Helsinki ServiceNow IT Service Management

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# Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT Service Management</td>
<td>6</td>
</tr>
<tr>
<td>Asset Management</td>
<td>6</td>
</tr>
<tr>
<td>Asset Management Overview module</td>
<td>6</td>
</tr>
<tr>
<td>Asset Management process</td>
<td>20</td>
</tr>
<tr>
<td>Asset information management</td>
<td>21</td>
</tr>
<tr>
<td>Asset classes</td>
<td>23</td>
</tr>
<tr>
<td>Asset and CI management</td>
<td>25</td>
</tr>
<tr>
<td>Transfer orders</td>
<td>47</td>
</tr>
<tr>
<td>Stockrooms</td>
<td>65</td>
</tr>
<tr>
<td>Stock rules</td>
<td>69</td>
</tr>
<tr>
<td>Software Asset Management plugin</td>
<td>71</td>
</tr>
<tr>
<td>Organization Management</td>
<td>146</td>
</tr>
<tr>
<td>Contract Management</td>
<td>146</td>
</tr>
<tr>
<td>Use the Contract Management Overview module</td>
<td>147</td>
</tr>
<tr>
<td>Components installed with Contract Management</td>
<td>148</td>
</tr>
<tr>
<td>Contract Management use</td>
<td>152</td>
</tr>
<tr>
<td>Condition check definitions</td>
<td>171</td>
</tr>
<tr>
<td>Procurement</td>
<td>172</td>
</tr>
<tr>
<td>Procurement roles</td>
<td>172</td>
</tr>
<tr>
<td>Procurement workflows</td>
<td>173</td>
</tr>
<tr>
<td>Use the Procurement Overview module</td>
<td>175</td>
</tr>
<tr>
<td>Activate Procurement</td>
<td>175</td>
</tr>
<tr>
<td>Request items source</td>
<td>179</td>
</tr>
<tr>
<td>Procurement purchase order management for assets</td>
<td>183</td>
</tr>
<tr>
<td>Receive assets</td>
<td>192</td>
</tr>
<tr>
<td>Product Catalog</td>
<td>195</td>
</tr>
<tr>
<td>Components installed with Product Catalog</td>
<td>195</td>
</tr>
<tr>
<td>Models</td>
<td>197</td>
</tr>
<tr>
<td>Vendor catalog items</td>
<td>204</td>
</tr>
<tr>
<td>Product catalog items</td>
<td>208</td>
</tr>
<tr>
<td>Model categories</td>
<td>212</td>
</tr>
<tr>
<td>Change Management</td>
<td>216</td>
</tr>
<tr>
<td>Change types</td>
<td>216</td>
</tr>
<tr>
<td>Upgrade Change Management</td>
<td>218</td>
</tr>
<tr>
<td>Activate change management plugins</td>
<td>219</td>
</tr>
<tr>
<td>Configure change management</td>
<td>238</td>
</tr>
<tr>
<td>Create a change request</td>
<td>288</td>
</tr>
<tr>
<td>Analyze risk of change and detect conflicts</td>
<td>297</td>
</tr>
<tr>
<td>Process a change request</td>
<td>301</td>
</tr>
<tr>
<td>Expense Line</td>
<td>304</td>
</tr>
<tr>
<td>Components installed with Expense Line</td>
<td>306</td>
</tr>
<tr>
<td>View an expense</td>
<td>307</td>
</tr>
<tr>
<td>Expense lines and expense allocations</td>
<td>308</td>
</tr>
<tr>
<td>Incident Alert Management</td>
<td>312</td>
</tr>
<tr>
<td>Incident Alert Management features</td>
<td>313</td>
</tr>
<tr>
<td>Activate Incident Alert Management</td>
<td>313</td>
</tr>
<tr>
<td>Incident Alert life cycle</td>
<td>318</td>
</tr>
<tr>
<td>Incident Alert contact</td>
<td>320</td>
</tr>
<tr>
<td>Create incident alerts</td>
<td>326</td>
</tr>
<tr>
<td>Process incident alerts</td>
<td>331</td>
</tr>
<tr>
<td>ServiceNow Helsinki Table of Contents</td>
<td></td>
</tr>
<tr>
<td>---------------------------------------</td>
<td></td>
</tr>
</tbody>
</table>

- Notify with Incident Alert .......................................................... 338
- Incident Alert Management roles ................................................... 343
- Incident Alert Management example ............................................. 343
- Subscribe to incident alerts ............................................................ 344
- Incident Management ..................................................................... 348
- Identify incidents ........................................................................... 349
- Log incidents .................................................................................. 349
- Incident Management state model .................................................. 363
- Activate Incident Management Notification .................................... 365
- Activate Incident Management - Core plugin .................................. 365
- Categorize incidents ....................................................................... 368
- Incident priority ............................................................................. 373
- Initial diagnosis of incidents ............................................................ 374
- Escalate incidents .......................................................................... 374
- Investigate and diagnose incidents .................................................. 377
- Incident resolution and recovery ...................................................... 384
- Incident closure .............................................................................. 393
- View incident notifications ............................................................... 397
- Incident management for end users ................................................ 399
- Incident Management service improvements .................................. 400
- Incident ticketing integrations ........................................................ 400
- ITSM guided setup ......................................................................... 407
  - Access ITSM guided setup .............................................................. 409
  - ITSM guided setup user interface .................................................. 410
  - Unlock a task .............................................................................. 418
  - Mark a configuration task as complete or incomplete ...................... 419
- On-call scheduling ......................................................................... 419
  - Activate on-call scheduling ........................................................... 419
  - On-call schedule concepts .............................................................. 426
  - On-call scheduling roles ................................................................. 426
  - On-call scheduling security ............................................................. 427
  - On-call scheduling wizard ............................................................... 428
  - On-call scheduling management ..................................................... 432
  - On-call scheduling ITIL functions .................................................. 436
  - On-call scheduling escalations ........................................................ 444
  - Use Notify with on-call scheduling ................................................. 450
  - Upgrade to on-call scheduling ......................................................... 451
- Problem Management .................................................................... 453
  - Data for problem resolution ........................................................... 453
  - Close related incidents from a problem ......................................... 459
  - Problem management service improvements .................................. 459
  - Create knowledge ......................................................................... 459
  - Problem Management process ....................................................... 466
  - Problem templates ....................................................................... 474
  - Problem record producers .............................................................. 475
  - Task outage .................................................................................. 480
  - Use a UI action to create a record .................................................... 481
  - Define an assignment rule for problems ........................................ 482
  - Define an inbound email action for problems ................................. 483
- Request Management ..................................................................... 483
  - Request creation .......................................................................... 483
  - Request states ............................................................................... 487
  - Request approvals ........................................................................ 489
  - Agent assignment ......................................................................... 489
  - Collaborate on a request ............................................................... 495
  - Close a request ............................................................................ 495

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IT Service Management

Deliver IT services and support to business users.

Asset Management

Asset management integrates the physical, technological, contractual, and financial aspects of information technology assets.

Asset management business practices have a common set of goals.

• Control inventory that is purchased and used.
• Reduce the cost of purchasing and managing assets.
• Select the proper tools for managing assets.
• Manage the asset life cycle from planning to disposal.
• Achieve compliance with relevant standards and regulations.
• Improve IT service to end users.
• Create standards and processes for managing assets.

Most successful ITAM programs involve a variety of people and departments, including IT, finance, services, and end users.

Asset Management and configuration management (CMDB) are related, but have different goals. Asset management focuses on the financial tracking of company property. Configuration management focuses on building and maintaining elements that create an available network of services.

Asset Management Overview module

The Asset Management Overview module displays various asset management widgets showing information such as configuration item by manufacturer, computers by manufacturer, configuration item types, and asset information for a specific vendor. It also includes a report widget showing pending asset retirements for the current week, month, and year.

The Overview module is a type of homepage. For more information about editing reports on homepages, see Add existing reports to a homepage.

Roles

Only users with certain roles have access to the Overview module. These roles can view the overview page and refresh, add, delete, and rearrange widgets.

• admin
• asset
• sam

Use the Asset Management Overview module

The Asset Management Overview module displays various asset management widgets.

Role required: asset, sam, or admin

1. Navigate to Asset Overview.
2. Click elements within reports to obtain more information.
Figure 1: Asset Management Overview module

- Microsoft Licenses
  - Microsoft Windows XP Professional = 5
  - Microsoft Office 2007 Professional = 5
  - Microsoft Office 2010 Professional = 3
  - Microsoft Office 2013 Professional = 1
  - Microsoft Office 2016 Professional = 1
  - Microsoft Office 2019 Professional = 1
  - Microsoft Office 2021 Professional = 1
  - Microsoft Virtual Studio = 0
  - Microsoft Visual Studio 2005 Professional Edition = 1

- Configuration Items by Manufacturer
  - Apple = 474
  - Dell Inc. = 331
  - Lenovo = 318
  - Asus = 38
  - HP = 106
  - HP Compaq = 97
  - IBM = 35
  - Cyberpower = 13
  - Gateway = 10
  - Alienware = 6
  - Sony = 9
  - Linux = 2
  - HP Compaq = 2
  - HP Proliant = 2
  - Other = 37

- Computers by Manufacturer
  - Apple = 474
  - Dell Inc. = 331
  - Lenovo = 318
  - Asus = 38
  - HP = 106
  - HP Compaq = 97
  - IBM = 35
  - Cyberpower = 13
  - Gateway = 10
  - Alienware = 6
  - Sony = 9
  - Linux = 2
  - HP Compaq = 2
  - HP Proliant = 2
  - Other = 37

- Computers by OS

- Pending Asset Retirements
  - End of this week: 4
  - End of this month: 3
  - End of this year: 9
Installed with Asset Management

A number of tables, user roles, UI policies, script includes, client scripts, and business rules are installed with Asset Management.

Demo data is available with asset management. The demo data provides information such as users, specific assets, and individual stockrooms.

Tables

Asset Management includes the following tables.

Table 1: Asset Management tables

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asset (alm_asset)</td>
<td>Stores general, financial, and contractual information about assets.</td>
</tr>
<tr>
<td>Asset Entitlement (alm_entitlement_asset)</td>
<td>Enables ServiceNow to categorize the Asset Entitlement table and enforce how entitlements behave.</td>
</tr>
<tr>
<td>Consumable (alm_consumable)</td>
<td>Stores data about consumable assets (previously known as parts).</td>
</tr>
<tr>
<td>Default Stockroom (alm_user_stockroom)</td>
<td>Stores the relationship between a user and their default stockroom.</td>
</tr>
<tr>
<td>Fixed Assets (alm_fixed_assets)</td>
<td>Stores fixed assets, which are containers that can hold multiple assets.</td>
</tr>
<tr>
<td>Fixed asset to asset (m2m_fixed_asset_to_asset)</td>
<td>Stores associations between fixed assets and assets.</td>
</tr>
<tr>
<td>Hardware (alm_hardware)</td>
<td>Stores general, financial, and contractual information about hardware assets.</td>
</tr>
<tr>
<td>License Entitlement (alm_entitlement)</td>
<td>Stores entitlements that permit users or machines to use a software license.</td>
</tr>
<tr>
<td>Software License (alm_license)</td>
<td>Stores general, financial, and contractual information about software license assets.</td>
</tr>
<tr>
<td>Stock Rule (alm_stock_rule)</td>
<td>Transfers stock or sends an email message to the asset manager when a specified asset drops below a set threshold.</td>
</tr>
<tr>
<td>Stockroom (alm_stockroom)</td>
<td>Stores information about stockrooms.</td>
</tr>
<tr>
<td>Stockroom Model (alm_m2m_stockroom_model)</td>
<td>Tracks all models that have ever been stocked in a stockroom. This table is automatically populated.</td>
</tr>
<tr>
<td>Stockroom Type (alm_stockroom_type)</td>
<td>Stores general information about stockroom types.</td>
</tr>
<tr>
<td>Transfer Order (alm_transfer_order)</td>
<td>Contains data about transfer orders, including the state and stockrooms.</td>
</tr>
<tr>
<td>Transfer Order Line (alm_transfer_order_line)</td>
<td>Contains data about individual assets being shipped with a transfer order.</td>
</tr>
<tr>
<td>User Entitlement (alm_entitlement_user)</td>
<td>Enables ServiceNow to categorize the User Entitlement table and enforce how entitlements behave.</td>
</tr>
</tbody>
</table>
User roles

Asset Management includes the following user roles.

Table 2: Asset Management user roles

<table>
<thead>
<tr>
<th>Role</th>
<th>Contains roles</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>asset (Asset Manager)</td>
<td>category manager, contract manager, financial mgmt user, inventory user</td>
<td>Can manage hardware and consumable assets ([alm.hardware] and [alm.consumable]). Asset manager cannot edit asset records that are created and updated automatically, but can read and delete the asset records when needed. Can create requests. Can create and delete stock information.</td>
</tr>
<tr>
<td>inventory_admin</td>
<td>inventory user</td>
<td>Can create and delete stock information. Can edit stock rules, stockrooms, and stockroom types.</td>
</tr>
<tr>
<td>inventory_user</td>
<td>none</td>
<td>Can access stock information. Can create and manage transfer orders.</td>
</tr>
<tr>
<td>sam</td>
<td>contract manager, model manager, financial mgmt user</td>
<td>Can create, edit, change, and manage software licenses. Can edit the Software model field on a discovery model. Can approve a model. Has full control of the Software Asset Management application. Controls the Software Asset Management IBM PVU Process Pack, if activated.</td>
</tr>
</tbody>
</table>

UI policies

Asset Management includes the following UI policies.

Table 3: Asset Management UI policies

<table>
<thead>
<tr>
<th>Name</th>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hide asset tag and serial num</td>
<td>[alm_asset]</td>
<td>Hides the asset tag when the asset is pre_allocated and the quantity is greater than 1.</td>
</tr>
<tr>
<td>Hide/show parent stockroom on Stockroom Replenish</td>
<td>[alm_stock_rule]</td>
<td>Shows the Parent stockroom field only when the Restocking option field is set to Stockroom.</td>
</tr>
<tr>
<td>Make allocated to and assigned to mandatory.</td>
<td>License Entitlement [alm Entitlement]</td>
<td>Makes the Allocated to and Assigned to fields mandatory.</td>
</tr>
<tr>
<td>Make substatus read-only when not required</td>
<td>[alm_asset]</td>
<td>Sets the Substatus to read-only if the State is On order, In use, Consumed, or In maintenance.</td>
</tr>
<tr>
<td>Name</td>
<td>Table</td>
<td>Description</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>---------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Model bundle field hidden but present for UI Policy conditions purposes</td>
<td>[alm_asset]</td>
<td>Hides the Model Bundle field. Exists on page only for use by UI policies and client scripts.</td>
</tr>
<tr>
<td>Pre-allocated constraints</td>
<td>[alm_asset]</td>
<td>Hides unneeded fields and related lists when the asset is pre-allocated.</td>
</tr>
<tr>
<td>Quantity readonly until model and category qualify the asset and are not bundle</td>
<td>[alm_asset]</td>
<td>Sets the Quantity field to readonly for assets that are not consumable, software, or pre-allocated. Quantity is also readonly if the model or model category fields are empty.</td>
</tr>
<tr>
<td>Show ‘Assigned to’</td>
<td>[alm_asset]</td>
<td>Shows the Assigned to field if the State field is not On order, In stock, or In transit.</td>
</tr>
<tr>
<td>Show ‘Reserved for’</td>
<td>[alm_asset]</td>
<td>Shows the Reserved for field if the State field is On order, In stock, or In transit.</td>
</tr>
<tr>
<td>Show ‘Stockroom’</td>
<td>[alm_asset]</td>
<td>Shows the Stockroom field if either of the following conditions is true:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• The State field is In stock and Substate is not Pre-allocated.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• The Substate is Pre-allocated and Parent is empty.</td>
</tr>
</tbody>
</table>

**Script includes**

Asset Management includes the following script includes.

**Table 4: Asset Management script includes**

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AssetandCI</td>
<td>Code for creating and managing the relationship between asset and CI records.</td>
</tr>
<tr>
<td>AssetAndCiSynchronizer</td>
<td>Synchronization code between asset and CI records.</td>
</tr>
<tr>
<td>AssetUtils</td>
<td>Utility functions for asset management. Also checks if a license can be merged and then merges licenses if requirements are met.</td>
</tr>
<tr>
<td>AssetUtilsAJAX</td>
<td>AJAX based utility functions for asset management. Call the AssetUtils script include from a client-side UI action.</td>
</tr>
<tr>
<td>Consumables</td>
<td>Code to modify (for example, consume, split, and merge) consumables.</td>
</tr>
<tr>
<td>FixedAssetUtils</td>
<td>Methods for rolling up fixed asset costs.</td>
</tr>
<tr>
<td>PortalFilters</td>
<td>Filters used in the My Assets portal.</td>
</tr>
<tr>
<td>PreAllocatedAssets</td>
<td>Code to modify pre-allocated assets.</td>
</tr>
</tbody>
</table>
### Table 4: ServiceNow scripts

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>StockRuleFilters</td>
<td>Reference qualifier code for filtering options on reference fields on stock rules.</td>
</tr>
<tr>
<td>StockRuleTransfer</td>
<td>Transfer order creation code for when stock rules are triggered.</td>
</tr>
<tr>
<td>TransferOrderDateTimeAjax</td>
<td>Date comparison utility for transfer orders.</td>
</tr>
<tr>
<td>TransferOrderFilters</td>
<td>Reference qualifier code for reference field filtering options on transfer orders.</td>
</tr>
<tr>
<td>TransferOrderFinder</td>
<td>Finds an appropriate transfer order to put a transfer order line into.</td>
</tr>
<tr>
<td>TransferOrderHelper</td>
<td>Function that checks if a transfer order has multiple transfer order lines.</td>
</tr>
<tr>
<td>TransferOrderLineFilters</td>
<td>Reference qualifier code for reference field filtering options on transfer order lines.</td>
</tr>
<tr>
<td>TransferOrderReceiver</td>
<td>Code for receiving a transfer order line.</td>
</tr>
<tr>
<td>TransferOrderReturn</td>
<td>Code for returning a transfer order line.</td>
</tr>
<tr>
<td>TransferOrderStageHandler</td>
<td>Code for changing transfer order stages and transfer order line stages.</td>
</tr>
<tr>
<td>TransferOrderStageHelper</td>
<td>Helper method to get numeric stages for transfer orders and transfer order lines.</td>
</tr>
</tbody>
</table>

### Table 5: Asset Management client scripts

<table>
<thead>
<tr>
<th>Name</th>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Correct substatus</td>
<td>[alm_asset]</td>
<td>Updates the Substatus field when the Status field is modified.</td>
</tr>
<tr>
<td>Ensure no negative quantity</td>
<td>[alm_asset]</td>
<td>Clears the Quantity field when set to less than 1.</td>
</tr>
<tr>
<td>Error on pre-allocated substatus</td>
<td>[alm_consumable]</td>
<td>Prevents Substatus field from being set to Pre-allocated for consumable assets. Also displays an error message.</td>
</tr>
<tr>
<td>Error on pre-allocated substatus</td>
<td>[alm_license]</td>
<td>Prevents Substatus field from being set to Pre-allocated for license assets. Also displays an error message.</td>
</tr>
<tr>
<td>Null out allocated_to</td>
<td>[alm_entitlement]</td>
<td>Does the following when the Assigned to field is set:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Clears the Allocated to field and makes it not mandatory.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Makes the Assigned to field mandatory.</td>
</tr>
<tr>
<td>Name</td>
<td>Table</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Null out assigned_to</td>
<td>[alm_entitlement]</td>
<td>Does the following when the Allocated to field is set:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Clears the Assigned to field and makes it not mandatory.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Makes the Allocated to field mandatory.</td>
</tr>
<tr>
<td>Salvage must be less than cost</td>
<td>[alm_asset]</td>
<td>Displays a warning if a salvage value greater than the cost of an asset is entered.</td>
</tr>
<tr>
<td>Set Cost of the Asset</td>
<td>[alm_asset]</td>
<td>Populates the Cost field when the Model field is set.</td>
</tr>
<tr>
<td>Set Loc/CC/Dep/Com from assigned to</td>
<td>[alm_asset]</td>
<td>Populates the Location, Cost center, Department, and Company fields when the Assigned to field is set.</td>
</tr>
<tr>
<td>Set Location from stockroom</td>
<td>[alm_asset]</td>
<td>Populates the Location field when the Stockroom field is set.</td>
</tr>
<tr>
<td>Update From Location from Stockroom</td>
<td>[alm_transfer_order]</td>
<td>Populates the From location field when the From stockroom field is set.</td>
</tr>
<tr>
<td>Update Model and Quantity based on Asset</td>
<td>[alm_transfer_order_line]</td>
<td>Populates the Model field when the Asset field is set.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>If the asset is a pre-allocated asset, this client script also populates the Quantity field.</td>
</tr>
<tr>
<td>Update To Location from Stockroom</td>
<td>[alm_transfer_order]</td>
<td>Populates the To location field when the To stockroom field is set.</td>
</tr>
<tr>
<td>Update UI on load and model change</td>
<td>[alm_transfer_order_line]</td>
<td>Runs checks, and updates the user interface, when the transfer order line form is loaded and when a model is selected.</td>
</tr>
<tr>
<td>Validate Delivery by Date</td>
<td>[alm_transfer_order]</td>
<td>Validates that the delivery date is in the future.</td>
</tr>
<tr>
<td>Verify Stock Available</td>
<td>[alm_transfer_order_line]</td>
<td>Verifies that stock exists to fulfill the quantity requested.</td>
</tr>
<tr>
<td>Verify Stock Available (Stockroom)</td>
<td>[alm_transfer_order_line]</td>
<td>Verifies that stock exists to fulfill the quantity requested when the From stockroom value changes.</td>
</tr>
</tbody>
</table>

Business rules

Asset Management includes the following business rules.
Table 6: Asset Management business rules

<table>
<thead>
<tr>
<th>Name</th>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allocated more licenses than rights</td>
<td>Software License (alm_license)</td>
<td>Prevents creation or update of a license if the number of licenses allocated is larger than the total rights.</td>
</tr>
<tr>
<td>Asset Retirement</td>
<td>Asset (alm_asset)</td>
<td>Clears the Assigned to, Stockroom, and Reserved for fields and sets the retirement date to the current time when the asset is retired.</td>
</tr>
<tr>
<td>Automatically Change TOL State</td>
<td>Transfer Order Line (alm_transfer_order_line)</td>
<td>If a transfer order has the same From stockroom and To stockroom and it is a personal stockroom, this business rule:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Sets the transfer order line Stage to Delivered.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Sets the asset Substate to Reserved.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>If a transfer order has the same From stockroom and To stockroom and it is not a personal stockroom, this business rule:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Sets the transfer order Stage to Received.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Sets the asset Substate to Pending transfer.</td>
</tr>
<tr>
<td>Build bundle components on Insert</td>
<td>Asset (alm_asset)</td>
<td>Creates assets for the components related to a bundle if the model of the created asset is a bundle.</td>
</tr>
<tr>
<td>Clear Assigned To on update</td>
<td>Asset (alm_asset)</td>
<td>Clears the Assigned to field if the State field changes to On order, In stock, or In transit.</td>
</tr>
<tr>
<td>Clear fields irrelevant for preallocated</td>
<td>Asset (alm_asset)</td>
<td>Clears the value of fields that are irrelevant for pre-allocated assets.</td>
</tr>
<tr>
<td>Create Asset on insert</td>
<td>Configuration Items (cmdb_ci)</td>
<td>Creates a corresponding asset when a new configuration item with no asset is created.</td>
</tr>
<tr>
<td>Create asset on model change</td>
<td>Configuration Items (cmdb_ci)</td>
<td>Creates a new associated asset when the Model ID field changes.</td>
</tr>
<tr>
<td>Create CI on insert</td>
<td>Asset (alm_asset)</td>
<td>Creates a corresponding configuration item when a new asset with no configuration item is created.</td>
</tr>
<tr>
<td>Create Stockroom Model Relation</td>
<td>Asset (alm_asset)</td>
<td>Creates a record (if none already exists) in the Stockroom Model table indicating the stockroom that holds the model when an asset is created or updated.</td>
</tr>
<tr>
<td>Name</td>
<td>Table</td>
<td>Description</td>
</tr>
<tr>
<td>------</td>
<td>-------</td>
<td>-------------</td>
</tr>
<tr>
<td>Delete all Transfer Order Lines</td>
<td>Transfer Order (alm_transfer_order)</td>
<td>Deletes all related transfer order lines when a transfer order is deleted.</td>
</tr>
<tr>
<td>Ensure Entitlements do not exceed rights</td>
<td>License Entitlement (alm_entitlement)</td>
<td>Checks that the total number of entitlements for the related license does not exceed the number of rights given by the license when an entitlement is created.</td>
</tr>
<tr>
<td>GenerateAssets</td>
<td>Model Categories (cmdb_model_category)</td>
<td>Executes a scheduled script job to create assets for configuration items.</td>
</tr>
<tr>
<td>Inherit information from parent</td>
<td>Asset (alm_asset)</td>
<td>Assigns some parent values to the asset when assigning a new parent to an asset.</td>
</tr>
<tr>
<td>Managed Stockroom for Vendor</td>
<td>Stock Rule (alm_stock_rule)</td>
<td>Validates that a vendor replenishing stock rule has a stockroom selected and the stockroom has an associated manager with a valid email address.</td>
</tr>
<tr>
<td>Mandate allocated to or assigned to</td>
<td>License Entitlement (alm_entitlement)</td>
<td>Makes a value in either the Allocated to field or the Assigned to field mandatory.</td>
</tr>
<tr>
<td>Merge Records</td>
<td>Consumable (alm_consumable)</td>
<td>Merges consumables that have matching fields and are not In Transit into one record containing the total count.</td>
</tr>
<tr>
<td>Null out asset on insert and stay</td>
<td>Configuration Items (cmdb_ci)</td>
<td>Clears the Asset field on insert if the field contains an asset that has a CI.</td>
</tr>
<tr>
<td>Null out CI on insert and stay</td>
<td>Asset (alm_asset)</td>
<td>Nulls out the asset field so a new asset is created for the CI if an insert is performed on an existing CI.</td>
</tr>
<tr>
<td>Populate reserved for field</td>
<td>Transfer Order Line (alm_transfer_order_line)</td>
<td>If the transfer order line has an associated request line, this business rule populates the associated asset’s Reserved for field with the appropriate information from the request line.</td>
</tr>
<tr>
<td>Push Status to Asset/Consumable</td>
<td>Transfer Order Line (alm_transfer_order_line)</td>
<td>Modifies the corresponding asset to reflect the current state of transit when a transfer order line moves to another state.</td>
</tr>
<tr>
<td>Release Asset on TOL cancel/delete</td>
<td>Transfer Order Line (alm_transfer_order_line)</td>
<td>Places the corresponding asset back into stock and unsources the part requirement when a transfer order line in the draft state is canceled or deleted.</td>
</tr>
<tr>
<td>Rollup TOL cancellation to TO</td>
<td>Transfer Order Line (alm_transfer_order_line)</td>
<td>Signals to the corresponding transfer order that the transfer order line has been canceled.</td>
</tr>
<tr>
<td>Name</td>
<td>Table</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------------------------------------------</td>
<td>--------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Salvage value must be less than cost</td>
<td>Asset [alm_asset]</td>
<td>Prevents saving an asset record if the salvage value is greater than the cost.</td>
</tr>
<tr>
<td>Sanity check on pre-allocated</td>
<td>Asset [alm_asset]</td>
<td>Prevents creation or update of pre-allocated assets if they do not satisfy the conditions to be pre-allocated.</td>
</tr>
<tr>
<td>Set Class</td>
<td>License Entitlement [alm_entitlement]</td>
<td>Sets the class for this entitlement depending on if the entitlement is assigned or allocated.</td>
</tr>
<tr>
<td>Set Transfer Order Type</td>
<td>Transfer Order [alm_transfer_order]</td>
<td>Sets the type of the transfer order depending on whether there is a related service order or work order task.</td>
</tr>
<tr>
<td>Sync model category</td>
<td>Product Models [cmdb_model]</td>
<td>When the model category changes, this business rule creates assets if they did not previously exist for configuration items associated with the model.</td>
</tr>
<tr>
<td>Transfer Order Stockroom Rules</td>
<td>Transfer Order [alm_transfer_order]</td>
<td>Prevents the From stockroom field from being changed if the transfer order has multiple transfer order lines.</td>
</tr>
<tr>
<td>Transition reserved to assigned</td>
<td>Asset [alm_asset]</td>
<td>Populates the Assigned to field with the value from the Reserved for field when the asset is in the appropriate state.</td>
</tr>
<tr>
<td>Trickle information down to components</td>
<td>Asset [alm_asset]</td>
<td>Updates components of an asset to reflect any changes that have been made to the asset record.</td>
</tr>
<tr>
<td>Update Asset fields on change</td>
<td>Configuration Items [cmdb_ci]</td>
<td>Synchronizes fields so changes made on the Configuration Item form trigger the same update on the corresponding Asset form, ensuring consistent reporting. ServiceNow recommends updating statuses on the Asset form.</td>
</tr>
<tr>
<td>Update CI fields on change</td>
<td>Asset [alm_asset]</td>
<td>Synchronizes fields so changes made on the Asset form trigger the same update on the corresponding Configuration Item form, ensuring consistent reporting.</td>
</tr>
<tr>
<td>Update location as needed</td>
<td>Asset [alm_asset]</td>
<td>Updates the location of the asset, if the asset is set to a new stockroom or assigned to a new user.</td>
</tr>
<tr>
<td>Name</td>
<td>Table</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------------</td>
<td>--------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Validate Field Agent Type</td>
<td>Stockroom (alm_stockroom)</td>
<td>Ensures you do not create a stockroom of type Field Agent without Work Management or Field Service Management activated. Allows for only one personal stockroom per user.</td>
</tr>
<tr>
<td>Validate TOL and check availability</td>
<td>Transfer Order Line (alm_transfer_order_line)</td>
<td>Validates changes made to the transfer order line and checks availability of the assets to be transferred in the specified stockroom.</td>
</tr>
<tr>
<td>Validate transfer order</td>
<td>Transfer Order (alm_transfer_order)</td>
<td>Validates that the Delivery by date is not earlier than the current date.</td>
</tr>
<tr>
<td>Validate Unique Users</td>
<td>Default Stockroom (alm_user_stockroom)</td>
<td>Prevents the creation of multiple records with the same user.</td>
</tr>
<tr>
<td>Verify Entitlement (Allocated)</td>
<td>License Entitlement (alm_entitlement)</td>
<td>Ensures that the allocation of the entitlement follows the allocation condition on the license, if a condition exists.</td>
</tr>
<tr>
<td>Verify Entitlement (Assigned)</td>
<td>License Entitlement (alm_entitlement)</td>
<td>Ensures that the assignee of the entitlement follows the assignment condition on the license, if a condition exists.</td>
</tr>
<tr>
<td>Verify Entitlements (Allocated)</td>
<td>Software License (alm_license)</td>
<td>Ensures that the allocations of all the license’s entitlements follow the allocation condition on the license, if a condition exists.</td>
</tr>
<tr>
<td>Verify Entitlements (Assigned)</td>
<td>Software License (alm_license)</td>
<td>Ensures that the assignees of all the license’s entitlements follow the assignment condition on the license, if a condition exists.</td>
</tr>
<tr>
<td>Verify Not Field Agent</td>
<td>Default Stockroom (alm_user_stockroom)</td>
<td>Verifies that the selected default stockroom is not of the Field Agent type.</td>
</tr>
</tbody>
</table>

Installed with Model Management

Several types of components are installed with Model Management.

Demo data is available with Model Management.

Business rules installed with Model Management

Model Management uses a number of business rules.

<table>
<thead>
<tr>
<th>Name</th>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abort action if no license type</td>
<td>(cmdb_software_product_model)</td>
<td>Ensures that a license type (not a license type group that cannot be handled by counters) has been selected.</td>
</tr>
<tr>
<td>Name</td>
<td>Table</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------------------------------</td>
<td>--------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Calculate display_name</td>
<td>Product Model ( \text{cmdb_model} )</td>
<td>Sets the Display name field when any of the following field values change: Manufacturer, Name, Version, Edition. The display name differs depending on whether the glide.cmdb_model.display_name.shorten property is set to true or false.</td>
</tr>
<tr>
<td>Date validation</td>
<td>( \text{cmdb_m2m_downgrade_model} )</td>
<td>Ensures that the Start date is before the End date.</td>
</tr>
<tr>
<td>Enforce CI Rules</td>
<td>( \text{cmdb_model_category} )</td>
<td>Ensures that categories that track assets as consumables or software licenses do not have a CI class.</td>
</tr>
<tr>
<td>Flag parent as bundle on creation</td>
<td>( \text{cmdb_m2m_model_component} )</td>
<td>Flags a model that has components as a bundle.</td>
</tr>
<tr>
<td>License Type - Fullname</td>
<td>( \text{cmdb_sw_license_calculation} )</td>
<td>Computes the full name of the license type.</td>
</tr>
<tr>
<td>License validation</td>
<td>Software Upgrade and Downgrades ( \text{cmdb_m2m_downgrade_model} )</td>
<td>Prevents software upgrades and downgrades from being duplicated and prevents having duplicate upgrades and downgrades for the same license where duplication also involves having the same dates. Also ensures that both the Upgrade parent and Downgrade child fields are mandatory and that if the License field is not empty, either Upgrade parent or Downgrade child must be equal to the license.model.</td>
</tr>
<tr>
<td>Protect ( \text{cmdb_ci_class} )</td>
<td>( \text{cmdb_model_category} )</td>
<td>Prevents CI class from being changed after creation.</td>
</tr>
<tr>
<td>Protect ( \text{cmdb_ci_class_on_insert} )</td>
<td>( \text{cmdb_model_category} )</td>
<td>Prevents creation of a category if another category already exists for the chosen CI class.</td>
</tr>
<tr>
<td>Protect Contract</td>
<td>( \text{cmdb_model_category} )</td>
<td>Prevents changes to the Contract model category record.</td>
</tr>
<tr>
<td>Set parent’s main component link</td>
<td>( \text{cmdb_m2m_model_component} )</td>
<td>Populates a read-only reference from the bundle to the component when a bundle component is selected as the main component.</td>
</tr>
<tr>
<td>Unflag parent on last delete</td>
<td>( \text{cmdb_m2m_model_component} )</td>
<td>Removes the bundle flag from a model when the last component is deleted from the bundle.</td>
</tr>
<tr>
<td>Update model category</td>
<td>( \text{cmdb_ci} )</td>
<td>Updates the model categories for the associated model if the model is not already associated with the CI’s model category.</td>
</tr>
<tr>
<td>Name</td>
<td>Table</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>--------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Validate record before creation</td>
<td>[cmdb_m2m_model_component]</td>
<td>Ensures that a component is not already in a bundle when an attempt is made to add the component to a bundle.</td>
</tr>
</tbody>
</table>

**Client scripts installed with Model Management**

Model Management includes a number of client scripts.

<table>
<thead>
<tr>
<th>Name</th>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clear models not matching license</td>
<td>[cmdb_m2m_downgrade_model]</td>
<td>Clears the Upgrade parent and Downgrade child fields when the License field is changed to a license and neither the upgrade or downgrade fields match the license model.</td>
</tr>
<tr>
<td>Constraints based on asset class</td>
<td>[cmdb_model_category]</td>
<td>Enables or disables bundling options based on the asset class of the category.</td>
</tr>
<tr>
<td>Hide sections when needed</td>
<td>[cmdb_model]</td>
<td>Shows and hides sections according to what is relevant for a given model.</td>
</tr>
<tr>
<td>model_category change</td>
<td>[cmdb_model]</td>
<td>Ensures compatibility of classes between the several categories referenced by the same model (client part).</td>
</tr>
<tr>
<td>Populate downgrade from license</td>
<td>[cmdb_m2m_downgrade_model]</td>
<td>Sets the downgrade child to the software model on the referenced license when an upgrade is selected. Only sets the downgrade to the license if the license is not empty.</td>
</tr>
<tr>
<td>Populate upgrade from license</td>
<td>[cmdb_m2m_downgrade_model]</td>
<td>Sets the upgrade parent to the software model on the referenced license when a downgrade is selected. Only sets the upgrade to the license if the license is not empty.</td>
</tr>
</tbody>
</table>

**Properties installed with Model Management**

Model Management includes the property glide.cmdb_model.display_name.shorten.
<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
</table>
| glide.cmdb_model.display_name.shorten                                | When set to true, generates shorter display names for models by eliminating duplication of the manufacturer name. Consider the following model, for which Manufacturer is set to Spotify and Name is set to Spotify Premium. The Display name field is set as follows, based on the property setting.  
• false: Display name is Spotify Spotify Premium  
• true: Display name is Spotify Premium  
For software models, the edition and version are also included in the name, if they are specified.  
• Type: true | false  
• Default value: false  
• Location: System Properties (sys_properties) table                                                                  |

Script includes installed with Model Management

Model Management includes script includes.

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ModelAndCategoryFilters</td>
<td>Refines reference qualifiers for models and model categories based on class.</td>
</tr>
<tr>
<td>ModelCategoryCheck</td>
<td>Ensures compatibility of classes between the several categories referenced by the same model.</td>
</tr>
</tbody>
</table>

Tables installed with Model Management

Model Management includes numerous tables.

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application Model</td>
<td>Stores models used to describe software application products.</td>
</tr>
<tr>
<td>Consumable Model</td>
<td>Describes consumable product models.</td>
</tr>
<tr>
<td>Contract Model</td>
<td>Stores all contract models.</td>
</tr>
<tr>
<td>Depreciation</td>
<td>Stores asset depreciation patterns.</td>
</tr>
<tr>
<td>Hardware Model</td>
<td>Describes hardware product models.</td>
</tr>
<tr>
<td>Model Category</td>
<td>Defines groups of assets, consumables, product bundles, and configuration items.</td>
</tr>
<tr>
<td>Model Compatibility</td>
<td>Stores many-to-many relationship between two models signifying their compatibility with one another.</td>
</tr>
<tr>
<td>Model Component</td>
<td>Stores many-to-many relationship between two models signifying that they form a bundle.</td>
</tr>
<tr>
<td>Product model</td>
<td>Describes all kinds of product models.</td>
</tr>
<tr>
<td>Software License Calculation</td>
<td>Defines commonly used software licensing patterns.                                                                --------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Software Model ([\text{cmdb_software_product_model}])</td>
<td>Describes software product models.</td>
</tr>
<tr>
<td>Software Suite ([\text{cmdb_m2m_suite_model}])</td>
<td>Stores many-to-many relationship between two models that defines elements of a software suite.</td>
</tr>
<tr>
<td>Software Upgrade and Downgrades ([\text{cmdb_m2m_downgrade_model}])</td>
<td>Stores many-to-many relationship between two models signifying that being licensed for one model grants rights to the other as well.</td>
</tr>
</tbody>
</table>

UI policies installed with Model Management

Model Management includes UI policies.

<table>
<thead>
<tr>
<th>Name</th>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hide unverified</td>
<td>Model Category ([\text{cmdb_model_category}])</td>
<td>Shows the Enforce CI verification field if the Asset class and CI class fields are not empty.</td>
</tr>
<tr>
<td>Lock fields for Contract and Work</td>
<td>Model Category ([\text{cmdb_model_category}])</td>
<td>Sets all fields on the Model Category form to read-only if the Name is Contract or, Work Order or Work Task.</td>
</tr>
<tr>
<td>Protect model category</td>
<td>Product Model ([\text{cmdb_model}])</td>
<td>Makes the Model categories field mandatory and read-only if it contains any of the following values: Software License, Contract, Work Order, Work Task.</td>
</tr>
<tr>
<td>Show is an option if Oracle</td>
<td>Software Model ([\text{cmdb_software_product_model}])</td>
<td>Shows the Is an option field if the selected Manufacturer name starts with Oracle.</td>
</tr>
</tbody>
</table>

User roles installed with Model Management

Model Management includes user roles.

<table>
<thead>
<tr>
<th>Role</th>
<th>Contains Roles</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>category_manager</td>
<td>model manager</td>
<td>Can create, edit, and delete model categories.</td>
</tr>
<tr>
<td>model_manager</td>
<td>none</td>
<td>Can create new CMDB models. The model manager role can control the base models and any model extensions that are not hardware, software, or consumables. Hardware and consumable models are controlled by the asset manager (asset) role. Software models are controlled by the software asset manager (sam) role.</td>
</tr>
</tbody>
</table>

Asset Management process

The best method for managing assets depends on business needs and how your business is organized.
These steps are one possible process for getting started with Asset Management.

1. Identify assets in your system. A key component of asset management is the initial and ongoing inventory or discovery of what you own. The ServiceNow platform provides the following options for asset discovery.
   • The separate, robust Discovery tool.
   • A lightweight, native discovery tool, Help the Help Desk lets you scan your network proactively to discover all Windows-based PCs and the software packages installed on those PCs. This WMI-based discovery is included in the base self-service application.
   • For organizations that want to use the discovery technologies they have deployed already, such as SMS, Tally NetCensus, LanDesk, or others, ServiceNow can support integration to those technologies via web services. Scanned data can be mapped directly into the configuration management database (CMDB).

2. Clean up information in the configuration management database (CMDB). Remove information that is obsolete or invalid. Ensure that all remaining information is accurate and complete. Add any necessary information.

3. Create categories of asset models such as computers, servers, printers, and software.

4. Create asset models. Models are specific versions or various configurations of an asset, such as a MacBook Pro 17”.

5. Create individual assets, such as hardware, consumables, and software licenses. If you used a discovery tool, you may already have many assets identified accurately.

6. Manage assets by counting software licenses, viewing assets that are in stock, setting asset states and substates, and analyzing unallocated software.

Asset information management

Asset management starts with finding out information about the assets your organization has. Questions to answer include the following.

• What assets does the organization own?
• What assets does the organization lease or rent?
• Who is responsible for each asset?
• Where are all assets located?
• Are assets being used? How frequently are they used?

In the ServiceNow platform, there are several methods for obtaining asset information. After you use a discovery tool to identify assets, you can use tools in the Asset Management application. For example, use the overview reports, view a list of assets in stock, and view a list of unallocated software licenses.

To view assets that are in stock, navigate to Inventory Management Stock In Stock.
View a list of assets in stock
You can view a list of assets in stock.
Role required: asset or inventory_admin
1. Navigate to Inventory Stock In Stock.
2. View the Assets list in Asset view.
   The list shows only assets with a state of In stock.
Asset classes

The default asset classes are Hardware, Software License, and Consumable. These general classes can be used to manage a variety of assets.
If the general classes are not appropriate for a specific group of assets, consider creating a new asset class. For example, a fleet of cars could be tracked in a custom asset class named Vehicle. Before creating new asset classes, analyze business needs to see if the general classes can be used. A large number of asset classes can be difficult to maintain.

Built-in functionality allows you to use asset classes for financial tracking, in a model bundle, and as a pre-allocated asset.

Create an asset class

Creating a new asset class requires defining a new table and creating a corresponding application and module, then adding the new asset class to new or existing model categories.

Role required: asset or category_manager

Ensure that the model categories contain models. Use the Table Creator to extend an existing table.

1. Navigate to System Definition Tables & Columns and scroll to the bottom of the page.
2. Fill in the Table Creator fields with information about the new table.
   For example, to extend the alm_asset table with a new table named u_vehicle and add a new application named Vehicle, fill out the Table Creator fields with the following information.

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Label</td>
<td>Enter Vehicle.</td>
</tr>
<tr>
<td>Table name</td>
<td>Check that u_vehicle has been added to the field automatically.</td>
</tr>
<tr>
<td>Extends base table</td>
<td>Select alm_asset.</td>
</tr>
<tr>
<td>Create new application</td>
<td>Check that the Named check box is selected and that Vehicle has been added to the text box automatically.</td>
</tr>
<tr>
<td>Create new module</td>
<td>Check that the In application check box is selected and select Asset Management.</td>
</tr>
</tbody>
</table>

3. Click Do It!. 
4. Navigate to the new application (for example, Asset Management > Vehicle) and click New.
5. Configure the form to include Model, Model Category, and Quantity.
6. Create a model category and add the asset class you created to the Asset class field.
7. Create new models and add them to the model category.

Now that the model category (associated with the new asset class) and the models are created, manage the models as assets. For example, use the model in a bundle.

Asset and CI management

Asset and configuration item (CI) management refers to creating assets, setting appropriate states and substates, synchronizing assets and CIs, managing consumables, and retiring assets.

It is important to manage the relationship between assets and associated CIs. Assets are tracked with the Asset Management application, which focuses on the financial aspects of owning property. CIs are stored in the CMDB, which is used to track items and make them available to users. When an asset has a corresponding CI, the asset record and the CI record are kept synchronized with two business rules.

- Update CI fields on change (on the Asset [alm_asset] table)
- Update Asset fields on change (on the Configuration Item [cmdb_ci] table)

Note: Assets and CIs can be synchronized only if they are logically mapped.

Asset-CI mapping and synchronization

The State field of asset record and Status field of CI record are synchronized so that changes made on one form trigger the same update on the corresponding form, ensuring consistent reporting.

Note: The ServiceNow platform synchronizes updates between assets and configuration items only if the asset and configuration item are pointed toward each other.

The following diagram illustrates the concept of Asset-CI mapping and synchronization.
This synchronization and mapping is based on the following factors:

- Asset state and CI status are not mapped on one-to-one basis; rather they are mapped to the most logical counterpart on the other table. For example, for a hardware asset set to state In Stock - Pending disposal, the corresponding CI is set to In Disposition with no substate.
- This synchronization happens between the asset’s State field and the following CI fields:
  - Install Status field: Install Status does not have a sub status and must be used for non-hardware CIs.
  - Hardware Status and Sub status field: Hardware Status is visible only for Hardware CI.
- Drive changes by updating the state on the Asset form. The Asset-CI synchronization can be driven in the following ways:
  - Asset to CI synchronization: Change to the asset’s status updates the logically mapped CI’s Install Status or Hardware Status and sub status.
  - CI to Asset: Change to the CI’s Install Status or Hardware Status updates the logically mapped asset’s states and sub states.
- For a CMDB hardware CI, if both Hardware Status and Install Status is updated, the Hardware Status change is considered for mapping the corresponding state of the asset.
Ci’s Install Status and Hardware Status work independently. There is no correlation between them. Ci’s Hardware Status change does not change Ci’s Install Status and vice versa. To avoid confusion, keeping both status for CMDB CI Hardware is not recommended.

List of the fields that get synced between Asset and CI

When modifying any of following fields on the asset or CI record, the same field on the corresponding record is automatically updated (with the exception of the Cost field, which is informational-only on the CI record).

Following is a list of fields that are synched.

- Asset tag
- Assigned
- Assigned to
- Checked in
- Checked out
- Company
- Cost (synchs in only one direction: asset to CI)
- Cost center
- Delivery date
- Department
- Due in
- Due
- GL account
- Install date
- Invoice number
- Justification
- Lease id
- Location
- Managed by
- Model
- Order date
- Order received
- Ordered
- Owned by
- PO number
- Purchase date
- Purchased
- Serial number
- Support group
- Supported by
- Vendor
- Warranty expiration

Create assets

You can create hardware, software license, consumable, license, and facility assets.

Role required: asset

1. Navigate to Asset Portfolios All Assets.
2. Click New.
3. Fill in the fields.

Table 7: Asset record fields

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display name</td>
<td>Name of the asset as it appears in record lists. Automatically set when asset is created, based on Asset Tag and Model fields.</td>
</tr>
<tr>
<td>Model category</td>
<td>Model grouping of the asset. Based on the model category selected, the asset can be linked to a configuration item.</td>
</tr>
<tr>
<td>Model</td>
<td>Specific product model of the asset.</td>
</tr>
<tr>
<td>Configuration Item</td>
<td>CI automatically created when this asset is created. The name that appears in this field is based on Model category and Model. Point to the reference icon (📎) to see the configuration item details inherited from the asset record.</td>
</tr>
<tr>
<td>Quantity</td>
<td>Number of items this asset represents. An asset always has a quantity of one unless one or more of these points are true.</td>
</tr>
<tr>
<td></td>
<td>• It is a consumable. Quantity is unrestricted because consumables are tracked in groups.</td>
</tr>
<tr>
<td></td>
<td>• It is pre-allocated. Quantity is unrestricted when Model category and Model are defined and Substate is set to Pre-allocated.</td>
</tr>
<tr>
<td></td>
<td>• It has no model and no model category.</td>
</tr>
<tr>
<td>General tab</td>
<td></td>
</tr>
<tr>
<td>Asset tag</td>
<td>Alphanumeric information assigned by your organization to help track the asset.</td>
</tr>
<tr>
<td>State</td>
<td>Current state of the asset, such as On order or In use.</td>
</tr>
<tr>
<td>Stockroom</td>
<td>Current stockroom in which the asset is physically located.</td>
</tr>
<tr>
<td>Reserved for</td>
<td>Person for whom the asset has been ordered. This field is visible when the asset state is On Order.</td>
</tr>
<tr>
<td>Assigned to</td>
<td>Person using or primarily responsible for this item. This field is visible when the asset state is In Use.</td>
</tr>
<tr>
<td>Managed by</td>
<td>Person who maintains the asset. This can be different from the person in the Owned by field.</td>
</tr>
<tr>
<td>Owned by</td>
<td>Person who has financial ownership of the asset. This can be different from the person in the Managed by field.</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>---------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Parent</td>
<td>Parent asset of the asset. For example, a monitor or peripheral can have a workstation as their parent asset. When a parent link is defined, the fields related to assignment and state of the child assets is set to read-only and are populated based on the parent assignment and state fields. For more information, see <a href="#">Bundled models</a>.</td>
</tr>
<tr>
<td>Class</td>
<td>Asset group, for example, base, hardware, license, or consumable.</td>
</tr>
<tr>
<td>Serial number</td>
<td>Serial number of this asset.</td>
</tr>
<tr>
<td>Substate</td>
<td>Current substate of the asset. The available substate settings depend on the state selected. For example, the Retired state contains the Substate options Disposed, Sold, Donated, and Vendor credit.</td>
</tr>
<tr>
<td>Location</td>
<td>Current physical location of the asset.</td>
</tr>
<tr>
<td>Department</td>
<td>Department to which the asset belongs.</td>
</tr>
<tr>
<td>Company</td>
<td>Company or organization to which this asset belongs.</td>
</tr>
<tr>
<td>Assigned</td>
<td>Date on which the asset was assigned to a user.</td>
</tr>
<tr>
<td>Installed</td>
<td>Date on which the asset was installed.</td>
</tr>
<tr>
<td>Comments</td>
<td>Information about the asset that would be helpful for others to know.</td>
</tr>
<tr>
<td>Financial tab</td>
<td></td>
</tr>
<tr>
<td>PO number</td>
<td>Purchase order under which the asset was purchased.</td>
</tr>
<tr>
<td>Order received</td>
<td>Date on which the asset was received.</td>
</tr>
<tr>
<td>Request line</td>
<td>Requested item to which the asset is linked.</td>
</tr>
<tr>
<td>Purchase order line</td>
<td>Purchase order line item to which the asset is linked.</td>
</tr>
<tr>
<td>Receiving line</td>
<td>Receiving slip line to which the asset is linked.</td>
</tr>
<tr>
<td>Invoice number</td>
<td>Invoice under which the asset was billed.</td>
</tr>
<tr>
<td>Cost</td>
<td>Price at which the asset was purchased.</td>
</tr>
<tr>
<td>Vendor</td>
<td>Vendor from which the asset was purchased. For assets automatically created from purchase orders in Procurement, the default value of the Vendor field is the vendor specified on the purchase order.</td>
</tr>
<tr>
<td>Purchased</td>
<td>Date on which the asset was purchased.</td>
</tr>
<tr>
<td>Ordered</td>
<td>Date on which the asset was ordered.</td>
</tr>
<tr>
<td>Opened</td>
<td>Date on which the requested item record was opened. The system automatically populates the field when a request line is specified.</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>--------------------------</td>
<td>------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>GL account</td>
<td>General ledger account number with which the asset is associated.</td>
</tr>
<tr>
<td>Cost center</td>
<td>Group financially responsible for the asset.</td>
</tr>
<tr>
<td>Acquisition method</td>
<td>How the asset was acquired. Base system choices are Purchase, Lease, Rental, and Loan.</td>
</tr>
<tr>
<td></td>
<td>For assets automatically created from purchase orders in Procurement, the default value is Purchase.</td>
</tr>
<tr>
<td>Expenditure type</td>
<td>The type of expenditure.</td>
</tr>
<tr>
<td></td>
<td>• Capex: Capital expenditure is a one-time expenditure, where the value is realized over the years. For example, a photocopier.</td>
</tr>
<tr>
<td></td>
<td>• Opex: Operational expenditure is an ongoing expenditure. For example, toners for the photocopier.</td>
</tr>
<tr>
<td>Disposal tab</td>
<td></td>
</tr>
<tr>
<td>Disposal reason</td>
<td>Text explaining why the asset is being retired.</td>
</tr>
<tr>
<td>Beneficiary</td>
<td>Organization that receives the asset when it is retired.</td>
</tr>
<tr>
<td>Resale price</td>
<td>Value of the asset when it is retired. For example, if the asset is donated, the value used when reporting taxes.</td>
</tr>
<tr>
<td>Scheduled retirement</td>
<td>Scheduled date on which the asset is retired.</td>
</tr>
<tr>
<td>Retired date</td>
<td>Actual date on which the asset was retired.</td>
</tr>
<tr>
<td>Depreciation tab</td>
<td></td>
</tr>
<tr>
<td>Depreciation</td>
<td>Depreciation method that is applied. Base system choices are Declining Balance and Straight Line. The depreciation value is defaulted from the associated Model.</td>
</tr>
<tr>
<td>Depreciation effective date</td>
<td>Date on which the specified depreciation method begins.</td>
</tr>
<tr>
<td>Salvage value</td>
<td>Estimated value of an asset at the end of its useful life. This value must be less than or equal to the Cost of the asset.</td>
</tr>
<tr>
<td>Residual date</td>
<td>(Read-only) Number of days that have passed since the Depreciation effective date.</td>
</tr>
<tr>
<td>Residual value</td>
<td>(Read-only) Value in the Cost field with the depreciation method applied.</td>
</tr>
<tr>
<td>Covered by Fixed Asset</td>
<td>List of all fixed assets that contain the asset. To add the asset to another fixed asset, double-click in the Fixed asset column, click the reference lookup icon (🔍), select an asset, and click the green check mark.</td>
</tr>
<tr>
<td>Contracts tab</td>
<td></td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Lease contract</td>
<td>Name of the lease contract that applies to the asset.</td>
</tr>
<tr>
<td>Warranty expiration</td>
<td>Expiration date of the asset warranty.</td>
</tr>
<tr>
<td>Support group</td>
<td>Group managing the contract covering the asset.</td>
</tr>
<tr>
<td>Supported by</td>
<td>Person managing the contract covering the asset.</td>
</tr>
<tr>
<td>Entitlements tab (available for hardware assets)</td>
<td></td>
</tr>
<tr>
<td>Hardware Entitlements</td>
<td>Software asset license entitlements associated to the asset.</td>
</tr>
<tr>
<td>Device Entitlements tab (available for software assets)</td>
<td></td>
</tr>
<tr>
<td>Allocated condition</td>
<td>Condition that a configuration item must satisfy to be granted entitlement for this license (available for software entitlements).</td>
</tr>
<tr>
<td>Device Entitlements</td>
<td>Software license entitlements associated to the asset.</td>
</tr>
<tr>
<td>User Entitlements tab (available for software assets)</td>
<td></td>
</tr>
<tr>
<td>Assigned condition</td>
<td>Condition that a user item must satisfy to be granted entitlement for this license (available for software entitlements).</td>
</tr>
<tr>
<td>User Entitlements</td>
<td>User license entitlements associated to the asset.</td>
</tr>
<tr>
<td>Activities tab</td>
<td></td>
</tr>
<tr>
<td>Work notes</td>
<td>Work notes are updated for the following cases:</td>
</tr>
<tr>
<td></td>
<td>• Updates to Assigned To, Managed To State, Substate, and Reserved fields of asset. The columns for these fields are audited by default and any update is recorded in the work notes.</td>
</tr>
<tr>
<td></td>
<td>• Work notes for hardware and software assets are updated when asset is received by a purchase order and transfer order. These work notes help in tracking life cycle of the asset.</td>
</tr>
<tr>
<td>Related links</td>
<td></td>
</tr>
<tr>
<td>Calculate Depreciation</td>
<td>Click to calculate the depreciation amount and residual value.</td>
</tr>
<tr>
<td>Delete Assets Only</td>
<td>Click to delete the assets and not the associated CI.</td>
</tr>
</tbody>
</table>

4. Click Submit.

Add depreciation to an asset

Depreciation is the reduction in value of an asset over time.
Role required: asset

A depreciation schedule can be added to hardware assets. Based on the information specified in the asset record, the ServiceNow platform calculates the depreciation amount daily using the Calculating Depreciation scheduled job.

The ServiceNow platform calculates the read-only Residual date and Residual value fields based on the Cost, Depreciation, and Depreciation effective date fields. For example, if the asset Cost is $1000.00, the Straight Line depreciation method is selected, and exactly two years have passed, the Residual value would be $500.00.

For more information about fixed assets and depreciation, see Using Depreciation with Fixed Assets.

1. Navigate to Asset Portfolios Hardware Assets.
2. Select an asset.
3. Fill in the Depreciation, Depreciation effective date, Salvage Value, and Covered by fixed asset fields as described in Create assets.

Consider these points.

- If the depreciation effective date is in the future, depreciation is 0 and the current, residual value is the original purchase price. The system does not begin to calculate depreciation until the effective date is reached.
- The salvage value must be less than or equal to the asset cost. If a salvage value greater than the cost is entered, a warning message appears and the record cannot be saved.

4. Right-click the header and click Save.
5. Click Calculate Depreciation.

The Residual date, Residual value, and Depreciated amount fields are automatically calculated.

Create pre-allocated assets

A pre-allocated asset physically exists, but is not yet a financial liability.

Role required: asset

Pre-allocated assets are often assets that the vendor still owns, but has agreed to store in a customer stockroom for just-in-time procurement. For example, a pre-allocated asset could be a pallet of 100 computers ready to be allocated. Allocating the asset generates a configuration item (if required by the category) and enables you to assign the asset. Pre-allocated assets can be components of another asset that is already in use. For example, pre-installed, pre-allocated servers can be set up in server racks next to production servers, but the pre-allocated servers only become a financial liability after they are turned on.
The pre-allocated option can only be used for assets, not consumables or licenses. Pre-allocated assets cannot be comprised of bundles.

**Note:** Warranties are not usually active until an item is installed. Therefore, until an asset is allocated and assigned, it is not under warranty.

1. Navigate to **Asset Portfolios** and select All Assets, Hardware Assets, or Other Assets.
2. Click New.
3. Select a Model Category.
   Category must have the Allow pre-allocated option selected.
4. Select a Model.
5. Set State to In Stock or In Transit.
6. Set Substate to Pre-allocated.
   The pre-allocated substate can only be set when the asset is created.
7. Enter a Quantity.
   The quantity can be set only when the substate is Pre-allocated.
8. If the State is In Stock, select a Stockroom.

![Figure 6: Create pre-allocated assets](image)

9. Fill in other fields, as appropriate.
10. Right-click the header bar and select Save.
    The pre-allocated asset is created and the Allocate button is displayed.
Allocate a pre-allocated asset

Assets can be allocated from pre-allocated asset records, which creates new asset records and reduces the Quantity in the original pre-allocated asset record.

Role required: asset

Allocating an asset makes it a financial liability. After all pre-allocated assets have been allocated, the pre-allocated asset record is removed from the asset list.

1. Navigate to Asset Portfolios All Assets.
2. Find the row containing the asset to allocate. You may want to filter the Substate column to show only Pre-allocated assets.
3. Click the reference icon in the row containing the asset to allocate.

4. Click Allocate at the bottom of the form.
   The system creates and navigates to a new asset record, which has the same model and parent information as the pre-allocated asset. The new asset has a Quantity of one, while the pre-allocated asset’s Quantity is reduced by one.

Split a pre-allocated asset

You can split a pre-allocated asset to create a group that can be moved to a different stockroom.

Role required: asset
For example, a group of 100 pre-allocated computers is in Stockroom A. Split the group into two groups of 50 and move one group to Stockroom B. Allocate the computers from the two different stockrooms.

1. Navigate to Asset Portfolios All Assets.
2. Find the row containing the asset to split. You may want to filter the Substate column to show only Pre-allocated assets.
3. Click the reference icon in the row containing the asset to split.

![Image of Asset Portfolios view]

Figure 7: Pre-allocated reference icon

The asset record is displayed.

4. Click Split.
5. Enter a Quantity to Split and click OK.
   The pre-allocated asset is split into two groups and the Quantity field on each record indicates the number in each group.

Create fixed assets

Fixed assets are containers that can hold multiple assets. Fixed assets are commonly tracked at the corporate level by a finance or accounting department, but may contain IT assets such as hardware and software.

The Fixed Asset option in the Financial Management application shows the IT assets related to a fixed asset record. This link can help IT stay coordinated with the corporate asset system. Users with the financial_mgmt_admin and financial_mgmt_user roles can create fixed assets. After creating a fixed asset and adding assets, the residual value can be automatically calculated.

To create a fixed asset:
1. Navigate to Financial Management Fixed assets.
2. Click New.
3. Enter a name for the fixed asset.
4. Click Submit.

To add assets to a fixed asset:
1. Navigate to Financial Management Fixed assets.
2. Click a fixed asset.
3. In the Covered assets related list, click Edit.
4. In the Collection list, double-click an asset to add it to the Covers Assets List.
5. Click Save.

To sum the residual values of all assets in a fixed asset:
1. Navigate to Financial Management Fixed assets.
2. Click a fixed asset.
3. Click Sum Residual Value.

The ServiceNow platform calculates the Residual Value, Total cost, and Total depreciation based on information in the Financial and Depreciation sections on the individual asset records.

Use depreciation with fixed assets

You can calculate depreciation for a fixed asset using a choice of depreciation schedules. Calculating depreciation for a fixed asset can help IT coordinate with the corporate fixed asset system to report correct valuation and book value.

Role required: financial_mgmt_admin or financial_mgmt

When creating a new depreciation schedule, select the Declining Balance or Straight Line depreciation Category. The two categories depreciate an asset by the same overall amount during the asset life cycle, but do so on different schedules.

- Declining Balance: depreciates an asset by a greater amount in earlier accounting periods than in later periods.
- Straight Line: depreciates an asset by an equal amount each accounting period.

The following example shows depreciated value on a $10,000.00 asset over five years using the two different methods.

<table>
<thead>
<tr>
<th>Year</th>
<th>Declining balance</th>
<th>Straight line</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$5000.00</td>
<td>$8000.00</td>
</tr>
<tr>
<td>2</td>
<td>$2500.00</td>
<td>$6000.00</td>
</tr>
<tr>
<td>3</td>
<td>$1250.00</td>
<td>$4000.00</td>
</tr>
<tr>
<td>4</td>
<td>$625.00</td>
<td>$2000.00</td>
</tr>
<tr>
<td>5</td>
<td>$0</td>
<td>$0</td>
</tr>
</tbody>
</table>

1. To view a depreciation schedule, navigate to Financial Management Depreciation and click the Category.
2. To create a new depreciation schedule, click New.
3. Enter a Name.
4. Select a Category.
5. Add a Script to calculate depreciation value.
6. Click Submit.
The depreciation schedule is now available in the Depreciation field on the asset record.

Create license assets

You can manage your organization’s software license assets.

Role required: sam

Examples include a license to use a single copy of a desktop software program and an enterprise license to install a software program on multiple computers.

1. Navigate to Asset Portfolios License Assets.
2. Click New.
3. In the Rights field, type the number of entitlements to be granted by this license.
4. Complete the form as described in Create assets.

Set asset states and substates

Asset states and corresponding substates can be used to accurately track assets at a detailed level.

Role required: sam

Good asset information helps with reporting, controlling assets, and lowering costs. For example, accurately recording missing items using the Missing state and the Lost and Stolen substates enables you to run reports and analyze the information in order to lower costs.

1. Navigate to Asset Portfolios All Assets.
2. Select an asset.
3. Edit the State and Substate fields.
Table 9: Asset states and substates definitions

<table>
<thead>
<tr>
<th>State</th>
<th>Available substates</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>On order</td>
<td>None</td>
<td>Asset has been ordered but not received.</td>
</tr>
<tr>
<td>In stock</td>
<td>Available, Reserved, Defective, Pending repair, Pending install, Pending disposal, Pending transfer, Pre-allocated</td>
<td>Asset is stored in a stockroom. Substate indicates if it is possible or recommended to put the asset into use.</td>
</tr>
<tr>
<td>In transit</td>
<td>Available, Reserved, Defective, Pending install, Pending disposal, Pre-allocated</td>
<td></td>
</tr>
<tr>
<td>In use</td>
<td>None</td>
<td>Available only for non-consumables.</td>
</tr>
<tr>
<td>Consumed</td>
<td>None</td>
<td>Available only for consumables.</td>
</tr>
<tr>
<td>In maintenance</td>
<td>None</td>
<td>Asset is being repaired or undergoing maintenance.</td>
</tr>
<tr>
<td>Retired</td>
<td>Disposed, Sold, Donated, Vendor credit</td>
<td>Setting an asset to a Retired state is recommended for asset end of life. Only delete asset records that were created erroneously.</td>
</tr>
<tr>
<td>Missing</td>
<td>Lost, Stolen</td>
<td></td>
</tr>
</tbody>
</table>

Asset and CI mapping

Synchronize asset records and CI records by mapping their fields, states, and statuses to each other. Changes made to one record trigger the same updates on the corresponding record, ensuring consistent reporting. You can synchronize out-of-the-box and custom mappings.

Note: If you have upgraded from the Geneva or a prior release and had customized the AssetAndCISynchronizer script include before the upgrade, you must overwrite the customization, and then recreate the custom mappings.

For fields one-to-mapping is done. However, for states, the asset-CI synchronization can be driven in the following ways:

- Asset to CI: Changes to the asset are updated to the logically mapped CI.
- CI to asset: Changes to the CI are updated to the logically mapped asset.
- Both: Changes to either the asset or the CI are updated to the logically mapped record.
Asset-CI mapping and synchronization is based on the following factors:

- To synchronize asset and CI records, you can create the following mappings:
  - Asset fields with CI fields.
  - Asset State and Substate fields with CI Install Status fields.
  - Asset State field and Substate fields with CI Hardware Status and Substatus fields.

- Assets and CIs are not mapped on a one-to-one basis. The fields are mapped to the most logical counterpart. For example, for a hardware asset set to the In Stock state and Pending disposal substate, the corresponding CI is set to the In Disposition state with no substate.

- For a hardware CI, if both the Hardware Status and Install Status fields are mapped and updated, the Hardware Status field change is considered for mapping the corresponding state of the asset.

- The Install Status and Hardware Status fields of a CI are independent of each other. There is no correlation between them. A change to the Hardware Status field does not change the CI Install Status field and vice versa.
Map asset and CI fields

When you map the asset and CI fields, synchronization happens both ways. Changes to either the asset or CI record are updated to the logically mapped record. You can synchronize custom mappings and mappings provided with the base instance.

Role required: admin or asset

Note: If you upgraded from the Geneva release or a prior release and customized the AssetAndCISynchronizer script include before the upgrade, you must overwrite the customization and then recreate the custom mappings.

You can conditionally map the fields for synchronization. For example, you can map the Location field only for a hardware asset and not for a software asset. So when an asset is updated, the Location field is synchronized only for the hardware asset.

1. Navigate to Asset Administration Asset-CI Field Mapping.
2. Click New.
3. From the Asset field list, select the field. This list refers to the alm_asset table.
4. From the Configuration Item field list, select the logically associated field. This list refers to the cmdb_ci table.
5. To create conditions for the mapping, click the Advanced view related link.
   • To specify conditions for synchronizing the asset field with the CI field, use the Asset mapping condition builder.
   • To specify conditions for synchronizing the CI field with the asset field, use the Configuration Item mapping condition builder.
6. Select the Active check box to activate the mapping.
7. Click Submit.

Map asset state and CI install status

Map the asset State and Substate fields to the CI Install Status field. The CI Install Status field does not have a Substatus field and must be used for CIs other than hardware. When you create the mapping, you can set the synchronization direction from the asset, CI, or both.

Role required: admin or asset

Note: If you upgraded from the Geneva release or a prior release and customized the AssetAndCISynchronizer script include before the upgrade, you must overwrite the customization and then recreate the custom mappings.

1. Navigate to Asset Administration Asset-CI Install Status Mapping.
2. Click New.
3. From the Asset State list, select the state you want to map.
4. If available, select a substate from the Asset Substate list.
   Some of the asset states do not have a substate.
5. From the Configuration Item Status list, select the logically associated CI status you want to map.
6. From the Sync direction list, select the direction you want to drive the synchronization.
7. Select the Active check box to activate the mapping.
8. Click Submit.

Map asset state and CI hardware status

Map the asset State and Substate fields to the CI Hardware Status and Substatus fields. The Hardware Status field is visible only for hardware CIs. When you create the mapping, you can set the synchronization direction from the asset, CI, or both. For hardware, you can synchronize custom mappings.

Role required: admin or asset

Note: If you upgraded from the Geneva release or a prior release and customized the AssetAndCISynchronizer script include before the upgrade, you must overwrite the customization and then recreate the custom mappings.

The Install Status and Hardware Status fields of a CI are independent of each other. There is no correlation between them. A change to the Hardware Status field does not change the CI Install Status field and vice versa.

1. Navigate to Asset Administration Asset-CI Hardware Status Mapping.
   By default, only custom mappings are displayed. The list of mappings uses the filter condition of [Out of the box] [is] [False].
2. Click New.
3. From the Asset state list, select the state you want to map.
4. If available, select a substate from the Asset substate list.
   Some of the asset states do not have a substate.
5. From the Configuration Item status list, select the logically associated CI state you want to map.
6. If available, select a substate from the Configuration Item substatus list.
   Some of the CI statuses do not have a substatus.
7. From the Sync direction list, select the direction you want to drive the synchronization.
8. Select the Active check box to activate the mapping.
9. Click Submit.

List of synchronized asset and CI fields

Some asset and CI fields are mapped by default. If you update a mapped field on the asset or CI record, the same field on the corresponding record is automatically updated.

- Asset tag
- Assigned
- Assigned to
- Checked in
- Checked out
- Company
- Cost
- Cost center
- Delivery date
- Department
- Due in
- Due
- GL account
- Install date
- Invoice number
• Justification
• Lease id
• Location
• Managed by
• Model
• Order date
• Order received
• Ordered
• Owned by
• PO number
• Purchase date
• Purchased
• Serial number
• Support group
• Supported by
• Vendor
• Warranty expiration

Consumables life cycle

Consumables are assets that are not tracked individually, but as a group of the same model. The group of consumables has one or more of the following traits.

• Same location
• Same state
• Consumed by the same asset, typically as accessories or parts

Some common consumable assets include computer mice, computer keyboards, and pencils. The base ServiceNow system includes the Consumable model category. The first step in working with models is to create a model within the model category for an individual consumable asset. Items such as keyboards and computer mice are often tracked as consumables. Consumables cannot be pre-allocated.

Consumable assets are stored in the Consumable (alm_consumable) table. Consumables follow a slightly different life cycle from other assets.

Stages of consumables

The consumable life cycle stages are as follows.

• On order
• In stock
• In transit
• Consumed
• In maintenance
• Retired
• Missing

View consumable assets

Consumables are tracked as a group of the same model, but you can view individual consumables in the consumable model record.
Role required: model_manager

1. Navigate to Product Catalog Product Model Consumable Models.
2. Open a consumable model record.
3. View individual consumables in the Consumables related list.

Create consumable assets

Create a consumable to track an asset as a group of the same model.
Role required: asset
1. Navigate to Asset Portfolio Consumables and click New.
2. Fill in the fields, as appropriate.
   The system automatically sets the Class to Consumable.

![Figure 11: Class field set to Consumable](image)

Consume consumable assets

To consume consumable assets, they must have a state of In Stock and a substate of Available.

Role required: asset
1. Navigate to Asset Portfolio Consumables.
2. Click the Display Name of a consumable asset with a state of In Stock and a substate of Available.
3. Click Consume.
4. Enter the Quantity to consume.
5. In Asset, click the lookup icon and select the asset associated with the consumable. For example, a computer mouse tracked as a consumable asset can be associated with a non-consumable asset such as a computer.
6. In User, click the lookup icon and select a user associated with the consumable.
7. Click OK.

On the Consumable form, the Quantity field shows the reduced number. The Consumables list contains two records for the consumable in the specific stockroom: one with a state and substate of In Stock and Available (if you did not consume the entire quantity), and one with a state of Consumed. If a consumable is not in the process of being transferred to a different stockroom and information in the data record is the same, similar records are merged automatically. After a consumable is consumed, the record remains in the system for reporting purposes.

Retire assets
You can retire an asset at any time.
Role required: asset

After you change the state of an asset to Retired, the Substate field is active. When you retire an asset, the status of related CIs also changes to Retired. Selecting a substate is not required, but can be helpful for tracking and reporting.

1. Navigate to Asset Portfolio All Assets.
2. In State, select Retired.
3. In Substate, select Disposed, Sold, Donated, or Vendor Credit.
4. Click Update.

Delete assets
You can delete an asset at any time.
Role required: asset
A confirmation must be accepted before the asset and components are permanently deleted. If a CI and asset are linked, deleting one also deletes the other.

You should delete an asset only to clean up errors. For tracking purposes, the correct method for managing an asset that is no longer in use is to change the state of the asset to Retired.

1. Navigate to Asset Portfolio All Assets.
2. Select the check box to the left of the asset Name.
3. In the Actions choice list below the list, select Delete.

Transfer orders

Transfer orders move assets between company stockrooms.

The Asset Management application enables asset managers to create transfer orders for moving assets between company stockrooms.

Transfer order lines allow the transfer of multiple assets on one transfer order. Actions such as shipment preparation can take place at the order level or the line level. Pre-allocated assets can be included in a transfer order line, but can only be transferred in their full quantity. A business rule prevents asset managers from transferring the same asset at the same time.

Consumable assets and non-consumable assets can be transferred as follows:

- If an asset is consumable, it can be transferred and the quantity can be greater than one. Consumable parts are tracked by the system qualitatively.
- If an asset is non-consumable, it must be transferred as a single entity with a quantity of one. Non-consumable parts correspond to assets defined in the system.

Transfer assets using transfer orders

The steps below explain how to create a transfer order and move it from Draft status to Received.

For a more detailed look at the process, see Move an asset through the transfer process.

1. Create a transfer order by navigating to Inventory Management Transfer Orders Create Transfer Order.
2. Enter a From Stockroom and To Stockroom.
   Note: If you select the same stockroom for both fields, the transfer order automatically moves from Draft to Received as soon as a transfer order line is added.
3. Enter a Delivery by date.
4. Click Submit.
5. Select the transfer order.
6. Next to Transfer Order Lines, click New.
7. Select a Model.
8. If the model is a consumable, specify a Quantity.
9. Click Submit.
10. If necessary add more transfer order lines.
11. When finished adding assets to transfer, click Ready for fulfillment on the transfer order.
12. Click Prepare for shipment.

Note: Alternatively, prepare assets for shipment by selecting individual transfer order lines and clicking Prepare for shipment.
13. Click Ship.

   \textbf{Note:} Alternatively, ship assets by selecting individual transfer order lines and clicking Ship.

14. Select each individual transfer order line number and click Receive.

   \textbf{Note:} Assets can only be received individually on the transfer order line level, not at the transfer order level.

All transfer order lines and the transfer order are marked Received.

Create a transfer order

To create a transfer order, navigate to \textit{Inventory Management Transfer Orders}.

1. Navigate to \textit{Inventory Management Transfer Orders}.

![Create Transfer Order](image)

\textbf{Figure 12: Create Transfer Order}

2. Fill in the fields, as appropriate.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>(Read-only) Unique number for the transfer order generated automatically by the system.</td>
</tr>
<tr>
<td>From stockroom</td>
<td>(Required) Stockroom from which the items will be shipped.</td>
</tr>
<tr>
<td>From location</td>
<td>(Read-only) Location from which the items will be shipped. Calculated automatically from the From stockroom field.</td>
</tr>
<tr>
<td>Requested date</td>
<td>(Read-only) Date on which the transfer order was requested.</td>
</tr>
<tr>
<td>Drop Off</td>
<td>(Read-only) Check box that indicates whether the items are included in a drop off list. Used in the work management feature only.</td>
</tr>
</tbody>
</table>
Create a transfer order line

Transfer order lines specify the exact items that comprise a transfer order.

A transfer order can contain one or more transfer order lines. Under a single transfer order, all transfer order lines will have the same From location and To location. Each line contains an asset to transfer and the quantity to transfer. The item to transfer is identified by asset name and model name. A transfer order line can involve one quantity of a non-consumable asset or multiple quantities of a consumable asset. A bundled model can be transferred.

- After creating a transfer order, click New in the Transfer Order Lines related list and fill in the fields as appropriate.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage</td>
<td>(Read-only) Current stage of the transfer order, such as Draft or Requested. Controls what actions can be performed against the transfer order.</td>
</tr>
<tr>
<td>To stockroom</td>
<td>(Required) Stockroom to which the items will be shipped.</td>
</tr>
<tr>
<td>To location</td>
<td>(Read-only) Location to which the items will be shipped. Calculated automatically from the To stockroom field.</td>
</tr>
<tr>
<td>Delivery by date</td>
<td>Date by which items are expected to be received.</td>
</tr>
<tr>
<td>Number</td>
<td>(Read-only) Internal unique number identifying the transfer order line.</td>
</tr>
<tr>
<td>Transfer Order</td>
<td>(Read-only) The transfer order to which the transfer order line belongs.</td>
</tr>
<tr>
<td>Model</td>
<td>(Required) Model of the items requested by the transfer order line. For example, a printer. If the Asset field is filled out first, the Model field is automatically filled in with the model corresponding to the asset.</td>
</tr>
<tr>
<td>Quantity requested</td>
<td>(Read-only) Number of items requested by the transfer order line. For example, 3 computers are requested to be transferred.</td>
</tr>
<tr>
<td>Quantity received</td>
<td>(Read-only) Number of items already received. For example, 3 keyboards are transferred, 2 are received.</td>
</tr>
<tr>
<td>Stage</td>
<td>(Read-only) Current stage of the transfer order. Transfer order lines can only be created when a transfer order is in Draft stage.</td>
</tr>
<tr>
<td>Request line</td>
<td>Requested item to associate with the transfer order line.</td>
</tr>
<tr>
<td>Asset</td>
<td>(Required) Asset requested by the transfer order line. For example, a specific printer. The asset can filter on stockrooms.</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>---------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Quantity remaining</td>
<td>(Read-only) Number of items yet to be received. For example, 3 keyboards had been requested, 2 are received, 1 is remaining.</td>
</tr>
<tr>
<td>Quantity returned</td>
<td>(Read-only) Number of items that already needed to be returned.</td>
</tr>
</tbody>
</table>

Move an asset through the transfer process

The transfer order itself and each individual transfer order line have a separate stage. The overall stage of the transfer order is calculated cumulatively based on the stages of the individual transfer order lines.

For example, after all transfer order lines are changed to Received, the transfer order is marked Received. The transfer order line stages are visible in the Transfer Order Lines related list.

1. Click the plus icon to expand the stage information.

   After creating transfer order lines, the transfer order and all of the transfer order lines are in Draft stage. Transfer orders and transfer order lines always start in Draft. While a transfer order or a transfer order line is in Draft stage, it can be deleted.

   Note: When an asset is part of a transfer order set to Draft, the asset record updates to show the asset as reserved. No one else can request or transfer the asset while it is reserved.

2. After all information has been added to the transfer order and the transfer order lines, click Ready for Fulfillment on the transfer order.
This moves the transfer order and all transfer order lines to the Requested stage. At this point in the process, the transfer order can continue to move forward as a unit or the transfer order lines can be moved forward separately.

3. To move the transfer order, ready all assets for shipment and click Prepare for shipment on the transfer order.

   The transfer order and all transfer order lines move to the Shipment Preparation stage. You can also click Prepare for shipment on a transfer order line to move only that transfer order line to the Shipment Preparation stage. The transfer order stage is set to Shipment Preparation as soon as the first transfer order line is set to Shipment preparation.

   While an asset is in the Shipment Preparation (or earlier) stage, the transfer order line can be cancelled by opening the transfer order line record and clicking Cancel. The stage changes to Cancelled (Closed Complete).

   When all transfer order lines reach the Shipment preparation stage, the Ship button is available on the transfer order.

4. Click Ship on the transfer order to move all transfer order lines to the In Transit stage.
In the case that assets ship at different times, transfer order lines can move individually. For example, assume a transfer order is comprised of three assets: a laptop, a printer, and a keyboard. All three assets have been prepared for shipment and the laptop is ready to ship.

5. Click the transfer order line Number next to the laptop. Now, on the transfer order line record for the laptop, click Ship.

Figure 14: Ship Transfer Order

The laptop moves to the In Transit stage, but the printer and keyboard remain in the Shipment Preparation stage. Because at least one of the transfer order lines is now in transit, the overall transfer order is moved to the Partially Shipped stage. Once all transfer order lines are shipped, the transfer order moves to the Fully Shipped stage.
### Transfer Order

<table>
<thead>
<tr>
<th>Number</th>
<th>Model</th>
<th>Stage</th>
<th>Quantity requested</th>
<th>Quantity received</th>
<th>Quantity remaining</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOL010001</td>
<td>Apple MacBook Pro 13&quot;</td>
<td>Draft (Pending - has not started)</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Requested (Pending - has not started)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Shipment Preparation (Pending - has not started)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>In Transit (Closed Complete)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Received (Pending - has not started)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Delivered (Pending - has not started)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cancelled (Pending - has not started)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOL010002</td>
<td>Brother MFC 8890CDW Color Laser Printer</td>
<td>Draft (Pending - has not started)</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Requested (Pending - has not started)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Shipment Preparation (Closed Complete)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>In Transit (Pending - has not started)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Received (Pending - has not started)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Delivered (Pending - has not started)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cancelled (Pending - has not started)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOL010003</td>
<td>Logitech Logitech Desktop Keyboard</td>
<td>Draft (Pending - has not started)</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Requested (Pending - has not started)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Shipment Preparation (Closed Complete)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>In Transit (Pending - has not started)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Received (Pending - has not started)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Delivered (Pending - has not started)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cancelled (Pending - has not started)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
After all transfer order lines are shipped, the next step is to receive the assets. Assets are always received at the transfer order line level.

6. Click the transfer order line Number next to the asset.
7. On the asset record, click Receive.

![Receive Transfer Order](image)

**Figure 16: Receive Transfer Order**

Once all transfer order lines are received, the transfer order moves to the Received stage.

**Attention:** It may be necessary to return items, such as when they are defective. To return items, receive the items, then follow the return process.

**Summary of transfer order stages**

As assets move through the transfer process, the stage of a transfer order is always based on the stages of the individual transfer order lines.

**Table 10: Transfer order stages**

<table>
<thead>
<tr>
<th>Transfer order stage</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Draft</td>
<td>After all information has been added to the form, click Ready for Fulfillment.</td>
</tr>
<tr>
<td>Requested</td>
<td>If all assets in the transfer order are ready, click Prepare for shipment. The stage of the transfer order and all transfer order lines is automatically changed to Shipment Preparation. (Transfer order lines can also be set to Shipment Preparation individually.)</td>
</tr>
<tr>
<td>Shipment Preparation</td>
<td>All transfer order lines have to reach shipment preparation before the Ship button is available on the transfer order.</td>
</tr>
<tr>
<td>Partially Shipped</td>
<td>After at least one transfer order line is changed to Shipped, the transfer order is marked Partially Shipped.</td>
</tr>
</tbody>
</table>
## Transfer order line asset tracking

As transfer order line actions are triggered, the stock information and states of any affected assets are updated. Consumables and non-consumables are tracked differently.

When an asset is included in a transfer order line, the following takes place:

- A substate field on the asset form changes to reflect the transfer order line states
- The Active TO option on the asset form is automatically selected to show that the asset is part of a transfer order and cannot be added to multiple transfer orders
- The asset is removed from the pool of available assets and changed to a state of In Stock Pending Transfer

### Transfer order line asset tracking of non-consumables

This page provides the effect on asset substates when transfer order line stages change for non-consumables.

<table>
<thead>
<tr>
<th>Transfer order line stage</th>
<th>Affect on asset substate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Draft</td>
<td>Asset moves to In Stock Pending Transfer (from the current stockroom). If the asset is a consumable, the quantity can be edited.</td>
</tr>
<tr>
<td>Requested</td>
<td>Asset stays in In Stock Pending Transfer.</td>
</tr>
<tr>
<td>Shipment Preparation</td>
<td>Asset stays in In Stock Pending transfer.</td>
</tr>
<tr>
<td>In Transit</td>
<td>Asset moves to In Transit Reserved.</td>
</tr>
<tr>
<td>Received</td>
<td>Asset moves to In Stock Available (in the destination stockroom).</td>
</tr>
</tbody>
</table>

### Transfer order line asset tracking consumables

When a consumable is added to a transfer order line, the stock for the consumable is split into two records and the transfer order links to the newly created stock line.

For example:

1. Stockroom A has ten keyboards in stock.
2. A transfer order line named TOL1 transfers three keyboards from stockroom A to stockroom B.
3. The stock of ten keyboards in A is split into two records: seven shown as In stock Available and three shown as In Stock Pending Transfer.
4. Another transfer order is created with a transfer order line named TOL2 that transfers two keyboards from stockroom A to stockroom B.
5. The seven remaining keyboards are split into another two lines: five In stock Available and two In stock Pending Transfer.

   Note: The three In Stock Pending Transfer and the two In Stock Pending Transfer are not merged together because they are not part of the same transfer order line and not necessarily from the same person.

6. As TOL2 for two keyboards moves from Draft to Requested to Shipment Preparation, TOL1 for the three keyboards remains In Stock Pending Transfer.

7. When TOL1 for the three keyboards moves to the In Transit stage, the three keyboards are changed to the In Transit Reserved stage. The same happens for TOL2 with two keyboards.

8. When TOL1 is Received, the three keyboards move to In stock Available in stockroom B.

9. When TOL2 is received in stockroom B, the two keyboards move to In stock Available and are merged with the three keyboards that are also In Stock Available in B.

10. At the end, stockroom B shows five keyboards are In Stock Available.

Delete a transfer order

Users with the inventory_user role can delete transfer orders.

The transfer order or transfer order line must be in the Draft stage.

1. Navigate to Inventory Management Transfer Orders Transfer Orders
2. Select the check box beside a transfer order.
3. From the Actions on selected rows menu at the bottom of the list, click Delete.

Alternatively, you can cancel a transfer order or a transfer order line while it is in Requested or Shipment Preparation stage.

Delete a transfer order line

Users with the inventory_user role can delete transfer order lines.

The transfer order or transfer order line must be in the Draft stage.

1. Open a transfer order.
2. Select the check box beside a transfer order line.
3. From the Actions on selected rows menu at the bottom of the list, click Delete.

Alternatively, you can cancel a transfer order or a transfer order line while it is in Requested or Shipment Preparation stage.

Return items received in a transfer order

If a transfer order is received, but there is a problem with all or some of the items, do a transfer order return.

Items must be received before they can be returned.

1. Check the item status to ensure it has been received by navigating to Inventory Management Transfer Orders Transfer Order Returns.
2. Navigate to Inventory Management Transfer Orders Transfer Orders.
3. Select a transfer order that is in the Received stage.
4. Click the transfer order line Number of the item to return.
5. Click Return.
6. Enter a Quantity to return.
7. Enter a reason for the return.
8. Select the Defective check box to return items that are broken.

Defective items are returned to the stockroom from which they were delivered, but are not added to available stock. Instead, they are tracked in the separate category named “Defective” so they cannot be requested or transferred again.
9. Click OK.
10. Click Update.

A new transfer order line is automatically created.

11. If you are returning a consumable, navigate to the transfer order line record and click the model name to open the model record.
The model record shows which stockrooms contain the model. The one defective model is listed.
## Figure 20: Defective Model Listed

<table>
<thead>
<tr>
<th>Display name</th>
<th>Model category</th>
<th>State</th>
<th>Substate</th>
<th>Blockroom</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Logitech Logitech Desktop Optical Wireless Mouse</td>
<td>Consumable</td>
<td>Consumed</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Logitech Logitech Desktop Optical Wireless Mouse</td>
<td>Consumable</td>
<td>Consumed</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Logitech Logitech Desktop Optical Wireless Mouse</td>
<td>Consumable</td>
<td>Consumed</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Logitech Logitech Desktop Optical Wireless Mouse</td>
<td>Consumable</td>
<td>Consumed</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Logitech Logitech Desktop Optical Wireless Mouse</td>
<td>Consumable</td>
<td>Consumed</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Logitech Logitech Desktop Optical Wireless Mouse</td>
<td>Consumable</td>
<td>Consumed</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Logitech Logitech Desktop Optical Wireless Mouse</td>
<td>Consumable</td>
<td>Consumed</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Logitech Logitech Desktop Optical Wireless Mouse</td>
<td>Consumable</td>
<td>Consumed</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Logitech Logitech Desktop Optical Wireless Mouse</td>
<td>Consumable</td>
<td>Consumed</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Logitech Logitech Desktop Optical Wireless Mouse</td>
<td>Consumable</td>
<td>Consumed</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Logitech Logitech Desktop Optical Wireless Mouse</td>
<td>Consumable</td>
<td>Consumed</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Logitech Logitech Desktop Optical Wireless Mouse</td>
<td>Consumable</td>
<td>Consumed</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Logitech Logitech Desktop Optical Wireless Mouse</td>
<td>Consumable</td>
<td>Consumed</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Logitech Logitech Desktop Optical Wireless Mouse</td>
<td>Consumable</td>
<td>Consumed</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Logitech Logitech Desktop Optical Wireless Mouse</td>
<td>Consumable</td>
<td>Consumed</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Logitech Logitech Desktop Optical Wireless Mouse</td>
<td>Consumable</td>
<td>Consumed</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Logitech Logitech Desktop Optical Wireless Mouse</td>
<td>Consumable</td>
<td>Consumed</td>
<td></td>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>

- **Display name:** Logitech Logitech Desktop Optical Wireless Mouse
- **Model category:** Consumable
- **State:** Consumed
- **Substate:** In stock
- **Blockroom:** Defective
- **Quantity:** 1

Additional notes:
- **Note:** The defective model is marked as "Defective" and needs to be replaced.
Note: The defective model is still at the stockroom to which it was delivered. The defective model needs to be transferred back to the stockroom where it originated.

12. Move the new transfer order through the regular transfer order process.

   Items are automatically returned to the stockroom from which they were delivered. A transfer order line item that has been returned cannot be delivered at a later time.
Figure 21: Automatically returned to stockroom
If you return another defective model from the same, original order, the two defective returns are merged into one line item.
Stockrooms

Stockrooms are places to which assets are assigned.

When stock is low on a particular asset, stock rules can either notify an asset manager or automatically transfer inventory from one stockroom to another.

Stockrooms are separate, standalone entities in the Asset Management application.

View a list of assets in stock

You can view a list of assets in stock.
Role required: asset or inventory_admin

1. Navigate to Inventory Stock In Stock.
2. View the Assets list in Asset view.
   The list shows only assets with a state of In stock.
Create a stockroom

You can create a stockroom.
Role required: asset or inventory_user
1. Navigate to Inventory Stock Stockrooms.
2. Click New.
3. Complete the form.

<table>
<thead>
<tr>
<th>Fields</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Display name and identifier of the stockroom.</td>
</tr>
<tr>
<td>Assignment group</td>
<td>Group that primarily uses the stockroom.</td>
</tr>
<tr>
<td>External</td>
<td>Whether this stockroom is managed internally (check box is cleared) or is managed externally by a third party (check box is selected).</td>
</tr>
<tr>
<td>Location</td>
<td>Physical location of the stockroom.</td>
</tr>
<tr>
<td>Type</td>
<td>Type of stockroom, such as Field Agent or On site.</td>
</tr>
<tr>
<td>Manager</td>
<td>Person in charge of the stockroom. Receives restocking notifications and requests for the stockroom’s stock rules.</td>
</tr>
</tbody>
</table>

Delete a stockroom with assets

You can delete a stockroom. If the stock room has assets, you must remove the assets from the stockroom first.

Role required: inventory_admin
1. Navigate to Asset All Assets.
2. Personalize the list to add the Stockroom column.
3. Filter the list to show only the assets in the stockroom that you want to delete.
4. Change or remove the stockroom for all of the asset records.
5. After removing assets from the stockroom you want to delete, continue with the instructions for *deleting a stockroom with no assets*.

Delete a stockroom with no assets

You can delete a stockroom that has no assets.

Role required: inventory_admin
1. Navigate to Inventory Stock Stockrooms.
2. Select the check box beside the stockroom Name.
3. In the Actions choice list below the list, select Delete.

Stockroom types

Stockroom types are categories of stockrooms.

The stockroom type has two significant characteristics.

- Priority: indicates the order of stockrooms the parts should be sourced from. For example, if a personal stockroom (priority 2) contains the required part, the personal stockroom receives priority
over the Central Stockroom (priority 7) because the part in the personal stockroom does not require delivery.

- **Shipment Required**: informs the system if a transfer order needs to be created when the part is sourced from a stockroom of the given type. For example, a part in a personal stockroom does not require shipment, so no transfer order is needed.

<table>
<thead>
<tr>
<th>Value</th>
<th>Name</th>
<th>Priority</th>
<th>Shipment Required</th>
<th>Description</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>on_site</td>
<td>On Site</td>
<td>1</td>
<td>False</td>
<td>Stockroom at the customer site.</td>
<td>Close to the users and does not require shipping.</td>
</tr>
<tr>
<td>field_agent</td>
<td>Field Agent</td>
<td>2</td>
<td>False</td>
<td>Virtual, personal stockroom linked with a field service agent (FSA) directly, used for delivery.</td>
<td>Mainly used to indicate to the system that the part has been delivered and is with the FSA.</td>
</tr>
<tr>
<td>fsl</td>
<td>FSL</td>
<td>4</td>
<td>True</td>
<td>Forward Shipping Location.</td>
<td>Small stockrooms where the parts can typically be shipped via overnight delivery.</td>
</tr>
<tr>
<td>pudo</td>
<td>PUDO</td>
<td>5</td>
<td>True</td>
<td>Pick Up/Drop out location.</td>
<td>This type is sometimes called a by-box. Can be a postal box that can receive new and returned parts. Often in close proximity to major customer sites.</td>
</tr>
<tr>
<td>stockroom</td>
<td>Stockroom</td>
<td>6</td>
<td>True</td>
<td></td>
<td>A regional stockroom.</td>
</tr>
<tr>
<td>central_stockroom</td>
<td>Central Stockroom</td>
<td>7</td>
<td>True</td>
<td>A central stockroom, usually a big facility from which most parts are shipped.</td>
<td></td>
</tr>
</tbody>
</table>
Check the priority level of the stockroom types provided in the base instance to ensure that you assign the correct priority level to any new stockroom types you create. You can also modify the stockroom types included in the base system.

1. Navigate to Inventory Stock Stockroom Types.
2. Click New.
3. Complete the form.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Display name of the stockroom type.</td>
</tr>
<tr>
<td>Description</td>
<td>General information about the stockroom type.</td>
</tr>
<tr>
<td>External stockroom</td>
<td>Whether stockrooms of this type are managed internally (check box cleared) or managed externally by a third party (check box selected).</td>
</tr>
<tr>
<td>Priority</td>
<td>Level of precedence for this type of stockroom.</td>
</tr>
<tr>
<td>Shipment required</td>
<td>Option that determines if stockrooms of this type require shipment by default.</td>
</tr>
<tr>
<td>Value</td>
<td>Internal identifier of the stockroom type.</td>
</tr>
</tbody>
</table>

Stock rules

Stock rules are defined criteria stating that when inventory of a particular asset in a particular stockroom reaches a specified threshold, a certain number should either be transferred from another stockroom or ordered from a vendor.

For example, a specific model of computer keyboard reaches an inventory of 10 in a particular stockroom and, because a stock rule is in place, a transfer order is automatically created to transfer 50 from a different stockroom. Because there can be multiple assets of a model within a stockroom, stock rules enable you to check all assets fitting the criteria and view a total count.

There are two restocking options:

- An email can be sent to the stockroom manager (user identified in the Manager field on the stockroom record) to place a vendor order. A task is also automatically created for the stockroom manager.
- A transfer order can be generated automatically to restock the item from another stockroom.

Stock rules consider existing transfer orders and do not create additional transfer orders if replenishment is already in progress.

A scheduled job named Stock Rule Runner runs once per day to create the restocking transfer orders, send email messages to stockroom managers, and create tasks for stockroom managers. You may need to activate the Procurement application to configure and use this scheduled job.

Note: If restocking is in progress, the system does not create duplicate email messages or duplicate transfer orders.

Create a stock rule

Users can create a stock rule to control what happens when inventory of a particular asset in a particular stockroom reaches a specified threshold.
Role required: inventory_admin or asset

1. Navigate to Inventory Stock Stock Rules.
2. Click New.

3. Complete the form.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>Product model to which the rule applies.</td>
</tr>
<tr>
<td>Threshold</td>
<td>Quantity that the stock must reach to trigger restocking. For example, enter a threshold of 10 for a laptop computer that should be restocked when inventory drops below 10 in the specified stockroom.</td>
</tr>
</tbody>
</table>
| Restocking option | Location where additional supplies should come from. Select one of the following:  

  - Stockroom: creates a transfer order to obtain the asset from another stockroom.  
  - Vendor: sends an email to the stockroom manager to order from a vendor. In addition to the email notification, a task is created for the stockroom manager.  |
<p>| Active            | Whether this stock rule active (check box is selected). Clearing this check box prevents the stock rule from restocking automatically. |
| Stockroom         | Current physical location of the asset.                                                                                                                                                      |</p>
<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Order size</td>
<td>Minimum order quantity for stockroom transfers or vendor purchases. ServiceNow calculates the smallest multiple of the order size needed to restock the item above the threshold. For example, there are 3 laptops in stock with a threshold of 10 and the Stockroom option selected. If the order size is set to 4, the system creates a transfer order for 8 laptops to exceed the threshold and satisfy the rule (3 in stock + 8 ordered = 11). When restocking from a vendor, ServiceNow sends an email to the stockroom manager showing the total number of items to order, as multiples of the order size.</td>
</tr>
</tbody>
</table>

Software Asset Management plugin

ServiceNow® Software Asset Management plugin is a feature provided with the Asset Management application.

A strong software asset management (SAM) program can help an organization reduce software costs, improve compliance, and simplify or develop processes for employee software requests. SAM programs can also help control inventory through accurate databases, which in turn helps identify organizational software needs, identify unused software that can be deleted, as well as reduce or consolidate the number of software vendors used.

Software Asset Management plugin Overview module

The Software Asset Management Overview module is a homepage that displays various software asset management reports.

Use the Software Asset Management plugin Overview module

The Overview module is a homepage that displays charts and graphs to help you manage software assets in the organization.

To use the software asset Overview module, navigate to Software Asset Overview. Click an element within a report to see more information or add and move widgets as needed.
The overview shows the following compliance types:

- **Immediate Compliance**: number of licenses that should be purchased in order to be compliant immediately. Compliance is based on grouping. When tracking software licenses at a high level without any grouping, you are more likely to be compliant. With grouping, you are more likely to be out of compliance. For example, if grouping regionally by location, your organization can be globally compliant, but regionally non-compliant.

- **Planned Compliance**: based on the number of licenses you plan to allocate and the number installed.

The graphs show important statistics about the software being tracked, including software that has been entitled but is not being used and the total number of unallocated licenses.

**Software Asset Management plugin roles**

Software Asset Management plugin adds the following user role.

<table>
<thead>
<tr>
<th>Role Title</th>
<th>Contains Role Names</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>sam</td>
<td>inventory_user</td>
<td>Can create, edit, change, and manage software licenses.</td>
</tr>
<tr>
<td></td>
<td>category_manager</td>
<td></td>
</tr>
<tr>
<td></td>
<td>contract_manager</td>
<td></td>
</tr>
<tr>
<td></td>
<td>financial_mgmt_user</td>
<td></td>
</tr>
</tbody>
</table>

Users with the sam or admin role can view the overview page and refresh, add, delete, and rearrange reports and other widgets.

**Installed with Software Asset Management plugin**

A number of tables, properties, user roles, script includes, client scripts, UI policies, and business rules are installed with Software Asset Management plugin.

**Activating Software Asset Management plugin adds these components.**

Demo data is available with Software Asset Management plugin.

**Tables**

Software Asset Management plugin adds the following tables.

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processor Definition (cmdb_processor_definition)</td>
<td>Describes a computer in terms of the attributes IBM uses for its PVU licensing model. A row can be associated with one or more discovered computers if they are all identical in terms of the attributes used for PVU licensing.</td>
</tr>
<tr>
<td>Processor Mapping (sam_processor_mapping)</td>
<td>Encodes the information specified by the IBM Table of Processor Value Units per core and is used in matching a computer’s processor definition to a PVU cost for that computer. Each row in this table is a mapping between a set of processors and the associated PVU cost (per core).</td>
</tr>
<tr>
<td>Table</td>
<td>Description</td>
</tr>
<tr>
<td>--------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Software Counter [sam_sw_counter]</td>
<td>Configures license counting options for software models.</td>
</tr>
<tr>
<td>Software Counter Compliance Violations</td>
<td>Stores records of software counter compliance issues that are due to violations other than installs exceeding rights, such as:</td>
</tr>
<tr>
<td>(sam_sw_counter_violation)</td>
<td>• Maximum CPU/user count exceeded, based on model limits.</td>
</tr>
<tr>
<td></td>
<td>• Maximum or minimum rights rules not followed, based on model limits.</td>
</tr>
<tr>
<td></td>
<td>• Options installed on a server with a license that does not support options (Oracle).</td>
</tr>
<tr>
<td>Software Counter Detail (sam_sw_counter_detail)</td>
<td>Reconciles a software installation or usage with its corresponding software license and entitlement. The software counting logic automatically generates and maintains these records.</td>
</tr>
<tr>
<td>Software Counter History (sam_sw_counter_history)</td>
<td>Stores read-only copies of software counter records, which the system generates automatically each time a software counter finishes counting licenses.</td>
</tr>
<tr>
<td>Software Counter Result (sam_sw_counter_result)</td>
<td>Records all software counter results. Organizes the results based on the Grouping field (such as Company, Department, or Location) on the Software Counter record.</td>
</tr>
<tr>
<td>Software Counter Summary (sam_sw_counter_summary)</td>
<td>Aggregates all the software counter details for a given allocation state, a given group, and a given software counter. The software counting logic automatically generates and maintains these records.</td>
</tr>
<tr>
<td>Software Discovery Model (cmdb_sam_sw_discovery_model)</td>
<td>Stores a unique and definitive list of all software found by a discovery tool.</td>
</tr>
<tr>
<td>Software Installation [cmdb_sam_sw_install]</td>
<td>Associates software discovery models and the hardware on which they are installed.</td>
</tr>
<tr>
<td>Software Usage [cmdb_sam_sw_usage]</td>
<td>Associates software discovery models and the hardware that uses the models. ServiceNow Discovery does not populate the Software Usage (cmdb_sam_sw_usage) table. Use a third party tool to add information about software assets to the Software Usage table.</td>
</tr>
</tbody>
</table>

Properties

Software Asset Management plugin adds the following system properties.
Table 14: Software Asset Management plugin properties

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>sam.install_deletion_deadline</td>
<td>Defines the number of days after which a software install is deleted if not discovered with the configuration item. Use a value that is greater than the number of days between consecutive discovery runs.</td>
</tr>
<tr>
<td></td>
<td>• Type: integer</td>
</tr>
<tr>
<td></td>
<td>• Default value: 7</td>
</tr>
<tr>
<td></td>
<td>• Location: System Properties (sys_properties) table</td>
</tr>
</tbody>
</table>

User roles

Software Asset Management plugin adds the following user roles.

Table 15: Software Asset Management plugin user roles

<table>
<thead>
<tr>
<th>Role</th>
<th>Contains roles</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>sam</td>
<td>inventory_user, contract_manager, category_manager, financial_mgmt_user</td>
<td>Can create, edit, change, and manage software licenses. Can edit the Software model field on a Discovery model. Can approve a model. Has full control of the Software Asset Management plugin feature. Controls the Software Asset Management plugin IBM PVU Process Pack, if activated.</td>
</tr>
</tbody>
</table>

Script includes

Software Asset Management plugin adds the following script includes.

Table 16: Software Asset Management plugin script includes

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DiscoveryModelMatcher</td>
<td>Matches a discovery model with a software product model.</td>
</tr>
<tr>
<td>ProcessorDefinitionsUtils</td>
<td>Contains utilities for managing the Processor Definition (cmdb_processor_definition) table.</td>
</tr>
<tr>
<td>ProcessorValueUnitsUtils</td>
<td>Contains logic that determines the IBM PVU pricing associated with a given processor. Also generates an event when a processor mapping is not found.</td>
</tr>
<tr>
<td>SAMMigration</td>
<td>Deprecated. Used by the fix job that migrates software license management data to Software Asset Management plugin.</td>
</tr>
<tr>
<td>SAMSuiteEngine</td>
<td>Contains functions for handling suite inference on software installations.</td>
</tr>
<tr>
<td>Name</td>
<td>Description</td>
</tr>
<tr>
<td>---------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>SAMUtil</td>
<td>Generates models and counters for Software Asset Management plugin.</td>
</tr>
</tbody>
</table>

Client scripts

Software Asset Management plugin adds the following client scripts.

Table 17: Software Asset Management plugin client scripts

<table>
<thead>
<tr>
<th>Name</th>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clean up Counter</td>
<td>Software Counter {sam_sw_counter}</td>
<td>Ensures integrity between the various counting options of a software counter.</td>
</tr>
<tr>
<td>Deactivate automatched checkbox</td>
<td>Software Discovery Model {cmdb_sam_sw_discovery_model}</td>
<td>Deactivates the automatically matched check box when a user edits the software model.</td>
</tr>
<tr>
<td>Notify if counter in progress</td>
<td>Software Counter {sam_sw_counter}</td>
<td>Displays a message if the counter is currently running.</td>
</tr>
</tbody>
</table>

UI policies

Software Asset Management plugin adds the following UI policies.

Table 18: Software Asset Management plugin UI policies

<table>
<thead>
<tr>
<th>Name</th>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enforce Installs per license</td>
<td>Software Counter {sam_sw_counter}</td>
<td>Makes the Installs per license field mandatory when the software counter License type is By number of users.</td>
</tr>
<tr>
<td>Handle custom counts</td>
<td>License Calculation {sam_sw_license_calculation}</td>
<td>Displays the fields for entitlement type and valuation script when Count by is set to custom.</td>
</tr>
<tr>
<td>Hide condition fields</td>
<td>Software Counter {sam_sw_counter}</td>
<td>Hides the Software usage condition field if the license calculation query table is set to Software install and hides the Software install condition field if the license calculation query table is set to Software usage.</td>
</tr>
<tr>
<td>Hide query table</td>
<td>Software Counter {sam_sw_counter}</td>
<td>Hides the Query table field on the Software Counter form.</td>
</tr>
</tbody>
</table>

Business rules

Software Asset Management plugin adds the following.
<table>
<thead>
<tr>
<th>Name</th>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>assign processor</td>
<td>Computer (cmdb_ci_computer)</td>
<td>Attempts to match a processor with a processor definition.</td>
</tr>
<tr>
<td>Build Primary Key</td>
<td>Software Installation (cmdb_sam_sw_install)</td>
<td>Sets the primary key for the record to the serial number on the (cmdb_sam_sw_install) table. If the serial number is empty, the rule creates one based on the publisher, display name, product ID, version, and revision.</td>
</tr>
<tr>
<td>Build Primary Key</td>
<td>Software Usage (cmdb_sam_sw_usage)</td>
<td>Creates the primary key for the record from the publisher, name, product ID, and version number on the (cmdb_sam_sw_usage) table.</td>
</tr>
<tr>
<td>Check for software suite</td>
<td>Software Installation (cmdb_sam_sw_install)</td>
<td>Checks if the current software install is part of a software suite.</td>
</tr>
<tr>
<td>Check for suite omission</td>
<td>Software Installation (cmdb_sam_sw_install)</td>
<td>Checks if the current software install should be omitted from any suites.</td>
</tr>
<tr>
<td>Clean up Cache</td>
<td>Software License (alm_license)</td>
<td>Removes the cache for the counter of the software license record when a software license is deleted.</td>
</tr>
<tr>
<td>Clean up software normalization</td>
<td>Software Installation (cmdb_sam_sw_install)</td>
<td>Deletes the discovery model if the discovery model is changed and it is not used by other software installs. This rule is not enabled by default.</td>
</tr>
<tr>
<td>Clear install and usage records</td>
<td>Software Counter Summary (sam_sw_counter_summary)</td>
<td>Uncaches all related install and usage records when a software counter summary is deleted.</td>
</tr>
<tr>
<td>Clear normalized flag</td>
<td>Software Usage (cmdb_sam_sw_usage)</td>
<td>Clears normalized flag on certain field changes.</td>
</tr>
<tr>
<td>Clear normalized flag</td>
<td>Software Installation (cmdb_sam_sw_install)</td>
<td>Clears the is_normalized check box when a field value is changed from a normalized value.</td>
</tr>
<tr>
<td>CPU/Core count change</td>
<td>Computer (cmdb_ci_computer)</td>
<td>Clears the Cached check box on related software installs when the CPU count or CPU core count changes.</td>
</tr>
<tr>
<td>Create a Software Normalization</td>
<td>Software Installation (cmdb_sam_sw_install)</td>
<td>Links the record to the discovery model with that primary key on the (cmdb_sam_sw_install) table if the primary key changes. The business rule creates a discovery model if none exist for that primary key.</td>
</tr>
<tr>
<td>Name</td>
<td>Table</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------------------</td>
<td>------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Create a Software Normalization</td>
<td>Software Usage</td>
<td>Links the record to the discovery model with that primary key on the [cmdb_sam_sw_usage] table if the primary key changes. The business rule creates a discovery model if none exist for that primary key.</td>
</tr>
<tr>
<td>Delete cached count results</td>
<td>Software License [alm_license]</td>
<td>Marks the software counter results to be recounted when one or more fields on a license have changed.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>This script runs after a change to a field that a counter can be grouped on, such as location, department, company, cost_center, entitlement_condition, or assigned_condition. If one or more of these fields changes, then the script sets the Recount field to true on any cached counter results matching the previous value. When the counter runs, the results with Recount set to true are treated as non-cached results and are recounted. For example, if Location on a license was Americas and changes to EMEA, cached results for Americas will have Recount set to true for the next count.</td>
</tr>
<tr>
<td>Delete Cached row entry</td>
<td>License Entitlement [alm_entitlement]</td>
<td>When an entitlement is deleted: • Deletes all related software counter details. • Clears the Cached check box on the related software install.</td>
</tr>
<tr>
<td>Drop counter Cache</td>
<td>Software Counter [sam_sw_counter]</td>
<td>Clears the Cached check box for the software counter if the grouping, license type, contract, or installs per license change in a software counter. Added enforce field changes to the conditions.</td>
</tr>
<tr>
<td>Flag counter to reprocess</td>
<td>Software Upgrade and Downgrades [cmdb_m2m_downgrade_model]</td>
<td>Clears the Cached check box for all related software counters if the upgrade parent or downgrade child values are changed or deleted.</td>
</tr>
<tr>
<td>Flag counter to reprocess</td>
<td>Software Suite [cmdb_m2m_suite_model]</td>
<td>Clears the Cached check box for all related software counters if the suite parent or suite child values are changed or deleted.</td>
</tr>
<tr>
<td>invalidate sw install cache</td>
<td>Computer [cmdb_ci_computer]</td>
<td>Uncaches all install and usage records referencing a computer when the computer’s processor field is changed.</td>
</tr>
<tr>
<td>Name</td>
<td>Table</td>
<td>Description</td>
</tr>
<tr>
<td>------</td>
<td>-------</td>
<td>-------------</td>
</tr>
<tr>
<td>Limit license metric</td>
<td>License (alm_license)</td>
<td>Limits software licenses to a single license metric value.</td>
</tr>
<tr>
<td>Limit license metric combinations</td>
<td>Hardware (cmdb_ci_hardware)</td>
<td>Rejects license metric combinations of the same type, such as CAL (user) and CAL (devices).</td>
</tr>
<tr>
<td>Link to Model</td>
<td>Software Discovery Model (cmdb_sam_sw_discovery_model)</td>
<td>Finds and sets the model field to the model that best corresponds to the record when a software discovery model is created.</td>
</tr>
<tr>
<td>Mark install for suite omission</td>
<td>License Entitlement (alm_entitlement)</td>
<td>Searches for any matching installs and marks them for suite omission.</td>
</tr>
<tr>
<td>One and only one default mapping</td>
<td>Processor Mapping (sam_processor_mapping)</td>
<td>Ensures only one default mapping by resetting the last resort flag for modified records and setting it to false for new records.</td>
</tr>
<tr>
<td>Process cache reset</td>
<td>Software Installation (cmdb_sam_sw_install)</td>
<td>Resets the install of any counter information when it becomes uncached.</td>
</tr>
<tr>
<td>Process suite component deletion</td>
<td>Software Installation (cmdb_sam_sw_install)</td>
<td>Updates all other members of an install’s suite if the install is deleted.</td>
</tr>
<tr>
<td>rebind processor definitions</td>
<td>Processor Mapping (sam_processor_mapping)</td>
<td>Refreshes processor definitions when a processor mapping changes.</td>
</tr>
<tr>
<td>Rebuild Cache</td>
<td>Software Discovery Model (cmdb_sam_sw_discovery_model)</td>
<td>Clears the Cached field on the software counter if the associated software model is modified on the software discovery model record.</td>
</tr>
<tr>
<td>Rebuild inferred suite and cached</td>
<td>Software Discovery Model (cmdb_sam_sw_discovery_model)</td>
<td>Clears the cached flag and inferred suite field on records referencing this discovery model, when the matched model changes.</td>
</tr>
<tr>
<td>Remove cached flag</td>
<td>Software Installation (cmdb_sam_sw_install)</td>
<td>Clears the corresponding cached software counter details if a software installation is deleted or if the configuration item on which it is installed changes.</td>
</tr>
<tr>
<td>Remove cached flag</td>
<td>Software Usage (cmdb_sam_sw_usage)</td>
<td>Clears the corresponding cached software counter details if a software usage record is deleted or if the configuration item from which the software is accessed changes.</td>
</tr>
<tr>
<td>Remove caches from detail</td>
<td>Software Counter Detail (sam_sw_counter_detail)</td>
<td>Clears the Cached check box on the related entitlement, installation, and usage records if they exist.</td>
</tr>
<tr>
<td>Reset counter info on suite change</td>
<td>Software Installation (cmdb_sam_sw_install)</td>
<td>Uncaches and resets counter information on the install if its inferred suite changes.</td>
</tr>
<tr>
<td>Name</td>
<td>Table</td>
<td>Description</td>
</tr>
<tr>
<td>------</td>
<td>-------</td>
<td>-------------</td>
</tr>
<tr>
<td>Reset Installs per License</td>
<td>Software Counter [sam_sw_counter]</td>
<td>Clears the Installations per license fields if the counter license type is not per user.</td>
</tr>
<tr>
<td>Retrieve PVU Mapping</td>
<td>Processor Definition [cmdb_processor_definition]</td>
<td>Finds a matching processor mapping based on the information of the processor definition.</td>
</tr>
<tr>
<td>SAM: Core Process</td>
<td>Global (global)</td>
<td>Not used for any processing.</td>
</tr>
<tr>
<td>Set Display name</td>
<td>Software Counter Result [sam_sw_counter_result]</td>
<td>Sets the display name of the counter result to the counter name with the grouping type.</td>
</tr>
<tr>
<td>Set normalized fields</td>
<td>Software Usage [cmdb_sam_sw_usage]</td>
<td>Sets normalized fields on insert to be copies of discovered fields.</td>
</tr>
<tr>
<td>Set normalized fields</td>
<td>Software Installation [cmdb_sam_sw_install]</td>
<td>Copies the given values as their normalized values when a software install is inserted.</td>
</tr>
<tr>
<td>Sync Software Package</td>
<td>Software Discovery Model [cmdb_sam_sw_discovery_model]</td>
<td>Creates a row in the package table to reflect the row in the discovery model table.</td>
</tr>
<tr>
<td>Update Cache</td>
<td>Software Installation [cmdb_sam_sw_install]</td>
<td>Updates all corresponding cached software counter details if usage metrics for this installation change.</td>
</tr>
<tr>
<td>Update Cache</td>
<td>Software Usage [cmdb_sam_sw_usage]</td>
<td>Updates all corresponding cached software counter details if usage metrics for this software usage change.</td>
</tr>
</tbody>
</table>

References

Software Asset Management plugin adds the following references.

Table 20: Software Asset Management plugin references

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processor Definition</td>
<td>Activating the Software Asset Management plugin IBM PVU Process Pack after activating Software Asset Management plugin adds a reference to the processor definition to the Hardware [cmdb_ci_hardware] table.</td>
</tr>
</tbody>
</table>

Software Asset Management plugin setup process

Complete a set of steps to prepare to manage your software assets.

To get started with Software Asset Management plugin:

- Identify Software Owned. The following methods identify the software your organization owns:
  - Use Discovery to identify currently owned software and begin working with Software Asset Management plugin.
  - Identify and add the software manually or with a third-party tool.
• Make the Configuration Management Database Accurate
  Clean up information in the configuration management database (CMDB). At first, focus on your top 10–20 software vendors.

• Create Software Models
  Create software models for all of the software your organization wants to monitor. Software models can also be imported from another source such as a Discovery application, an existing data set of software licenses, or a third-party source.

• Create Software License Records
  Create software license records for all of the software your organization owns. This information can also be based on information from a purchasing source or imported as a spreadsheet.

• Configure Software Counters
  Configure software counters to view your organization’s software compliance levels for all of your software.

Request Software Asset Management plugin

Software Asset Management plugin (com.snc.software_asset_management) must be activated by ServiceNow personnel. This plugin includes demo data and activates related plugins if they are not already active.

Role required: none

Request the plugin through the HI Service Portal.

1. In the HI Service Portal, click Service Requests Activate Plugin.
2. Fill out the form.

<table>
<thead>
<tr>
<th>Target Instance</th>
<th>Instance on which to activate the plugin.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plugin Name</td>
<td>Name of the plugin to activate.</td>
</tr>
<tr>
<td>Specify the date and time you would like this plugin to be enabled</td>
<td>Date and time must be at least 2 business days from the current time.</td>
</tr>
</tbody>
</table>

Note: Plugins are activated in two batches each business day in the Pacific timezone, once in the morning and once in the evening. If the plugin must be activated at a specific time, enter the request in the Reason/Comments.

| Reason/Comments | Any information that would be helpful for the ServiceNow personnel activating the plugin such as if you need the plugin activated at a specific time instead of during one of the default activation windows. |

3. Click Submit.

Determine where software is installed

When determining where software is installed, there are a few points to keep in mind.

• The software instance no longer contains discovered information. The information previously went to the Software Instance (cmdb_software_instance) table, but now goes to the Software Installation
(cmdb_sam_sw_install) table. Because the table has changed, you must change your transform maps to point to the new table.

- Models identified by a discovery tool are linked to software models.
- Use grouping to obtain more specific information from a software counter.
- Software installations link a computer with a software model (via a discovery model).

A discovery tool places the data it obtains into the Software Installation (cmdb_sam_sw_install) table. All of the information can be seen in the Software Installations list and the individual Software Installation forms. When a record is created, the system analyzes the Discovery Model table and identifies five key points.

- Publisher
- Display name
- Prod ID
- Version
- Revision

Find software on the network

After using a discovery tool, you can find a definitive list of all the software found on the network.

Role required: sam

Note: A user with the Asset role can delete software installations, but it is not recommended. As an alternative, archive software installation information.

1. Navigate to Software Asset Discovery Software Installations.
Figure 25: SAM software installations

A software administrator can, for example, look at the list and see that Adobe Acrobat 9.0, 9.2, 9.3, and 9.5 were found. Then, the administrator can edit software discovery models so all the dot versions are considered version 9.0 when doing reconciliation.

2. Click a Display Name in a row.
All installations that map to an individual software discovery model are displayed.
Figure 26: SAM software installation record

All fields on the form are read-only.

Table 21: Software installation fields

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display name</td>
<td>Name of the software installation as it appears in record lists.</td>
</tr>
<tr>
<td>Publisher</td>
<td>Publisher of the software.</td>
</tr>
<tr>
<td>Version</td>
<td>Version of the software.</td>
</tr>
<tr>
<td>Discovery model</td>
<td>Software discovery model that represents the installed software.</td>
</tr>
<tr>
<td>Prod id</td>
<td>Number created by the publisher to identify the software.</td>
</tr>
<tr>
<td>Install location</td>
<td>Path under which the software is installed.</td>
</tr>
<tr>
<td>Install date</td>
<td>Date on which the software was installed.</td>
</tr>
<tr>
<td>Revision</td>
<td>Revision of the software.</td>
</tr>
<tr>
<td>Instance key</td>
<td>Encrypted credentials for the software installation.</td>
</tr>
<tr>
<td>Installed on</td>
<td>Hardware on which the software is installed.</td>
</tr>
<tr>
<td>Uninstall string</td>
<td>Identifier used to uninstall the software.</td>
</tr>
<tr>
<td>ISO serial number</td>
<td>ISO number of the software.</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>----------------</td>
<td>-------------------------------------------------------</td>
</tr>
<tr>
<td>Foreground</td>
<td>Duration of foreground usage of the software.</td>
</tr>
<tr>
<td>Background</td>
<td>Duration of background usage of the software.</td>
</tr>
<tr>
<td>Last scanned</td>
<td>Date and time on which the software was last discovered on this hardware.</td>
</tr>
<tr>
<td>Last used</td>
<td>Date and time on which the software was last used on this hardware.</td>
</tr>
<tr>
<td>Counted by</td>
<td>The counter summary name that the installation is counted on.</td>
</tr>
<tr>
<td>Entitlement</td>
<td>Entitlement that is associated with the software installation.</td>
</tr>
<tr>
<td>Inferred suite</td>
<td>Software suite inferred by the inference parameters.</td>
</tr>
<tr>
<td>Valuation</td>
<td>Indicates the number of rights the install has.</td>
</tr>
<tr>
<td>Cached</td>
<td>If checked, the license installation has already been counted.</td>
</tr>
<tr>
<td>Omit from suites</td>
<td>If checked, the license is ignored for any suite calculations. This box is automatically checked if the install finds a possible entitlement of the exact software model for this configuration item.</td>
</tr>
</tbody>
</table>

Note: Third-party discovery tools can use software normalization to more effectively manage the software installation database. Software normalization allows you to standardize your software installation data, such as the display name, publisher, revision, and version. You can personalize the software installation form to include these normalization fields. For more information, see [Personalizing forms](#).

For more information on forms see [Configure a form](#).

Scan software installations with the system scheduler

Software Asset Management plugin adds a scheduled job for scanning software installations named SAM License Counters in System Scheduler Scheduled Jobs.

The SAM License Counters job occurs at 2:00am (local time) every morning. The job queries the Software Installation (cmdb_sam_sw_install) table and captures any installations that have not been scanned in the past 7 days. The job runs a join query on hardware that has been scanned within the last day and software installations that have not been scanned in the last 7 days. These software installations are then removed.

Software licenses

Software licenses are based on defined models.

You can create the models to organize software licenses in any way that makes sense for your organization. Common methods of defining models and licenses include by department or by region.

Licenses can be associated with a contract. For more information, see [Software Contracts](#).
Licensing types

Different types of licenses are available in the Software Asset Management plugin feature as listed below.

- By CPU
  - By CPU cores
  - By number of CPUs
- By number of points
  - Per installation - IBM PVU
- By user
  - Number of installs per user
  - Per named user
- By utilization
  - Usage (CPU)
  - Usage (User)
- By workstation
  - Per workstation

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual</td>
<td>Given to individuals.</td>
</tr>
<tr>
<td>Bulk allocated</td>
<td>Allocated to users via entitlements.</td>
</tr>
<tr>
<td>Bulk not allocated</td>
<td>Given to users with details, such as who has a license or where the license is located, not tracked.</td>
</tr>
</tbody>
</table>

Software license management

The Software Asset Management plugin feature allows asset managers to track and organize the number of licenses available to the organization.

Software licenses are based on models that you create to organize software licenses in meaningful ways. Different license calculation types determine how software is counted.

Software licenses can also be associated with a contract which enables a company to cover software licenses for multiple assets or users. For more information, see Software Contracts.

Add a new software license

You can add a new software license.

Role required: sam

1. Navigate to Software Asset Software Licenses.
2. Click New.
3. Complete the form.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display name</td>
<td>Read-only. Name of the software license. Created automatically.</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>---------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Model category</td>
<td>Model category for the software license. Software License is selected by default.</td>
</tr>
<tr>
<td>Model</td>
<td>Software model of the license you are matching to. For example, Microsoft Excel.</td>
</tr>
<tr>
<td>Rights</td>
<td>Number of entitlements to be granted by this license. If an enterprise contract is attached to the license, the Rights field does not display.</td>
</tr>
</tbody>
</table>

**General**

<table>
<thead>
<tr>
<th>Asset tag</th>
<th>Number from the asset tag. The tag contains the serial number and bar code for tracking the software license.</th>
</tr>
</thead>
<tbody>
<tr>
<td>State</td>
<td>Current status of the software license, such as On order or In use.</td>
</tr>
</tbody>
</table>

**Assigned to**

| User currently assigned to this software license. |

**Managed by**

| User or department that maintains the software license. Can be different than the owner. For example, a specified user can own a software license, but the IT department manages it. |

**Owned by**

| User or department with financial ownership of the software license. Can be different than the manager. |

**Parent**

| Parent asset of the software license, if any. For example, the parent asset of Microsoft Word software is often the Microsoft Office suite. |

**Class**

| (Read-only) Automatically created as Software License. |

**License metric**

| (Optional) A single metric which the software license is counted against. |

**Serial number**

| Unique number assigned for identification. |

**Substate**

| More details about the software license stage. The available substate settings depend on the State selected. For example, if you select the Retired state, the substate options available are Disposed, Sold, Donated, and Vendor credit. |

**Location**

| Where the license will be used. For example, a specific site, country, or region. |

**Department**

| Department of the person Assigned to this software license. |

**Company**

| Company that created the software. |

**Assigned**

| Date on which the software license was assigned. |

**Installed**

| Date on which the software license was installed. |

**Comments**

| Information about the software license that would be helpful for others to know. |
For information about the fields in the Financial and Contracts sections of the form, see Create assets.

4. Click Submit.

Create and manage an enterprise license

Enterprise licenses are typically for large customers and provide some flexibility, an agreed upon discount price, and a mechanism for easy administration.

Use the Contract Management application to set a software license as enterprise or subscription.

2. Click New.
3. Select a License type of Enterprise.
4. Fill in as many of the remaining fields on the Contract form as you can, and click Submit.
5. Reopen the contract.
6. In the Assets Covered related list, click New.
7. In Asset, select the software covered by the contract.
8. In Date added, select the date the software license was added to the contract. The date can be in the past, the present, or the future.
9. (Optional) In Date removed, select the date asset was, or will be, removed from the contract.
10. Click Submit.
11. Navigate to Software Asset Reconciliation -> Software Counters.
12. Click the software you specified.
13. Click Count Licenses.

The licenses are listed under Software Counter Results. The licenses display as 0, but you are not out of compliance because you have an enterprise license with an enterprise contract. Once an enterprise contract is associated with software, all users are entitled when the licenses are counted.

Note: In the Software Licenses list, enterprise licenses display 0 in the Rights column. The concept of rights is not used with enterprise licenses.

Create and manage a subscription license

You can create subscription licenses, and manage the information as it changes.

Role required: contract_manager

1. Navigate to Contract Software License and click New.
2. Select a License type of Subscription.
3. Complete the Contract form, right-click the header, and select Save.
4. In the Assets Covered related list, click New.
5. In Asset, select the software covered by the contract.
6. In Date added, select the date the software license was added to the contract. The date can be in the past, the present, or the future.
7. In Date removed, select the date asset was, or will be, removed from the contract.
8. Click Submit.
10. Click the software specified in step 6.
11. Click Count Licenses.

The licenses are listed under Software Counter Results.
Software license entitlements

Software entitlements enable you to define the people or machines to which a specific, purchased software license is assigned.

Role required: asset

Asset managers allocate a license to entitle a user or machine to use the license. For example, a company purchases a software license for 100 rights. The software entitlement specifies the 100 employees or machines that are rightfully assigned a license. If the ServiceNow Discovery tool is used and it finds the software installed on 200 machines, the asset manager can identify the employees or computers that have the software installed without a license. The asset manager can ask users to remove the software from their computers.

Built-in rules prevent entitling more licenses than have been purchased. License entitlements use specific software license asset tags. In addition to the mandatory asset tag, an individual person and a specific configuration item can be assigned.

The benefits of using software entitlements include the following.

- If the overall license allotment is exceeded, the asset manager can rapidly address the problem and return to compliant status by either removing unauthorized software or ordering more licenses.
- If the license allotment is not being used completely, the asset manager can respond by lowering the number of licenses purchased in the future.

1. Navigate to Asset Software Asset License Entitlements.
2. Click New.

![Asset Entitlement Form](image)

Figure 27: Software asset entitlement

3. Complete the form.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display name</td>
<td>Read-only. Name used in record lists.</td>
</tr>
<tr>
<td>Allocated to</td>
<td>The configuration item consuming the license token.</td>
</tr>
<tr>
<td>Licensed by</td>
<td>License granting this token.</td>
</tr>
<tr>
<td>Cached</td>
<td>Read-only. Internal flag set and used by software counters logic.</td>
</tr>
</tbody>
</table>
4. Click Submit.

Create an entitlement

You create software entitlements for both CIs and users from the same License Entitlement form. You can create these entitlements from Asset Management. Navigate to one of these locations and click New:

- Asset Management Software Asset License Entitlements
- Asset Management Software User License Entitlements

1. Navigate to Software Asset Software Licenses.
2. Click an Asset tag.
3. Click Add Entitlement and complete the License Entitlement form using the fields in the table.

![Figure 28: Software license entitlement](image)

4. Click Submit.

The view returns to the Software License form.

5. Set an optional condition in the Allocated conditions section.

The configuration items given this license must meet the specified conditions. For example, you might set a condition that allocates this software license to CIs in a certain department only.

![Figure 29: Asset entitlement condition](image)

6. Click Update.
Table 23: License entitlement

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display name</td>
<td>(Read-only) Name used in record lists.</td>
</tr>
<tr>
<td>Assigned to</td>
<td>User of the entitlement token.</td>
</tr>
<tr>
<td>Allocated to</td>
<td>The configuration item consuming the license token.</td>
</tr>
<tr>
<td>Licensed by</td>
<td>License granting this token.</td>
</tr>
<tr>
<td>Cached</td>
<td>(Read-only) Internal flag set and used by software counters logic.</td>
</tr>
</tbody>
</table>

Create a software user license entitlement
You can entitle a user to use one of your software licenses.

Role required: asset
1. Navigate to Asset Software User License Entitlements.
2. Click New.
3. Complete the form.
4. Click Submit.

Entitle a license to a configuration item
You can entitle a license to a configuration item, such as a computer or server, or a location, such as a city of building.
Role required: sam
1. Navigate to Software Asset Software Licenses.
2. Click an Asset tag, or click New to create a new software license.
3. In the Asset Entitlements related list, perform one of the following actions.
   - Double-click in Allocated to to entitle the license to a specific configuration item, such as a computer or server.
   - Double-click in Location to entitle the license to a specific location, such as a city or building.
4. Set the Allocated conditions condition to the configuration items given this license must meet the specified conditions.
   For example, only configuration items in a certain department can be allocated this software license.
5. Click Update.

*Entitle a license to a user or location*
You can entitle a license to an individual user.

Role required: sam
1. Navigate to Software Asset Software Licenses.
2. Click an Asset tag, or click New to create a new software license.
3. In the User Entitlements related list, perform one of the following actions.
   - Double-click in Assigned to to entitle the license to a specific user.
   - Double-click in Location to entitle the license to a specific location, such as a city or building.
4. Set the Assigned to condition to require that every user given this license meets the specified conditions.
   Only people in a certain region can be assigned this software license
5. Click Update.

License upgrade and downgrade
The concept of upgrading and downgrading licenses is built into the Software Asset Management plugin feature.

This is helpful when reconciling licenses. Downgrading a license is the process of purchasing a license, but using an earlier version. Upgrading a license occurs when a newer version of a license is not purchased, but you are allowed to use the newer version. Downgrading is more common than upgrading.

Any version defined as a downgrade child that does not have entitlements and a license can be counted as an installation of the upgrade parent. Use this method to avoid having to uninstall unlicensed versions of software running in your environment. When you define an unlicensed version as a downgrade child of a licensed version, the system creates a software model record for the unlicensed version with an upgrade path to the licensed version. If you delete the downgrade child from the licensed version’s record, it is automatically deleted from the Software Model record for the unlicensed version.

Note: If the downgrade child has either a license or an entitlement, it must also have a counter, which counts all installations of the downgrade child against its own license.

For example, you have licenses for the software model Microsoft Word 2010, but no licenses or entitlements for Word 2007. Discovery finds installations of Word 2007 being used in your organization. Rather than force users to uninstall all instances of this unlicensed version, you decide to count installations of Word 2007 against your Word 2010 license. To do this, you configure Word 2007 as a downgrade child in the Word 2010 Software Model record. A Software Model record is automatically created for Word 2007 which specifies Word 2010 as the upgrade parent.
If a software version has a downgrade child or an upgrade version that can be counted against the parent, the number of installs counted is restricted to the number of available rights of the parent. For example, Microsoft Word 2010 has a downgrade to Word 2007. Both versions have an active counter. Microsoft Word 2010 finds all entitled copies of Word 2007, and also takes out of compliance any installs from that downgrade counter until the available downgrade rights are used. However, if Microsoft Word 2010 only has 100 rights, then the maximum number of rights to be taken from the downgrade counter is 100.

You can set the start and end dates for a software upgrade parent and downgrade child to be valid. The software counter counts the upgrade and downgrade licenses within the selected dates. If the software counter runs outside of the date range, the upgrade and downgrade licenses are not counted.

Note: If an upgrade parent or downgrade child is set on the software model, it applies to all licenses of that model. If set on the software license, it applies specifically to that license.

**Upgrade a license**
You can upgrade a software license using one of two methods: from a software license record or from a software model record.

**Role required**: sam

1. Complete the following steps to identify an upgrade parent from a software license record.
   a) Navigate to Software Asset Software Licenses.
   b) Select a model.
   c) In the Upgrade related list, double-click under the Upgrade Parent column heading.
   d) Click the reference lookup icon (🔍).
   e) Select a software model from the list.
   f) Click the green check mark.

2. Complete the following steps to identify an upgrade parent from a software model record.
   a) Navigate to Software Asset Software Models.
   b) Select a model.
   c) In the Upgrade section, double-click under the Upgrade parent column heading.
   d) Select a software model from the list.
   e) Click the green check mark.

**Downgrade a license**
You can downgrade a software license using one of two methods: from a software model record or from a software license record.

**Role required**: sam

Note: Downgrade children set on the software license applies specifically to that license. If a downgrade child is set on the software model, it applies to all licenses of that model.

1. Complete the following steps to downgrade a license from a software model record.
   a) Navigate to Software Asset Software Models.
   b) Select a model.
   c) In the Downgrade section, double-click under the Downgrade child column heading.
   d) Select a software model from the list.
2. Complete the following steps to downgrade a license from a software license record.
   a) Navigate to Software Asset Software Licenses.
   b) Select a license.
   c) Click New in the Software Upgrade and Downgrades related list.
   d) Select a software model from the list.
   e) Select the Start and End dates.
   f) Click Submit.

Identify a downgrade child from a software license record
How to identify a downgrade child from a Software License record.
1. Navigate to Software Asset Software Licenses.
2. Select a license.
3. Click New in the Software Upgrade and Downgrades related list.
4. Select a software model from the list.
5. Select the Start and End dates.
6. Click Submit.

Note: Downgrade children set on the software license applies specifically to that license. If a downgrade child is set on the software model, it applies to all licenses of that model.

View a list of unallocated software licenses
Managing software licenses includes knowing what licenses are owned by your organization, but are not allocated.

Role required: sam

You can, for example, allocate the licenses to users or machines. If no one needs the unallocated licenses, this can be noted so that fewer licenses are purchased in the future.

1. Navigate to Software Asset Unallocated Licenses.
   This list is also available from Asset Management Stock Unallocated Licenses.
2. View the Software Counter Details list (Unallocated License view).
   The Valuation column lists the number of unallocated licenses for the given software model.
3. Click a name in the Model column for detailed information about a specific license. View the Software Model list in the Unallocated License view.

Merge a software license

If you have multiple software licenses that are linked to the same model, you can merge these individual licenses into one new consolidated license.

To be merged, the individual licenses must meet the following requirements:

- The licenses cannot already be merged into another consolidated license.
- The information in the following fields must match for each license:
  - Model
  - Allocated condition
  - Assigned condition
  - Company
  - Location
  - Department
  - Cost center
  - State

- The licenses must have the same set of software upgrades and downgrades and the same set of assets covered. To verify this information, go to ‘Software Asset Software Licenses’ and select a license.
- For upgrades and downgrades, go to the Software Upgrade and Downgrades related list.
• For assets covered, go to the Assets Covered embedded list in the Contracts related list.

If a license can be merged, Merge with similar licenses appears under Related Links on the Software License form.

To merge a license:
1. Open a license.
2. Click the Merge with similar licenses link.
   Displays a dialog box with a message stating that the merge process is irreversible and that license keys are not merged.
3. Click OK.
   All qualifying licenses, including the current license, are merged into a new consolidated license. An informational message appears until the user is redirected to the newly merged license.

All qualifying licenses are merged into a new consolidated license unless they can be matched to an existing consolidated license. If they are merged into a new consolidated license, the Asset tag field is cleared. After merging, the merged license is marked as Is merged license (field = true) and the Merged into field is set to this license for the consolidated licenses.

Note: Licenses that are marked as merged are not counted.

For the consolidated licenses:
• The number of rights are summed up into a new count.
• The asset and user entitlements are transferred to the new license.
• The expense lines and assets on contract rate cards are transferred to the new license.
• The set of software upgrades and downgrades, as well as the set of assets covered, are copied to the new license.
• The cost of each individual license is summed up into the new license using the system base currency.
• A history of the consolidated licenses and where they went is maintained.

Manage software models

Software Asset Management plugin uses software models to manage licenses, specifically in software counters and license restrictions, and to track upgrade and downgrade licenses.

Role required: sam or model_manager

Create software models for all of the software your organization wants to monitor. Software models can also be imported from another source such as the Discovery application.

Note: Software does not create configuration items. If the discovery tool you use supports and finds ISO information, details such as ISO ID and ISO serial number are added to the Software Model form for compliance purposes.

1. Navigate to Software Asset Software Models.
   Users with the model_manager role can navigate to Product Catalog Product Model Software Models, but cannot administer all aspects of software models.
2. Click New.
3. Complete the form.
### Table 24: Software model fields

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display name</td>
<td>(Read-only) Name of the model. A system property called glide.cmdb_model.display_name.shorten controls how software model display names are generated. Administrators can configure the property.</td>
</tr>
<tr>
<td>Manufacturer</td>
<td>The company that built the model.</td>
</tr>
<tr>
<td>Name</td>
<td>The manufacturer-assigned name of the model or an abstract name specified by the model manager, such as Field Agent Laptop.</td>
</tr>
<tr>
<td>Edition</td>
<td>The edition of the software model, such as Professional.</td>
</tr>
<tr>
<td>General</td>
<td></td>
</tr>
<tr>
<td>Short description</td>
<td>A brief description of the model.</td>
</tr>
<tr>
<td>Model categories</td>
<td>(Read-only) The category the model is assigned to. The system automatically sets the value to Software License. This field is a glide list.</td>
</tr>
<tr>
<td>Asset tracking strategy</td>
<td>The process the model should be tracked by. Choose from the following: • Leave to Category: model is transparent and the asset class is defined solely by the category. • Create Consumable Asset: model forces the asset class to be consumable, regardless of what the category defines as the asset class. • Don’t create assets: model blocks asset instantiation, regardless of what the category defines as the asset class.</td>
</tr>
<tr>
<td>Acquisition method</td>
<td>The method for purchasing the model. Options are Both, Buy, and Lease.</td>
</tr>
<tr>
<td>Cost</td>
<td>The cost a single unit of the model.</td>
</tr>
<tr>
<td>Depreciation</td>
<td>The depreciation scheme for the model.</td>
</tr>
<tr>
<td>Model number</td>
<td>The specific model number assigned to the item by the manufacturer.</td>
</tr>
<tr>
<td>Barcode</td>
<td>The barcode number assigned to the model. Barcodes are usually assigned by the manufacturer.</td>
</tr>
<tr>
<td>Owner</td>
<td>The person responsible for the model.</td>
</tr>
<tr>
<td>Status</td>
<td>The current status of the model. Options are In Production, Retired, and Sold.</td>
</tr>
<tr>
<td>Certified</td>
<td>The option that determines whether the model is approved for use.</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Comments</td>
<td>Information about the model that would be helpful for others to know.</td>
</tr>
<tr>
<td>License</td>
<td></td>
</tr>
<tr>
<td>Version</td>
<td>The exact version of the software. For example, Version 2.</td>
</tr>
<tr>
<td>Major</td>
<td>The ISO major version number of the software.</td>
</tr>
<tr>
<td>Minor</td>
<td>The ISO minor version number of the software.</td>
</tr>
<tr>
<td>Build</td>
<td>The build number of the software.</td>
</tr>
<tr>
<td>Software category</td>
<td>A category name for grouping software with similar characteristics.</td>
</tr>
<tr>
<td>Single or multi license</td>
<td>Defines whether this model uses a single license or multiple licenses.</td>
</tr>
<tr>
<td>Maximum socket count</td>
<td>Maximum number of CPU sockets that a computer must have for the software to be installed.</td>
</tr>
<tr>
<td>License type</td>
<td>The tracking type for the license. For example, by number of users, per workstation, per installation with IBM PVU or per Oracle processors. If you select the By number of users option, you can create a software counter and specify the number of installations per license.</td>
</tr>
<tr>
<td>Activation status</td>
<td>The activation state of the software model. Options are None and Activated.</td>
</tr>
<tr>
<td>ISO id</td>
<td>The unique ISO identification number of the software product.</td>
</tr>
<tr>
<td>ISO serial number</td>
<td>The serial number issued by ISO for the software.</td>
</tr>
<tr>
<td>Application model</td>
<td>Application associated with this software.</td>
</tr>
<tr>
<td>Rights</td>
<td>Number of licenses granted to this software.</td>
</tr>
<tr>
<td>Minimum users</td>
<td>Minimum number of user licenses required for this software.</td>
</tr>
<tr>
<td>Maximum users</td>
<td>Maximum number of user licenses required for this software.</td>
</tr>
<tr>
<td>Suite Components</td>
<td></td>
</tr>
<tr>
<td>Inference percent</td>
<td>The percentage of suite components that need to be present on a system to count as a suite. Used for suite management. For example, Suite A consists of 5 products. If the inference percent is set to 60% and a discovery tool finds three of the products on the system, the software is flagged for possible purchase as a suite.</td>
</tr>
<tr>
<td>Components</td>
<td>The child product or products of the suite. For example, Microsoft Word and Microsoft Excel are child products of Microsoft Office.</td>
</tr>
<tr>
<td>Suite Parents</td>
<td></td>
</tr>
</tbody>
</table>
### Field Description

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parents</td>
<td>The parent suites to which the software is assigned. For example, the parent suite for several common Microsoft products is a version of Microsoft Office.</td>
</tr>
<tr>
<td>Upgrade</td>
<td>An alternative version license to which you have rights. For example, if you purchase version 4 of a software product shortly before version 5 is released, your version 4 license may include a free upgrade to version 5 when it is released.</td>
</tr>
<tr>
<td>Upgrades</td>
<td>An alternative version license to which you have rights. For example, if you purchase version 4 of a software product, your version 4 license may include downgrade rights to version 3.</td>
</tr>
<tr>
<td>Downgrade</td>
<td>An alternative version license to which you have rights. For example, if you purchase version 4 of a software product, your version 4 license may include downgrade rights to version 3.</td>
</tr>
<tr>
<td>Downgrades</td>
<td>An alternative version license to which you have rights. For example, if you purchase version 4 of a software product, your version 4 license may include downgrade rights to version 3.</td>
</tr>
<tr>
<td>Licenses</td>
<td>The software licenses that should be created automatically from this model.</td>
</tr>
<tr>
<td></td>
<td>Note: This embedded list shows all assets created from this model, whether or not they are software licenses, in versions prior to this release.</td>
</tr>
<tr>
<td>Catalog Item</td>
<td>The information about the model as it appears in the product catalog and service catalog. Information only appears if the model has been published to the product catalog.</td>
</tr>
<tr>
<td>Product Catalog</td>
<td>Description of the software model as it appears in the product catalog.</td>
</tr>
<tr>
<td>Picture</td>
<td>An image of the software logo.</td>
</tr>
</tbody>
</table>

Any software licenses you create and assign to the new model are displayed in the Licenses embedded list on the Software Model form.

### Create and manage software suites

Software uses the concept of suites instead of bundles.

A software suite is a group of related software offered as one unit. An example is the Microsoft Office Professional suite of office productivity software tools that includes Powerpoint, Word, Excel, Outlook, and Access. In software asset management, create suites and add components to the suite so the licenses your organization owns are counted accurately.

For any software model, you have the option to specify whether the model is a suite (parent) or a component (child). A software model can be a component in multiple suites. For example, Microsoft Word is a component in Microsoft Office Standard and Microsoft Office Professional. Although you can set a single software model as both a suite and a component, software is not typically sold as nested suites.

Use the Inference percent and Inference mandatory options for even greater control of suites.
• Inference percent: specifies what percentage of the components in the suite must be installed for the software to be identified as a suite.
• Inference mandatory: enforces that a specific component in a suite must be installed to infer that the suite is installed.

For example, specify the Inference percent as 80% and set the Inference mandatory option to true on Microsoft Access. These settings specify that Microsoft Access must be installed, along with 3 out of 4 other products (Microsoft Word, Microsoft Excel, Microsoft PowerPoint, and Microsoft Outlook) to infer that Microsoft Office Professional is installed.

![Suite Components](image)

Figure 31: The interference percent and interference mandatory fields

To make the new software model record a parent record in a suite:

1. Open a software model record.
2. In the Suite Components section, double-click an empty row under Suite child.
3. Add the software to include in the suite.
4. (Optional) Set the Inference mandatory option to true if the software must be installed to count the model as a suite.
5. Repeat as necessary.

To make the new software record a child item:
1. Open a software model record.
2. In the Suite Parents section, double-click an empty row under Suite parent.
3. Add the suite to which this software model should belong.
4. Repeat as necessary.

Note: When a change is made to a suite, a scheduled job called Calculate suites [Software Suite Model] is created. The job runs instantly, calculates any suites, and then deletes itself. The calculations are stored in the cmdb_sam_sw_install table under inferred suite.

License calculations

Software license calculations count the number of licenses that exist in your network environment.

Users with the sam role can choose to count software licenses using a variety of license calculation types, such as counting by the number of users, the number of workstations, the number of CPUs, and others. For example, you can count the number of Adobe Acrobat 9.0 licenses based on the number of users that have the software installed in the organization.

Calculate software licenses

Software calculations use license calculation types to determine how software licenses are counted in your organization.

You can use the default license types provided in the base system or create new ones. To view the default types, navigate to Software Asset Reconciliation License Calculations and select a type. All fields in the default records are read-only.
Table 25: License calculation details

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>The name of the license type.</td>
</tr>
<tr>
<td>Query table</td>
<td>The table that is being used for data. Possible values are Software install and Software usage.</td>
</tr>
<tr>
<td>Count by</td>
<td>The calculation type by which the license calculation type counts software licenses.</td>
</tr>
</tbody>
</table>

License calculation types

Certain default license calculation types are available. These license types cannot be deleted.

Table 26: License calculation types

<table>
<thead>
<tr>
<th>Category</th>
<th>License type</th>
</tr>
</thead>
</table>
| By CPU   | • By CPU cores: The counter adds up the total license rights for all software license records of this model. The CPU Core Count field on the hardware configuration item determines the number of rights consumed by any software installation located on the configuration item. For that installation, the counter checks for a valid entitlement record on any of the software license records. Applies to software installation data and hardware configuration items.  
|          | • By number of CPUs: The counter adds up the total license rights for all software license records of this model. The CPU Count field on the hardware configuration item determines the number of rights consumed by any software installation located on the configuration item. For that installation, the counter checks for a valid entitlement record on any of the software license records. Applies to software installation data and hardware configuration items. |
### Category | License type
--- | ---
By number of points | • Per installation - IBM PVU: The counter adds up the total license rights for all software license records of this model. The installation count for every hardware configuration item that has IBM PVU software is a point calculation. The CPU type determines the PVU per-core multiplier based on the IBM PVU mapping table. The total number of cores on the configuration item is multiplied with this per-core multiplier to determine how many rights are used by an installation on this configuration item. For that installation, the counter checks for a valid entitlement record on any of the software license records. Applies to software installation data and hardware configuration items.

This license type is present but does not work until the Software Asset Management plugin IBM PVU Process Pack is active.

By Client Access License (CAL) | • CAL (Device): The counter adds up the total license rights for all software license records of this model. Usage is counted as one installation for every unique configuration item (device). For each installation, the counter checks for a valid entitlement record on any of the software license records. The Software Usage (ast_usage) table is used for counting.

• CAL (User): The counter adds up the total license rights for all software license records of this model. Usage is counted as one installation for every unique user. For that installation, the counter checks for a valid entitlement record on any of the software license records. The Software Usage (ast_usage) table is used for counting.
<table>
<thead>
<tr>
<th>Category</th>
<th>License type</th>
</tr>
</thead>
</table>
| By user          | • Number of installs per user: The counter adds up the total license rights for all software license records of this model. It counts an installation when one software installation matches the discovery models that are mapped to this software model for any hardware used by a user. It counts up to the specified amount. For that installation, the counter checks for a valid entitlement record on any of the software license records. Applies to software installation data and hardware configuration items.  
• Per named user: The counter adds up the total license rights for all software license records of this model. It counts an installation when there is at least one software installation that matches the discovery models that are mapped to this software model for any hardware used by a unique user. For that installation, the counter checks for a valid entitlement record on any of the software license records. Applies to software installation data and hardware configuration items.  
• No license needed (User): The counter adds up the total number of users of this model. It counts an installation when there is at least one software installation that matches the discovery models that are mapped to this software model for any hardware used by a unique user. It applies to software installation data and hardware configuration items. This license type is used for software installations where no license is required, such as open source applications.  
To compare Number of installs per user and Per named user:  
• Number of installs per user counts the number of installs the user has and assigns license cost based on installs per license. For example, UserA has three installs. One license is used by each install, for a total of three licenses.  
• For Per named user, there is no install limit for a particular user. For example, UserB, who has three installs, needs only one license for the three installs. |
<table>
<thead>
<tr>
<th>Category</th>
<th>License type</th>
</tr>
</thead>
</table>
| By utilization      | • Usage (CPU): The counter adds up the total license rights for all software license records of this model. The counter looks at all of the software usage data mapped to any of the discovery model records of the counter’s software model. It counts one installation for every unique configuration item. For that installation, the counter checks for a valid entitlement record on any of the software license records. Applies to software usage data.  
  • Usage (User): The counter adds up the total license rights for all software license records of this model. The counter looks at all of the software usage data mapped to any of the discovery model records of the counter’s software model. It counts one installation for every unique user Accessed From hardware configuration item. For that installation, the counter checks for a valid entitlement record on any of the software license records. Applies to software usage data. |
| By workstation      | • Per workstation: The counter adds up the total number of license rights for all software license records of this model. It counts an installation when there is at least one software installation on a hardware configuration item that matches the discovery models that are mapped to this software model. For each installation, the counter checks for a valid entitlement record on any of the software license records. Applies to software installation data and hardware configuration items.  
  • No license needed (Workstation) This license type is used for software installations where no license is required, such as open source applications. |
| By Oracle install   | • Oracle Named User: Oracle licensing scheme that counts by the number of unique users.  
  • Oracle Named User Plus: Oracle licensing scheme that counts by the number of unique users and accounts.  
  • Oracle Processor: Oracle licensing scheme that counts by the number of processors on a server. |

Create a custom license type

Custom license types allow you to create a license type with special conditions.

Role required: sam

A custom script can provide detailed information about the number of rights a software install or usage consumes.

1. Navigate to Software Asset Reconciliation License Calculations.
2. Click New.
3. Complete the form.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Name of the software license type.</td>
</tr>
<tr>
<td>Query table</td>
<td>The value that is used for queries. This can be either Software install to count the number of installations or Software usage to count the number of times the software is used.</td>
</tr>
<tr>
<td>Count by</td>
<td>The calculation type by which the license type counts software licenses. Make sure this value is set to Custom to create a new calculation type.</td>
</tr>
<tr>
<td>Entitlement type</td>
<td>The entitlement type of the license, either Workstation or User. This field is available only when the Count by field is set to Custom.</td>
</tr>
<tr>
<td>Script</td>
<td>The script used for custom license types. This field is available only when the Count by field is set to Custom.</td>
</tr>
</tbody>
</table>

4. Click Submit.

Create the script

By default, the Script field in the Software License Calculation form contains information about available variables and an example script.

You can use the example as the basis of the custom script or replace the example entirely.

You can use the following variables in the custom script.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>found</td>
<td>Contains a GlideRecord of the software install or software usage record currently being evaluated.</td>
</tr>
<tr>
<td>workstation</td>
<td>Contains a GlideRecord of the workstation referenced by the found record.</td>
</tr>
<tr>
<td>user</td>
<td>Contains a GlideRecord of the user referenced by the found record. Can be null if no user is assigned.</td>
</tr>
<tr>
<td>counter_id</td>
<td>Contains the sys.id of the counter running the script.</td>
</tr>
<tr>
<td>query_table</td>
<td>Identifies the table currently being queried, either Software Installation or Software Usage.</td>
</tr>
<tr>
<td>valuation</td>
<td>Identifies the value in rights that is given to this software install or software usage record.</td>
</tr>
</tbody>
</table>

The following functions are available as part of the SAMUtil script include and can be used in custom scripts.

**Note:** All of these functions utilize and depend on the variables mentioned above.
Table 29: Custom script functions

<table>
<thead>
<tr>
<th>Functions</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>getWorkstationInstallsOrUsages</td>
<td>Returns a list of other installs on the given workstation.</td>
</tr>
<tr>
<td>getUserInstallsOrUsages</td>
<td>Returns a list of all other installs belonging to the user.</td>
</tr>
<tr>
<td>createCounterViolation</td>
<td>Returns insert a counter violation for the current counter with the given cause.</td>
</tr>
</tbody>
</table>

Example:

The following script uses the number of rights equal to the number of CPU sockets on the machine the script is installed on. The workstation variable is used to identify any workstation that is in the development environment. If such a workstation is found, the script then assigns a valuation equal to the number of CPU sockets on the machine. Otherwise, if the workstation is not in the development environment, then no rights are assigned.
Software discovery models can be used to help normalize the software you own by analyzing and classifying models to reduce duplication.

Software discovery models are stored in the Software Discovery Model (cmdb_sam_sw_discovery_model) table. There is a distinct difference between software models and software discovery models.

- A software model is a specific version or configuration of software.
- A software discovery model is a model created when Discovery runs and identifies software.

Software discovery models cannot be created manually. The ServiceNow platform uses any of the following field combinations to match the new software discovery model to an existing software model.

- Display Name, Publisher, and Version
• Display Name and Version if the Publisher field is empty
• Display Name only if the Publisher and Version fields are empty

When analyzing version numbers, the ServiceNow platform always searches for an exact match first, but rounds down to a major version number if an exact match is not found. For example, if no match is found for version number 8.0.4, but version 8.0 is found, then version 8.0 is used in the Software model field.

Edit a software discovery model

You can only edit the Software model field and Approved check box on the Software Discovery Models form.

Role required: sam

If the information automatically added to the Software model field is incorrect, you can change to an existing model or create a new one.

None of the software discovery model records are approved when they are created. You must approve them manually after you have reviewed them for accuracy or normalized them. If the automatically generated software model is correct, approve the model.

1. Navigate to Software Asset Reconciliation Discovery models.
2. Click an entry in the Publisher column.
3. Select Approved.

Automatically match to an existing model

The automatic matching feature allows you to match a software discovery model to an existing software model.

Role required: sam

1. Navigate to Software Asset Reconciliation Discovery models and open a model.
2. Clear the Software model field.
3. Click an entry in the Publisher column.
4. Click Match model.

The system searches for the best match from existing models. If a match is found, the system automatically adds the name to the Software model field and selects the Automatically matched check box. If a match is not found, a No match found message is displayed, and two related links appear, allowing you to create a new model. No change occurs if the system has already made a match.

5. If no match is found, create a new model.

If a model is already matched, then the automatic matching feature does not run.

The automatic matching feature can also be used when you insert a new discovery model record or if you modify and update an existing discovery model. If automatic matching is run, all software installations and usages that reference the discovery model will have their Inferred suite and Cached fields cleared.

For more information on software installation and usage records, see [Determine where software is installed](#).

Create new models

If the automatically generated software model is not correct or if the system cannot find a match from existing models, you can create a new model.

Role required: sam

1. Navigate to Software Asset Reconciliation Discovery models and open a model.
2. Clear the Software model field.
3. Save the record.

Two related links appear for creating software models.

4. Select one of these related links to create a new model, which are available only if no Software model is specified.

- Create Software Model: Creates a new software model for this record if a suitable one does not already exist. You can create a new software model for multiple records in the Discovery Models list view. Select one or more records and then click the link in the Actions choice list.
- Create Software Model and Counter: Creates a new software model and a new software counter for this record. The system creates the software model automatically using the value in the Display name field, and then opens a new Software Counter form. In the Discovery Model list view, you can select multiple records and choose this option from the Actions choice list.

5. Complete the form.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display name</td>
<td>(Read-only) Name of the discovery model as it appears in record lists.</td>
</tr>
<tr>
<td>Publisher</td>
<td>(Read-only) Publisher of the software.</td>
</tr>
<tr>
<td>Version</td>
<td>(Read-only) Specific version of the software.</td>
</tr>
<tr>
<td>Revision</td>
<td>(Read-only) Revision number of the software.</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>--------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Software model</td>
<td>Software product model to which the discovery model maps. Click the reference lookup icon and use the lookup list to find the software model to associate with this software discovery model.</td>
</tr>
<tr>
<td>Prod id</td>
<td>(Read-only) Product ID code for the software, as reported through the discovery process.</td>
</tr>
<tr>
<td>Automatically matched</td>
<td>(Read-only) Check box that indicates whether the discovery tool used the Display Name, Publisher, and Version fields to determine the Software model.</td>
</tr>
<tr>
<td>Approved</td>
<td>Check box that indicates whether the mapping to software model has been reviewed and approved.</td>
</tr>
<tr>
<td>Low confidence</td>
<td>(Read-only) Check box that indicates whether the automatically matched software model is not a close match. If selected, and if after reviewing the item it is determined that it’s the correct software model, click Confirm Mapping to match the discovery model to the software model.</td>
</tr>
</tbody>
</table>

6. Select Approved.

![Figure 36: SAM match model](image)

7. Click Submit.

**Software License Compliance Checker**

The Software License Compliance Checker is a fast way to see if the software licenses used in your organization are compliant based on number of rights purchased and number of installations.
For example, if there are 100 licenses for a software program, the Software License Compliance Checker can show if the software has been installed more than 100 times. The Compliance Checker uses information found by a discovery tool such as Discovery, Help the Help Desk, or third-party technologies, to analyze the software installed on your network.

Use the Software License Compliance Checker

You can check software license compliance.

Role required: sam

1. Navigate to Software Asset System Check License Compliance.
2. Click Proceed.
   - Your organization’s network is analyzed for name, software model, rights, installs, license type, and active status.
3. View the results.
   - The Software Counters list is color coded.
     • Green - in compliance
     • Orange - within 5% of being out of compliance
     • Red - not compliant
Use counters for software license reconciliation

Software counters reconcile software rights with software installations to verify compliance.

For asset managers, software counters answer the question: Is my number of installations equal to or lower than the number of rights purchased? Counters are useful for software that must be tracked;
some software may not need to be tracked closely. Grouping—such as location, company, department, cost center, entitlement workstation and entitlement user—or no grouping can be used with software counters.

In addition to software counters, software asset management offers usage counters that track a license based on use by a workstation or user.

The software counter cache is used to increase the speed of counting software licenses. If there is a large number of software license records, the first time software is counted takes several minutes. After the first count, only changes are processed so the procedure is faster.

Get started with software counters

A good way to see how software counters work is to use the demo data provided with Software Asset Management plugin.

Load the demo data on a non-production instance.

Using the demo data, try some of the procedures on this page, such as Use the Software Counter and View a Usage Counter Result.

To use software counters with your own information, follow the steps in the Software Asset Management plugin setup process. ServiceNow Discovery does not populate the Software Usage (cmdb_sam_sw_usage) table. Use a third party tool such as Microsoft’s System Center Configuration Manager to add information about software assets to the Software Usage table.

Schedule a software count

You can schedule a software count.

The SAM License Counters scheduled job scans your instance for software installations. The SAM License Counters job occurs at 2:00am local time every morning. The job queries the Software Installation (cmdb_sam_sw_install) table and captures any installations that have not been scanned in the past 7 days. The job runs a join query on hardware that has been scanned within the last day and software installations that have not been scanned in the last 7 days.

The SAM License Counters scheduled job runs all software counters at once.

To refresh the cache manually for a specific counter:

1. Navigate to Software Asset Reconciliation Software Counters.
2. Select a counter whose cache you want to refresh.
3. Right-click in the header bar of the Software Counter record and select Rebuild SAM Cache from the context menu.
Use the software counter

Use a software counter to count the licenses for a specific version of software and receive summary or detailed results.

When a software counter runs for the first time, it can take several minutes to process records. The license counts are cached so that on subsequent runs, the counter processes only changed records, both those from Discovery or altered entitlements, making it faster. The Software Counter form contains check boxes to enable faster counting through the use of quick counters. For more information on using quick counters, see Setting Up Quick Counters.

Use a software counter to count the licenses for a specific version of software and receive summary or detailed results. For example, an asset manager can look at summary information to discover which departments are not in compliance. Then, department managers can look at detailed information to determine the people or individual computers that are not in compliance.

Software counters return results by Licensing Type:

- Entitled in use: Number of people who have been allocated a license and installed the software.
- Entitled not in use: Number of people who have been allocated a license but did not install the software.
- Not entitled: Number of people using an unauthorized copy of the software.
- Not allocated: Number of licenses not assigned.
The Software Counters list is color coded:

- Green - in compliance
- Orange - within 5% of being out of compliance
- Red - not compliant

Figure 40: SAM software license compliance check

Create a software counter

You can create a software counter.

Depending on the license type you select for a counter, multiple installations can count as a single license, such as when using the per user license type. This licensing concept is used on occasion by companies like Microsoft and Adobe. It grants users the right to install software on multiple machines if those users already have rights to install the software.

Note: You can create new counters from Discovery model records or from the list view.
To manage multiple versions of software from a single licensing perspective for the parent software model:

- The downgrade child software models that are licensed under the parent software model should all be related to the single parent software model.
- The downgrade child software models should not have any software counters associated with them.
- The software counter should be associated only with the licensed parent software model, otherwise misleading results for the counter will be reported.

To create a software counter:
1. Navigate to Software Asset Reconciliation Software Counters.
2. Click New.
3. Fill in the fields on the Software Counter form (see table).
4. Click Submit.
5. Reopen the new counter and click Count Licenses.
6. Reload the form to view the counter results.

Table 31: Software counter form

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Enter the name of the software counter as it appears in record lists.</td>
</tr>
<tr>
<td>Software model</td>
<td>Click the reference lookup icon and select the software model for which the counter will check compliance.</td>
</tr>
<tr>
<td>Contract</td>
<td>Select the contract that you want to use to limit the license. Used for enterprise and subscription-based licenses. Also restricts how counters retrieve licenses for the given counter. If left empty, all licenses for the model are counted.</td>
</tr>
<tr>
<td>Active</td>
<td>Select the check box to have the scheduler run the counter.</td>
</tr>
<tr>
<td>Rights Owned</td>
<td>Displays a summation if a contract is specified. The total sum is the license rights provided by all the licenses for the software model (of the counter) under the specified contract. If no contract is specified, this field is a count of all licenses of this model.</td>
</tr>
<tr>
<td>Rights Used</td>
<td>Displays the number of rights used by all installs, whether a contract is specified or not.</td>
</tr>
<tr>
<td>Immediate compliance</td>
<td>Displays the number of additional rights needed to achieve compliance based on installations.</td>
</tr>
<tr>
<td>Parameters</td>
<td></td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>---------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Grouping</strong></td>
<td>Select the field for grouping data:</td>
</tr>
<tr>
<td>Location</td>
<td>• Location: group by the geographic location set in the license record.</td>
</tr>
<tr>
<td>Company</td>
<td>• Company: group by the company set in the license record.</td>
</tr>
<tr>
<td>Department</td>
<td>• Department: group by the department set in the license record.</td>
</tr>
<tr>
<td>Cost Center</td>
<td>• Cost Center: group by the cost center set in the license record.</td>
</tr>
<tr>
<td>Entitlement (CPU)</td>
<td>• Entitlement (CPU): group by the condition defined in the Allocated condition field of the license record.</td>
</tr>
<tr>
<td>Entitlement (User)</td>
<td>• Entitlement (User): group by the condition defined in the Assigned condition field of the license record.</td>
</tr>
<tr>
<td></td>
<td>The software counter results also displays counts for licenses that do not match the grouping parameter.</td>
</tr>
<tr>
<td><strong>Enforce to</strong></td>
<td>Select the level of adherence to the license:</td>
</tr>
<tr>
<td>License</td>
<td>• License: counts all existing entitlements for the installations or usage you are analyzing regardless of the grouping parameter selected.</td>
</tr>
<tr>
<td>Strict</td>
<td>• Strict: counts the license and entitlement as valid only if the license also matches the grouping category. For example, a license is assigned to a specific location, such as Americas. With strict enforcement enabled, the user and the machine on which the license is installed must be in the Americas group. If the person and their license assigned to the Americas group moves to the United Kingdom, the license is still valid, but strict enforcement flags the user as unauthorized to use that license. The license will be counted as valid, but will also show up as not entitled in the summary.</td>
</tr>
<tr>
<td><strong>Verify entitlements</strong></td>
<td>Select the check box to view the software entitlement details for the software counter. Results include the number of installations of all types: not entitled, entitled in use, entitled not in use, and not allocated. For more information, see Setting Up Quick Counters.</td>
</tr>
<tr>
<td><strong>Generate details</strong></td>
<td>Select the check box to generate the details of the entitlement records. For more information, see Setting Up Quick Counters.</td>
</tr>
<tr>
<td><strong>License type</strong></td>
<td>Select the method for counting licenses. For example, Per named user or Per workstation. For more information, see License Calculation Types.</td>
</tr>
</tbody>
</table>
### Field Description

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installs per license</td>
<td>Enter the number of installations allowed (one or more) per license for each user if the License type is set to By number of users. You can allow more than two installations per license. For all other license types this field is set to 1 install per license.</td>
</tr>
<tr>
<td>Cached</td>
<td>Shows whether this option is selected. If selected, only changed information is counted, reducing the amount of time it takes to count the licenses.</td>
</tr>
<tr>
<td>License condition</td>
<td>Specify the condition a license should satisfy in order to be counted.</td>
</tr>
<tr>
<td>Software install condition</td>
<td>Specify the condition an install record should satisfy in order to be counted. This field appears depending on the value of the License type field.</td>
</tr>
<tr>
<td>Software usage condition</td>
<td>Specify the condition a usage record should satisfy in order to be counted. This field appears depending on the value of the License type field.</td>
</tr>
</tbody>
</table>

### Related Lists

<table>
<thead>
<tr>
<th>Related Lists</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Software Counter Results</td>
<td>Displays all results for this software counter.</td>
</tr>
<tr>
<td>Software Counter Compliance Violations</td>
<td>Displays all records of compliance violations for this software counter.</td>
</tr>
<tr>
<td>Software Counter Histories</td>
<td>Displays all software counter history records for this software counter. Each time a count is completed, the system automatically generates a software counter history record, which is a read-only copy of the software counter record.</td>
</tr>
</tbody>
</table>

**Note:** A message is displayed at top of the software counter form indicating if a license count is in progress. Reload the form to view the counter results.

---

**Set up quick counters**

Quick counter settings can help speed up the software counting process.

The following check boxes are available in the Parameters section of the Software Counter form:

- **Verify entitlements:** When this check box is selected, the software counter will generate entitlement details in the software counter summaries, displaying the number of entitlements in use and entitlements not in use. If the check box is cleared, the software counter will display Entitlement not known with a count of total installs. The counter will not check for entitlements.

- **Generate details:** When this check box is selected, the software counter will generate software counter details for each software counter result type. If the check box is cleared, no details will be available.

Clearing these check boxes in addition to setting the Grouping parameter to None will enable software counters to run more quickly.

**View a software counter result**

Software counter results provide detailed information about each grouping.
To view software counter results:
1. On the Software Counter form, click a name in the Software Counter Results related list.

2. View the Software Counter Result form (see table).
   All fields on the form are read-only.

Figure 41: SAM software counter results 2
Table 32: Software counter result form

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Software counter</td>
<td>Name of the software counter whose results are displayed.</td>
</tr>
<tr>
<td>Grouping</td>
<td>Grouping this software belongs to.</td>
</tr>
<tr>
<td>Parent</td>
<td>Name of the parent software, if one exists, assigned to this software.</td>
</tr>
<tr>
<td>Rights</td>
<td>Number of rights available in the group.</td>
</tr>
<tr>
<td>Installs</td>
<td>Number of rights used by installations of the software in the group.</td>
</tr>
<tr>
<td>Immediate compliance</td>
<td>Number of additional rights needed for the group to achieve compliance based on installations.</td>
</tr>
<tr>
<td>Planned compliance</td>
<td>Number of additional rights needed for the group to achieve compliance based on installations and number of unused entitlements available.</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>----------------</td>
<td>------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Usage Section</td>
<td></td>
</tr>
<tr>
<td>Foreground</td>
<td>Total duration of foreground usage of the software, based on all the installations for the group.</td>
</tr>
<tr>
<td>Background</td>
<td>Total duration of background usage of the software, based on all the installations for the group.</td>
</tr>
<tr>
<td>Times used</td>
<td>Total number of times the software was used, based on software usage records for the group.</td>
</tr>
<tr>
<td>Duration</td>
<td>Total duration of software usage, based on software usage records for the group. (Not the sum of Foreground and Background.)</td>
</tr>
<tr>
<td>Related List</td>
<td></td>
</tr>
<tr>
<td>Summary</td>
<td>Breakdown of software counter results by type. Click a type to view a detailed summary.</td>
</tr>
</tbody>
</table>

**View a software counter summary**

Software counter summaries provide information about each software counter type.

To view a software counter summary:

1. On the Software Counter Result form, click a type in the Summary related list.
2. View the Software Counter Summary form (see table).

   All fields on the form are read-only.
Figure 43: SAM software counter results

Table 33: Software counter summary

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Software counter result</td>
<td>Name of the software counter result for which the summary is displayed.</td>
</tr>
<tr>
<td>Count as</td>
<td>The software model being counted.</td>
</tr>
<tr>
<td>Rights</td>
<td>Number of rights that have been used.</td>
</tr>
<tr>
<td>Valuation</td>
<td>How software is counted during the reconciliation process.</td>
</tr>
<tr>
<td>Software counter</td>
<td>Name of the software counter.</td>
</tr>
<tr>
<td>Summary</td>
<td>Check box that indicates whether the form displays summary information</td>
</tr>
<tr>
<td></td>
<td>(selected) or detailed information (cleared).</td>
</tr>
<tr>
<td>Type</td>
<td>Type of license counted.</td>
</tr>
</tbody>
</table>

Usage Section

| Foreground                | Total duration of foreground usage of the software, based on all the        |
|                          | installations for the grouping.                                           |
| Background                | Total duration of background usage of the software, based on all the       |
|                          | installations for the grouping.                                           |
| Times used                | Total number of times the software was used, based on software usage       |
|                          | records for the grouping.                                                 |
View software counter detail

Software counter details provide information about a specific software counter summary.

To view a software counter detail:

1. On the Software Counter Summary form, click a type in the Software Counter Details related list.
2. View the Software Counter Detail form (see table).
   
   All fields on the form are read-only.

![Figure 44: Software counter detail form](image)
Table 34: Software counter detail

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Type of the counter detail.</td>
</tr>
<tr>
<td>Software install</td>
<td>Name of the related software install record, if applicable. This field is blank if the type is Entitled not in use or Not allocated.</td>
</tr>
<tr>
<td>Software usage</td>
<td>Name of the related software usage record, if applicable.</td>
</tr>
<tr>
<td>Software counter</td>
<td>Name of the related software counter.</td>
</tr>
<tr>
<td>Software counter summary</td>
<td>Name of the related software counter summary.</td>
</tr>
<tr>
<td>Valuation</td>
<td>A valuation of 1 indicates that the license right is being used. A valuation of 0 indicates that the license right is part of a software suite, or that the license allows more than one installation per right. The 0 indicates that this installation does not count against the license.</td>
</tr>
<tr>
<td>Entitlement</td>
<td>Name of the related software license entitlement, if applicable. This field is blank if the type is Not entitled or Not allocated.</td>
</tr>
<tr>
<td>Software license</td>
<td>Name of the related software license, if applicable. This field is blank if the type is Not entitled.</td>
</tr>
<tr>
<td>Usage Section</td>
<td></td>
</tr>
<tr>
<td>Foreground</td>
<td>Total duration of foreground usage of the software, based on the related software install record.</td>
</tr>
<tr>
<td>Background</td>
<td>Total duration of background usage of the software, based on the related software install record.</td>
</tr>
<tr>
<td>Times used</td>
<td>Total number of times the software was used, based on the related software usage record.</td>
</tr>
<tr>
<td>Duration</td>
<td>Total duration of foreground and background software usage, based the related software usage record.</td>
</tr>
</tbody>
</table>

View a usage counter result

A usage counter tracks a license based on how often the license is actually used either by a workstation or a user.

A usage counter tracks a license based on how often the license is actually used either by a workstation or a user. For example, an asset manager can use a usage counter to determine who is actually using the software they have been entitled. If an individual is not using the software at all or very infrequently, the software can be uninstalled and given to an individual who will use it more often. If you have a way of capturing information, for example a proxy server or gateway, you can capture the IP address and the name of the user accessing the license. The captured data can be added directly into the Software Usages list.

1. Navigate to Software Asset Discovery Software Usages.
2. Click the Display Name in the row containing the software and user to check.
3. View the Software Usage form (see table).

All fields on the form are read-only.

Figure 45: SAM software usage

Table 35: Software usage form

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display name</td>
<td>Name of the software usage record.</td>
</tr>
<tr>
<td>Publisher</td>
<td>Publisher of the software.</td>
</tr>
<tr>
<td>Version</td>
<td>Version of the software.</td>
</tr>
<tr>
<td>Discovery model</td>
<td><em>Software discovery model</em> associated with the installed software.</td>
</tr>
<tr>
<td>Primary key</td>
<td>Unique identifier for table row.</td>
</tr>
<tr>
<td>Usage</td>
<td></td>
</tr>
<tr>
<td>User</td>
<td>User who accessed the software.</td>
</tr>
<tr>
<td>Accessed from</td>
<td>Hardware configuration item from which the software was accessed.</td>
</tr>
<tr>
<td>Last scanned</td>
<td>Date and time when the software was last discovered on this hardware.</td>
</tr>
<tr>
<td>Duration</td>
<td>Duration of all usage.</td>
</tr>
<tr>
<td>Times used</td>
<td>Number of times the software was accessed from this hardware.</td>
</tr>
<tr>
<td>Last used</td>
<td>Date and time when the software was last used on this hardware.</td>
</tr>
</tbody>
</table>
### Field Description

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Software counter</td>
<td>The software counter summary record in the Software Counter Summary (sam_sw_counter_summary) table on which this usage is counted.</td>
</tr>
<tr>
<td>Counted by</td>
<td>The entitlement rights of the software.</td>
</tr>
<tr>
<td>Valuation</td>
<td>Number of license rights used by this software usage.</td>
</tr>
<tr>
<td>Cached</td>
<td>If selected, indicates that a software count has already been cached.</td>
</tr>
</tbody>
</table>

**IBM PVU Process Pack**

Processor Value Unit (PVU) is a unit of measurement defined by IBM to determine software licensing costs based on processor or server model.

A processor is defined as each core on a socket. Each software package has a price defined as number of points or PVUs per core. For a complete explanation of IBM PVU licensing for distributed software, see [Processor Value Unit (PVU) licensing for Distributed Software](#) on the IBM website.

In the ServiceNow platform, the concept of PVU is used in the Software Asset Management plugin IBM PVU Process Pack, which is an add-on to the Software Asset Management plugin feature. It provides the ability to manage software licensed under the IBM Processor Value Units licensing model.

The Software Asset Management plugin Processor Definition Extension is automatically activated when the Software Asset Management plugin IBM PVU Process Pack is activated. It provides data model support for processor definitions and is required by all Software Asset Management plugin process packs.

- **Note:** Oracle and Microsoft also use the concept of PVU, but have slightly different definitions.

**Activate the IBM PVU Process Pack**

You can activate the Software Asset Management plugin - IBM PVU Process Pack plugin.

Role required: admin

1. Navigate to System Definition Plugins.
2. Find and click the plugin name.
3. On the System Plugin form, review the plugin details and then click the Activate/Upgrade related link.

   - If the plugin depends on other plugins, these plugins are listed along with their activation status.

   - If the plugin has optional features that are not functional because other plugins are inactive, those plugins are listed. A warning states that some files will not be installed. If you want the optional features to be installed, cancel this activation, activate the necessary plugins, and then return to activating the plugin.

4. If available, select the Load demo data check box.

   - Some plugins include demo data—sample records that are designed to illustrate plugin features for common use cases. Loading demo data is a good policy when you first activate the plugin on a development or test instance.
You can also load demo data after the plugin is activated by clicking the Load Demo Data Only related link on the System Plugin form.

5. Click Activate.

Requirements to associate a software installation to PVU mapping

Meeting recommended requirements ensures that you receive the highest quality results with PVU mapping.

1. Use a discovery tool, such as ServiceNow Discovery, to identify hardware and populate the configuration management database (CMDB) with the configuration items you want to manage with IBM PVU licensing.
2. Use a discovery tool, such as ServiceNow Discovery, to identify software installations. Check that the added CPU information is correct.
3. **Activate** the Software Asset Management plugin - IBM PVU Process Pack plugin. This also activates Software Asset Management plugin if it is not already active.
4. **Refresh processor definitions.**
5. Ensure that the software models you want to manage with IBM PVU licensing have the correct license type: Per installation - IBM PVU.
6. **Create software counters** to calculate IBM PVU licenses.
7. Count licenses to determine compliance with IBM PVU guidelines.

IBM PVU mapping preparation

Most IBM PVU mapping and license checking in the ServiceNow platform is managed automatically.

For the automatic calculations to be as accurate as possible, it is important that configuration item and software model information be accurate.

The important fields describing the processor on the configuration item form are:

- CPU type
- CPU count
- CPU core count
Figure 46: PVU configuration item

This CPU data is often added accurately when the CMDB is populated with information. If the fields contain incorrect information, manually edit the fields on the configuration item form.

The mapping between the configuration item form fields and processor definition fields is as follows.
Table 36: Preparing for IBM PVU mapping

<table>
<thead>
<tr>
<th>Configuration Item Form Field</th>
<th>Processor Definition Form Field</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU type</td>
<td>Processor name, Server model number, and Processor model number</td>
<td>Combination of processor name, server model number, and processor model number. The CPU type field is created as part of the general process described in Populating the CMDB. Some discovery tools fill in the CPU name instead of CPU type. If the CPU type field is empty, the CPU name field is used for mapping instead. (You can configure the form to display the CPU name, if needed.) If the CPU type field and the CPU name field are both empty, no mapping is done.</td>
</tr>
<tr>
<td>CPU count</td>
<td>Number of sockets</td>
<td>Number of sockets.</td>
</tr>
<tr>
<td>CPU core count</td>
<td>Cores per socket</td>
<td>Cores per socket</td>
</tr>
</tbody>
</table>

The key field on the Software Model form is License type. For any software licenses you want to track with IBM PVU, open the corresponding software model form and select the Per installation - IBM PVU license type.
Refresh processor definitions

After activating the Software Asset Management plugin IBM PVU Process Pack, use the Refresh Processor Definitions module in the Software Asset Management plugin feature to create process definitions for existing computers in the Computer (cmdb_ci_computer) table.

Role required: sam

After this step, software asset business rules update the Processor Definition (CMDB_processor_definition) table automatically when changes are made to computers or when new
computers are added. You should not need to use the Refresh Processor Definitions module a second time, but it is always available if you make significant changes to the Computer (cmdb_ci_computer) table.

1. Navigate to Software Asset System Refresh Processor Definitions.
2. Click Proceed.

Processor definitions

Processor definitions are automatically derived from the information in the configuration item form for an item such as a computer or server.

To view a processor definition, navigate to Software Asset Reconciliation Processor Definitions and click an item.

![Processor Definition](image)

**Figure 48: Processor definition**

The following read-only fields are listed.

Table 37: Processor definitions

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display name</td>
<td>Name of the processor as it should appear in the processor list.</td>
</tr>
<tr>
<td>Manufacturer</td>
<td>Company that built the processor.</td>
</tr>
<tr>
<td>Server model number</td>
<td>Number assigned to the model by the server manufacturer.</td>
</tr>
<tr>
<td>Number of sockets</td>
<td>Number of dies on the computer motherboard. The number of CPUs per die is specified by Cores per socket.</td>
</tr>
<tr>
<td>IBM PVU Mapping</td>
<td>The IBM PVU mapping to which this processor is associated. The information in this field is automatically calculated from the server model number, number of sockets, processor name, and processor model number, based on the rules defined in the IBM PVU Table.</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>---------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Processor name</td>
<td>Name assigned to the processor by the manufacturer.</td>
</tr>
<tr>
<td>Processor model number</td>
<td>Number assigned to the model by the processor manufacturer.</td>
</tr>
<tr>
<td>Cores per socket</td>
<td>Number of cores (functional unit needed to execute programs) on each physical connection (socket) on the motherboard.</td>
</tr>
<tr>
<td>Match level</td>
<td>Accuracy level of the association between processor and PVU mapping. Automatically set when association is inferred.</td>
</tr>
</tbody>
</table>

**View IBM PVU mappings**

Every rule listed in the IBM PVU Table is represented by one PVU mapping record in the Software Asset Management plugin feature.

**Role required**: sam

For example, in the IBM PVU Table there is one line with processor name POWER5 QCM and in IBM PVU mappings there is a line representing POWER5 QCM.
1. Navigate to Software Asset Reconciliation Processor Mappings.
2. Click a Short Description for detailed information about the mapping.
The fields are for information only and cannot be edited.

Table 38: IBM PVU mappings

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processor names</td>
<td>Names of running processors. Processor names are separated by commas.</td>
</tr>
<tr>
<td>Model-based condition</td>
<td>Regular expression used to determine whether the server model number of a computer’s processor definition matches that of the PVU entry.</td>
</tr>
<tr>
<td>Socket-based condition</td>
<td>Regular expression used to determine whether the number of sockets of a computer’s processor definition matches that of the PVU entry.</td>
</tr>
<tr>
<td>Short description</td>
<td>A short description of this PVU mapping.</td>
</tr>
<tr>
<td>PVUs per core</td>
<td>Number of processor value units consumed (according to the IBM PVU chart) by each core.</td>
</tr>
<tr>
<td>Max cores</td>
<td>Maximum number of cores on the processor family, as shown in the IBM PVU Table (rightmost column under cores per socket).</td>
</tr>
<tr>
<td>Rule publication date</td>
<td>Date published by IBM on the PVU Rules table.</td>
</tr>
</tbody>
</table>

Use software counters to calculate IBM PVU licenses

To calculate IBM PVU licenses, you can create a software counter with the IBM PVU license type. For a given PVU software package, you only need to create the counter once and then it can be reused.
Role required: sam

Processor definitions are searched as licenses are counted. If a processor definition is found, but no PVU mapping link exists for the processor, the system automatically does the following to obtain a PVU mapping link.

- Pre-filtering based on processor name.
- Advanced filtering based on PVU mapping records’ condition field.
- If no exact match is found, the most expensive mapping is used to increase the chance of being compliant.

1. Navigate to Software Asset Reconciliation Software Counters.
2. Click New.
3. Enter a Name.
4. Select a Software Model.
5. Select a level of adherence to the license in the Enforce to field.
6. For License type, select Per Installation - IBM PVU.

7. Add information to other fields as necessary.
8. Right-click the header bar and select Save.
9. Click Count licenses.
10. In the Software Counter Results list, drill down to obtain summary and detailed information.
Installed with Software Asset Management plugin IBM PVU Process Pack

The following tables, fields, script includes, and business rules are installed with Software Asset Management plugin IBM PVU process pack.
Tables

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Processor Definition (cmdb_processor_definition)</td>
<td>Each row in this table describes a computer in terms of the attributes IBM uses for its PVU licensing model. A row can be associated with one or more (if they are all identical in terms of the attributes used for PVU licensing) discovered computers.</td>
</tr>
</tbody>
</table>

Script includes

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ProcessorDefinitionsUtils</td>
<td>Contains utilities for managing the Processor Definition (cmdb_processor_definition) table.</td>
</tr>
<tr>
<td>ProcessorValueUnitsUtils</td>
<td>Contains logic that determines the IBM PVU pricing associated with a given processor.</td>
</tr>
</tbody>
</table>

Business Rules

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>One and only one default mapping (sam_ibm_pvu_mapping)</td>
<td>Ensures only one default mapping by resetting the last resort flag for modified records and setting it to false for new records.</td>
</tr>
</tbody>
</table>

Software contracts

A software contract is a binding agreement between the owner of a software product and a buyer. The contract enables the buyer to use the software legally.

In the ServiceNow ITSA Suite, you can manage and track software contracts with the Contract Management application. When you create a new software contract, you can specify that the contract is an enterprise or subscription license.

View software contracts

You can view a list of created software contracts.

Role required: contract_manager
1. Navigate to Contract Software License.
2. Click a contract number to view its details.

Create software contracts

You can create a binding agreement that enables the buyer to legally use the software.

Role required: contract_manager
1. Navigate to Contract Software License.
2. Click New.
3. Complete the form.
4. Add the software license to the contract.
   Be sure to use the Software License option. The License Bundle and Software License Contracts options are deprecated.

Oracle process pack

The Oracle process pack is an add-on to Software Asset Management plugin that provides the ability to manage software licensed under the Oracle licensing model.

Administrators can use this feature to perform the following functions.
- Identify the software packs installed on Oracle database servers.
- See the software packs that are currently in use.
- List which options are installed and in use.

Oracle software counter

There are two distinct ways of counting Oracle software. Be sure that your Oracle models are set up accurately.

Note: Oracle license calculation types are available in the Software Counter form after you activate the Oracle process pack.

Oracle software that uses the Oracle Processor license calculation type counts by the number of processors on a server. This license calculation type must exist in the Software Installation (`cmdb_sam_sw_install`) table. A software installation record must be inserted with a discovery model that matches the correct Oracle software. For an install to be counted by an Oracle processor counter, the Installed on field on the Software Installation form should reference a configuration item with a Metric type of Oracle Processor.

Oracle software that uses the Oracle Named User or Oracle Named User Plus license calculation types count by number of unique users or number of unique users plus devices. This license calculation type must exist in the Software Usage (`cmdb_sam_sw_usage`) table. A software installation record must be inserted with a discovery model that matches the correct Oracle software. For a usage to be counted by an Oracle New User or Oracle New User Plus counter, the Target host field on the Software Usage (`cmdb_sam_sw_usage`) table should reference a configuration item with a Metric type of Oracle NU or Oracle NUP.

Oracle software models

In order to count Oracle software licenses, you must create software models for your Oracle software.

For more information, see Manage software models.

Activate the Software Asset Management plugin Oracle Process Pack

You can activate the Software Asset Management plugin - Oracle Process Pack (com.snc.sam.oracle.pp) plugin.

Role required: admin

1. Navigate to System Definition Plugins.
2. Find and click the plugin name.
3. On the System Plugin form, review the plugin details and then click the Activate/Upgrade related link.

If the plugin depends on other plugins, these plugins are listed along with their activation status.
If the plugin has optional features that are not functional because other plugins are inactive, those plugins are listed. A warning states that some files will not be installed. If you want the optional
features to be installed, cancel this activation, activate the necessary plugins, and then return to
activating the plugin.

4. If available, select the Load demo data check box.

Some plugins include demo data—sample records that are designed to illustrate plugin features for
common use cases. Loading demo data is a good policy when you first activate the plugin on a
development or test instance.

You can also load demo data after the plugin is activated by clicking the Load Demo Data Only
related link on the System Plugin form.

5. Click Activate.

Installed with the Oracle Process Pack

Activating the Oracle Process Pack plugin adds certain components.

The information from this table appears in the Software Counter Compliance Violations section of the
Software Model form.

Table 39: Software counter compliance violations table

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
</table>
| Software Counter Compliance Violations (sam_sw_counter_violation) | Used to store counter violations that are due to violations other than installs exceeding rights, such as:  
- Maximum CPU/user count exceeded (based on model limits)  
- Maximum or minimum rights rules not followed (based on model limits)  
- Option installed on a server with a non-option-supporting license (Oracle) |

Table 40: Fields

<table>
<thead>
<tr>
<th>Field</th>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Software counter (counter)</td>
<td>Software Counter Compliance Violations (sam_sw_counter_violation)</td>
<td>References the software counter that this violation belongs to. (Reference field to Software Counter table (sam_sw_counter).)</td>
</tr>
<tr>
<td>Cause (name)</td>
<td>Software Counter Compliance Violations (sam_sw_counter_violation)</td>
<td>An explanation of the violation.</td>
</tr>
<tr>
<td>Is an option (is_option)</td>
<td>Software Model (cmdb_software_product_model)</td>
<td>Indicates if the software model is an option or pack for some other software, such as Active Data Guard or Data Mining options for Oracle Enterprise Edition. This field only appears if the manufacturer is Oracle.</td>
</tr>
</tbody>
</table>
The Oracle Process Pack adds the following license calculation types.

Table 41: Oracle license calculation types

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oracle Named User</td>
<td>Oracle licensing scheme that counts by the number of unique users.</td>
</tr>
<tr>
<td>Oracle Named User Plus</td>
<td>Oracle licensing scheme that counts by the number of unique users and devices.</td>
</tr>
<tr>
<td>Oracle Processor</td>
<td>Oracle licensing scheme that counts by the number of processors on a server.</td>
</tr>
</tbody>
</table>

Create an Oracle software license

To use the Oracle process pack, you must create an Oracle software license.

Role required: sam

1. Navigate to Software Asset Software Licenses.
2. Click New.
3. Select Software License in the Model category field.
4. Select an Oracle model in the Model field.

The Oracle models in this list are created by the user. For more information, see Manage software models.

5. Ensure that the License metric field specifies the correct license calculation type.
6. Fill in the remaining fields, as appropriate.
7. Click Submit.
Validate the requirements to associate a software installation to Oracle mapping

Meeting recommended requirements ensures that you receive the highest quality results with Oracle mapping.

1. Use a discovery tool (such as ServiceNow Discovery) to identify software installations. Check that the added CPU information is correct.

2. **Activate the Software Asset Management plugin Oracle Process Pack.** This also activates Software Asset Management plugin if it is not already active.

3. Refresh processor definitions by navigating to Software Asset System and clicking Refresh Processor Definitions.

4. Ensure that the software models you want to manage with Oracle licensing are set up accurately. See *Creating a software model*.

5. **Create a software license** for your Oracle software. Ensure that the license is given the correct license metric.

   The License metric (metric_type) field on the Software License table is a reference field to the License Calculation table.

6. **Create a software counter** to calculate Oracle licenses with the matching license type.

7. Count licenses to determine compliance with Oracle guidelines.

Run the Oracle software counter

Running the Oracle software counter is a requirement to associate a software installation to Oracle mapping.

Role required: sam

1. Navigate to Software Asset Reconciliation Software Counters.
2. Click the name of the counter.
3. Click Count Licenses.

   You can view different types of software counter results.

Organization Management

The Organization Management application provides an easy way to perform such asset management tasks as updating users and adding vendors.

It includes managing your vendors and manufacturers, as well as managing locations.

Create a new vendor or manufacturer

You can create a new vendor, which is a company that sells assets or services that your organization purchases. You can also create a new manufacturer, which is a company that builds assets that your organization purchases.

Role required: user_admin

1. Navigate to one of the following:
   - Organization Vendors
   - Organization Manufacturers
   - Organization Companies

2. Switch to the Default view.
3. Click New in the record list.
4. Complete the form and select either Manufacturer or Vendor.
5. Click Submit.

![Vendor example](image)

**Figure 50: Vendor example**

**Locations module**

The Locations module is the Asset view of the Location table (cmn_location).

In addition to the physical specifics for the location, the Asset view includes the Stock room designation and a list of configuration items (CI) in stock at that location.
Contract Management

Manage and track contracts with the Contract Management application in the ServiceNow platform.

A contract is a binding agreement between two parties. In the ServiceNow platform, contracts contain detailed information such as the following.

- Contract number
- Contract start and end dates
- Active status
- Terms and conditions statements
- Documents
- Renewal information
- Financial terms

Contract Management is active by default. If the Cost Management plugin has been activated, Contract Management integrates with Cost Management to associate contracts with costs and determine the total cost of ownership. You can track recurring expenses with rate cards and expense lines. An administrator can activate the Cost Management plugin.

To use terms and conditions in Contract Management, you must activate the Managed Documents plugin.

Figure 51: Asset location
To associate contracts with work orders, you must activate the Work Management plugin. If you are using the Software Asset Management plugin, use the Software Licenses option.

Use the Contract Management Overview module

You can view information about your contract status in the Contract Management Overview module. It displays various contract management reports.

Role required: asset, contract_manager

Because the Contract Management Overview module is a type of homepage, you can add, delete, and rearrange reports on the page.

1. Navigate to Contract Overview.
2. Click elements within the reports to obtain more information.
   For example, click any of the colored bars in the Contract Expenditure by Type bar chart report to view detailed information.
Components installed with Contract Management

Several types of components are installed with Contract Management. Demo data is available.

Tables installed with Contract Management

Contract Management adds the following tables.

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asset Covered (clm_m2m_contract_asset)</td>
<td>Lists the assets covered by a contract. An asset can be covered by multiple contracts and a contract can have multiple assets.</td>
</tr>
<tr>
<td>Table</td>
<td>Description</td>
</tr>
<tr>
<td>-------</td>
<td>-------------</td>
</tr>
<tr>
<td>Asset Covered (clm_m2m_rate_card_asset)</td>
<td>Lists the rate cards that apply to an asset.</td>
</tr>
<tr>
<td>Condition (clm_condition_checker)</td>
<td>Lists the conditions and values for each condition checker.</td>
</tr>
<tr>
<td>Condition Checks (clm_condition_check)</td>
<td>Stores conditions and values that modify specified condition fields.</td>
</tr>
<tr>
<td>Contract (ast_contract)</td>
<td>Stores contract information.</td>
</tr>
<tr>
<td>Contract History (clm_contract_history)</td>
<td>Stores a copy of the contract when the start date, end date, or terms and conditions change.</td>
</tr>
<tr>
<td>Terms and Conditions (clm_terms_and_conditions)</td>
<td>Lists the terms and conditions used by contracts.</td>
</tr>
<tr>
<td>Terms and Conditions (clm_m2m_contract_and_terms)</td>
<td>Lists all terms and conditions available for use with contracts.</td>
</tr>
<tr>
<td>Users Covered (clm_m2m_contract_user)</td>
<td>Lists the users covered by contracts.</td>
</tr>
</tbody>
</table>

### User roles installed with Contract Management

Contract Management adds the following roles.

<table>
<thead>
<tr>
<th>Role</th>
<th>Contains Role</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>contract_manager</td>
<td>financial_mgmt_user</td>
<td>Manages the contract life cycle. Can create, edit, and delete contracts.</td>
</tr>
</tbody>
</table>

### Script includes installed with Contract Management

Contract Management adds the following script includes.

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ConditionChecks</td>
<td>Checks for matching conditions, such as for contract expirations and license compliance, defined in the Condition Checks (clm_condition_check) table.</td>
</tr>
<tr>
<td>ContractManagementUtils</td>
<td>Utilities that manage contract management actions, such as state transitions.</td>
</tr>
</tbody>
</table>

### Client scripts installed with Contract Management

Contract Management adds the following client scripts.

<table>
<thead>
<tr>
<th>Name</th>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calculate Tax Cost - Base cost</td>
<td>Contract (ast_contract)</td>
<td>Calculates the Tax cost field and the Total cost field on the Contract form when the Payment amount field changes.</td>
</tr>
<tr>
<td>Name</td>
<td>Table</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------------------</td>
<td>------------------</td>
<td>------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Calculate Tax Cost - Sales tax</td>
<td>Contract (ast_contract)</td>
<td>Calculates the Tax cost field and the Total cost field on the Contract form when the Sales tax field changes.</td>
</tr>
<tr>
<td>Calculate Tax Cost - Tax rate</td>
<td>Contract (ast_contract)</td>
<td>Calculates the Tax cost field and the Total cost field on the Contract form when the Tax rate field changes.</td>
</tr>
<tr>
<td>Ensure discount is valid percent</td>
<td>Contract (ast_contract)</td>
<td>Ensures that the Discount field does not contain a value less than zero or greater than 99.</td>
</tr>
<tr>
<td>Renew Cost Adjustment</td>
<td>Contract (ast_contract)</td>
<td>Sets the Percentage field on the Contract form to zero if the user sets a dollar amount for the cost adjustment.</td>
</tr>
<tr>
<td>Renew Cost Percentage</td>
<td>Contract (ast_contract)</td>
<td>Sets the Amount field on the Contract form to zero if the user enters a percentage for the cost adjustment.</td>
</tr>
<tr>
<td>Tax exempt/ rate</td>
<td>Contract (ast_contract)</td>
<td>Changes all tax-related fields on the Contract form to read-only if the Tax Exempt check box is selected.</td>
</tr>
<tr>
<td>Tax rate/exempt</td>
<td>Contract (ast_contract)</td>
<td>Changes all tax-related fields on the Contract form to writable if the Sales Tax check box is selected.</td>
</tr>
</tbody>
</table>

**Business rules installed with Contract Management**

Contract Management adds the following business rules.

<table>
<thead>
<tr>
<th>Name</th>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calculate projected costs (Reports)</td>
<td>Contract (ast_contract)</td>
<td>Calculates the projected monthly and annual costs for a contract when costs or payment schedule changes.</td>
</tr>
<tr>
<td>Calculate Totals with Tax</td>
<td>Contract (ast_contract)</td>
<td>Calculates the Tax cost and Total cost fields for a contract when the contract is created or updated.</td>
</tr>
<tr>
<td>ContractHistory</td>
<td>Contract (ast_contract)</td>
<td>Stores history when the start, end, or terms and conditions of a contract change.</td>
</tr>
<tr>
<td>Create Approval Record</td>
<td>Contract (ast_contract)</td>
<td>Updates contract Terms and Conditions and starts the contract approval workflow when a contract is sent for review.</td>
</tr>
<tr>
<td>Name</td>
<td>Table</td>
<td>Description</td>
</tr>
<tr>
<td>---------------------------------------</td>
<td>-----------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Flag terms and conditions</td>
<td>Terms and Conditions</td>
<td>Sets the Use flag on a Terms and Conditions record to true after the record is associated with a contract or to false after the record is disassociated from a contract.</td>
</tr>
<tr>
<td>Install Count for manual licenses</td>
<td>Software License Instance</td>
<td>Calculates and updates the number of computers a particular license is installed on when a software license instance is created or deleted.</td>
</tr>
<tr>
<td>Manage Contract Lifecycle</td>
<td>Contract</td>
<td>This business rule:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Updates the end date of a contract when a contract extension has been approved.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Renews the contract, updating its start date, end date, and base cost (if cost adjustments need to be applied) when a contract renewal has been approved and the renewal has reached its start date.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Runs the condition checks to evaluate if dates need to be changed when a contract is approved, or an extension or renewal is approved, or the start or end dates have changed.</td>
</tr>
<tr>
<td>Post Outage to News</td>
<td>Business Service</td>
<td>Posts a news article on the knowledge table when there is an outage.</td>
</tr>
<tr>
<td>Update contract cost per asset</td>
<td>Asset Covered</td>
<td>Updates the cost per unit value based on the total cost and number of assets associated to the contract.</td>
</tr>
<tr>
<td>Update Contract Lifetime Cost</td>
<td>Contract Rate Card [fm_contract_rate_card]</td>
<td>Calculates the lifetime cost of the contract by calculating the sum of the contract expense lines.</td>
</tr>
<tr>
<td>Updates After Contract Dates Change</td>
<td>Contract</td>
<td>Updates the Date added and Date removed fields for all assets and users associated with a contract if the contract end date changes.</td>
</tr>
<tr>
<td>Updates After Rate Card Dates Change</td>
<td>Contract Rate Card [fm_contract_rate_card]</td>
<td>Updates the related contract assets and users linked to the rate card when the end date is changed.</td>
</tr>
<tr>
<td>Verify contract’s start and end dates</td>
<td>Contract</td>
<td>Validates contract start and end dates and contract renewal start and end dates.</td>
</tr>
<tr>
<td>Name</td>
<td>Table</td>
<td>Description</td>
</tr>
<tr>
<td>------</td>
<td>-------</td>
<td>-------------</td>
</tr>
<tr>
<td>Verify purchase agreement discount price</td>
<td>Contract (ast_contract)</td>
<td>For contracts with the contract model Purchase Agreement, the business rule validates that the Discount field does not contain a value less than zero or greater than 99.</td>
</tr>
</tbody>
</table>

**Contract Management use**

Users with the contract_manager role can use the Contract Management application to create various types of contracts, such as leases, warranties, maintenance, and service.

You can add additional information to contracts, such as the following.

- Assets covered by the contract
- Users covered by the contract
- Terms and conditions associated with the contract
- Other documents related to the contract

Track the various stages of a contract from draft to closure by viewing contract history and running reports. Adjust, extend, and renew active contracts.

**Contract life cycle**

From creation until closure, contracts follow a life cycle that determines which fields can be edited.

When a contract is in Draft state, almost all fields on the contract record can be edited. After a contract moves past the Draft state, certain date, renewal, extension, and financial fields become read-only. The State field and Substate field are always read-only.

A scheduled job named Contract Compliance Checks runs on the Contract (ast_contract) table automatically each night. For more information about the scheduled job, see *Use Condition Check Definitions*. The scheduled job performs the following actions.

- Changes the contract state to Active if the contract is approved and reaches the specified start date.
- Renews the contract if the contract is approved for renewal and reaches the specified start date.
- Changes the contract state to Expired if the contract state is Active and reaches the end date.

Expense lines are only generated from contracts that are active or expired.

**Table 42: Contract states**

<table>
<thead>
<tr>
<th>State</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Draft</td>
<td>User adds information about the contract and specifies an approver.</td>
</tr>
<tr>
<td>Active</td>
<td>Contract was approved and has reached the specified start date.</td>
</tr>
<tr>
<td>State</td>
<td>Description</td>
</tr>
<tr>
<td>------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Expired</td>
<td>Contract reached the specified end date. Expired contracts with an active renewal workflow that are waiting for approval have a substate of Awaiting Review. Expired contracts with an active renewal workflow where the renewal was approved, but the renewal date has not yet passed, have a substate of Renewal Approved. Expired contracts with no active renewal or extension pending workflow have an empty substate.</td>
</tr>
<tr>
<td>Canceled</td>
<td>Contract was discontinued and is no longer active.</td>
</tr>
</tbody>
</table>

In addition to a state, a contract can also have a substate.

Table 43: Contract substates

<table>
<thead>
<tr>
<th>Substate</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Awaiting Review</td>
<td>Contract is being prepared for review.</td>
</tr>
<tr>
<td>Under Review</td>
<td>Contract is sent to the approver and the approver is reviewing the contract.</td>
</tr>
<tr>
<td>Approved</td>
<td>Contract is reviewed and accepted by the approver.</td>
</tr>
<tr>
<td>Rejected</td>
<td>Contract is reviewed and declined by the approver.</td>
</tr>
<tr>
<td>Renewal Approved</td>
<td>Contract renewal is approved by the approver.</td>
</tr>
<tr>
<td>Renewal Rejected</td>
<td>Contract renewal is rejected by the approver.</td>
</tr>
<tr>
<td>Extension Approved</td>
<td>Contract extension is approved by the approver.</td>
</tr>
<tr>
<td>Extension Rejected</td>
<td>Contract extension is rejected by the approver.</td>
</tr>
<tr>
<td>None</td>
<td>No substate is specified.</td>
</tr>
</tbody>
</table>

Contracts

A contract is a binding agreement between two parties.

In the ServiceNow platform, contracts contain detailed information such as contract number, start and end dates, active status, terms and conditions statements, documents, renewal information, and financial terms.

Working with contracts includes the following tasks and processes.

Create a contract

You can create a variety of contract models for leases, maintenance, or warranties.

Role required: contract_manager or admin

If a contract has one or more associated rate cards, the fields on the Contract form cannot be edited.

1. Navigate to Contract and select the type of contract, such as Insurance, Maintenance, or Service, or select All.
2. Click New.
3. Complete the form.
   Not all fields appear on all contract type forms.
<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>Unique number identifying the contract record.</td>
</tr>
<tr>
<td>Vendor</td>
<td>Vendor responsible for the contract. This field is mandatory when the contract model selected is NDA or Purchase Agreement.</td>
</tr>
<tr>
<td>Contract model</td>
<td>Model to which the contract is assigned. For example Lease, Maintenance, Warranty, or Service Contract.</td>
</tr>
<tr>
<td>Commitment</td>
<td>Amount committed to spend with this vendor during this time period, from the start to the end of the contract.</td>
</tr>
<tr>
<td>Discount</td>
<td>Discount the vendor has agreed to provide.</td>
</tr>
<tr>
<td>Contract number</td>
<td>Number assigned to the contract by the vendor.</td>
</tr>
<tr>
<td>State</td>
<td>Current state of the contract: Draft, Active, Expired, or Canceled.</td>
</tr>
<tr>
<td>Substate</td>
<td>Current substate of the contract. For example, Awaiting Review, Under Review, Approved, or Rejected.</td>
</tr>
<tr>
<td>License quantity entitled</td>
<td>Number of licenses included in the contract. This field is available for Maintenance and Software License contracts.</td>
</tr>
<tr>
<td>Short description</td>
<td>Brief description of the contract.</td>
</tr>
<tr>
<td>General section</td>
<td></td>
</tr>
<tr>
<td>Starts</td>
<td>Date on which the contract takes effect. This field is mandatory if the contract model is Purchase Agreement or NDA.</td>
</tr>
<tr>
<td>Ends</td>
<td>Date on which the contract expires. Leave the end date blank to create an open-ended contract. This field is mandatory if the contract model is Purchase Agreement or NDA.</td>
</tr>
<tr>
<td>PO Number</td>
<td>Purchase order number assigned to the contract.</td>
</tr>
<tr>
<td>Vendor account</td>
<td>Vendor account associated with the contract.</td>
</tr>
<tr>
<td>License type</td>
<td>Type of license: Enterprise, SaaS, or Subscription. This field is available for Maintenance and Software License contracts.</td>
</tr>
<tr>
<td>Application model</td>
<td>Application model associated with the contract.</td>
</tr>
<tr>
<td>Location</td>
<td>Location covered by the contract.</td>
</tr>
<tr>
<td>Contract administrator</td>
<td>Individual who works for the vendor and is responsible for managing the contract.</td>
</tr>
<tr>
<td>Approver</td>
<td>User who approves or rejects the contract. List is filtered to only show users with the itil role.</td>
</tr>
<tr>
<td>Description</td>
<td>Detailed description of the contract.</td>
</tr>
<tr>
<td>Renewal/Extension section</td>
<td></td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------------</td>
<td>------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Automatically renew/extend</td>
<td>Indicates whether or not the contract can be renewed at the end of its term.</td>
</tr>
<tr>
<td>Options</td>
<td>Duration of the contract renewal or extension. For example, 1 year.</td>
</tr>
<tr>
<td>Renewal/Extension date</td>
<td>Date on which the contract renewal or extension takes effect.</td>
</tr>
<tr>
<td>Renewal/Extension end date</td>
<td>Date on which the contract renewal or extension ends.</td>
</tr>
<tr>
<td>Renewal/Extension contact</td>
<td>Individual who works for the vendor and is responsible for renewing the contract.</td>
</tr>
<tr>
<td>Cost adjustment type</td>
<td>Type of cost adjustment applied to the contract: Fixed, Manual, or CPI (consumer price index).</td>
</tr>
<tr>
<td>Cost adjustment amount</td>
<td>Numerical increase or decrease in price of contract. To indicate a decrease in price, enter a negative number. Either a Cost adjustment or Cost adjustment percentage can be specified, but not both.</td>
</tr>
<tr>
<td>Cost adjustment percentage</td>
<td>Percentage increase or decrease in price of contract. To indicate a decrease in price, enter a negative percentage. Either a Cost adjustment or Cost adjustment percentage can be specified, but not both.</td>
</tr>
</tbody>
</table>

### Financial section

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost center</td>
<td>Cost center that is financially responsible for the asset.</td>
</tr>
<tr>
<td>Tax exempt</td>
<td>Indicates whether or not the contract is exempt from tax.</td>
</tr>
<tr>
<td>Sales tax</td>
<td>Indicates whether or not sales tax is applied to the total cost.</td>
</tr>
<tr>
<td>Effective tax rate</td>
<td>Effective tax rate to apply to the total cost, if applicable. Effective tax rate is usually the average tax rate charged.</td>
</tr>
<tr>
<td>Has rate card</td>
<td>Check box to indicate whether the contract has an associated rate card.</td>
</tr>
<tr>
<td>Invoice payment terms</td>
<td>Terms that explain how to pay the contract. For example, Net Monthly Account or Net 30.</td>
</tr>
<tr>
<td>Payment schedule</td>
<td>Schedule that defines when to make payments. For example, Monthly or Annually.</td>
</tr>
<tr>
<td>Payment amount</td>
<td>Amount which has been paid on the contract to date.</td>
</tr>
<tr>
<td>Tax cost</td>
<td>Total cost of the tax.</td>
</tr>
<tr>
<td>Total cost</td>
<td>Final cost of the contract after adjustments have been applied. If a contract has one or more rate cards, this field shows the combined value of all rate cards.</td>
</tr>
</tbody>
</table>

4. Right-click the form header and click Save.
5. Continue entering information in the additional sections and related lists that appear.

Table 45: Contract form fields and related lists

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Terms and Conditions section</td>
<td></td>
</tr>
<tr>
<td>Terms and conditions</td>
<td>Specific legal information in the contract.</td>
</tr>
<tr>
<td>Related lists</td>
<td></td>
</tr>
<tr>
<td>Assets Covered</td>
<td>Lists all assets covered by this contract.</td>
</tr>
<tr>
<td>Users Covered</td>
<td>Lists all users covered by this contract.</td>
</tr>
<tr>
<td>Contract used by</td>
<td>Lists all configuration items (CI) used in this contract.</td>
</tr>
<tr>
<td>Terms and Conditions</td>
<td>Lists all terms and conditions of this contract.</td>
</tr>
<tr>
<td>Expense Lines</td>
<td>Lists all expense lines in this contract.</td>
</tr>
<tr>
<td>Contract History</td>
<td>Displays the changes to the start and end dates of this contract and changes to the terms and conditions.</td>
</tr>
<tr>
<td>Service Offerings</td>
<td>Lists all service offerings from this vendor. This related list is available when Service Portfolio Management is activated.</td>
</tr>
<tr>
<td>Service Commitments for Contracts</td>
<td>Lists all service commitments for this vendor’s offerings. This related list is available when Service Portfolio Management is activated.</td>
</tr>
</tbody>
</table>

6. Perform one of the following actions.
   • Click Update to save and exit the contract.
   • Click Submit for Review to send notification to the approver.

Create a software maintenance contract example
One common use case for the Contract Management application is creating a contract to track maintenance payments for enterprise software. You can use this example to learn how to create a software maintenance contract.

Role required: contract_manager or admin

The goal of this example is to create a contract that shows the total amount of maintenance that must be paid for the software application, independent of different license purchases made over time. To use the steps below, the Software Asset Management plugin must be activated.

1. Create an application model, adding a Name and specifying Software License in Model categories.
2. Create a software model, adding a Name and Model Number, and selecting the application model created in step 1.
3. Follow the steps in Add a new software license to create a new software license, selecting the software model created in step 2.
5. Click New and enter the following information.
6. Right-click the form header and click Save. A number of related lists and sections appear.

7. In the Asset Covered related list, click New and enter the following information.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asset</td>
<td>Select the software license created in step 3.</td>
</tr>
<tr>
<td>Date added</td>
<td>Enter the value.</td>
</tr>
</tbody>
</table>

8. Click Submit.

9. Continue completing the form with the following information.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payment schedule</td>
<td>Select Annually.</td>
</tr>
<tr>
<td>Payment amount</td>
<td>Enter the value.</td>
</tr>
</tbody>
</table>

10. Complete the other fields as appropriate.
11. Click Update.
12. Submit the contract for review.

**Add an asset to a contract**
You can associate contracts with specific assets, including software licenses.

Role required: contract_manager or admin

Linking a contract with assets clarifies what the contract legally covers.
2. Select a contract.
3. In the Assets Covered related list, click New.
4. In Asset, select a specific asset that is covered by the contract.
5. In Date added, select the date the asset was added to the contract. The date can be in the past, the present, or the future.
6. In Date removed, select the date the asset was, or will be, removed from the contract. Specifying Date added and Date removed is useful for reporting.
7. Click Submit.

**Add a user to a contract**
A contract can cover specific users. For example, you may use a contract to hire a group of temporary workers.

Role required: contract_manager or admin
2. Select a contract.
3. In the Users Covered related list, click New.
4. In User, select a specific user covered by the contract.
5. In Date added, select the date the user was added to the contract. The date can be in the past, the present, or the future.
6. In Date removed, select the date the user was, or will be, removed from the contract. Specifying Date added and Date removed can be useful for reporting.
7. Click Submit.
Add a configuration item to a contract
Contracts can be associated with specific configuration items. You can link a contract with configuration items to clarify what the contract legally covers.

Role required: contract_manager or admin
2. Select a contract.
3. In the Contract used by related list, click New to create a new configuration item.
4. In the Contract used by related list, click Edit.
5. In the Collection configuration items list on the left, double-click a configuration item name.
   The item is added to the Contract used by List on the right.
6. Click Save.

Add a document to a contract
Contracts can be associated with documents. Linking a contract to related documents helps keep all relevant information about a contract together and easily accessible.

The Managed Documents plugin must be activated.

Role required: contract_manager or admin
2. Select a contract.
3. In the Documents related list, click Edit.
   All documents stored in the Managed Documents application appear in the Collection list. If the Collection list is long, create a filter of Type is Contract and click Run filter.
4. In the Collection list, double-click a document.
   The item is added to the Documents List.
5. Click Save.

Adjust a contract
After creating a contract, you can adjust it as necessary.

Role required: contract_manager or admin

For example, you may need to change the start date, end date, or payment amount for a contract. If a contract has a rate card, the rate card start date, end date, and base cost can also be adjusted. To adjust a contract, the State should be Active. If the end date of a contract rate card changes, the end date of any associated assets changes to match.
2. Select a contract in Active state.
3. Click Adjust.
4. Double-click in any field to edit information.

Table 46: Adjust contract values

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contract Start Date</td>
<td>Date on which the contract takes effect.</td>
</tr>
<tr>
<td>Contract End Date</td>
<td>Date on which the contract expires.</td>
</tr>
<tr>
<td>Contract Payment Amount</td>
<td>Total amount paid for the contract. If the contract has one or more rate cards, this field shows the total of all rate card base costs.</td>
</tr>
<tr>
<td>Rate Card Name</td>
<td>Name of the rate card.</td>
</tr>
<tr>
<td>Start date</td>
<td>Date on which the rate card values take effect.</td>
</tr>
<tr>
<td>End date</td>
<td>Date on which the rate card values expire.</td>
</tr>
<tr>
<td>Base cost</td>
<td>Amount that must be paid before taxes.</td>
</tr>
</tbody>
</table>

5. Click Apply changes to contract and rate cards.

*Renew a contract*
After creating a contract, you can renew it, if necessary.

Role required: contract_manager or admin

Contract information and history is retained when a contract is renewed. If the end date of the contract changes, the end date of any associated assets changes to match. You can renew a contract that meets the following conditions.

- State is Active or Expired
- Substate is None or Rejected

2. Select a contract in Active or Expired state.
3. Click Renew.
4. Complete the form.
### Table 47: Contract renewal fields

<table>
<thead>
<tr>
<th>Field</th>
<th>Descriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Renewal Contact</td>
<td>Individual who works for the vendor and is responsible for renewing the contract.</td>
</tr>
<tr>
<td>Renewal Start Date</td>
<td>Date on which the renewed contract takes effect.</td>
</tr>
<tr>
<td>Renewal Option</td>
<td>Length of time for the renewal, in years.</td>
</tr>
<tr>
<td>Renewal End Date</td>
<td>Date on which the renewed contract expires.</td>
</tr>
<tr>
<td>Cost Adjustment Type</td>
<td>Type of cost adjustment applied to the renewed contract: None, Fixed, Manual, or CPI.</td>
</tr>
<tr>
<td>Approver</td>
<td>User who approves or rejects the contract.</td>
</tr>
<tr>
<td>Cost Adjustment</td>
<td>Numerical increase or decrease in price of the renewed contract. To indicate a decrease in price, enter a negative number. A Cost Adjustment or Cost Adjustment Percentage can be specified, but not both.</td>
</tr>
<tr>
<td>Cost Adjustment Percentage</td>
<td>Percentage increase or decrease in price of the renewed contract. To indicate a decrease in price, enter a negative percentage. A Cost Adjustment or Cost Adjustment Percentage can be specified, but not both.</td>
</tr>
</tbody>
</table>

5. Perform one of the following steps.
   - To save all entered data and change the substate to Under Review, click Submit for Review. The contract is sent to the specified Approver.
   - To save all entered data and change the substate to Awaiting Review, click Save But Do Not Submit. The Renew button is available to submit the renewed contract for review at a later time.

6. Change any information on the Contract form, as necessary.
7. Click Update.

If you selected the Save But Do Not Submit option, ensure that you click Renew when you are ready to submit the contract renewal for approval.

### Extend a contract

After creating a contract, you can extend it, if necessary. Extending the end date retains contract information and history.

Role required: contract_manager or admin

When you extend a contract, the end date of any associated assets changes to match the new contract end date. All other contract dates, including notification dates, are recalculated automatically based on the new end date. You can extend a contract that meets the following conditions.

- State must be Active or Expired
- Substate must be None or Rejected

2. Select a contract in Active or Expired state.
3. Click Extend.
4. Select an option from Extension Option or enter an Extension End Date.
5. Complete the form.

Table 48: Extend the contract

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extension Contact</td>
<td>Individual who works for the vendor and is responsible for extending the contract.</td>
</tr>
<tr>
<td>Extension Option</td>
<td>Length of time for the extension, in years.</td>
</tr>
<tr>
<td>Extension End Date</td>
<td>Date on which the extended contract expires.</td>
</tr>
<tr>
<td>Cost Adjustment Type</td>
<td>Type of cost adjustment to apply to the extended contract: None, Fixed, Manual, or CPI.</td>
</tr>
<tr>
<td>Approver</td>
<td>User with the contract_manager role who approves or rejects the contract extension.</td>
</tr>
<tr>
<td>Cost Adjustment</td>
<td>Numerical increase or decrease in price of the extended contract. To indicate a decrease in price, enter a negative number. A Cost Adjustment or Cost Adjustment Percentage can be specified, but not both.</td>
</tr>
<tr>
<td>Cost Adjustment Percentage</td>
<td>Percentage increase or decrease in price of the extended contract. To indicate a decrease in price, enter a negative percentage. A Cost Adjustment or Cost Adjustment Percentage can be specified, but not both.</td>
</tr>
</tbody>
</table>

6. Perform one of the following tasks.

- To save all entered data and change the substate to Under Review, click Submit For Review. The contract can be sent to the specified Approver.
- To save all entered data and change the substate to Awaiting Review, click Save But Do Not Submit. The Extend button is available to submit the extended contract for review at a later time.

**Cancel a contract**

You can cancel a contract when the State is Active.

Role required: contract_manager or admin

After a contract is canceled, the following process occurs.

- The contract State changes to Canceled.
- Condition checkers are changed to inactive.
- Renew and Extend buttons become inactive.
- Contract rate cards become inactive.

2. Select a contract.
3. Click Cancel Contract.
4. Click Yes to confirm contract cancellation.
Verify contract administrator assignment for notification

An event runs automatically each night to send reminders to contract administrators about contract expiration dates so they can renew or renegotiate the contract. You can verify that the right contract administrator is assigned to the contract.

Role required: contract_manager or admin

When the contract.expiration event runs on the Contract (ast.contract) table each night, an email message is sent to the person identified as the contract administrator. This occurs at the following times.

• 90 days ahead of the contract expiration date
• 60 days ahead of the contract expiration date
• 30 days ahead of the contract expiration date
• On the contract expiration date

A user with the admin role can edit the contract.expiration condition check that processes contract notifications. Follow the procedure below to verify that the right contract administrator is assigned to the contract.

2. Select a contract.
3. Check that the Contract administrator field contains the correct name. A single name can be specified.

Send the contract for approval

You can send a contract that is in Draft state for approval.

Role required: contract_manager or admin

2. Select a contract in Draft state.
3. Select an Approver for the contract.
4. Click Submit For Review.
   An email message is sent to the selected approver and the contract Substate changes to Under Review.

Approve or reject a contract

You can approve or reject a contract if you are the contract manager.

Role required: contract_manager or admin

2. Select a contract in Requested state.
3. Perform one of the following tasks.
   
<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approve the contract</td>
<td>Click Approve. The contract Substate changes to Approved.</td>
</tr>
<tr>
<td>Reject the contract</td>
<td>Click Reject and enter a rejection reason in the Comments field. The contract Substate changes to Rejected</td>
</tr>
</tbody>
</table>

4. Click Update.
• A contract with a State of Draft and a Start Date set in the future is kept in Draft until the start date is reached. If the contract has a Substate of Approved, the system changes the State to Active and removes the Substate value.
• When a contract with a State of Draft and a Start Date set to a date in the past is approved, the contract State is automatically set to Active and Substate is left blank.

Show approval history on contracts
You can set a workflow property to ensure that approval history is saved to the contract approval history journal.

Role required: workflow_admin or admin

After a contract is sent to an approver for review, the approver name cannot be changed. If a contract is rejected by the approver, the same approver or a different approver can be specified before the contract is sent for approval again. Set the following system property so this activity is recorded in the approval history journal.

1. Navigate to Workflow Administration Properties.
2. Select the Yes check box for the Log User approval activity - such as requested, approved and rejected - in the Approval History journal when using workflows to manage the approvals for a task. property.
3. Click Save.

Terms and conditions
You can add terms and conditions to a contract to keep all documentation that is relevant to a contract in one location.

The terms and conditions can be searched and used in reports. If multiple terms and conditions records are added to a single contract, set an order for the records so they appear in a specific sequence. The terms and conditions fields become read-only after a contract is sent for approval.

Users with the contract_manager role can read contract history and add terms and conditions.

There are three procedures involved in adding terms and conditions to a contract, as follows.
• Create a terms and conditions record.
• Add the record to a contract.
• Build a terms and conditions document for the contract.

Add terms and conditions to a contract
After you create a terms and conditions record, add the record to a contract.

Role required: contract_manager or admin

2. Select a contract.
3. In the Terms and Conditions section, double-click Insert a new row.
4. Click the reference lookup icon and select a terms and conditions record from the list.
5. Enter a number in Order to specify the sequence in which the record should appear in the terms and condition document.

Note: If you attempt to enter a duplicate terms and conditions record for a contract and save the record, an error message appears and the new duplicate record is not added.

Create a terms and conditions record
You can create a terms and conditions record to add to a contract.
Role required: contract_manager or admin

2. Click New.
3. Enter a Name.
4. In Description, enter the text or copy and paste text from an existing file.
5. Format the text using the HTML formatting bar.
6. Click Submit.

Build a terms and conditions document within a contract

After adding one or more terms and conditions records to a contract, you can build a terms and conditions document within the contract.

Role required: contract_manager or admin

The terms and conditions records are added in the sequence specified in the Order field.

2. Select a contract.
3. Ensure that one or more terms and conditions records have been added to the Terms and Conditions section.
4. In Related Links, click Build Terms and Conditions.
   All records from the Terms and Conditions related list are added to the Terms and Conditions section of the contract record.
Create a contract rate card

You can create rate cards to track contract expenses. Rate cards help to record and allocate costs. You must activate [Cost Management](#) to use rate cards.

Role required: financial_mgmt_user, asset, or contract_manager

A contract rate card provides detailed price information for a contract and enables you to generate expense lines for recurring expenses automatically. There can be multiple rate cards for the same contract.

Consider the following case: an organization has a contract with a third-party company, which oversees technical operations in the organization’s datacenters. The contract costs to use a specific server model in the New York datacenter are different from using the same server model in the London datacenter. There are two rate cards to detail these costs separately.

2. Select a contract.
3. In the Contract Rate Cards related list, click New.
4. Complete the form.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>The contract rate card number.</td>
</tr>
<tr>
<td>Contrct</td>
<td>The internal contract number.</td>
</tr>
<tr>
<td>Summary type</td>
<td>The contract rate card type. Categorizing rate cards can be useful for reporting. Select Grow Business, Run Business, or Transform Business.</td>
</tr>
<tr>
<td>Name</td>
<td>A descriptive name for the contract rate card.</td>
</tr>
<tr>
<td>Active</td>
<td>Check box that indicates whether the rate card is available for use.</td>
</tr>
<tr>
<td>Short description</td>
<td>A brief description of the contract rate card.</td>
</tr>
<tr>
<td>Start date</td>
<td>The date on which the contract rate card becomes active. Expense lines are generated for costs incurred beginning on the date specified. For financial calculations to work, the date cannot be before the start date of the contract.</td>
</tr>
<tr>
<td>End date</td>
<td>The date on which the contract rate card becomes inactive. No expense lines are generated for costs incurred after the end date. For financial calculations to work, the date cannot be after the end date of the contract. The date is automatically set to the end date of the contract if no value is entered and the contract has an end date.</td>
</tr>
<tr>
<td>Interval</td>
<td>The amount of time between rate card charges. For example, Monthly, Quarterly, or Annually.</td>
</tr>
<tr>
<td>Cost center</td>
<td>The cost center financially responsible for the rate card.</td>
</tr>
<tr>
<td>Last processed</td>
<td>The most recent date on which the rate card was charged.</td>
</tr>
<tr>
<td>Next process</td>
<td>The next date on which the rate card will be charged.</td>
</tr>
<tr>
<td>Description</td>
<td>Detailed information about the rate card.</td>
</tr>
<tr>
<td>Sales tax</td>
<td>Check box that indicates whether to apply sales tax to the total cost.</td>
</tr>
<tr>
<td>Tax rate</td>
<td>The effective tax rate to apply to the total cost. Tax rate is usually the average tax rate charged.</td>
</tr>
<tr>
<td>Distribute cost</td>
<td>The method for distributing the amount listed in Base cost and generating expense lines.</td>
</tr>
<tr>
<td>Value</td>
<td>Type of value to use when Allocate and distribute cost based on value is selected in the Distribute cost field.</td>
</tr>
<tr>
<td>Base cost</td>
<td>The amount that must be paid before taxes.</td>
</tr>
<tr>
<td>Tax cost</td>
<td>The total cost of the tax.</td>
</tr>
</tbody>
</table>
5. Click Submit.

*Create a new expense line*

Typically, expense lines are automatically generated based on assets or users, but you can create a new expense line manually if needed.

**Role required:** asset or contract_manager

2. Select a contract.
3. In the Expense Lines related list, click New.
4. Complete the form.

Table 49: Expense line table

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>The unique number identifying the expense line.</td>
</tr>
<tr>
<td>Date</td>
<td>The date on which the expense line was created.</td>
</tr>
<tr>
<td>Rate Card</td>
<td>The identification number of the rate card to which the expense line is associated.</td>
</tr>
<tr>
<td>Source ID</td>
<td>The identification number of the item associated with the expense line. If this field is filled in, corresponding information is automatically added to the Source fields on this form.</td>
</tr>
<tr>
<td>Amount</td>
<td>The monetary value of the item specified in the Source ID field. Enter a negative value to indicate a credit.</td>
</tr>
<tr>
<td>Process date</td>
<td>The date the expense line is processed.</td>
</tr>
<tr>
<td>Inherited</td>
<td>Check box that indicates whether the expense line is located on another expense line.</td>
</tr>
<tr>
<td>State</td>
<td>The current state of the expense line, either Pending or Processed.</td>
</tr>
<tr>
<td>Summary type</td>
<td>The expense line category: Grow Business, Run Business, or Transform Business. Categorizing expense lines can be useful for reporting.</td>
</tr>
<tr>
<td>Short description</td>
<td>A brief description of the expense line.</td>
</tr>
<tr>
<td>Asset</td>
<td>The identification number of the asset associated with the expense line, if any.</td>
</tr>
<tr>
<td>Fixed asset</td>
<td>Fixed asset that contains the asset in this expense line. A fixed asset is a container that holds one or more individual assets, including hardware or software assets. The system auto-populates this field with the appropriate fixed asset if the named Asset is contained within that fixed asset.</td>
</tr>
</tbody>
</table>
5. Click Submit.

Generating expense lines based on assets or users
An expense line is an expense amount at a given point in time and the record that incurred or generated the expense. You can generate expense lines based on assets or users assigned to the contract.

Role required: financial_mgmt_user, asset, or contract_manager

Generating expense lines is a three-step procedure.

Add a user or asset to a contract
You can add a user or asset to a contract to generate expense lines.

Role required: financial_mgmt_user, asset, or contract_manager
2. Create a new contract or select an existing contract.
3. In the Assets Covered or Users Covered related list, click New.
4. Specify an Asset or User.
5. Specify a Date Added.
6. Click Submit.
7. Repeat the previous steps to add more assets or users to the contract.

Create a rate card and assign a user or asset
You can assign a user or asset when you create a rate card. You can only assign the user or asset that is assigned to the contract.

Role required: financial_mgmt_user, asset, or contract_manager
2. Select a contract with an assigned user or asset.
3. In the Contract Rate Cards related list, click New.
4. Specify a Start date.
   For financial calculations to work, the date cannot be before the start date of the contract.
5. Right-click the header bar and select Save.
6. In the Asset Covered or Rate Card Users related list, click New.
7. Select the Asset or User who is assigned to the contract.
   Only assets and users associated with the parent contract are listed.
8. Specify a Date Added.
9. Click Submit.
Configure rate card expense generation

After assets or users are added to the rate card, you can use the Distribute cost field in the Financial section of the contract to generate rate card expenses.

Role required: financial_mgmt_user, asset, or contract_manager

2. Select the contract to generate expenses.
3. In the Contract Rate Card related list, select a rate card.
4. In Distribute cost, select one of the following options to distribute the amount listed in Base cost.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Split expense lines evenly across assets</td>
<td>Select Allocate and distribute cost per asset. For example, with a $100 Base cost and two assets, two expense lines for $50 are created.</td>
</tr>
<tr>
<td>Split expense lines across assets based on asset value</td>
<td>Select Allocate and distribute cost based on value. The Value field displays with Cost and Residual Cost options. The cost is derived from the Cost or Residual Cost field on an asset record. If there are multiple assets on the rate card, the cost or residual cost is distributed based on the value of the assets. For example, if you select the Cost option with a $100.00 Base cost, one asset worth $70, and one asset worth $30, two expense lines are created, one for $70 and one for $30.</td>
</tr>
<tr>
<td>Split expense lines evenly across users</td>
<td>Select Allocate and distribute cost per user. For example, with a $100 Base cost and two users on the contract, two expense lines for $50 are created.</td>
</tr>
<tr>
<td>Allocate the cost to the contract instead of the individual assets</td>
<td>Select Allocate cost to contract.</td>
</tr>
</tbody>
</table>

5. Click Update.

Expense lines are automatically generated by a scheduled job for costs incurred between the rate card Start date and End date. The scheduled job, Process FM Costs, runs on the Contract [ast_contract] table once per day. Expense lines are only generated from contracts with the Active or Expired state. You may want to generate expense lines for expired contracts to track previous expenses.

View contract expense lines

You can view and audit all the expenses recorded for a given contract in the Expense Lines related list on a contract record.

Role required: financial_mgmt_user, asset, or contract_manager

2. Select a contract.
3. Select the Expense Lines related list.
4. Select an expense line record to view.

Information such as expense line details, total cost of the contract, and the contract current value is listed.

Monitor a contract

You can monitor contracts by viewing contract history and creating contract reports.
Role required: asset or contract_manager

If changes are made to a contract start date, end date, or terms and conditions, a copy of the contract is automatically saved and placed in contract history. This is useful for tracking changes to a contract and keeping an audit trail. Configure the Contract History related list to include columns for creation and update so you can easily see who edited the contract.

2. Select a contract.
3. View the Contract History related list and perform one of the following actions.
   - If earlier versions of the contract exist, click a date in the Contract Starts column to view a version.
   - If an earlier version of the contract does not exist, change the contract’s Start date or End date. Right-click in the header bar and select Save. In the Contract History related list, click a date in the Contract Starts column to view the earlier version.

Run contract reports
A variety of contract reports are available to help track and manage contracts.

1. Navigate to Reports View / Run.
2. Select one of the following reports to run.

Table 50: Contract reports

<table>
<thead>
<tr>
<th>Report</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active Contracts by Cost Per Unit</td>
<td>All active contracts grouped in ascending order by average cost per unit.</td>
</tr>
<tr>
<td>Active Contracts by Lifetime Cost</td>
<td>All active contracts with an associated rate card grouped in ascending order by total cost. Total cost is measured from the beginning of the contract to the report run date.</td>
</tr>
<tr>
<td>Active Contracts by Monthly Cost</td>
<td>All active contracts grouped in ascending order by cost per month.</td>
</tr>
<tr>
<td>Active Contracts by Vendor</td>
<td>All active contracts alphabetically by vendor.</td>
</tr>
<tr>
<td>Active Contracts by Yearly Cost</td>
<td>All active contracts grouped in ascending order by cost per year.</td>
</tr>
<tr>
<td>All Contracts by State</td>
<td>Contracts grouped by state, such as Draft, Active, or Expired, in bar chart format</td>
</tr>
<tr>
<td>Asset Contracts by Type</td>
<td>All active contracts for assets grouped by type, in pie chart format.</td>
</tr>
<tr>
<td>Asset Contracts List</td>
<td>All active contracts for assets by contract number.</td>
</tr>
<tr>
<td>Contract Expenditure by Type</td>
<td>Total contract expenses by type, such as lease, maintenance, or warranty, in bar chart format.</td>
</tr>
<tr>
<td>Contract Expenditure by Vendor</td>
<td>Total costs of all contracts associated with a specific vendor, in bar chart format.</td>
</tr>
<tr>
<td>Contract Pipeline Report</td>
<td>All contracts with a state of Draft, Active, or Expired and a substate of Awaiting Review or Under Review, in bar chart format.</td>
</tr>
<tr>
<td>Expiring Contracts</td>
<td>All contracts expiring in the next 90 days.</td>
</tr>
</tbody>
</table>
Condition check definitions

Condition check definitions enable you to define logical conditions that indicate when to change a specific field value in a record.

A scheduled job, called Contract Compliance Checks, evaluates these condition check definitions nightly by running the condition checker. Use this condition checker to check start dates and end dates and to set expiration levels for contracts.

For example, a contract has a start date of March 1st. When the condition checker runs on March 1st, it verifies that the contract Substate is Approved and sets the contract State to Active based on the Start Date field.

The nightly condition checker sets the appropriate expiration level for active contracts based on the contract End Date. The expiration level can be viewed in the Contracts list. Knowing the expiration level can help contract managers renew or extend a contract before it expires.

Define a condition check

You can define a condition check to change values in a contract when the Contract Compliance Checks scheduled job runs each night.

Role required:

1. Navigate to Contract Administration Condition Check Definitions.
2. Click New.
3. Complete the form.

Table 51: Condition check definition fields

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table</td>
<td>The table to which the condition applies. For a contract check definition, select Contract (ast.contract).</td>
</tr>
<tr>
<td>Category</td>
<td>The category for the condition check. Select Contract or None. The category is used for organizing information and reporting.</td>
</tr>
<tr>
<td>Condition field</td>
<td>The field to be updated, typically Expiration level or State.</td>
</tr>
<tr>
<td>Event name</td>
<td>The name for the event to be fired when this condition changes the value of the field. Create a name using this syntax: &lt;table_name&gt;.&lt;condition_field&gt;, for example, contract.validation.</td>
</tr>
<tr>
<td>Order</td>
<td>The order in which the conditions are evaluated.</td>
</tr>
</tbody>
</table>

4. Right-click the header bar and click Save.
   The Conditions related list appears.
5. In the Conditions related list, click New.
6. Complete the form.
Table 52: Conditions fields

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>The value the field is set to, if the expiration conditions are met.</td>
</tr>
<tr>
<td>Condition check</td>
<td>The associated condition check.</td>
</tr>
<tr>
<td>Table</td>
<td>The table associated with the condition check.</td>
</tr>
<tr>
<td>Event name</td>
<td>The name of the event this condition triggers.</td>
</tr>
<tr>
<td>Expiration Condition</td>
<td>The condition that must be true for the Condition check field to be set to this value (the Name). Add as many conditions as are needed.</td>
</tr>
<tr>
<td>Compliant state</td>
<td>System field. Do not use.</td>
</tr>
<tr>
<td>Order</td>
<td>The order in which the conditions are evaluated. The first condition that is found to match, where the Expiration Condition is true, is used, and no others are checked.</td>
</tr>
</tbody>
</table>

7. Click Submit. The Condition Checks form reopens with the new condition listed in the related list.
8. Continue adding conditions as needed, following the steps above.

Procurement

Procurement managers can use the Procurement application to create purchase orders and to obtain items for fulfilling service catalog requests.

Procurement offers the ability to perform the following functions.

- Track service catalog requests
- Create and manage purchase orders
- Create and manage transfer orders
- Receive assets

Procurement roles

The Procurement application uses the following roles.
### Procurement workflows

Procurement uses the following workflows.

- In the Service Catalog Request workflow, items ordered from the service catalog that cost over one thousand dollars require approval.
In the Source Request workflow, catalog tasks are created so that a procurement manager can source the item by creating a transfer order or purchase order.

These workflows are provided in the base system. You can edit these workflows in the graphical workflow editor or create a workflow to better fit your organization’s procurement needs.
Use the Procurement Overview module

Use the gauges on the Procurement Overview homepage to help you track and manage requests, purchase orders, and other important aspects of the procurement process.

Role required: procurement_admin or procurement_user

1. Navigate to ProcurementOverview.
2. Click elements within the gauges to obtain more information.
   For example, click a request number to view the request record.

Activate Procurement

You can activate the Procurement plugin that provides core procurement capabilities.

Role required: admin

1. Navigate to System Definition Plugins.
2. Find and click the plugin name.
3. On the System Plugin form, review the plugin details and then click the Activate/Upgrade related link.
   If the plugin depends on other plugins, these plugins are listed along with their activation status.
   If the plugin has optional features that are not functional because other plugins are inactive, those plugins are listed. A warning states that some files will not be installed. If you want the optional features to be installed, cancel this activation, activate the necessary plugins, and then return to activating the plugin.
4. If available, select the Load demo data check box.
   Some plugins include demo data—sample records that are designed to illustrate plugin features for common use cases. Loading demo data is a good policy when you first activate the plugin on a development or test instance.
   You can also load demo data after the plugin is activated by clicking the Load Demo Data Only related link on the System Plugin form.
5. Click Activate.

Components installed with Procurement

Several types of components are installed with Procurement.

Demo data is available with Procurement. The demo data provides sample requests, purchase orders, purchase order line items, and receiving slips.

Business rules installed with Procurement

Procurement plugin adds the following business rules.

<table>
<thead>
<tr>
<th>Business rule</th>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adjust remaining quantity</td>
<td>Purchase order line items (proc_po_item)</td>
<td>Calculates the remaining quantity of items ordered on a purchase order line items by subtracting the amount received from the amount ordered.</td>
</tr>
<tr>
<td>Can request be sourced</td>
<td>Request (sc_request)</td>
<td>Checks if a request can be sourced.</td>
</tr>
<tr>
<td>Business rule</td>
<td>Table</td>
<td>Description</td>
</tr>
<tr>
<td>---------------------------------------</td>
<td>------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Cancel Procurement Orders</td>
<td>Request</td>
<td>Cancels all unreceived purchase orders and unshipped transfer order lines associated with the request’s items if the request state changes to Closed Cancelled.</td>
</tr>
<tr>
<td>Check if req item is sourced</td>
<td>Requested Item</td>
<td>Sets the Sourced field on the parent request to true if all requested items have been sourced.</td>
</tr>
<tr>
<td>Check if request is sourceable</td>
<td>Requested Item</td>
<td>Checks if the request associated with a requested item can be sourced (obtained from a transfer order or by creating a purchase order to a vendor).</td>
</tr>
<tr>
<td>Create Assets</td>
<td>Receiving Slip Line</td>
<td>If the purchase order line item is available, creates the assets for a receiving slip line when the slip line assets are received.</td>
</tr>
<tr>
<td>Handle roll up states and assets removal</td>
<td>Purchase order line items</td>
<td>Manages purchase order line items if they are canceled or received. If a purchase order line is canceled, this business rule deletes any pre-created assets. This business rule also checks the status of other purchase order lines that share the same purchase order and, if necessary, updates the status of the purchase order. For example, when the last purchase order line is received, the status of the purchase order changes to Received.</td>
</tr>
<tr>
<td>Redirect TOL to existing TO-Procurement</td>
<td>Transfer Order Line</td>
<td>Attaches a transfer order line to an existing transfer order if the transfer order is in the Draftstage and has the same From stockroom and To stockroom values as the transfer order line.</td>
</tr>
<tr>
<td>Shipping Cost Changes</td>
<td>Purchase Order</td>
<td>Recalculates the total cost of the purchase order if the shipping rate changes.</td>
</tr>
<tr>
<td>State Change</td>
<td>Transfer Order Line</td>
<td>Marks the requested item as Received if the state of the associated transfer order line changes to Received.</td>
</tr>
<tr>
<td>State Change</td>
<td>Purchase order line items</td>
<td>Sets the time at which the purchase order line item is ordered and updates the original requested item when the purchase order line item is received.</td>
</tr>
<tr>
<td>Business rule</td>
<td>Table</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-------------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>State Change PO</td>
<td>Purchase Order (proc_po)</td>
<td>Changes the purchase order line item status when the status of the associated purchase order changes.</td>
</tr>
</tbody>
</table>
| Total Cost                    | Purchase order line items (proc_po_item) | Calculates the total order cost based on the cost of individual items and the quantity ordered. When you receive a purchase order line item, this business rule also takes the following steps.  
  • Populates the List price field with the value from the Cost field unless you enter a different value.  
  • Calculates the Total list price field value by multiplying the List price and Ordered quantity values. |
| Update expected delivery date for PO | Purchase order line items (proc_po_item) | Sets the Expected delivery date for purchase orders to the latest purchase order line Expected delivery date. |
| Update expected delivery date for POLs | Purchase Order (proc_po) | Sets the Expected delivery date of associated purchase order lines to the purchase order’s Expected delivery date if at least one of the following conditions is true.  
  • The purchase order line has no expected delivery date.  
  • The purchase order line’s expected delivery date is later than the purchase order’s expected delivery date.  
  • The purchase order line’s expected delivery date is the same as the purchase order’s previous delivery date. |
| Update Ordered Date           | Purchase Order (proc_po)            | Sets the Ordered date field to the date and time at which the status of the purchase order is set to Ordered. |
| Update PO                     | Purchase order line items (proc_po_item) | Updates the purchase order if the cost of any purchase order line item changes. |
| Update Purchase Order Line    | Receiving Slip Line (proc_rec_slip_item) | Updates the Quantity received field on the associated purchase order line item when a receiving slip item is received. |
### Business rule

<table>
<thead>
<tr>
<th><strong>Business rule</strong></th>
<th><strong>Table</strong></th>
<th><strong>Description</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Update Request Item CI</td>
<td>Hardware (alm_hardware)</td>
<td>Sets the Configuration item field on the catalog task and requested item to the related hardware CI created during the procurement process.</td>
</tr>
</tbody>
</table>

### Client scripts installed with Procurement

Procurement plugin adds the following client scripts.

<table>
<thead>
<tr>
<th><strong>Client script</strong></th>
<th><strong>Table</strong></th>
<th><strong>Description</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Hide request item if request is not empty</td>
<td>Catalog Task (sc_task)</td>
<td>Displays the task’s Request item and the request item’s Requested for value if the task is associated with a requested item and not directly with a request. Otherwise, if the task is associated with a request, the client script displays the Request and the request’s Requested for value.</td>
</tr>
<tr>
<td>Purchase Order Line Mandatory</td>
<td>Receiving Slip Line (proc_rec_slip_item)</td>
<td>Changes the Purchase Order Line field on the Receiving Slip Line form to mandatory if the associated receiving slip has a listed purchase order.</td>
</tr>
</tbody>
</table>

### Script includes installed with Procurement

Procurement plugin adds the following script include.

<table>
<thead>
<tr>
<th><strong>Script include</strong></th>
<th><strong>Description</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>ProcurementUtils</td>
<td>Provides utilities for Procurement.</td>
</tr>
</tbody>
</table>

### Tables installed with Procurement

Procurement plugin adds the following tables.

<table>
<thead>
<tr>
<th><strong>Table</strong></th>
<th><strong>Description</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Purchase Order (proc_po)</td>
<td>Stores information about items ordered, cost of items ordered, and users that require the items for orders placed with a vendor.</td>
</tr>
<tr>
<td>Purchase order line items (proc_po_item)</td>
<td>Stores information about items and quantity ordered on purchases order.</td>
</tr>
<tr>
<td>Receiving Slip (proc_rec_slip)</td>
<td>Stores receiving information for items ordered with a purchase order. Can reference multiple receiving slip lines.</td>
</tr>
<tr>
<td>Receiving Slip Line (proc_rec_slip_item)</td>
<td>Stores receiving information for items ordered on a specific purchase order line, such as the items ordered, quantity ordered, and who ordered them.</td>
</tr>
</tbody>
</table>
User roles installed with Procurement

Procurement plugin adds the following user roles.

<table>
<thead>
<tr>
<th>Role</th>
<th>Contains roles</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>procurement_admin</td>
<td>procurement_user</td>
<td>Can create purchase orders without a request. Can view requests and requested items. Can view transfer orders. Can create a purchase order or transfer order when sourcing items for a request. Can view the vendor catalog. Can refresh, add, delete, and rearrange gauges in the Procurement Overview module.</td>
</tr>
<tr>
<td>procurement_user</td>
<td>financial_mgmt_user, model_manager</td>
<td>Can create purchase orders without a request. Can view requests and requested items. Can view transfer orders. Can create a purchase order or transfer order when sourcing items for a request. Can view the vendor catalog. Can view and refresh gauges in the Procurement Overview module.</td>
</tr>
</tbody>
</table>

Request items source

A request from the service catalog can contain multiple items that need to be obtained or sourced. The following diagram illustrates the different methods for sourcing items.
Figure 55: Methods of sourcing requested items

**Note:** Only items with an assigned model can be sourced. Sourcing bundles is not supported.

**Purchase order for sourcing requested items**

Items not in a stockroom can be ordered with a purchase order and delivered to a destination stockroom. In the same purchase order you can order multiple items.
You can choose to create the hardware asset and reserve it for a user after creating the purchase order, or you can do the same after you receive the items. For software items, you cannot pre-create the assets and assign them before they are received.

Transfer order for sourcing requested hardware items

To source requested hardware items, create a transfer order. You can choose to transfer the hardware assets from:

- One source stock room to multiple destination stockrooms.
- In case, if one source stock room doesn’t have sufficient stock, you can specify multiple stockrooms so that items can be transferred to single or multiple destination stockrooms.

Add assignment for sourcing requested software items

To source software items, add assignments wherein, you need to assign rights of the software license. You can assign rights to a user or device so that they are entitled to use the software.

Create a purchase order from a request

You can create a purchase order directly from a request. This enables procurement managers to obtain items and fulfill requests from the Service Catalog. You can create multiple purchase orders from a request.

Role required: procurement_admin or procurement_user

1. Navigate to ProcurementRequestsRequests.
2. Click the Number of a request that has been approved but not sourced. Look in the Request State and Sourced columns.
3. In the Catalog Tasks related list, click a Number.
4. Click Source Request.
   The Source Request screen is displayed with a list of all the requested items.
5. Click Add Purchase Order in the requested item section.
6. In the Vendor list, select the vendor from which the requested item or items should be delivered.
7. In the Out of Stock field, verify if the value is false. If the vendor doesn’t have stock, the field value will be true.
8. In the Quantity field, specify the quantity you want to order.
9. In the Destination Stockroom list, select the destination to which the requested item or items should be delivered.
10. Select the Consolidate PO check box to combine the listed items with existing purchase orders.
    When Consolidate Purchase Orders is checked, all items sourced from the same vendor on the same request are placed on the same purchase order. When a vendor is selected, the system automatically searches for purchase orders that have been created for the same request, have the same Vendor selected, and have the Requested status. If the system finds a match, all items are placed on the same purchase order and can be ordered together. If the system does not find a match, a new purchase order is created.
    For example, if you are purchasing 25 phones from Apple and an open purchase order already exists for Apple, the 25 phones are added to the open purchase order. If there are no open purchase orders for the selected vendors, new purchase orders are created. Items ordered from the same vendor are grouped together. Different items are shown on separate lines on the purchase order.
11. Click Submit.
The catalog task reopens and you see a message that the purchase order was created. When you view the request, the Sourced check box is selected.

Create a transfer order from a request

You can create a transfer order directly from a request to source hardware items and consumables from stockrooms.

Role required: procurement_admin or procurement_user

1. Navigate to ProcurementRequestsRequests.
2. Click the request Number of a request that has been approved but not sourced.
   Check the Request State and Sourced columns.
3. In the Catalog Tasks related list, click a Number.
4. Click Source Request.
   The Source Request screen is displayed with a list of all the requested items.
5. Click Add Transfer Order in the requested hardware item section.
6. In the Source Stockroom list, select a stockroom from which the hardware item should be sourced.
7. The In Stock column, displays the total stock available with the selected source stockroom.
8. In the Transfer Quantity field, specify the quantity you want transfer.
9. In the Destination Stockroom list, select the destination to which the requested item or items should be delivered.
10. Click Submit.
    A transfer order is created to move the item or items from the Source Stockroom location to the Destination Stockroom location. When you view the request, the Sourced check box is selected.

Add an assignment from a request

You can add assignments directly from a request to source rights from software licenses.

Role required: procurement_admin or procurement_user

1. Navigate to ProcurementRequestsRequests.
2. Click the request Number of a request that has been approved but not sourced.
   Check the Request State and Sourced columns.
3. In the Catalog Tasks related list, click a Number.
4. Click Source Request.
   The Source Request screen is displayed with a list of all the requested items.
5. Click Add assignments in the requested software item section.
6. In the License Name list, select a license from which the software rights should be sourced.
7. The Available Rights column, displays the total rights available with the selected license.
8. In the Rights field, specify the rights you want to assign.
9. From the Type list, select whether to assign the rights to a user or device.
10. In the Assigned\Allocated list, select the user or device to whom the requested item should be assigned.
11. Click Submit.
    A assignment is created to assign rights from the License Name location to the Assigned\Allocated user or device. When you view the request, the Sourced check box is selected.
12. If Software Asset Management is active, you are prompted to run the software counter. It is recommended that you run the counter, to ensure that you are in compliance.
13. Click OK.
Procurement purchase order management for assets

Accurate purchase order information is important for invoice tracking, receiving, and reporting in the ServiceNow platform.

The Procurement application enables users with an appropriate procurement role to manage purchase order information for assets. It also provides direct access to service catalog requests. You can create purchase orders and transfer orders directly from requests.

Before using the Procurement application, create assignment groups for catalog tasks. Assignment groups are sets of users, filtered by location, who can perform catalog tasks.

Track a request from the service catalog

The Procurement application lets you track a request that was ordered from the service catalog.

Role required: procurement_admin or procurement_user

When a user places an order from the service catalog, a request record is created to track the order. Each ordered item becomes a requested item that is listed on the request record. For example, a single request for 1 laptop, 2 monitors, and 1 keyboard creates the following records.

Request REQ00000001: 4 items

- Requested Item RITM00000001: 1 laptop
- Requested Item RITM00000002: 2 monitors
- Requested Item RITM00000003: 1 keyboard

1. Navigate to Procurement Requests Requests.
2. Click a request Number.

The Requested Items related list displays the items that were ordered. You can view the requested item, or view associated Purchase Orders, Transfer Orders, and Assignments on other related lists. A catalog task is automatically generated for each requested item to identify the source of the item, whether it needs to be purchased or transferred from a stockroom.

Cancel a request from the service catalog

You can cancel a request from the service catalog if, for example, the item is no longer needed or the request was not approved.

Role required: catalog_admin, procurement_admin, or procurement_user

When a service catalog request is canceled, the following actions occur automatically.

- Associated purchase orders that have not been received are canceled.
- All procurement tasks are canceled.
- Associated transfer orders are canceled, if all transfer order lines related to the transfer order are also associated with the service catalog request and the transfer order lines have all been canceled. If the transfer order contains transfer order lines that are not related to the service catalog request and those lines have not been canceled, the transfer order is not canceled.

Associated transfer order lines that are in the In Transit or Delivered stages are not canceled.

1. Navigate to Procurement Requests Requests.
2. Click a request Number.
3. Click Cancel Request.

View and edit a catalog task

Catalog tasks are used to source items and fulfill requests. You can view and edit catalog tasks from a request.

Role required: procurement_admin or procurement_user

If a request requires approval, a catalog task is created automatically when the request is approved. If a request does not require approval, a catalog task is created automatically when the request is created.

Note: If a request contains one requested item and the item has no model specified, a catalog task is not created automatically. If a request has multiple requested items and only some of them have a model specified, catalog tasks are created automatically, but only for the requested items with a model.

1. Navigate to Procurement Requests Tasks.
2. Open a catalog task.
3. Edit the fields as necessary.

Table 53: Catalog task fields

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>The unique number identifying the catalog task.</td>
</tr>
<tr>
<td>Request</td>
<td>The number of the request to which the catalog task is associated. The information in this field is derived from the Number field on the Request form.</td>
</tr>
<tr>
<td>Request item</td>
<td>The number of the requested item to which the catalog task is associated. The information in this field is derived from the Number field on the Requested Item form.</td>
</tr>
<tr>
<td>Requested for</td>
<td>The name of the person for whom the associated item was requested. The information in this field is derived from the Request or Request item field.</td>
</tr>
<tr>
<td>Due date</td>
<td>The date by which the catalog task should be completed.</td>
</tr>
<tr>
<td>Configuration item</td>
<td>The configuration item associated with the Request Item.</td>
</tr>
<tr>
<td>Approval</td>
<td>The status of catalog task approval: Not Yet Requested, Requested, Approved, or Rejected.</td>
</tr>
<tr>
<td>State</td>
<td>The current state of the catalog task: Pending, Open, Work in Progress, Closed Complete, Closed Incomplete, or Closed Skipped.</td>
</tr>
<tr>
<td>Assignment group</td>
<td>The group from which an individual is selected to complete the catalog task.</td>
</tr>
<tr>
<td>Assigned to</td>
<td>The individual assigned to complete the catalog task, selected from the Assignment group.</td>
</tr>
</tbody>
</table>
4. Click Update.

Create a purchase order

You can create a purchase order. Purchase orders specify assets to order from a single vendor.

Role required: procurement_admin or procurement_user

For example, an organization can create a purchase order to buy 20 laptop computers or 10 servers. Information on a purchase order enables physical and financial tracking of the assets that were ordered.

You can also use a transfer order if an asset is already owned by an organization. A transfer order is used to internally transfer assets from one stockroom to another instead of purchasing the assets. For example, a company stockroom in New York has five laptops that are needed in Boston. You create a transfer order to move the laptops from the New York stockroom to the Boston stockroom.

After you create a purchase order, the Receiving Slip related list is available on the Purchase Order form. A receiving slip is created manually or automatically when the item is received. The Receiving Slip related list shows all receiving slips related to the purchase order. After a receiving slip is added to a purchase order, all fields on the purchase order record become read-only.

1. Navigate to Procurement Orders Purchase Orders.
2. Click New.
3. Complete the form.

Table 54: Purchase order fields

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>The unique number identifying the purchase order.</td>
</tr>
<tr>
<td>Due by</td>
<td>The date by which the purchase order Total cost must be paid.</td>
</tr>
<tr>
<td>Vendor</td>
<td>The supplier to which the purchase order was issued.</td>
</tr>
<tr>
<td>Ship to</td>
<td>The stockroom to which items on the purchase order should be shipped.</td>
</tr>
<tr>
<td>PO date</td>
<td>The date on which the purchase order was created.</td>
</tr>
<tr>
<td>Status</td>
<td>The current status of the purchase order: Canceled, Ordered, Received, Requested, or Suspended.</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>--------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Assigned to</td>
<td>The user to whom the purchase order is assigned.</td>
</tr>
<tr>
<td>Bill to</td>
<td>The location responsible for paying the purchase order Total cost.</td>
</tr>
<tr>
<td>Short description</td>
<td>A brief description of the purchase order.</td>
</tr>
<tr>
<td>General section</td>
<td></td>
</tr>
<tr>
<td>Shipping</td>
<td>The delivery method to be used when shipping the items on the purchase order.</td>
</tr>
<tr>
<td>Terms</td>
<td>The purchase order payment terms: Credit, Net 30 days, or Net 90 days.</td>
</tr>
<tr>
<td>Ship rate</td>
<td>The amount that must be paid for the delivery method specified in the Shipping field.</td>
</tr>
<tr>
<td>Total cost</td>
<td>The sum of all item costs on the purchase order and the shipping costs.</td>
</tr>
<tr>
<td>Description</td>
<td>A full description of the purchase order contents.</td>
</tr>
<tr>
<td>Details section</td>
<td></td>
</tr>
<tr>
<td>Initial request</td>
<td>The record number of the request that requires the items on the purchase order.</td>
</tr>
<tr>
<td>Requested by</td>
<td>The user requesting the items on the purchase order.</td>
</tr>
<tr>
<td>Requested</td>
<td>The date the user in the Requested by field requested the items on the purchase order.</td>
</tr>
<tr>
<td>Ordered</td>
<td>The date and time the Order button is clicked on the Purchase Order form.</td>
</tr>
<tr>
<td>Expected delivery</td>
<td>The date the items associated with the purchase order are expected to arrive in the stockroom identified in the Ship to field. This field cannot be edited when the purchase order has a Status of Received or Canceled. (For more information about this field, see Purchase order expected delivery date.)</td>
</tr>
<tr>
<td>Received</td>
<td>The date and time at which the purchase order status changed to Received.</td>
</tr>
<tr>
<td>Contract</td>
<td>The record number of the contract with the vendor from which the items on the purchase order are ordered.</td>
</tr>
<tr>
<td>Department</td>
<td>The department responsible for paying for the purchase order.</td>
</tr>
<tr>
<td>Budget number</td>
<td>The budget number associated with the purchase order.</td>
</tr>
<tr>
<td>Vendor account</td>
<td>The vendor account associated with the purchase order.</td>
</tr>
</tbody>
</table>

4. Click Submit.

Add purchase order line items to specify what you are ordering from this vendor.
Create a purchase order line item

After you save a new purchase order, you create purchase order line item records to specify the individual items to order.

Role required: procurement_admin or procurement_user

1. Navigate to Procurement Orders Purchase Orders.
2. Open a purchase order.
3. In the Purchase order line items related list, click New.
4. Complete the form.

Table 55: Purchase order line item fields

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>The unique number identifying the purchase order line item.</td>
</tr>
<tr>
<td>Vendor</td>
<td>The supplier from which this product should be ordered.</td>
</tr>
<tr>
<td>Product Model</td>
<td>The model of the purchase order line item.</td>
</tr>
<tr>
<td>Product Catalog</td>
<td>The product catalog category to which the product model is assigned. For example, Hardware, Software, or Supplies.</td>
</tr>
<tr>
<td>Part number</td>
<td>The identification number assigned to the product model.</td>
</tr>
<tr>
<td>Request line</td>
<td>The identification number of the requested item record associated with this purchase order line item.</td>
</tr>
<tr>
<td>Ordered</td>
<td>The date and time at which this purchase order line item was ordered.</td>
</tr>
<tr>
<td>Expected delivery</td>
<td>The date the purchase order line item is expected to arrive in the stockroom identified in the Ship to field on the purchase order record. This field is automatically filled with the value in the Expected delivery field on the purchase order record. This field can be edited when the purchase order line item has a Status of Requested. For more information about this field, see Purchase order expected delivery date.</td>
</tr>
<tr>
<td>Received</td>
<td>The date and time at which the purchase order line item status was changed to Received.</td>
</tr>
<tr>
<td>Purchase order</td>
<td>The purchase order record number associated with this purchase order line item.</td>
</tr>
<tr>
<td>Status</td>
<td>The current status of the purchase order line item: Canceled, Ordered, Pending Delivery, Received, or Requested.</td>
</tr>
<tr>
<td>Ordered quantity</td>
<td>The number of product models that were ordered.</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>---------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Received quantity</td>
<td>The number of product models that were shipped and received. The vendor may have sent multiple shipments. The received quantity can be larger or smaller than the Ordered quantity. For example, you may have ordered five laptops but the vendor sent six.</td>
</tr>
<tr>
<td>Remaining quantity</td>
<td>The number of product models that still need to be received to fulfill the Ordered quantity.</td>
</tr>
<tr>
<td>List price</td>
<td>The price at which the item retails, not including discounts. If the system creates the purchase order from the service catalog ordering process, the purchase order line item inherits the list price from the associated vendor catalog item. If the vendor catalog item does not have a list price value and you have not entered a value, this field is automatically populated with the value from the Cost field.</td>
</tr>
<tr>
<td>Cost</td>
<td>The cost of a single product model, including discounts. If the system creates the purchase order from the service catalog ordering process, the purchase order line item inherits the cost from the associated vendor catalog item Vendor Price.</td>
</tr>
<tr>
<td>Total cost</td>
<td>The cost of a single product model multiplied by the value specified in Quantity.</td>
</tr>
<tr>
<td>Short description</td>
<td>A few words or short phrase describing the purchase order line item.</td>
</tr>
</tbody>
</table>

5. Click Submit.
   The purchase order reopens with the line item listed. The purchase order and line item are in Requested status.

6. Continue adding purchase order line items for this vendor, as needed.

7. After you initiate the order with the vendor and are ready to show that the order was placed, click Order.
   The status of the purchase order and line items change to Ordered.

Purchase order status

Purchase orders follow a specific life cycle. The Status field on the purchase order record is always read-only.
Table 56: Status life cycle

<table>
<thead>
<tr>
<th>Status</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Requested</td>
<td>When you create a purchase order, the status is Requested.</td>
</tr>
<tr>
<td>Ordered</td>
<td>When you add purchase order line items, and click Order, the status changes to Ordered.</td>
</tr>
<tr>
<td>Pending Delivery</td>
<td>When you create assets before receiving them as a purchase order line item, the status of purchase orders and purchase order line items changes to Pending Delivery status.</td>
</tr>
<tr>
<td>Received</td>
<td>When ordered assets arrive in the specified stockroom and you click Receive, the status of purchase orders and purchase order line items changes to Received.</td>
</tr>
<tr>
<td>Canceled</td>
<td>You can cancel a purchase order if its status is Requested, Ordered, or Pending Delivery. For more information, see Cancel a purchase order.</td>
</tr>
</tbody>
</table>

Purchase order expected delivery date

The purchase order record and the purchase order line item record both contain an Expected delivery date field.

The Expected delivery field can be edited on both records. Editing the field on one record can change the field on the other record.

- If you add an expected delivery date to the purchase order and the expected delivery date field on the purchase order line item is blank, the date on the purchase order is added automatically to the purchase order line item.
- If you add an expected delivery date on the purchase order line item and the expected delivery date field on the purchase order is blank, the date on the purchase order line item is added automatically to the purchase order.
- If the purchase order and the purchase order line item have the same expected delivery date and you change the date on the purchase order, the date is changed automatically on the purchase order line item.
- If you change the date on the purchase order line item to a date that is later than the one specified on the purchase order, the date on the purchase order is changed to the new date. The expected delivery date of a purchase order line item cannot be later than the expected delivery date on the associated purchase order.
• If you change the date on the purchase order line item to a date that is earlier than the date specified on the purchase order, the date on the purchase order remains the same.

Cancel a purchase order

You can cancel purchase orders with a status of Requested, Ordered, or Pending Delivery.
Role required: procurement_admin or procurement_user
Purchase order line items can also be canceled from a purchase order.
1. Navigate to Procurement Orders Purchase Orders.
2. Open a purchase order to cancel.
3. Click Cancel.
   All associated purchase order line items that have not been received are canceled and any assets created for the purchase order are deleted.

Cancel a purchase order line item

You can cancel a purchase order line items with a status of Requested, Ordered, or Pending Delivery.
Role required: procurement_admin or procurement_user
Keep the following in mind when you cancel a purchase order line item.
• When a purchase order line item is canceled, if all other line items are also canceled, the purchase order is canceled.
• After a purchase order line item is canceled, it can be reordered if the associated purchase order has not been canceled or received.
• If you cancel a purchase order line item for which assets were created, the assets are deleted from the system and removed from the purchase order.
• If you reorder the same purchase order line item, the assets are recreated for that line if the line has a status of Pending Delivery.

1. Navigate to Procurement Orders Purchase Orders.
2. Open a purchase order.
3. In the Purchase order line items related list, select a line item to cancel.
4. Click Cancel.

Reorder a purchase order

You can reorder a purchase order that was canceled.
Role required: procurement_admin or procurement_user
1. Navigate to Procurement Orders Purchase Orders.
2. Open a purchase order with a status of Canceled.
3. Click Order.
   The status changes to Ordered for the purchase order and all associated purchase order line items.

Reorder a purchase order line item

You can reorder a purchase order line item that was canceled.
Role required: procurement_admin or procurement_user
1. Navigate to Procurement Orders Purchase Orders.
2. Open a purchase order.
3. In the Purchase order line items related list, select a line item with a status of Canceled.
4. Click Order.
   The purchase order line item Status field changes based on the Status field of the associated purchase order. For example, if the purchase order has a status of Pending Delivery, the purchase order line item status changes to Pending Delivery and the assets for the purchase order line item are created automatically.

Create an asset and reserve it for the requester

In the procurement process, hardware assets can be created before the assets are delivered. This allows you to create the asset record by providing asset tag and serial number early in the process and reserve the asset for the user who requested it. The receiver can only select the assets to be received as assets are pre-created.

Role required: procurement_admin or procurement_user

Some requests must be approved before items on the request can be sourced. In the base system, requests over $1,000 require approval. To change the $1,000 approval threshold and other workflow attributes, edit the Service Catalog Request workflow.

When the asset state is In stock, the Reserved for field is maintained as the asset is received and placed in a stockroom. When the asset state changes to In use, the Reserved for field is relabeled Assigned to. If there is a name in the Reserved for field, the name is retained when the field is relabeled. A user with the asset role can change the name in the Assigned to field. This is helpful, for example, if an IT technician orders 10 laptops and needs to assign them to individual users.

---

Note: If assets are not created prior to delivery, they are automatically created from line items when purchase orders are received. Also you can enter the asset details and receive them when the purchase orders are received.

---

1. Navigate to Procurement Requests Tasks.
2. Open a task with a State of Open and a Short description of Source Request Items.
3. Click Source Request.
   - If the request is already fulfilled or the items in the request are not sourceable, the Source Request button is hidden.
   - If the requested item does not have an assigned model, the item is not listed on the Source the Request dialog box.
   - Any items on the purchase order that have a remaining quantity of 0 are not listed on the Source the Request dialog box.
4. Select a Destination Stockroom.
5. Select the Create PO option for one or more listed items.
6. For each item requiring a purchase order, select a Vendor.
7. Click OK.
8. Navigate to Procurement Orders Purchase Orders.
9. Open the purchase order you just created. If you created a purchase order for more than one item, multiple purchase orders may have been created; select one of them.
10. Click Order. After items are ordered, no additional purchase order line items can be added to the purchase order.
    The status of all purchase order line items changes to Ordered.
11. Click the Create hardware assets prior to delivery related link to automatically create hardware assets for all purchase order line items.
    Hardware assets are listed in the Assets related list. Click an asset in the list to view the asset record. Note that, except for consumables, the Reserved for field contains the name of the user who made the original request.

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You can also create assets for individual purchase order line items. On a purchase order, go to the Purchase order line items related list and click a specific purchase order line item number. Then, click the Create hardware assets prior to delivery related link. Only the hardware assets included on the purchase order line item are created.

Receive assets

Assets can be received and added to the system when they are delivered to a stockroom.

Users with an appropriate procurement role can receive assets. If one purchase order contains multiple purchase order lines, the lines can be received at different times. This is useful if items arrive at the stockroom in different shipments. The purchase order status does not change to Received until all purchase order lines are received.

As an alternative to receiving assets when they arrive, you can create assets before they arrive and reserve them for the requester.

Receive an asset

When assets are received and delivered to a stockroom, they are added to the system.

Role required: procurement_admin or procurement_user

When you receive assets:

• If you have not pre-created hardware assets, you can enter asset details and reserve them for users.
• You can over receive an order wherein, the received quantity can be higher than the ordered quantity.
• If you have ordered multiple items with different receiving stockrooms, you can receive them at the time.

1. Navigate to Procurement Orders Purchase Orders.
2. Select a purchase order with a Status of Ordered or Pending Delivery.
3. Click Receive.
   The Receive Purchase Order screen is displayed with the list of the products that were ordered.
4. Select the Received check box for the line items you are receiving.
5. To receive software assets:
   a) Edit the Receiving Stockroom if the items arrived at a different stockroom than the one specified on the purchase order.
   b) Edit the Receiving Quantity if the number of items delivered does not match the number ordered.
   c) Edit the Unit Cost if the price changed between the time the item was ordered and the time it arrived at the stockroom. Enter a number; the number can include decimals.
   d) Click Capture Asset tags to enter asset details. You cannot enter details for assets more than the received rights.
   e) The Capture Asset Tag dialog box, click Insert a new row.
   f) Enter the asset tag, serial number, rights, and License key
6. To receive hardware assets and consumables:
   a) Edit the Receiving Stockroom if the items arrived at a different stockroom than the one specified on the purchase order.
b) Edit the Receiving Quantity if the number of items delivered does not match the number ordered.

c) Click the Reserve toggle button to reserve the item.
   When a reserved item is received, the State and Substate fields on the corresponding asset record are automatically set to In stock and Reserved, respectively. If the Reserve button is not clicked is not selected for an item, the State and Substate fields on the corresponding asset record are set to In stock and Available.
   Note: You cannot reserve consumables.

d) From the Reserved for list select a user you want reserve the asset for.
   If a name was specified in the Requested for field on the Purchase order line item form, the name is added automatically but can be changed.
   You can add multiple users in the Capture Asset tags dialog box.

e) Click Capture Asset tags to enter asset details. You cannot enter details for assets more than the received quantity. You can also reserve assets for a user.
   Note: If you have pre-created the assets, you need to select the ones you want to receive.

f) The Capture Asset Tag dialog box, click Insert a new row.

g) Enter the asset tag and serial number.

h) From the Reserved for list, select the user for whom the item was ordered. If a name was specified in the Requested for field on the Purchase order line item form, the name is added automatically but can be changed.

i) Edit the Unit Cost if the price changed between the time the item was ordered and the time it arrived at the stockroom. Enter a number; the number can include decimals.

7. Click Submit.
   A confirmation message is displayed with the details of assets received.

8. Click OK.
   A receiving slip is automatically created and can be viewed in the Receiving Slips related list. If items on a purchase order are received at different times, a new receiving slip is created each time any item on the purchase order is received. For example, if 30 laptop computers were ordered and arrived in three separate shipments, three receiving slips are created.

   Different assets are created for each hardware items. In case of software, one single asset is created for each licence if you don’t split the rights. And for consumables, if an asset already exists, it is updated, or new assets are created.

Create a receiving slip

Receiving slips are created automatically during the process of receiving assets. You can also create receiving slips manually.

Role required: procurement_admin or procurement_user

After a receiving slip has been created for a purchase order, all fields on the purchase order record are changed to read-only.

1. Navigate to Procurement Receiving Receiving Slips.
2. Click New.
A Number is assigned automatically. The current date and time is added automatically to the Received field.

3. Select a Purchase Order.

Only purchase orders with a status of Ordered, Pending Delivery, or Requested are listed in the selection window. The Vendor column lists the vendor specified on the purchase order. The Ship to column lists the destination stockroom specified on the purchase order.

4. Select a Receiving Stockroom.
5. Click Submit.

Add a receiving slip line to the receiving slip to identify the items from the purchase order that were received.

Create a receiving slip line

When assets arrive at a stockroom and you receive them, a receiving slip is created on the purchase order. You create a receiving slip line to identify the specific assets and quantities that were received.

Role required: procurement_admin or procurement_user

If the asset already exists, the asset record is updated when you save the receiving slip line. If the asset does not already exist, a new hardware or software asset record is created. The Model category and Configuration item fields are automatically filled in on the new asset record based on information in the request, purchase order, or receiving slip. If Asset Tag and Serial Number information exists, it is not overwritten.

1. Navigate to Procurement Receiving Receiving Slips and open a receiving slip.
2. In the Receiving Slip Lines related list, click New.

The following fields are completed automatically.

- A Number is assigned.
- In Received, the current date and time are added.
- In Received by, the currently logged in user is added.

3. In Purchase Order Line, click the reference lookup icon and select a purchase order line.

The Purchase Order Line field is mandatory if the parent receiving slip has an associated purchase order. Only purchase order lines that are associated with the same purchase order linked to the parent receiving slip are available to select.

4. In Quantity, enter the number of items received. For example, five items were ordered, but only two are being received.
5. Edit the Received by, Requested for, and Unit cost fields, as needed.
6. Click Submit.

After you create a receiving slip line, the Receiving stockroom field on the Receiving Slip record becomes read-only.

Consumable assets

A consumable asset is one that is purchased in quantity and distributed. It is assigned to the consumable model category, and the asset record tracks the quantity that are available and total cost. When consumable assets are received, they are merged into an existing consumable record, if available.

For the records to merge, the consumable cannot be listed on an active transfer order and the Model, Location, Model Category, Stockroom, Status, and Substatus fields on the asset record must match.

If consumables are merged into an existing consumable record, the cost of the additional consumables received is added to that of the existing consumables in the record. For example, if 50 computer
keyboards arrive and 20 keyboards of the same model already exist in the receiving stockroom, the two records are merged showing 70 keyboards in the stockroom with a combined total cost.

If no matching consumable record exists in the receiving stockroom, a record is created. After the consumables are received, the quantity is updated, but individual consumables are no longer tracked within the Procurement application and are not displayed on receiving slip lines.

Product Catalog

The product catalog is a set of information about individual models. Models are specific versions or various configurations of an asset. Asset managers use the product catalog as a centralized repository for model information.

A detailed and well-maintained product catalog can coordinate with service catalog, asset, procurement, request, contract, and vendor information.

Models published to the product catalog are automatically published to the service catalog. The service catalog includes information about goods (models) and services. A model may be listed more than once if the model is available from multiple vendors. Models are included with the Asset Management application.

Keep the following in mind when working with the product catalog.

- A product catalog item can be linked to multiple vendor catalog items or to a single model.
- A model can only have one product catalog item.
- A vendor catalog item can only have a single product catalog item.

Components installed with Product Catalog

The following components are installed with the Product Catalog plugin.

Demo data is available with the product catalog. The demo data provides a variety of models, model categories, product catalog items, vendor catalog items, and vendors.

Tables installed with Product Catalog

Product Catalog plugin adds the following tables.

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Call</td>
<td>The base table for Product Catalog that contains all call information.</td>
</tr>
<tr>
<td>(new_call)</td>
<td></td>
</tr>
<tr>
<td>Hardware Catalog</td>
<td>Stores all hardware catalog items that have been published from the Product</td>
</tr>
<tr>
<td>(pc_hardware_cat_item)</td>
<td>Model (cmdb_model) base table. Extends the Product Catalog Item</td>
</tr>
<tr>
<td></td>
<td>(pc_product_cat_item) table.</td>
</tr>
<tr>
<td>Product Catalog Item</td>
<td>Stores all information for the product catalog. This table extends the</td>
</tr>
<tr>
<td>(pc_product_cat_item)</td>
<td>Catalog Item (sc_cat_item) table.</td>
</tr>
<tr>
<td>Software Catalog</td>
<td>Stores all software catalog items that have been published from the Product</td>
</tr>
<tr>
<td>(pc_software_cat_item)</td>
<td>Model (cmdb_model) base table. Extends the Product Catalog Item</td>
</tr>
<tr>
<td></td>
<td>(pc_product_cat_item) table.</td>
</tr>
</tbody>
</table>
Roles installed with Product Catalog
Product Catalog plugin adds the following roles.

<table>
<thead>
<tr>
<th>Role</th>
<th>Description</th>
<th>Contains roles</th>
</tr>
</thead>
<tbody>
<tr>
<td>model_manager</td>
<td>Can create new CMDB models.</td>
<td>none</td>
</tr>
<tr>
<td>category_manager</td>
<td>Can do everything that model managers can do and can administer model categories.</td>
<td>model_manager</td>
</tr>
</tbody>
</table>

Script includes installed with Product Catalog
Product Catalog plugin adds the following script include.

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ProductCatalogUtils</td>
<td>Utilities for creating and maintaining product catalog items derived from vendor catalog items and models.</td>
</tr>
</tbody>
</table>

Client scripts installed with Product Catalog
Product Catalog plugin adds the following client script.

<table>
<thead>
<tr>
<th>Client script</th>
<th>Table</th>
<th>Script contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set Model Fields</td>
<td>(pc_vendor_cat_item)</td>
<td>Adds the description and price, if they do not exist, when a vendor catalog item is added to the product catalog.</td>
</tr>
</tbody>
</table>

Business rules installed with Product Catalog
Product Catalog plugin adds the following business rules.

<table>
<thead>
<tr>
<th>Business rule</th>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clear model</td>
<td>(pc_product_cat_item)</td>
<td>Clears the link on a model if the link is cleared from the product catalog.</td>
</tr>
<tr>
<td>Create child product catalog entries</td>
<td>(cmdb_hardware_product_model)</td>
<td>Creates entries in the product catalog for all items in a bundled model when the bundled model is created.</td>
</tr>
<tr>
<td>Sync to Product catalog item</td>
<td>(pc_vendor_cat_item)</td>
<td>Updates the corresponding field in the product catalog when a field is updated.</td>
</tr>
</tbody>
</table>
## Models

Models are specific versions or various configurations of an asset. Models are used for managing and tracking assets through various ServiceNow platform asset applications, including Product Catalog, Asset Management, and Procurement.

Model definitions can be based on vendor-provided criteria, for example, the manufacturer name Apple MacBook Pro, or on a custom abstraction, for example, Graphic Designer Workstation. All model information is located in the Product Catalog application.

A model can be in one or more *model categories*. For example, a laptop can be a computer and a server. Model definitions specify whether the model creates an asset, a configuration item, or both. On a hardware model record, compatible hardware models can be added.

Unless otherwise noted, working with product models requires the model_manager role. This role is contained by other roles, such as sam, category_manager, and asset.

### Creating models

Models are created in the Product Catalog Product Model All Models module.

See *Model form fields* for a list of the fields that appear on all models, regardless of the type of model.

### Model form fields

There are fields on the Model form that apply to all types of models.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Display name</td>
<td>Name of the model. A system property called glide.cmdb_model.display_name.shorten controls how software model display names are generated.</td>
</tr>
<tr>
<td>Manufacturer</td>
<td>The company that built the model.</td>
</tr>
<tr>
<td>Name</td>
<td>The manufacturer-assigned name of the model or abstract name specified by the model manager, such as Field Agent Laptop.</td>
</tr>
<tr>
<td>Edition</td>
<td>The edition of the software model, such as Professional.</td>
</tr>
<tr>
<td>Short description</td>
<td>A brief description of the model.</td>
</tr>
<tr>
<td>Model categories</td>
<td>The categories to which the model is assigned. This field is a glide list and cannot be used to create reports.</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Asset tracking strategy</td>
<td>The process by which the model should be tracked. Choose from the following:</td>
</tr>
<tr>
<td></td>
<td>• Leave to Category: model is transparent and the asset class is defined solely by the category.</td>
</tr>
<tr>
<td></td>
<td>• Create Consumable Asset: model forces the asset class to be consumable, regardless of what the category defines as the asset class.</td>
</tr>
<tr>
<td></td>
<td>• Don’t create assets: model blocks asset instantiation, regardless of what the category defines as the asset class.</td>
</tr>
<tr>
<td>Acquisition method</td>
<td>The method for purchasing the model. Options are Both, Buy, or Lease.</td>
</tr>
<tr>
<td>Cost</td>
<td>The cost of a single unit of the model.</td>
</tr>
<tr>
<td>Depreciation</td>
<td>The depreciation scheme for the model.</td>
</tr>
<tr>
<td>Salvage value</td>
<td>The estimated value that an asset will realize upon its sale at the end of its useful life. This value must be less than or equal to the cost of the asset.</td>
</tr>
<tr>
<td>Model number</td>
<td>The specific model number assigned to the item by the manufacturer.</td>
</tr>
<tr>
<td>Barcode</td>
<td>The barcode number assigned to the model. Barcodes are usually assigned by the manufacturer.</td>
</tr>
<tr>
<td>Owner</td>
<td>The person responsible for the model.</td>
</tr>
<tr>
<td>Status</td>
<td>The current status of the model. Options are In Production, Retired, and Sold.</td>
</tr>
<tr>
<td>Expenditure type</td>
<td>The type of expenditure. Choose from the following:</td>
</tr>
<tr>
<td></td>
<td>• Capex: Capital expenditure is a one-time expenditure, where the value is realized over the years. For example, a photocopier.</td>
</tr>
<tr>
<td></td>
<td>• Opex: Operational expenditure is an on-going expenditure. For example, toners for the photocopier.</td>
</tr>
<tr>
<td>Certified</td>
<td>The option that determines whether the model is approved for use.</td>
</tr>
<tr>
<td>Comments</td>
<td>Information about the model that would be helpful for others to know.</td>
</tr>
<tr>
<td>Assets</td>
<td>The assets created from this model. This can have any combination of assets and configuration items. For example, with a single hardware model you can have assets and no configuration items, configuration items and no assets, or have both.</td>
</tr>
<tr>
<td>Configuration Items</td>
<td>The configuration items created from this model. Can have any combination of assets and configuration items.</td>
</tr>
<tr>
<td>Product Catalog</td>
<td>The information about the model as it appears in the product catalog and service catalog. Information only appears if the model has been published to the product catalog.</td>
</tr>
</tbody>
</table>
Create hardware models

You use hardware models to track equipment assets such as servers and racks. You can create a new hardware model.

Role required: model_manager

1. Navigate to Product Catalog Product Model Hardware Models.
2. Click New.
3. Complete the form.

   For general field descriptions, see Model form fields. The hardware model fields listed below are found in the Information section of the form.

   Table 57: Model form fields for hardware models

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power (watts)</td>
<td>The electrical power, in watts.</td>
</tr>
<tr>
<td>Height (U)</td>
<td>The total height of the hardware item, in inches.</td>
</tr>
<tr>
<td>Flow Rate (cfm)</td>
<td>The flow rate of the hardware model, expressed in cubic feet per minute.</td>
</tr>
<tr>
<td>Sound Power (bels)</td>
<td>The noise measurement, in bels (1 bel=10 decibels).</td>
</tr>
<tr>
<td>Weight (lbs)</td>
<td>The total weight, in pounds.</td>
</tr>
</tbody>
</table>

4. Click Update.

Add compatible models to a hardware model

On a hardware model record, you can add compatible hardware models. This is a good method for tracking hardware assets that can work together.

Role required: model_manager

  Note: Hardware models included in bundled models cannot be added as compatibles.

1. Navigate to Product Catalog Product Model Hardware Models.
2. Click a hardware model Name.
3. Click Add Compatible.
4. Select a compatible model.
5. Click Submit.

   The selected model is listed in the Compatibles related list.

Add substitute models to a hardware model

On a hardware model record, you can add substitutes to track what hardware models can be substituted for another hardware model.

Role required: model_manager

For example, a 19” monitor may be a valid substitute for a 17” monitor. Note that substitutions are directional so, in this case, a 17” monitor is not a substitution for a 19” monitor. Information about valid substitute models is useful when you select models while creating transfer orders.

When you select substitute models, note the following conditions.
• Substitute models can be used with work management transfer orders. Substitute models are not used in procurement part sourcing.
• Hardware models included in bundled models cannot be added as substitutes.

1. Navigate to Product Catalog Product Model Hardware Models.
2. Click a hardware model Name.
3. Click Add Substitution.
4. In the Collection list on the left, double-click a hardware model.
   The hardware model is added to the List on the right.
5. Click Save.
   The model is listed in the Substitutes related list.

Create consumable models

Consumables are items that are tracked as a group, not individually. An example of consumable items are computer keyboards.

Role required: model_manager

1. Navigate to Product Catalog Product Model Consumable Models.
2. Click New.
3. Complete the form.
   For general field descriptions, see Model form fields. There are no fields specific to consumable models.
   Any consumable assets you create and assign to the new model are displayed in the Consumables related list on the model record.
4. Click Submit.

Bundled models

A bundled model is a single model comprised of individual models. For example, a laptop, printer, keyboard, and mouse can be combined into a single bundled model. If you assign any one asset from the bundled model to an individual, that person receives all of the components in the bundle.

Bundled models can be abstract or concrete.

Abstract

Permits use of one model in multiple bundles. The abstract bundle is created as a container. One asset in the bundle is usually specified as the main component. Model categories define which assets can be included in a bundle and which can be the main component of a bundle.

Add a main component to make it easier to track the bundle components. For example, create an abstract bundle adding a computer as the main component and a mouse and keyboard as other components. When the bundle is assigned to a user, the asset record for the computer shows the computer, mouse, and keyboard all assigned to the user. Abstract bundles are used more often than concrete bundles.
Concrete bundles are fixed bundles where the main component is an asset. Specify the main component and the other components to create an exact bundle. Concrete bundles do not allow for a many-to-many relationship with models.

Keep the following tips in mind when creating and using bundled models.

- Bundles can be nested inside bundles.
- Hardware and consumable models can be used in a bundle. Software and contract models cannot be used in a bundle.
- When a parent link is defined, the fields related to assignment and state of the child assets are read-only and populated based on the parent’s assignment and state fields.
- Taking action on the parent bundle affects the children in the bundle. For example, if you assign a bundle to an individual, all child asset records show that same individual as the person assigned.
- You cannot pre-allocate bundles.
- In a bundle, consumables are consumed and assets are set to the same state as the master component.
- Only the bundle, not individual components, can be part of a transfer order.
- You control what can go into a bundle through the model category. For example, the model category Servers might be set to never allow servers in bundles.
- To create a collection of software, you must create a suite instead of a bundled model.
- A software license cannot be the master component of a bundle.

To create an abstract model, set the model category to Bundle and add components. To create a concrete model, create a model in the Product Catalog Product Model Bundled Models module and add components.

Add model components to a bundle

You add model components to a model as needed, for example, when you upgrade a bundle to include additional assets.

Role required: model_manager

1. Navigate to Product Catalog Product Model Bundled Models.
2. Open a bundle record.
3. In the Model Components related list, click New.
4. Select the Model category of the component, such as Computer.
5. Select the Component, such as Apple Computer MacBook Pro 17”.
6. Select the Is main component check box if this component is the one that other components are attached to.
7. Click Submit.
8. Repeat steps 3-7 to add more components to the bundle.

Any components you add to the bundled model are displayed in the Model Components related list.
### Model Components

<table>
<thead>
<tr>
<th>Is main component</th>
<th>Component</th>
<th>Model category of component</th>
</tr>
</thead>
<tbody>
<tr>
<td>true</td>
<td>Apple MacBook Pro 13&quot;</td>
<td>Computer</td>
</tr>
<tr>
<td>false</td>
<td>Standard input bundle</td>
<td>Bundle</td>
</tr>
<tr>
<td>false</td>
<td>Samsung SyncMaster 22&quot; Class BackLight LED</td>
<td>Monitor</td>
</tr>
<tr>
<td>false</td>
<td>Samsung SyncMaster 22&quot; Class BackLight LED</td>
<td>Monitor</td>
</tr>
</tbody>
</table>
Remove model components from a bundle

You remove a component from a bundled model, for example, when you need to replace it with a different component.

Role required: model_manager

No component history is retained, so if you remove a component from a bundled model, no record is saved showing that the component was ever part of a bundle.

1. Navigate to Product Catalog Product Model Bundled Models.
2. Open a bundle record.
3. In the Model Components related list, select the component you want to remove.
4. In the Actions choice list below the list, select Delete.
5. Click OK.

Software models

Software models are created as part of the asset management process. You can create product models for software from the product catalog, but you cannot administer all aspects of the software models.

Software models are used in software counters. For more information about creating software models, see Manage software models.

Create application models

You can create application models that can be managed and tracked within a Scrum development process.

Role required: model_manager

1. Navigate to Product Catalog Product Model Application Models.
2. Click New.
3. Complete the form.
   For general field descriptions, see Model form fields. There are no fields specific to application models.
4. Click Submit.

Work order models

When work management is activated, the ServiceNow platform adds the Work Order Models and Work Task Models modules to the product catalog.

Users with the wm_admin role can define new model records, which can be used as templates to create work orders for common procedures.

Models created for VMware support and Amazon EC2

When you activate Orchestration for VMware or Amazon EC2, the system creates a new model (vmware instance or ec2 instance) automatically.

When the virtual machine is terminated, the asset state changes to Retired.
Add skills to a model

You can associate skills with any model. Creating associations between skills and models is helpful if you are using work management and need to assign tasks to agents based on their skills with specific models.

Role required: skill_admin or model_manager

1. Navigate to Product Catalog Product Model All Models.
2. Open a product model.
3. In the Skills related list, click Edit.
4. Add items from the Collection list to the Skills List.
5. Click Save.

Publish models to the hardware or software catalog

You can publish models to the hardware or software catalog to make the models available in the service catalog.

Role required: model_manager

1. Navigate to Product Catalog Product Model All Models.
2. Open a product model.
3. In Related Links, click Publish to Hardware or Publish to Software Catalog.
4. Select a category.
5. Click OK.

Delete models

If a model is no longer needed, it can be deleted as long as no assets or configuration items use the model.

Role required: model_manager

1. Navigate to Product Catalog Product Model All Models.
2. Select the check box beside the product model.
3. From the Actions choice list below the list, select Delete.
4. Click OK.

Vendor catalog items

The vendor catalog is a list of goods available from different vendors.

An accurate and complete vendor catalog can make it easier to keep items in stock at the best possible price.

You can link multiple vendor catalog items to a single product catalog item, which allows you to track information about a single item at different vendors.

For example, for an iPhone 5 product catalog item, you can create separate vendor catalog items from Apple and from Amazon. Select the vendor with the best price when you source an item. Users need the model_manager role to work with vendor catalog items.
Synchronize information

Certain information is synchronized between models, product catalog items, and vendor catalog items. When working with models, product catalog items, and vendor catalog items, keep the following in mind:

- Changes to a model record update vendor catalog items automatically only if the vendor catalog items are published, not linked.
- If a model is linked to a vendor catalog item, any changes to the model do not update the vendor catalog item.
- After publishing a vendor catalog item or model to the hardware or software catalog, some fields become read-only on the vendor catalog item or product catalog item record. Information can only be updated on the model record.

List of synchronized fields:
- Description
- Short description
- Name
- Product ID
- Price
- Vendor
- Specs
- Features
- Model
- UPC
- Model number
- Cost
- Manufacturer

Create a vendor catalog item

You create a vendor catalog item to associate product models with a vendor.

Role required: model_manager

1. Navigate to Product Catalog Catalog Definition Vendor Items.
2. Click New.
3. Complete the form.

Table 58: Vendor Catalog Item fields

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>The name of the item is built from information in the Product Model, Vendor, and Product ID fields.</td>
</tr>
<tr>
<td>Vendor</td>
<td>The supplier that provides the item.</td>
</tr>
<tr>
<td>Product model</td>
<td>The specific version or configuration of the item.</td>
</tr>
<tr>
<td>Out of stock</td>
<td>The option that indicates whether the item is currently unavailable for order. This field is important if you are sourcing request items. Clear this check box if the item is available to order.</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Product ID</td>
<td>The item identification number assigned by your organization.</td>
</tr>
<tr>
<td>List price</td>
<td>The price at which the item retails, excluding vendor discounts.</td>
</tr>
<tr>
<td>Vendor price</td>
<td>The price at which the item is available in the vendor catalog. If the vendor offers a discount, the vendor price reflects the discounted price.</td>
</tr>
<tr>
<td>Rank tier</td>
<td>Displays the overall ranking for this vendor’s products and services, such as Valued Partner or Blacklisted Supplier. Rank tier expresses your organization’s opinion of this vendor’s performance and can be used to decide if the vendor’s products should be promoted or discontinued. Users with the vendor_manager role can edit this field.</td>
</tr>
<tr>
<td>Short description</td>
<td>A brief description of the item.</td>
</tr>
<tr>
<td>General section</td>
<td></td>
</tr>
<tr>
<td>Product catalog item</td>
<td>Name of the product catalog item, if the item has been added to the product catalog. Leave this field empty if you are going to link a vendor catalog item to the hardware catalog.</td>
</tr>
<tr>
<td>UPC</td>
<td>The barcode number used to uniquely identify and track items for sale.</td>
</tr>
<tr>
<td>Active</td>
<td>Select the check box to list the item in the vendor catalog. Clear this check box to hide the item in the vendor catalog.</td>
</tr>
<tr>
<td>Description</td>
<td>A detailed description of the item.</td>
</tr>
<tr>
<td>Information section</td>
<td></td>
</tr>
<tr>
<td>Specifications</td>
<td>Facts about the item such as size, weight, version, or speed.</td>
</tr>
<tr>
<td>Features</td>
<td>Distinct properties or distinguishing characteristics of the item.</td>
</tr>
</tbody>
</table>

4. Click Submit.

Link an item to the hardware catalog

After you create a vendor catalog item, link the item to the hardware catalog for viewing.

To see the Link to Hardware Catalog Item related link on the Vendor Catalog Item form, add a hardware model or a consumable model to the Product Model field, and leave the Product Catalog Item field blank.

Role required: model_manager

1. Navigate to Product Catalog Catalog Definition Vendor Items.
2. Open a vendor catalog item.
3. In Related Links, click Link to Hardware Catalog Item.
4. Select a Catalog Item.
5. Click OK.
The page refreshes to the selected hardware catalog item. The vendor catalog item is listed in the Vendor Catalog Items related list.

Link an item to the software catalog

After you create a vendor catalog item, link the item to the software catalog for viewing.

To see the Link to Software Catalog Item related link on the Vendor Catalog Item form, add a software model or a consumable model to the Product Model field, and leave the Product Catalog Item field blank.

Role required: model_manager

1. Navigate to Product Catalog Catalog Definition Vendor Items.
2. Open a vendor catalog item.
3. In Related Links, click Link to Software Catalog Item.
4. Select a Catalog Item.
5. Click OK.

The page refreshes to the selected software catalog item. The vendor catalog item is listed in the Vendor Catalog Items related list.

Publish an item to the hardware catalog

After you create a hardware item for the vendor catalog, publish it to the hardware catalog for viewing. The hardware catalog is a section within the service catalog.

To see the Publish to Hardware Catalog Item related link on the Vendor Catalog Item form, add a hardware model or a consumable model to the Product Model field, and leave the Product Catalog Item field blank.

Role required: catalog_admin

After you publish a vendor catalog item to the hardware catalog, the Publish to Hardware Catalog related link is no longer available. Any changes made on the vendor catalog item record are synchronized with the information in the hardware catalog.

1. Navigate to Product Catalog Catalog Definition Vendor Items.
2. Open a vendor catalog item.
3. In Related Links, click Publish to Hardware Catalog.
4. Select a Category.
5. Click OK.

The Hardware Catalog form opens and the item is listed in the Vendor catalog Items related list.

Publish an item to the software catalog

After you create a software item for the vendor catalog, publish it to the software catalog for viewing. The software catalog is a section within the service catalog.

To see the Publish to Software Catalog Item related link on the Vendor Catalog Item form, add a software model or a consumable model to the Product Model field, and leave the Product Catalog Item field blank.

Role required: catalog_admin

After you publish a vendor catalog item to the software catalog, the Publish to Software Catalog related link is no longer available. Any changes made on the vendor catalog item record are synchronized with the information in the software catalog.

1. Navigate to Product Catalog Catalog Definition Vendor Items.
2. Open a vendor catalog item.
3. In Related Links, click Publish to Software Catalog.
4. Select a Category.
5. Click OK.
   The Software Catalog form opens and the item is listed in the Vendor catalog Items related list.

View a vendor list
You can view a list of vendors from the product catalog.
Role required: model_manager
The list includes every company that has the Vendor option selected on its record.
1. Navigate to Product Catalog Catalog Definition Vendors.
2. Click any vendor Name for more information.

Product catalog items
Product catalog items are hardware and software that you want to track and offer in the service catalog.
The product catalog is an extension of the service catalog that contains a list of available models. Users with the catalog_admin role can create, activate, and deactivate product catalog items.

Create a product catalog item
You can create hardware and software product catalog items to include in the product catalog and the service catalog.
Role required: catalog_admin
You must activate the items separately before they appear in the product catalog or service catalog.
1. Navigate to Product Catalog Catalog Definition Hardware and Software Items.
2. Click New.
3. Complete the form.
   Some of the fields listed do not appear until you save the product catalog item.

Table 59: Product catalog item fields

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>The name of the item as you want it displayed in the product catalog.</td>
</tr>
<tr>
<td>Catalogs</td>
<td>The catalog this item is listed in.</td>
</tr>
<tr>
<td>Vendor</td>
<td>The vendor that supplies the item. If the item is purchased from multiple vendors, use the vendor catalog and leave this field empty.</td>
</tr>
<tr>
<td>Rank tier</td>
<td>The overall ranking for the selected vendor’s products and services. This field is only visible in a Product Catalog Item record when the CI class is Hardware Catalog or Software Catalog.</td>
</tr>
<tr>
<td>Model</td>
<td>The specific version or configuration of the item.</td>
</tr>
<tr>
<td>Product ID</td>
<td>The item identification number assigned by your organization.</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Price</td>
<td>The price at which the item is available in the product catalog. Enter a numerical value and select the appropriate currency.</td>
</tr>
<tr>
<td>Recurring price</td>
<td>The item’s recurring price. For example, a subscription to a mobile phone contract may cost $500.00, with an $30.00 monthly recurring price.</td>
</tr>
<tr>
<td>Recurring price frequency</td>
<td>The interval at which the recurring price is accrued.</td>
</tr>
<tr>
<td>List Price</td>
<td>The price at which the item retails. This field is only visible when the Class is Hardware Catalog or Software Catalog.</td>
</tr>
<tr>
<td>Cost</td>
<td>The price at which the item was purchased from the vendor. The cost may be less than the List Price if your organization received a discount from the vendor. This field is only visible in a product catalog item record when the CI class is Hardware Catalog or Software Catalog.</td>
</tr>
<tr>
<td>Omit price in cart</td>
<td>When selected, hides the price when the item is displayed in the service catalog. Clear the check box to show the price in the service catalog. This field is only visible in a product catalog item record when the CI class is Hardware Catalog.</td>
</tr>
<tr>
<td>Workflow</td>
<td>Workflow associated with this item.</td>
</tr>
<tr>
<td>Execution plan</td>
<td>The execution plan associated with this item.</td>
</tr>
<tr>
<td>Short description</td>
<td>A brief description of the item.</td>
</tr>
<tr>
<td>Ordered item link</td>
<td>The list of links containing more information about items. The links can be reused across multiple items.</td>
</tr>
<tr>
<td>Class</td>
<td>The catalog item class this item belongs to. Select Hardware Catalog or Software Catalog. This field is visible by default. When you save the record as a hardware or software catalog item, the form is retitled Hardware Catalog or Software, respectively.</td>
</tr>
<tr>
<td>General section</td>
<td></td>
</tr>
<tr>
<td>Category</td>
<td>The named group of items to which the item belongs.</td>
</tr>
<tr>
<td>Delivery time</td>
<td>The amount of time it takes to deliver the item, starting from when it is ordered from the product catalog.</td>
</tr>
<tr>
<td>UPC</td>
<td>The barcode number used to identify and track items.</td>
</tr>
<tr>
<td>Description</td>
<td>A detailed description of the item. The description is displayed in the product catalog listing.</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Cost</td>
<td>The price at which the item was purchased from the vendor. This field is only visible when the Class is Software Catalog.</td>
</tr>
<tr>
<td>Specifications</td>
<td>Facts about the item, such as size, weight, version, or speed.</td>
</tr>
<tr>
<td>Features</td>
<td>Distinct properties or distinguishing characteristics of the item.</td>
</tr>
<tr>
<td>Images section</td>
<td></td>
</tr>
<tr>
<td>Icon</td>
<td>A small image that appears next to the name when the item is displayed in the service catalog. Supported file types are jpg, png, bmp, gif, and jpeg.</td>
</tr>
<tr>
<td>Picture</td>
<td>An image showing the item. Supported file types are jpg, png, bmp, gif, and jpeg.</td>
</tr>
<tr>
<td>Related lists</td>
<td></td>
</tr>
<tr>
<td>Includes</td>
<td>Additional catalog items provided with this item. This related list is for informational purposes only.</td>
</tr>
<tr>
<td>Variables</td>
<td>Service catalog variables associated with this item. A service catalog variable provides the ability to capture and pass on information about choices a customer makes when ordering an item from the service catalog.</td>
</tr>
<tr>
<td>Vendor Catalog Items</td>
<td>Vendor catalog items associated with this item. Vendor catalog items allow you to track information about this item by its specifications for each vendor.</td>
</tr>
</tbody>
</table>

Hardware catalog item record with an icon and picture of the item.
4. Click Try It to preview the item as it appears in the service catalog.
5. Click Submit or Update.

Activate a product catalog item

You can activate a product catalog item to make it available in the product catalog and the service catalog.

Role required: catalog_admin

You can activate the item from either the list view or the record.

1. Navigate to Product Catalog Catalog Definition Hardware and Software Items.
2. Complete one of the following actions.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activate one or more items from the list view</td>
<td>Select the check box next to one or more items in the record list and click Activate below the list.</td>
</tr>
<tr>
<td>Activate from the record</td>
<td>Click Activate under Related Links.</td>
</tr>
</tbody>
</table>

Deactivate a product catalog item

You can deactivate a product catalog item to remove it from the product catalog and the service catalog.

Role required: catalog_admin

You can deactivate the item from either the list view or the record.

1. Navigate to Product Catalog Catalog Definition Hardware and Software Items.
2. Complete one of the following steps.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deactivate from the list view</td>
<td>Select the check box next to one or more items in the record list and click Deactivate below the list.</td>
</tr>
<tr>
<td>Deactivate from the record</td>
<td>Click Deactivate under Related Links.</td>
</tr>
</tbody>
</table>

Model categories

Model categories associate CI classes with asset classes. Model categories are part of the Product Catalog application.

The model category configuration determines if the ServiceNow platform should create an asset from a CI, and, if so, what class of asset. Asset classes in the base system are Hardware, Software License, and Consumable. You can associate a model category to many models and a model to many model categories. For example, a specific model of a computer can be a Computer and a Server.
View model categories

Default model categories are included with product catalog. You can view a list of default categories and the categories that you created.

Role required: model_manager

1. Navigate to Product Catalog Product Model Model Categories.
2. Open a model category to view its details.

Create model categories

You can add custom model categories for your instance.

Role required: model_manager

When you create model categories, keep the following in mind:

- The base system provides a model category for each CI class in the CMDB. As you create new cmdb_ci classes, create a corresponding row in the model category table for the model table to be used.
• If you select an Asset class on any existing model category, the system automatically creates assets for all configuration items associated with the model category, if configured to do so. If an asset is not created automatically, you can create the asset manually. After an asset class is selected for a model category, the asset class cannot be changed.
• The Allow pre-allocated, Allow in bundle, and Allow as master options are only available if an asset class is specified for the model category.
• If you select Consumable or Software License for the asset class, the Allow in bundle option is available, but not Allow pre-allocation or Allow as master.
• When a CI is created from a model category that requires asset tracking, the system automatically creates an asset record for the asset class specified in the model category. It then links that asset record to the CI. The model category of the CI is determined by a combination of the CI class and the list of categories supported by the model, if a model is specified. Asset tracking is specified on the model record.
• When an asset is created from a model category that requires CI tracking, the system automatically creates a CI record of the class specified by the category and links it to the asset.
• The Model Categories list ('Product Catalog Product Model Model Categories') shows all of the CI classes and what asset class is generated on the asset side.

1. Navigate to 'Product Catalog Product Model Model Categories' and click New.
2. Complete the form.

Table 60: Model Category fields

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>A descriptive name for this category.</td>
</tr>
<tr>
<td>CI class</td>
<td>If a CI class is needed, it must be specified when you create the model category. The CI class cannot be added to the model category later.</td>
</tr>
<tr>
<td>Asset class</td>
<td>Default options and any new asset classes you have created. Setting the asset class triggers the creation of assets depending on the model category selected. An asset class can be added to the model category at a later time, but cannot be changed after it is added. If you select Consumable or Software License, the CI class field becomes read-only because consumables and software licenses do not create CIs. If you specify a CI class and then select Consumable or Software License, the CI class field is changed to None automatically.</td>
</tr>
<tr>
<td>Allow pre-allocation</td>
<td>Add and track items in this category as pre-allocated assets.</td>
</tr>
<tr>
<td>Allow in bundle</td>
<td>Use items in this category in bundles.</td>
</tr>
</tbody>
</table>

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Field | Description
--- | ---
Allow as master | Use items in this category as the master component in a bundle.
Enforce CI verification | Prevents the system from automatically creating assets in a specific model category when CIs are added manually or found with Discovery. This option enables an administrator to review and verify new CIs before adding them as assets. For example, an administrator can prevent contractors’ computers that are discovered as CIs by Help the Help Desk from being added to the asset portfolio.

3. Click Submit.

Create assets manually

The ServiceNow platform does not create an asset automatically under certain conditions. You can create an asset manually as needed.

Role required: model_manager

The conditions under which an asset is not automatically created include the following.

- Forced CI verification: If you select the Enforce CI verification check box in the Model Category form, the system does not create an asset automatically when a CI is created or discovered. When Enforce CI verification is enabled, newly created CIs do not trigger an automatic creation of an asset. Instead, these newly created CIs have their Requires verification field automatically set to true, which displays the following UI actions for the CI:
  - Create Asset: Creates an asset and sets Requires verification to false.
  - Merge CI: Merges duplicates of a CI. This is useful if an asset for the CI was created in a separate process, which created an associated CI. Then a second CI was created either manually or via the discovery source - and the duplicate CIs did not properly coalesce.

- Configuration errors: In rare cases, the system can fail to create the asset automatically. This may occur if you assign the model and model category to the CI in the wrong sequence.

Follow these steps to create an asset manually.

1. Navigate to **Product Catalog > Product Model > Model Categories**.
2. Open a model category that has no assigned CI class.
3. Click **Create Assets**.

This action creates assets from all CIs deferred for verification in this model category. This option is only available for users with the admin role.

Edit model categories

All default model categories can be edited, except for the Contract model category. You can edit any custom model categories that you created at any time.

Role required: model_manager

1. Navigate to **Product Catalog > Product Model > Model Categories**.
2. Open a model category record.
3. Make changes as appropriate.
4. Click Update.

Delete model categories
If a model category is no longer needed, you can delete it.
Role required: model_manager
Only model categories that are not referenced by any models can be deleted.
1. Navigate to Product Catalog Product Model Model Categories.
2. Select the check box beside the model category Name.
3. From the Actions on Selected Rows menu below the list, click Delete.
4. Click Delete.

Change Management
The ServiceNow® Change Management application provides a systematic approach to control the life cycle of all changes, facilitating beneficial changes to be made with minimum disruption to IT services.

Explore
- Change Management release notes
- Upgrade to Helsinki
- Change types
- State model and transitions
- Standard change catalog

Set up
- Activate change management plugins
- Change properties

Administer
- Configure change management
- Configure ability to copy a change request
- Configure the standard change catalog
- Create blackout and maintenance schedules
- Add a new change type
- Risk assessment and risk calculation

Use
- Create a change request
- Associated CIs on a change request
- Process a change request
- Analyze risk of change and detect conflicts

Develop
- Developer training
- Developer documentation
- Installed with change management core

Migrate
- Upgrade Change Management

Troubleshoot and get help
- Ask or answer questions in the Change Management community
- Search the HI Knowledge Base for known error articles
- Contact ServiceNow Support

Change types
One of the key descriptors of a Change is its type. The Change type dictates which of the process steps must be completed. Change Management offers ITIL-aligned processes for normal, standard, and
emergency change types. The process steps that are executed during a Change are adjusted based on type.

**Normal change**

Any service change that is not a standard change or an emergency change.

Normal change requests follow a prescriptive process which requires two levels of approval before being implemented, reviewed, and closed. These changes require a full range of assessments and authorizations such as peer or technical approval, change management, and Change Advisory Board (CAB) authorization, to ensure completeness, accuracy, and the least possible disruption to service. These changes are most often scheduled outside of defined change blackout windows or during defined maintenance windows. The normal type is used to implement beneficial change for any change to a service that is not a standard or emergency change.

**Standard change**

A standard change is a pre-authorized change that is low risk, relatively common and follows a specified procedure or work instruction.

A standard change is one that is frequently implemented, has repeatable implementation steps, and has a proven history of success. As Standard changes are pre-approved, they follow a streamlined process in which group level or peer approval and CAB authorization steps are not required.

Approved standard change requests can be predefined in a catalog of templates to make accessing and requesting a standard change more efficient. This ability also enables the Change Management team to control the changes that are authorized as standard.

**Emergency change**

A change that must be implemented as soon as possible, for example to resolve a major incident or implement a security patch. It is of such a high priority that it bypasses group and peer review and approval and goes straight to the Authorization state for approval by the CAB approval group.

Emergency changes cover the following types of emergencies:

- Fix on fail or retroactive situations where the impact to service has already been experienced.
- Fail or fail situations where the impact to service is imminent if action is not taken.
These changes do not follow the complete life cycle of a normal change due to the speed with which they must be authorized. Therefore, they progress directly to the Authorize state for approval from the CAB Approval group.

Upgrade Change Management

Follow these instructions to upgrade your Change Management system.

Prior to Geneva, Change Request installed the following plugins by default:

- Conflict Detection
- Best Practice Change Risk Calculator
- Change Risk Assessment
- Bulk CI changes

From Geneva onwards, new instances will have the Change Management core plugin installed by default. This installs the following new plugins in addition to the Conflict Detection, Best Practice Change Risk Calculator, and Change Risk Assessment plugins.

- Standard change catalog
- State Model
- Mass updates CI

If you are upgrading from a release prior to Geneva, you can choose to activate Change Management core, State Model, Standard change catalog, and Mass updates CI plugins. The State Model, and Standard change catalog plugins are dependent on the Change Management core plugin. Hence, activating either the State model or the Standard change catalog plugins results in the activation of the Change Management core plugin.

You must also consider the following consequences of activating Change Management core and the subsequent changes you might need to make to best suit your organization’s requirements:

- The previous change types will be updated from routine, comprehensive, and emergency to standard, normal, and emergency respectively. You must analyze customizations that you may have performed that reference old change type values since those will be affected and will require updating.

  Note: When Change management core is activated, the change types will be updated.

If you have already completed upgrading from a release prior to Geneva, you must perform the following tasks after you activate Change management core to ensure that change types and customizations are updated.

- If you had created newer change types in addition to the default change types, then you must customize them based on the new change types being introduced.
- Modify the customizations that are affected to use the new change type values.
- A new ACL, change_request.type, prevents users from updating the change type. If you allow any roles to update the type of a change request, for example, from Normal to Emergency, modify the ACL. Remove nobody from the Requires role list and add the roles allowed to update the change type.
- If you had the Bulk CI plugin installed, then install the Mass updates CI plugin for enhanced user experience and alignment with the new plugins.
Activate change management plugins

You can activate one or more of the Change Management plugins if you have the admin role. The plugins include demo data and activate related plugins if they are not already active.

Role required: admin

You can activate one or more of the following Change Management plugins.

Activate change management core

You can activate the Change Management plugin (com.snc.change_management) if you have the admin role. This plugin includes demo data and activates related plugins if they are not already active.

Role required: admin

1. Navigate to System Definition Plugins.
2. Find and click the plugin name.
3. On the System Plugin form, review the plugin details and then click the Activate/Upgrade related link.

If the plugin depends on other plugins, these plugins are listed along with their activation status.

If the plugin has optional features that are not functional because other plugins are inactive, those plugins are listed. A warning states that some files will not be installed. If you want the optional features to be installed, cancel this activation, activate the necessary plugins, and then return to activating the plugin.

4. If available, select the Load demo data check box.

Some plugins include demo data—sample records that are designed to illustrate plugin features for common use cases. Loading demo data is a good policy when you first activate the plugin on a development or test instance.

You can also load demo data after the plugin is activated by clicking the Load Demo Data Only related link on the System Plugin form.

5. Click Activate.

You can activate one or more of the following plugins:

- State model
- Change Management - Collision Detector
- Best practice - change risk calculator
- Change risk assessment
- Standard change catalog
- Best practice - bulk CI changes

You can now configure Change Management.

Installed with change management core

Several types of components are installed with the Change management core.

Script includes installed with change management core

Change management core adds the following script includes.

<table>
<thead>
<tr>
<th>Script include</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ChangeCIAjaxProcessor</td>
<td>Provides a client API for information about the Affected CI for Proposed Changes.</td>
</tr>
</tbody>
</table>
### Tables installed with change management core

Change management core adds the following tables.

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task CI</td>
<td>Adds Manual Proposed Change (manual_proposed_change) field if the proposed change has been made manually rather than through the Mass Update CI feature</td>
</tr>
</tbody>
</table>

### Activate the state model

You can activate the Change Management - State Model plugin (com.snc.change_management.state_model) if you have the admin role. This plugin includes demo data and activates related plugins if they are not already active.

Role required: admin

Change Management - State Model activates the following related plugin if it is not already active.

<table>
<thead>
<tr>
<th>Table 61: Plugins for Standard Change Catalog</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plugin</td>
</tr>
<tr>
<td>Change Management - Core</td>
</tr>
</tbody>
</table>

1. Navigate to System Definition Plugins.
2. Find and click the plugin name.
3. On the System Plugin form, review the plugin details and then click the Activate/Upgrade related link.

   If the plugin depends on other plugins, these plugins are listed along with their activation status.

   If the plugin has optional features that are not functional because other plugins are inactive, those plugins are listed. A warning states that some files will not be installed. If you want the optional features to be installed, cancel this activation, activate the necessary plugins, and then return to activating the plugin.

4. If available, select the Load demo data check box.

   Some plugins include demo data—sample records that are designed to illustrate plugin features for common use cases. Loading demo data is a good policy when you first activate the plugin on a development or test instance.

   You can also load demo data after the plugin is activated by clicking the Load Demo Data Only related link on the System Plugin form.

5. Click Activate.

You can now configure Change Management.
State model post-activation tasks

If you upgraded from a release prior to Geneva, you must update old state labels to new state labels after you activate the Change Management state model.

State values for current change records are not modified when you activate the Change Management state model. However, your current change records will display the new state labels in the state field.

<table>
<thead>
<tr>
<th>State value</th>
<th>New state label</th>
<th>Old state label</th>
</tr>
</thead>
<tbody>
<tr>
<td>-5</td>
<td>New</td>
<td>Pending</td>
</tr>
<tr>
<td>-4</td>
<td>Assess</td>
<td>(Not used)</td>
</tr>
<tr>
<td>-3</td>
<td>Authorize</td>
<td>(Not used)</td>
</tr>
<tr>
<td>-2</td>
<td>Scheduled</td>
<td>(Not used)</td>
</tr>
<tr>
<td>-1</td>
<td>Implement</td>
<td>(Not used)</td>
</tr>
<tr>
<td>0</td>
<td>Review</td>
<td>(Not used)</td>
</tr>
<tr>
<td>1</td>
<td>(Not used)</td>
<td>Open</td>
</tr>
<tr>
<td>2</td>
<td>(Not used)</td>
<td>Work in Progress</td>
</tr>
<tr>
<td>3</td>
<td>Closed</td>
<td>Closed Complete</td>
</tr>
<tr>
<td>4</td>
<td>Canceled</td>
<td>Closed Incomplete</td>
</tr>
<tr>
<td>7</td>
<td>(Not used)</td>
<td>Closed Skipped</td>
</tr>
</tbody>
</table>

For example, records with a state value of -5 have the Pending state label before the Change Management state model is activated. After the state model is activated, these records retain the state value of -5 but will have the New label. To use your organization’s required change management process with the state model, you must update state values to the new labels in your existing change records as appropriate, either manually or by script.

You must also update any reports that run queries based on old state labels to reflect the new state labels.

To automatically update the state field values from old state labels to new state labels, customize and then run the following sample script:

```javascript
function updateStates() {
    function hasApprovers(changeGr) {
        var approverGr = new GlideRecord("sysapproval_approver");
        approverGr.addQuery('sysapproval', changeGr.getUniqueValue());
        approverGr.query();
        return approverGr.getRowCount() > 0;
    }

    function hasRunningWorkflows(changeGr) {
        var workflow = new Workflow();
        var workflowGr = workflow.getRunningFlows(changeGr);
        var hasRunningFlows = workflowGr.getRowCount() > 0;
        return hasRunningFlows;
    }

    // Old State Model
    var PENDING = '-5';
    var OPEN = '1';

    // New State Model
    var NEW = 'New';
    var OPEN = 'Open';

    // Update state values
    var stateGr = new GlideRecord("change_state");
    stateGr.query();
    stateGr.each();
    while (stateGr.next()) {
        var currentValue = stateGr.getValue('value');
        var newState = stateTable[currentValue].newLabel;
        stateGr.setValue('value', newState);
        stateGr.update();
    }
}
```
var CLOSED_COMPLETE = '3';
var CLOSED_INCOMPLETE = '4';
var CLOSED_SKIPPED = '7';

// New State Model
var NEW = '-5';
var ASSESS = '-4';
var AUTHORIZE = '-3';
var SCHEDULED = '-2';
var IMPLEMENT = '-1';
var REVIEW = '0';
var CLOSED = '3';
var CANCELLED = '4';

// Find all change requests
var record = new GlideRecord('change_request');
record.query();

// Update state from old value to new value
while (record.next()) {
  switch(record.getValue('state')) {
    case OPEN:
      if (!hasRunningWorkflows(record) && !hasApprovers(record))
        record.state = NEW;
      break;
    case CLOSED_COMPLETE:
      record.state = CLOSED;
      record.close_code = "successful";
      break;
    case CLOSED_SKIPPED:
      record.state = CANCELLED;
      record.close_code = "unsuccessful";
      break;
    case CLOSED_INCOMPLETE:
      record.state = CLOSED;
      record.close_code = "successful_issues";
      break;
  }
  record.autoSysFields(false);
  record.setWorkflow(false);
  record.update();
}

Installed with state model

Several types of components are installed with the Change Management state model.

Properties installed with state model

The Change Management state model adds the following properties.

Note: To open the System Property [sys_properties] table, enter sys_properties.list in the navigation filter.
### Property Description

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>glide.ui.change_request_activity.fields</td>
<td>Change request activity formatter fields.</td>
</tr>
<tr>
<td></td>
<td>• Type: string</td>
</tr>
<tr>
<td></td>
<td>• Default value: assigned_to,cmdb_ci,state,impact,priority,opened_by,work_notes,opened_date,work_notes,comments,on_hold_reason</td>
</tr>
<tr>
<td></td>
<td>• Location: System Property (sys_properties) table</td>
</tr>
<tr>
<td>com.snc.change_management.core.log</td>
<td>Controls the level at which logging should be displayed.</td>
</tr>
<tr>
<td></td>
<td>• Type: choice list</td>
</tr>
<tr>
<td></td>
<td>• Default value: debug</td>
</tr>
<tr>
<td></td>
<td>• Other possible values:</td>
</tr>
<tr>
<td></td>
<td>• info</td>
</tr>
<tr>
<td></td>
<td>• warn</td>
</tr>
<tr>
<td></td>
<td>• error</td>
</tr>
<tr>
<td></td>
<td>• Location: System Property (sys_properties) table</td>
</tr>
</tbody>
</table>

### Business rules installed with state model

The Change Management state model adds the following business rules.

<table>
<thead>
<tr>
<th>Business rule</th>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scratchpad Variables from parent Change</td>
<td>Change Task (change_task)</td>
<td>Sets a flag in the Scratch Pad to indicate if the change task has a change request that is on hold.</td>
</tr>
<tr>
<td>mark_closed</td>
<td>Change Request (change_request)</td>
<td>Sets a change request to inactive depending on the current state.</td>
</tr>
<tr>
<td>Cancel approvals when Change is on hold</td>
<td>Change Request (change_request)</td>
<td>Cancels all approvals if the change request is put on hold.</td>
</tr>
</tbody>
</table>

### Client scripts installed with state model

The Change Management state model adds the following client scripts.

<table>
<thead>
<tr>
<th>Client script</th>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hide On hold for certain states</td>
<td>Change Request (change_request)</td>
<td>Hides the On hold field if the state was New, Closed, or Canceled when the Change Request form was loaded.</td>
</tr>
<tr>
<td>Field message for State field</td>
<td>Change Task (change_task)</td>
<td>Adds a field message to the state field under certain conditions such as when the change is on hold.</td>
</tr>
<tr>
<td>Show valid states values</td>
<td>Change Request (change_request)</td>
<td>Changes the state field to only display the current state and the next valid state for the change request.</td>
</tr>
</tbody>
</table>
### Tables installed with state model

The Change Management model adds the following table.

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change Request (change_request)</td>
<td>List of change requests.</td>
</tr>
</tbody>
</table>

### Script includes installed with state model

The Change Management state model adds the following script includes.

<table>
<thead>
<tr>
<th>Script include</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ChangeRequest</td>
<td>Change request API. Provides an abstraction from the legacy and new change types and state models.</td>
</tr>
<tr>
<td>ChangeRequestStateHandlerSNC</td>
<td>Base state handler implementation extended by ChangeRequestStateHandler.</td>
</tr>
<tr>
<td>ChangeRequestStateHandler</td>
<td>Transition between states. Uses one of the defined models to determine which transitions are allowed.</td>
</tr>
<tr>
<td>ChangeRequestStateModelSNC_emergency</td>
<td>Extended by ChangeRequestStateModel_emergency.</td>
</tr>
<tr>
<td>ChangeRequestStateModel_emergency</td>
<td>State model for emergency changes.</td>
</tr>
<tr>
<td>ChangeRequestStateModelSNC_standard</td>
<td>Extended by ChangeRequestStateModel_standard.</td>
</tr>
<tr>
<td>ChangeRequestStateModel_standard</td>
<td>State model for standard changes.</td>
</tr>
<tr>
<td>ChangeRequestStateModelSNC_normal</td>
<td>Extended by ChangeRequestStateModel_normal.</td>
</tr>
<tr>
<td>ChangeRequestStateModel_normal</td>
<td>State model for normal changes.</td>
</tr>
<tr>
<td>ChangeRequestStateHandlerAjaxSNC</td>
<td>Base client API extended by ChangeRequestStateHandlerAjax.</td>
</tr>
<tr>
<td>ChangeRequestStateHandlerAjax</td>
<td>Client-callable API for ChangeRequestStateHandler.</td>
</tr>
</tbody>
</table>

### Activate conflict detection

You can activate the Conflict Detection plugin (com.snc.change.collision) if you have the admin role. This plugin includes demo data and activates related plugins if they are not already active.

**Role required:** admin

1. Navigate to System Definition Plugins.
2. Find and click the plugin name.
3. On the System Plugin form, review the plugin details and then click the Activate/Upgrade related link.

If the plugin depends on other plugins, these plugins are listed along with their activation status.
If the plugin has optional features that are not functional because other plugins are inactive, those plugins are listed. A warning states that some files will not be installed. If you want the optional features to be installed, cancel this activation, activate the necessary plugins, and then return to activating the plugin.

4. If available, select the Load demo data check box.

Some plugins include demo data—sample records that are designed to illustrate plugin features for common use cases. Loading demo data is a good policy when you first activate the plugin on a development or test instance.

You can also load demo data after the plugin is activated by clicking the Load Demo Data Only related link on the System Plugin form.

5. Click Activate.

You can now configure Change Management.

Installed with conflict detection

Several types of components are installed with conflict detection.

Properties installed with conflict detection

Conflict detection adds the following properties.

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>change.conflict.role</td>
<td>A comma-separated list of roles which have access to the conflict detection feature. Roles included here should have access to the underlying change_request record.</td>
</tr>
<tr>
<td>change.conflict.blackout</td>
<td>When checking for change request conflicts, check against blackout windows.</td>
</tr>
<tr>
<td>change.conflict.currentci</td>
<td>When checking for change request conflicts, check against changes already scheduled for the same CI.</td>
</tr>
<tr>
<td>change.conflict.currentwindow</td>
<td>When checking for change request conflicts, check whether the change falls within the CI’s maintenance window.</td>
</tr>
<tr>
<td>change.conflict.relatedchildwindow</td>
<td>When checking for change request conflicts, check whether the change falls within the child CIs’ maintenance windows.</td>
</tr>
<tr>
<td>change.conflict.relatedparentwindow</td>
<td>When checking for change request conflicts, check whether the change falls within parent CIs’ maintenance windows.</td>
</tr>
<tr>
<td>change.conflict.mode</td>
<td>CI conflict check mode.</td>
</tr>
<tr>
<td></td>
<td>• Basic: When enabled, checks only the current change request’s CI against other change requests’ CI and affected CIs.</td>
</tr>
<tr>
<td></td>
<td>• Advanced: When enabled, checks both the current change request’s CI and affected CIs against other change requests’ CI and affected CIs.</td>
</tr>
<tr>
<td>change.conflict.refresh.conflicts</td>
<td>Run conflict detection automatically after changes to Configuration item, Planned start date, Planned end date, or State when a change request is updated</td>
</tr>
<tr>
<td>Property</td>
<td>Description</td>
</tr>
<tr>
<td>----------</td>
<td>-------------</td>
</tr>
<tr>
<td>change.conflict.refresh.scheduled</td>
<td>Enable the scheduled change conflict checker.</td>
</tr>
</tbody>
</table>

**Business rules installed with conflict detection**

Conflict detection adds the following business rules.

<table>
<thead>
<tr>
<th>Business rule</th>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Add CI in affected CIs List</td>
<td>Change Request (change_request)</td>
<td>Ensures that the configuration item (CI) is added to the Affected CIs list if the conflict mode is set to advanced.</td>
</tr>
<tr>
<td>Cancel Conflict Detection</td>
<td>Change Request (change_request)</td>
<td>Cancels conflict detection background job if any of Planned Start, Planned End, or Configuration Item fields are updated.</td>
</tr>
<tr>
<td>Clear Conflicts</td>
<td>Change Request (change_request)</td>
<td>Removes any conflict records related to a change request and resets the Conflict Status and Conflict Status fields. It also resets the Conflict Status and Conflict Status fields of related changes if removal of conflict records results in no conflict records for those related change requests.</td>
</tr>
<tr>
<td>Set Conflict Status</td>
<td>Change Request (change_request)</td>
<td>Ensures that the Conflict Status field is set to Not run for new change requests.</td>
</tr>
<tr>
<td>Sync Blackout Window Span</td>
<td>Schedule Entry (cmn_schedule_span)</td>
<td>Creates an entry in the current update set if a blackout window span is inserted, updated, or deleted.</td>
</tr>
<tr>
<td>Update Conflicts</td>
<td>Change Request (change_request)</td>
<td>Determines if conflict checking should be run against a change request and if that is the case, initiates conflict detection in background.</td>
</tr>
</tbody>
</table>

**Client scripts installed with conflict detection**

Conflict detection adds the following client scripts.

<table>
<thead>
<tr>
<th>Client script</th>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Notify Conflict</td>
<td>Client Script (sys_script_client)</td>
<td>Displays a message on the Conflict status field when conflicts have been detected.</td>
</tr>
<tr>
<td>Run Conflict Detection</td>
<td>Client Script (sys_script_client)</td>
<td>Runs conflict detection if the URL of the change record that is loaded contains the sysparm_run_conflict_detection=true parameter.</td>
</tr>
</tbody>
</table>
### Client script

| Show Applies to messages | Maintenance Schedule (cmn_schedule_maintenance) | Displays an information message when None is selected in the Applies to field. |
| Show Applies to messages | Blackout Schedule (cmn_schedule_blackout) | Displays an information message when None is selected in the Applies to field. |

**Tables installed with conflict detection**

Conflict detection adds the following tables.

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change request (change_request)</td>
<td>Represents a change request</td>
</tr>
<tr>
<td>Blackout Schedule (cmn_schedule_blackout)</td>
<td>Represents a blackout schedule</td>
</tr>
<tr>
<td>Condition Schedule (cmn_schedule_condition)</td>
<td>Represents a schedule condition</td>
</tr>
<tr>
<td>Maintenance Schedule (cmn_schedule_maintenance)</td>
<td>Represents a maintenance schedule</td>
</tr>
</tbody>
</table>

**Script includes installed with conflict detection**

Conflict detection adds the following script includes.

<table>
<thead>
<tr>
<th>Script include</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ChangeCollisionHelper</td>
<td>Helper methods for the Conflict Detection plugin (com.snc.change.collision).</td>
</tr>
<tr>
<td>ChangeConflictWorker</td>
<td>Used to initiate the conflict checker in a background job.</td>
</tr>
<tr>
<td>ChangeCheckConflicts</td>
<td>Contains the class methods for Collision Detection.</td>
</tr>
<tr>
<td>ChangeConflict</td>
<td>Class that holds a change conflict’s com.snc.change.collision plugin.</td>
</tr>
<tr>
<td>ChangeConflictAJAXProcessor</td>
<td>Methods to support executing conflict detection from the Change Request form.</td>
</tr>
<tr>
<td>ChangeConflictHandler</td>
<td>Class for the change conflict package.</td>
</tr>
<tr>
<td>ChangeCheckConflictsSNC</td>
<td>Contains base class methods for Conflict Detection.</td>
</tr>
</tbody>
</table>

### Activate best practice change risk calculator

You can activate the Best Practice- Change Risk Calculator plugin (com.snc.bestpractice.change_risk) if you have the admin role. This plugin includes demo data and activates related plugins if they are not already active.

**Role required: admin**

1. Navigate to System Definition Plugins.
2. Find and click the plugin name.
3. On the System Plugin form, review the plugin details and then click the Activate/Upgrade related link.

If the plugin depends on other plugins, these plugins are listed along with their activation status.
If the plugin has optional features that are not functional because other plugins are inactive, those plugins are listed. A warning states that some files will not be installed. If you want the optional features to be installed, cancel this activation, activate the necessary plugins, and then return to activating the plugin.

4. If available, select the Load demo data check box.

Some plugins include demo data—sample records that are designed to illustrate plugin features for common use cases. Loading demo data is a good policy when you first activate the plugin on a development or test instance.

You can also load demo data after the plugin is activated by clicking the Load Demo Data Only related link on the System Plugin form.

5. Click Activate.

You can define risk and impact conditions for your change records.

Installed with change risk calculator

Several types of components are installed with the Best Practice- Change Risk Calculator.

### Tables installed with change risk calculator

Best Practice- Change Risk Calculator adds the following table.

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change Request (change_request)</td>
<td>List of change requests.</td>
</tr>
</tbody>
</table>

### Business rules installed with change risk calculator

Best Practice- Change Risk Calculator adds the following business rules.

<table>
<thead>
<tr>
<th>Business rule</th>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calculate Risk</td>
<td>Change request (change_request)</td>
<td>Calculates the risk associated with a change request.</td>
</tr>
</tbody>
</table>

### Properties installed with change risk calculator

Best Practice- Change Risk Calculator adds the following properties.

Note: To open the System Property (sys_properties) table, enter sys_properties.list in the navigation filter.
<table>
<thead>
<tr>
<th>Property</th>
<th>Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>glide.ui.risk_calculate_rule</td>
<td>Change risk calculation method.</td>
</tr>
<tr>
<td></td>
<td>• Type: choice list</td>
</tr>
<tr>
<td></td>
<td>• Default value: ui_action</td>
</tr>
<tr>
<td></td>
<td>• Other possible values:</td>
</tr>
<tr>
<td></td>
<td>• none: None</td>
</tr>
<tr>
<td></td>
<td>• business_rule: Business Rule</td>
</tr>
<tr>
<td></td>
<td>• ui_action: UI Action</td>
</tr>
<tr>
<td></td>
<td>• Location: System Property (sys_properties) table</td>
</tr>
</tbody>
</table>

Script includes installed with change risk calculator

Best Practice - Change Risk Calculator adds the following script includes.

<table>
<thead>
<tr>
<th>Script include</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RiskCalculator</td>
<td>Calculates a change request’s risk and impact based on defined risk conditions.</td>
</tr>
</tbody>
</table>

Activate change risk assessment

You can activate the Change Management - Risk Assessment plugin (com.snc.change.risk_assessment) if you have the admin role. This plugin includes demo data and activates related plugins if they are not already active.

Role required: admin

Change Management - Risk Assessment activates these related plugins if they are not already active.

Table 62: Plugins for Change Management - Risk Assessment

<table>
<thead>
<tr>
<th>Plugin</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment Components (com.snc.assessment)</td>
<td>Provides the core components required for legacy surveys.</td>
</tr>
<tr>
<td>Best Practice - Change Risk Calculator</td>
<td>Provides simple risk and impact calculations for change management.</td>
</tr>
<tr>
<td>(com.snc.bestpractice.change_risk)</td>
<td></td>
</tr>
<tr>
<td>Best Practice - Task Survey Management</td>
<td>Provides survey functionality including triggering survey requests based on task conditions and linking survey responses to the task that generated the survey.</td>
</tr>
<tr>
<td>(com.snc.bestpractice.task_survey)</td>
<td></td>
</tr>
</tbody>
</table>

1. Navigate to System Definition Plugins.
2. Find and click the plugin name.
3. On the System Plugin form, review the plugin details and then click the Activate/Upgrade related link.

If the plugin depends on other plugins, these plugins are listed along with their activation status.

If the plugin has optional features that are not functional because other plugins are inactive, those plugins are listed. A warning states that some files will not be installed. If you want the optional
features to be installed, cancel this activation, activate the necessary plugins, and then return to
activating the plugin.
4. If available, select the Load demo data check box.

Some plugins include demo data—sample records that are designed to illustrate plugin features for
common use cases. Loading demo data is a good policy when you first activate the plugin on a
development or test instance.

You can also load demo data after the plugin is activated by clicking the Load Demo Data Only
related link on the System Plugin form.
5. Click Activate.

You can define risk assessment conditions for change requests.

Installed with risk assessment

Several types of components are installed with the Risk Assessment.

**Tables installed with change risk assessment**

Change risk assessment adds the following tables.

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk Assessment Thresholds</td>
<td>List of risk assessment thresholds.</td>
</tr>
<tr>
<td>(risk_assessment_threshold)</td>
<td></td>
</tr>
</tbody>
</table>

**Business rules installed with change risk assessment**

Change risk assessment adds the following business rules.

<table>
<thead>
<tr>
<th>Business rule</th>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Run Risk Calculation</td>
<td>Change request</td>
<td>Performs risk assessment when the specified conditions are met.</td>
</tr>
<tr>
<td></td>
<td>(change_request)</td>
<td></td>
</tr>
</tbody>
</table>

**Script includes installed with change risk assessment**

Change risk assessment adds the following script includes.

<table>
<thead>
<tr>
<th>Script include</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CreateAssessment</td>
<td>Creates or associate correct existing risk assessment to the change request.</td>
</tr>
<tr>
<td>RiskAssessmentCalculator</td>
<td>Calculates and sets the risk assessment after adding all weighted scores to calculate the composite score.</td>
</tr>
</tbody>
</table>

**Activate standard change catalog**

You can activate the Standard Change Catalog plugin (com.snc.change_management.standard_change_catalog) if you have the admin role. This plugin includes demo data and activates related plugins if they are not already active.

Role required: admin

Standard Change Catalog activates the following related plugin if it is not already active.
Table 63: Plugins for Standard Change Catalog

<table>
<thead>
<tr>
<th>Plugin</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change Management - Core</td>
<td>Change management is used to create and manage change requests. Once this is activated, it will update the values for the Type field on the change request.</td>
</tr>
</tbody>
</table>

1. Navigate to System Definition Plugins.
2. Find and click the plugin name.
3. On the System Plugin form, review the plugin details and then click the Activate/Upgrade related link.
   - If the plugin depends on other plugins, these plugins are listed along with their activation status.
   - If the plugin has optional features that are not functional because other plugins are inactive, those plugins are listed. A warning states that some files will not be installed. If you want the optional features to be installed, cancel this activation, activate the necessary plugins, and then return to activating the plugin.
4. If available, select the Load demo data check box.
   - Some plugins include demo data—sample records that are designed to illustrate plugin features for common use cases. Loading demo data is a good policy when you first activate the plugin on a development or test instance.
   - You can also load demo data after the plugin is activated by clicking the Load Demo Data Only related link on the System Plugin form.
5. Click Activate.

You can configure the standard change catalog or request a new standard change from the standard change catalog.

Installed with standard change catalog

Several types of components are installed with the standard change catalog.

**Tables installed with standard change catalog**

Standard change catalog adds the following tables.

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change request</td>
<td>Change request table. Adds the standard change template version.</td>
</tr>
<tr>
<td>(change_request)</td>
<td></td>
</tr>
<tr>
<td>Change producer version</td>
<td>Contains the record producer and change proposal for the standard change with the current version of the template. It also includes the number and percentage of successful and unsuccessful change requests created from the proposal.</td>
</tr>
<tr>
<td>(std_change_producer_version)</td>
<td></td>
</tr>
<tr>
<td>Standard change properties</td>
<td>List of standard change catalog properties.</td>
</tr>
<tr>
<td>(std_change_properties)</td>
<td></td>
</tr>
<tr>
<td>Standard change proposal</td>
<td>List if standard change proposals.</td>
</tr>
<tr>
<td>(std_change_proposal)</td>
<td></td>
</tr>
<tr>
<td>Standard change record producer</td>
<td>List of standard change record producers.</td>
</tr>
<tr>
<td>(std_change_record_producer)</td>
<td></td>
</tr>
<tr>
<td>Table</td>
<td>Description</td>
</tr>
<tr>
<td>-------</td>
<td>-------------</td>
</tr>
<tr>
<td>Standard change template (std_change_template)</td>
<td>List of standard change templates.</td>
</tr>
</tbody>
</table>

Properties installed with standard change catalog
Standard change catalog adds the following properties.

Note: To open the System Property (sys_properties) table, enter sys_properties.list in the navigation filter.

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>glide.approval_engine.std_change_proposal</td>
<td>Approval engine to use for the std_change_proposal table.</td>
</tr>
<tr>
<td>• Type: String</td>
<td></td>
</tr>
<tr>
<td>• Default value:</td>
<td></td>
</tr>
<tr>
<td>• Other possible values:</td>
<td></td>
</tr>
<tr>
<td>• Value 1: blank to use Approval Rules.</td>
<td></td>
</tr>
<tr>
<td>• Value 2: process_guide to use Process Guides.</td>
<td></td>
</tr>
<tr>
<td>• Value 3: ‘off’ to turn off the approval engines for the table. Set to off when using Workflow to manage approvals.</td>
<td></td>
</tr>
<tr>
<td>• Location: System Property (sys_properties) table</td>
<td></td>
</tr>
</tbody>
</table>

Script includes installed with standard change catalog
Standard change catalog adds the following script includes.

<table>
<thead>
<tr>
<th>Script include</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>StdChangeUtils</td>
<td>Customer extensible Class of StdChangeUtilsSNC. Customers can override the public methods of StdChangeUtilsSNC for their own business needs.</td>
</tr>
<tr>
<td>StdChangeUtilsSNC</td>
<td>Contains functions that are required and used within the Standard Change Request.</td>
</tr>
</tbody>
</table>

Client scripts installed with standard change catalog
Standard change catalog adds the following client scripts.

<table>
<thead>
<tr>
<th>Client script</th>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hide chart when it has no stats</td>
<td>Standard Change Template Version (std_change Producer_version)</td>
<td>If there are no statistics on the template, then the chart is not displayed.</td>
</tr>
<tr>
<td>Warn on Close and Cancel Without Approval</td>
<td>Standard Change Proposal (std_change_proposal)</td>
<td>Displays a warning message if the change is closed or cancelled without an outstanding approval associated with it.</td>
</tr>
</tbody>
</table>
### Client script Table Description

<table>
<thead>
<tr>
<th>Client script</th>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set template value read only</td>
<td>Standard Change Proposal</td>
<td>The values that are set in the template are set to read-only so they cannot be changed.</td>
</tr>
<tr>
<td>Mark standard change fields read only</td>
<td>Change Request</td>
<td>The values that are set in the template are set to read-only so they cannot be changed.</td>
</tr>
<tr>
<td>Hide chart when it has no stats</td>
<td>Standard Change Template</td>
<td>If there are no statistics on the template, then the chart is not displayed.</td>
</tr>
<tr>
<td>Disable ref expansion in field_list</td>
<td>Standard Change Properties</td>
<td>Remove the ability to expand reference fields and display the reference fields in the field list of change request values.</td>
</tr>
<tr>
<td>Check Template Values</td>
<td>Standard Change Proposal</td>
<td>Validates that the template fields are set with valid values and that restricted fields have not been selected.</td>
</tr>
<tr>
<td>Default Values For Modify</td>
<td>Standard Change Proposal</td>
<td>Populates the default values from the template to modify the template base. These default values can then be adjusted to reflect correct values.</td>
</tr>
<tr>
<td>Fetch Mandatory &amp; Restricted Columns</td>
<td>Standard Change Proposal</td>
<td>Retrieves all default values for fields as well as the mandatory and unmodifiable fields for the change request template.</td>
</tr>
</tbody>
</table>

### Business rules installed with standard change catalog

Standard change catalog adds the following business rules.

<table>
<thead>
<tr>
<th>Business rule</th>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Default Template Name</td>
<td>Standard Change Proposal</td>
<td>Sets the template name to either the short description or the name of the record producer.</td>
</tr>
<tr>
<td>Update Standard Change Version stats</td>
<td>Change Request</td>
<td>Updates the statistics of the template version when a change request is updated or deleted.</td>
</tr>
<tr>
<td>Validate Category</td>
<td>Standard Change Properties</td>
<td>Validates that the selected category is part of the selected catalog.</td>
</tr>
<tr>
<td>Restrict fields from Standard Change</td>
<td>Change Request</td>
<td>Checks that fields populated from the standard change proposal are not modified on the change request.</td>
</tr>
<tr>
<td>Validate template_value compliance</td>
<td>Standard Change Proposal</td>
<td>Validates that the values in the template are correct for the mandatory and restricted fields.</td>
</tr>
<tr>
<td>Business rule</td>
<td>Table</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>---------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Restrict template value</td>
<td>Standard Change Proposal (std_change_proposal)</td>
<td>Ensures that the template value cannot be modified for the current proposal if the proposal is closed, cancelled, or if the user does not have access to modify the template value.</td>
</tr>
<tr>
<td>Retired flag validation</td>
<td>Standard Change Template (std_change_record_producer)</td>
<td>Sets the active flag to false and also validates that the template cannot be republished once retired.</td>
</tr>
<tr>
<td>Generate Template On Approval</td>
<td>Standard Change Proposal (std_change_proposal)</td>
<td>Creates, modifies, retires the template based on the proposal once the proposal has been approved.</td>
</tr>
<tr>
<td>Make Template reference readonly</td>
<td>Standard Change Proposal (std_change_proposal)</td>
<td>Validates that the template field can only be set when the proposal state is new.</td>
</tr>
<tr>
<td>Check Standard Change Setup</td>
<td>Standard Change Proposal (std_change_proposal)</td>
<td>Validates that the category and catalog values are valid values to be used in the standard change properties.</td>
</tr>
<tr>
<td>Update Standard Change Catalog</td>
<td>Standard Change Properties (std_change_proposal)</td>
<td>Update the module and wizard parameters to the new category the category changes to in the property.</td>
</tr>
<tr>
<td>Make Template to modify or retire mandatory</td>
<td>Standard Change Proposal (std_change_properties)</td>
<td>Displays a message stating that the template is required modify or retire a standard change proposal.</td>
</tr>
<tr>
<td>Stamp version name and number</td>
<td>Standard Change Template Version (std_change_producer_version)</td>
<td>Sets the name and number of the version record to be an increment of the version number.</td>
</tr>
<tr>
<td>Check conflicts in field configurations</td>
<td>Standard Change Properties (std_change_proposal)</td>
<td>Validates that fields cannot be specified in both mandatory and restricted fields.</td>
</tr>
</tbody>
</table>

**Email notifications installed with standard change catalog**

Standard change catalog adds the following email notifications.

<table>
<thead>
<tr>
<th>Email notification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Change Proposal Request</td>
<td>Recipient of this notification is the user or group in the Approver field.</td>
</tr>
</tbody>
</table>

**Events installed with standard change catalog**

Standard change catalog adds the following events.

<table>
<thead>
<tr>
<th>Event</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>std_change_proposal.approval.rejected</td>
<td>Event is raised when request for a standard change proposal has been rejected.</td>
</tr>
<tr>
<td>Event</td>
<td>Description</td>
</tr>
<tr>
<td>--------------------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>std_change_proposal.approval.inserted</td>
<td>Event is raised when an approval request is inserted requesting an approval of a standard change proposal.</td>
</tr>
</tbody>
</table>

Activate change management mass update CI

You can activate the Change Management Mass Update CI plugin (com.snc.change_management.mass_update_ci) if you have the admin role. This plugin includes demo data and activates related plugins if they are not already active.

Role required: admin

Change Management mass update CI activates these related plugins if they are not already active.

Table 64: Plugins for Change Management Mass Update CI

<table>
<thead>
<tr>
<th>Plugin</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change Management - State model</td>
<td>State model is used to move and track change requests through several states.</td>
</tr>
<tr>
<td>(com.snc.change_management.state_model)</td>
<td></td>
</tr>
<tr>
<td>Best Practice - Bulk CI Changes</td>
<td>Best Practice - Bulk CI Changes enables you to record a single change proposal that are linked to all affected CIs.</td>
</tr>
<tr>
<td>(com.snc.bestpractice.bulkchange)</td>
<td></td>
</tr>
</tbody>
</table>

1. Navigate to System Definition Plugins.
2. Find and click the plugin name.
3. On the System Plugin form, review the plugin details and then click the Activate/Upgrade related link.

   If the plugin depends on other plugins, these plugins are listed along with their activation status.

   If the plugin has optional features that are not functional because other plugins are inactive, those plugins are listed. A warning states that some files will not be installed. If you want the optional features to be installed, cancel this activation, activate the necessary plugins, and then return to activating the plugin.

4. If available, select the Load demo data check box.

   Some plugins include demo data—sample records that are designed to illustrate plugin features for common use cases. Loading demo data is a good policy when you first activate the plugin on a development or test instance.

   You can also load demo data after the plugin is activated by clicking the Load Demo Data Only related link on the System Plugin form.
5. Click Activate.

Installed with mass update CI

Several types of components are installed with the Change Management - Mass update CI.

Tables installed with mass update CI

Change Management - Mass Update CI adds the following tables.
<table>
<thead>
<tr>
<th>Client script</th>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mass Update CIs - Alert on class change</td>
<td>Change request</td>
<td>Alerts the user when the CI Class is changed on the first change only.</td>
</tr>
<tr>
<td>Mass Update CIs - Sync CI Class</td>
<td>Change request</td>
<td>Keeps the Configuration Item’s class and the Mass Update CI Class in sync while the change is not flagged as a Mass Update.</td>
</tr>
</tbody>
</table>

### Business rules installed with mass update CI

Mass Update CI adds the following business rules.

<table>
<thead>
<tr>
<th>Business rule</th>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mass Update CIs - Generate xml diffs</td>
<td>Change request</td>
<td>Generates the xml changes for the Mass CI Update based on the change’s proposed change template.</td>
</tr>
<tr>
<td>Mass Update CIs - Delete Affected CIs</td>
<td>Change request</td>
<td>Based on the Mass Update CI Class, removes any Affected CIs that are not longer affected by the change such as those that do not have manual proposals and are not covered by the CI Class.</td>
</tr>
</tbody>
</table>

### Activate best practice - bulk CI changes

You can activate the Best Practice - Bulk CI Changes plugin (com.snc.bestpractice.bulkchange) if you have the admin role. This plugin includes demo data and activates related plugins if they are not already active.

Role required: admin

1. Navigate to System Definition Plugins.
2. Find and click the plugin name.
3. On the System Plugin form, review the plugin details and then click the Activate/Upgrade related link.

If the plugin depends on other plugins, these plugins are listed along with their activation status.

If the plugin has optional features that are not functional because other plugins are inactive, those plugins are listed. A warning states that some files will not be installed. If you want the optional features to be installed, cancel this activation, activate the necessary plugins, and then return to activating the plugin.

4. If available, select the Load demo data check box.
Some plugins include demo data—sample records that are designed to illustrate plugin features for common use cases. Loading demo data is a good policy when you first activate the plugin on a development or test instance.

You can also load demo data after the plugin is activated by clicking the Load Demo Data Only related link on the System Plugin form.

5. Click Activate.

You can now configure Change Management.

Installed with Best Practice- Bulk CI Changes

Several types of components are installed with the Best Practice- Bulk CI Changes.

*Tables installed with Best Practice - Bulk CI Changes*

Best Practice - Bulk CI Changes adds the following tables.

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>{change_request}</td>
<td>Change request table.</td>
</tr>
<tr>
<td>{task_ci}</td>
<td>Adds a reference qualifier to filter the Affected CI lookup to the CI Class defined in the change request.</td>
</tr>
</tbody>
</table>

*Business rules installed with Best Practice - Bulk CI Changes*

Best Practice - Bulk CI Changes adds the following business rules.

<table>
<thead>
<tr>
<th>Business rule</th>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clear Proposed Change on Class Change</td>
<td>{change_request}</td>
<td>Runs when the ci_class field is changed. Clears the proposed change field value.</td>
</tr>
<tr>
<td>Delete Affected CIs on Class Change</td>
<td>{change_request}</td>
<td>Runs when the ci_class field is changed. Deletes task_ci records since they may no longer match the ci_class.</td>
</tr>
<tr>
<td>Deploy Proposed Changes to CIs</td>
<td>{change_request}</td>
<td>Runs on update when proposed change value changes. Copies the current proposed change from the change request to the task_ci record.</td>
</tr>
<tr>
<td>Deploy Proposed Changes to new CIs</td>
<td>{task_ci}</td>
<td>Runs on all inserts where task class is change_request. Copies the current proposed change from the change request to the task_ci record.</td>
</tr>
<tr>
<td>affectedCiClassFilter</td>
<td>{global}</td>
<td>A special global rule script called by the new attribute on the task_ci.ci_item field to filter the lookup of CIs based on the change_request.ci_class field value.</td>
</tr>
</tbody>
</table>

*Client scripts installed with Best Practice - Bulk CI Changes*

Best Practice - Bulk CI Changes adds the following client scripts.
<table>
<thead>
<tr>
<th>Client script</th>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alert on Change of CI Class</td>
<td>(change_request)</td>
<td>Triggered by a change in the ci_class field. Alerts the user that the affected CI’s will be deleted, then forces a form Submit so the business rules run.</td>
</tr>
</tbody>
</table>

Configure change management

You can configure various aspects of Change Management based on the specific requirements of your organization.

Role required: admin or change_manager

Configure one or more of the following aspects of Change Management.

Change properties

Administrators can use change properties to configure change management behaviour.

Navigate to Change Administration Change Properties to view and edit these properties.

Table 65: Change Management Properties

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
</table>
| glide.approval_engine.change_task | Change Request Tasks approval engine  
  • Type: choice list  
  • Default value: process_guide  
  • Location: System Property [sys_properties] table |
| glide.ui.risk_calculate_rule | Change Risk calculation method. Business Rule calculates on insert/update, UI Action calculates only on demand. None disables this capability  
  • Type: choice list  
  • Default value: ui_action  
  • Location: System Property [sys_properties] table |
| com.snc.change_request.enable_copy | Enable Copy Change feature  
  • Type: true | false  
  • Default value: true  
  • Location: System Property [sys_properties] table |
| com.snc.change_request.copy.attributes | List of attributes (comma-separated) that will be copied from the originating change  
  • Type: string  
  • Default value: category,cmdb_ci,priority,risk,impact,type,assignment_group,assigned_to,short_description,description,change_plan,backout_plan,test_plan  
  • Location: System Property [sys_properties] table |
<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
</table>
| com.snc.change_request.copy.related_lists | Related lists (comma-separated) that will be copied from the originating change  
• Type: string  
• Default value: task_ci,task_cmdb_ci_service,change_task  
• Location: System Property (sys_properties) table |
| com.snc.change_request.attach.enable_copy | Enable copying of attachments from the originating change  
• Type: true | false  
• Default value: true  
• Location: System Property (sys_properties) table |
| com.snc.change_request.copy.rl.change_task.attributes | List of attributes (comma-separated) from Change Task (change_task) related list that will be copied from the originating change  
• Type: string  
• Default value: cmdb_ci,priority,assignment_group,assigned_to,short_description,description  
• Location: System Property (sys_properties) table |
| com.snc.change_request.copy.rl.task_ci.attributes | List of attributes (comma-separated) from Affected CIs (task_ci) related list that will be copied from the originating change  
• Type: string  
• Default value: ci_item  
• Location: System Property (sys_properties) table |
| com.snc.change_request.copy.rl.task_cmdb_ci_service.attributes | List of attributes (comma-separated) from Impacted Services (task_cmdb_ci_service) related list that will be copied from the originating change  
• Type: string  
• Default value: cmdb_ci_service  
• Location: System Property (sys_properties) table |

The following properties are also available for further configuration, within the sys_properties table:

Table 66: Change Management Properties available from Sys_Properties table

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
</table>
| com.snc.change_request.copy.rl.change_task.attributes | List of attributes (comma-separated) from Change Task (change_task) related list that will be copied from the originating change  
• Type: string  
• Default value: cmdb_ci,priority,assignment_group,assigned_to,short_description,description  
• Location: System Property (sys_properties) table |
| com.snc.change_request.copy.rl.task_ci.attributes | List of attributes (comma-separated) from Affected CIs (task_ci) related list that will be copied from the originating change  
• Type: string  
• Default value: ci_item  
• Location: System Property (sys_properties) table |
| com.snc.change_request.copy.rl.task_cmdb_ci_service.attributes | List of attributes (comma-separated) from Impacted Services (task_cmdb_ci_service) related list that will be copied from the originating change  
• Type: string  
• Default value: cmdb_ci_service  
• Location: System Property (sys_properties) table |
Configure ability to copy a change request

You can configure the ability to copy a change request record and also configure the specific details that can be copied.

Role required: admin

You can configure the ability to copy a change. You can do the following:

- Disable the ability to copy a change
- Disable the ability to copy an attachment
- Determine the components of the source change request that must be copied

You can configure the ability to copy a change request in the following ways:

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disable the ability to copy a change request</td>
<td>The ability to copy a change request is enabled by default. To disable the ability to copy a change request: 1. Set the Enable Copy Change feature (com.snc.change_request.enable_copy) system property to false.</td>
</tr>
<tr>
<td>Disable the ability to copy an attachment</td>
<td>The ability to copy an attachment to the change request is enabled by default. To disable this ability: 1. Set the Enable copying of attachments from the originating change (com.snc.change_request.attach.enable_copy) system property to false.</td>
</tr>
<tr>
<td>Option</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| Disable the ability to copy the attachments to a change task in the Change Tasks related list of a change request | The ability to copy the attachments to a change task in the Change Tasks related list of a change request is enabled by default.  
To disable this ability:  
1. Set the Enable copying of attachments from the originating change's related change tasks (com.snc.change_request.rl.change_task.attach.enable_copy) system property to false.  
Note: If the ability to copy attachments is enabled, the attachment will appear on the new change request form only after the change request is saved. |
| Configure attributes to be copied                                     | Common attributes such as columns in the change table are copied by default.  
To configure the attributes to be copied:  
1. Edit the list of values in the List of attributes (comma-separated) that will be copied from the originating change (com.snc.change_request.copy.attributes) system property to remove or add more attributes. For example, to the Assigned to attribute from being copied, remove the assigned_to value from the List of attributes (comma-separated) that will be copied from the originating change property. |
| Configure related lists to be copied                                  | The following related lists in a change record are copied by default:  
• Affected CIs  
• Impacted Services/CIs  
• Change Tasks  
Note: You can configure this property to control the copy functionality of the Affected CIs, Impacted Services/CIs, and Change Tasks related lists. You cannot add any other related list to this property.  
To configure the lists to be copied:  
1. Edit the list of values in the Related lists (comma-separated) that will be copied from the originating change (com.snc.change_request.copy.related_lists) system property. For example, to stop copying the Change Tasks related list, remove the change_task value from the Related lists (comma-separated) that will be copied from the originating change property. |
Configure attributes of related lists to be copied

You can configure the attributes of related lists to be copied using appropriate system properties.

To configure the attributes of related lists to be copied:

1. Navigate to the appropriate system property for a specific related list to configure the attributes that must be copied. The property name will be `com.snc.change_request.copy.rl.<table name>.attributes`.

You can modify the following system properties to configure the attributes of related lists to be copied:

<table>
<thead>
<tr>
<th>Name of the Related list</th>
<th>System property</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change Tasks</td>
<td><code>com.snc.change_request.copy.rl.change_task.attributes</code></td>
</tr>
<tr>
<td>Affected CIs</td>
<td><code>com.snc.change_request.copy.rl.task_ci.attributes</code></td>
</tr>
<tr>
<td>Impacted Services/CIs</td>
<td><code>com.snc.change_request.copy.rl.task_cmdb_ci_service.attributes</code></td>
</tr>
</tbody>
</table>

Customize the copy a change request ability

To further customize the ability to copy a change request:

1. Modify the ChangeUtils script include, which extends the default ChangeUtilsSNC script include. For example, the ability to copy a change request is not available by default for standard changes. However, you can provide your own implementation of the `isCopyRulesValid` function in the ChangeUtils script include to override the default.

Define change request assignment rules

You can define assignment rules to automate the process of assigning change requests to the appropriate group or individual.

Role required: admin

You can define an assignment rule either for the change request on a whole, or for individual change tasks as they get generated by change requests.

1. Navigate to System Policy Assignment and then click New.
2. Populate the fields as follows:
   - Name - Database Change
• Table - Change Request (change_request)
• Group - Database
• Conditions - Dot-walk to “Configuration Item.Class is Database”.

To test the assignment rule, navigate to Change Create New and populate the form with the following:
• Configuration Item - bond_trade_ny (or any other Configuration Item with a class of Database.)

Save the change and add the Assignment Group field to the form. The proper assignment group should be added:

Add a new change type

You can add a new change type to your change process.

Role required: admin

In addition to the normal, standard, and emergency types of change available by default, you can add new change types based on your organization’s requirements. For example, you can create an Expedited change type for changes that you require to be expedited.

1. Add a new choice to the Type field.
   a) Open an existing change request.
   b) Right click on the Type field and select Show Choice List.
   c) Click New and fill in the following fields.
2. Add the new change type to the Change Request Interceptor.
   a) Navigate to System Definition Interceptors.
   b) Open the change request interceptor.
   c) Click New on the Answers related list and fill in the following fields, as appropriate.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Question</td>
<td>Change Request</td>
</tr>
<tr>
<td>Name</td>
<td>Enter a name for the new change type. For example, Direct to Expedited Change.</td>
</tr>
<tr>
<td>User Prompt</td>
<td>Enter a description that will be displayed to the end user when they click Create New under Change.</td>
</tr>
<tr>
<td>Target URL</td>
<td>Set the appropriate target URL. For example, change_request.do?sys_id=-1&amp;sysparm_query=type=expedited.</td>
</tr>
<tr>
<td>Order</td>
<td>Set the appropriate order level for the change type. For example, 400.</td>
</tr>
</tbody>
</table>

   d) Submit the form.
3. Create the script include for the new change type.
   a) Navigate to System Definition Script Includes.
   b) Search for a change type script include on which to base the workflow for the new change type on. For example, to base it on Emergency change type, search for ChangeRequestStateModelSNC_emergency and open the script include.
   c) Copy the script of the ChangeRequestStateModelSNC_emergency script include from the Script field.
   d) Navigate to System Definition Script Includes.
   e) Click New to create a new script include.
   f) Name the new script include to match the value of the new type. For example, ChangeRequestStateModelCust_expedited.
   g) Paste the copied script in the Script field of the new script include.
   h) Update any references in the pasted script include from ChangeRequestStateModelSNC_emergency to ChangeRequestStateModelCust_expedited.
   i) Click Save to save the new script include.

   Note: An existing script include contains the implementation for all the moving and canMove functions. The moving function is used to pre-populate any fields that are required for the new state. The canMove function is used to check for any additional requirements and validate if a task can move to the next state.

4. Create the script include to define state transitions and control the transitioning between states for the new change type.
   a) Navigate to System Definition Script Includes.
   b) Search for change type script include on which to base the transitioning controls for the new change type on. For example, to base it on Emergency change type, search forChangeRequestStateModelSNC_emergency and open the script include.
c) Update the name of the script include to match the value of the new type. For example, ChangeRequestStateModel_expanded.

d) Update the reference to the base script include for the new change type. Change the extended Object in line 2 to the base script include name. For example, ChangeRequestStateModelCust_expanded, so the reference is similar to ChangeRequestStateModel_expanded.prototype = Object.extendObject(ChangeRequestStateModelCust_expanded, {}.

e) Click Insert and Stay to save the new script include.

5. Modify the script include that controls the transitioning between states using one of the defined models for the new change type. The base method is overridden so that the new state model for the new change type can be utilized.

a) Navigate to System Definition Script Includes.

b) Search for and open the ChangeRequestStateHandler script include, which controls the transitioning between states using one of the defined models.

c) Create a property to reference the new change request type value. For example, EXPEDITED:"expedited".

d) Override the base method _resetModel in order to have the ability to include the new model. For example, if the change request type is expedited, then the new state model ChangeRequestStateModel_expanded is included. Example code with changes highlighted in bold:

```javascript
var ChangeRequestStateHandler = Class.create();
   // All references to statehandler constants should be through this class ChangeRequestStateHandler
   ChangeRequestStateHandler.DRAFT = ChangeRequestStateHandlerSNC.DRAFT;
   ChangeRequestStateHandler.ASSESS = ChangeRequestStateHandlerSNC.ASSESS;
   ChangeRequestStateHandler.AUTHORIZE = ChangeRequestStateHandlerSNC.AUTHORIZE;
   ChangeRequestStateHandler.SCHEDULED = ChangeRequestStateHandlerSNC.SCHEDULED;
   ChangeRequestStateHandler.IMPLEMENT = ChangeRequestStateHandlerSNC.IMPLEMENT;
   ChangeRequestStateHandler.REVIEW = ChangeRequestStateHandlerSNC.REVIEW;
   ChangeRequestStateHandler.CLOSED = ChangeRequestStateHandlerSNC.CLOSED;
   ChangeRequestStateHandler.CANCELED = ChangeRequestStateHandlerSNC.CANCELED;

   EXPEDITED:"expedited";
```
State model and transitions

Change Management offers a state model to move and track change requests through several states. The following table provides a list of all the states that a change request can progress through.

---

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Table 68: Change states

<table>
<thead>
<tr>
<th>State</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>New</td>
<td>Change request has not been submitted yet for review and authorization. A change requester can save a change request as many times as necessary while building out the details of the change prior to submission.</td>
</tr>
<tr>
<td>Assess</td>
<td>Peer review and technical approval of the change details are performed during this state.</td>
</tr>
<tr>
<td>Authorize</td>
<td>Change Management and the CAB will schedule the change and provide final authorization to proceed.</td>
</tr>
<tr>
<td>Scheduled</td>
<td>The change is fully scheduled and authorized. It is now waiting for the planned start date.</td>
</tr>
<tr>
<td>Implement</td>
<td>The planned start date has approached and the actual work to implement the change is being conducted.</td>
</tr>
<tr>
<td>Review</td>
<td>The work has been completed. The change requester now determines whether the change was successful. A post-implementation review can be conducted during this state.</td>
</tr>
<tr>
<td>Closed</td>
<td>All review work is complete. The change is closed with no further action required.</td>
</tr>
<tr>
<td>Canceled</td>
<td>A change can be canceled at any point if it is no longer required. However, a change cannot be canceled from a Closed state.</td>
</tr>
</tbody>
</table>

Normal, standard, and emergency changes progress through states in different ways.

<table>
<thead>
<tr>
<th></th>
<th>New</th>
<th>Assess</th>
<th>Authorize</th>
<th>Scheduled</th>
<th>Implement</th>
<th>Review</th>
<th>Closed</th>
<th>Canceled</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Standard</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
<tr>
<td>Emergency</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
<td>✔</td>
</tr>
</tbody>
</table>

Normal changes progress through all states.

Standard changes are considered to be pre-authorized, so they bypass the Assess and Authorize states that trigger approval records. Approving these changes will progress the change to the next appropriate state. Rejecting these changes will send them back to New state.

Emergency changes are similar to standard changes, except that they must be authorized.

Normal change state model

You can progress a normal change through a number of state values.

The primary route for a normal change progresses in the following order:
1. New
2. Assess
3. Authorize
4. Scheduled
5. Implement
6. Review
7. Closed

A normal change can be canceled from every state except the Closed state.

Figure 60: Normal change state model
Emergency change state model

You can progress an emergency change through a number of state values.

The primary route for an emergency change progresses in the following order:

1. New
2. Authorize
3. Scheduled
4. Implement
5. Review
6. Closed

An emergency change can be canceled from the following states:

- Authorize
- Scheduled
- Implement
- Review
Standard change state model

You can progress a standard change through a number of state values.
The primary route for a standard change progresses in the following order:

1. New
2. Scheduled
3. Implement

Figure 61: Emergency change state model
4. Review
5. Closed

A standard change can be canceled from the following states:

- New
- Scheduled
- Implement
- Review

Figure 62: Standard change state model
Add a state to the change state model

You can add a new state to the existing state model for different change types based on the requirements of your organization.

Role required: admin

The State model plugin is activated by default. For more information about base system states for change requests, see State model and transitions.

1. Navigate to Change Create New and complete the following steps to add a choice to the choice list.
   a) Right-click the State field and click Configure dictionary.
   b) In the Choices related list, run a filter for (Table) (is) (change_request).
   c) Click New and add the new state with the following information.
      • Table: Change Request (change_request)
      • Label: name of your new state
      • Value: numerical value that is not already assigned to an existing state choice
      • Sequence: number corresponding to the location for it to appear in the list of states. If you assign it the same sequence number as another choice, it appears below the other choice.

   d) Click Submit.

2. Navigate to System definition Script includes.
   Script include records that contain SNC in the name are read-only. As you complete the following steps, ensure that you are selecting the correct script include to modify. For example, modify ChangeRequestStateHandler not ChangeRequestStateHandlerSNC.

   Note: Extended script includes (without SNC) include all of the functionality of their SNC counterparts. If you modify a base script include (appended with SNC), it is no longer updated during system upgrades.

3. Open the ChangeRequestStateHandler script to perform the following edits.
   • Update the statehandler constants section at the start of this script include to include values for the newly added state. For example:
     ChangeRequestStateHandler.MY_NEW_STATE = "mynewstate";
   • Update the STATE_NAMES map at the end of the initialize function to include the numeric value for the newly added state. For example:
     this.STATE_NAMES["-6"] = ChangeRequestStateHandler.MY_NEW_STATE;

   Note: The STATE_NAMES map provides a mapping between the numeric values that are stored in the State field on a change request under a memorable name. This mapping enables the memorable name to be used in the state model script includes.

4. Edit the appropriate script include to incorporate the new states into the model for the relevant change request types.
   Each type of change request has a corresponding script include named ChangeRequestStateModel_<type> where <type> is the value of the change request type. For example, ChangeRequestStateModel_normal defines the state model for change requests with a type of normal.

   Each state model script include defines objects that specify the following information.
   • Which states are available.
• The next state or states for each available state.
• Functions for each state transition to decide whether that transition is available (canMove) along with a function to be executed as part of moving to that state (moving).

The following example is from the ChangeRequestStateModel_normal script include.

```
Name of the change request state

```

```
const nextState = ['new', 'review', 'inProgress', 'suspended', 'canceled'];

let state = 'new';

let name = 'canceled';

let condition = 'isNext(state, canceled)';

```

5. Create a UI action to provide a button to progress the change request to the new state.
   a) Use Insert and Stay to make a copy of one of the default UI actions, such as implement.
   b) Update the following fields on the form.

<table>
<thead>
<tr>
<th>Field name</th>
<th>Update</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Update to match the name of the new state.</td>
</tr>
<tr>
<td>Action name</td>
<td>Replace the state at the end of the name with the new state.</td>
</tr>
<tr>
<td>Hint</td>
<td>Update the text to refer to the new state.</td>
</tr>
<tr>
<td>Onclick</td>
<td>Rename the function to match the new state.</td>
</tr>
<tr>
<td>Condition</td>
<td>Update the call to the isNext function with the new state.</td>
</tr>
<tr>
<td>Field name</td>
<td>Update</td>
</tr>
<tr>
<td>------------</td>
<td>--------</td>
</tr>
</tbody>
</table>
| Script     | • Update the function name to match the one specified in the Onclick field.  
• Update the line that starts with `ga.addParam("sysparm_state_name", ...` to enter the name of the new state as the second parameter of the `addParam` function.  
• Update the line starts with `gsftSubmit` and modify the third parameter of this function call to match the value entered in the Action name field. |

The following example uses the Implement UI action to show the values to update.
function moveToImplement()
{
    var ga = new GlideAjax("ChangeRequestStateHandlerAjax");
    ga.addParam("sysparm_name", "getSetValue");
    ga.addParam("sysparm_state_name", "implement");
    ga.getXMLAnswer(function(stateValue) {
        g_form.setValue("state", stateValue);
        g_formSubmit(null, g_form, getFormElement(), "state_model_move_to_implement");
    });
}

if (typeof window == 'undefined')
    setRedirect();

function setRedirect()
{
    current.update();
    action.setRedirectURL(current);
}
The ChangeRequestStateHandler script include contains two functions that are used to
determine if a UI action is displayed based on the current state of the change request.

- `isNext(stateName)`: This function only checks if the stateName passed as a parameter is
  available as a next state for the current state of the change request.
- `canMoveTo(stateName)`: This function performs the same check as the `isNext` function. However, it also checks the result of calling the appropriate `canMoveTo` function for the
  transition from the current state to the `stateName` passed as a parameter. This function is
  used if there are additional checks in the `canMoveTo` functions such as checking that a field
  contains a particular value.

6. Complete the following steps to update the process flow configuration to incorporate the new
change state.
The process flow is displayed at the top of the Change Request form and is configured in various
process flow records.

   a) Navigate to **System UI Process Flow** module and filter for `(Table) (is) (change_request)`.
   b) Open a record and use Insert and Stay to make a copy.
   c) Update the following fields on the form.

<table>
<thead>
<tr>
<th>Field name</th>
<th>Update</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Update to match the name of the new state.</td>
</tr>
<tr>
<td>Label</td>
<td>Update to match the name of the new state. This value is included in the process flow at the top of the Change Request form.</td>
</tr>
<tr>
<td>Order</td>
<td>Update this number so that the new state is in the correct sequence with the existing process flow records for other states.</td>
</tr>
<tr>
<td>Condition</td>
<td>Update the filter to match the new state.</td>
</tr>
</tbody>
</table>

   d) Click Update.

To ensure that the new state works as expected, **Review default workflows**. Add the new state to the
workflow as necessary.

**Review default workflows**

Any modification to the state model may impact the default workflows for change requests.

Role required: admin
Each change type has a default workflow. To ensure that any change to the state model has not adversely impacted workflows, you must review each of the default workflows.

Review the workflow for each ChangeRequestStateModel_<type> script include that has been modified.

<table>
<thead>
<tr>
<th>Change type</th>
<th>Script include Name</th>
<th>Workflow</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>ChangeRequestStateModel_normal</td>
<td>Change Request - Normal</td>
</tr>
<tr>
<td>Standard</td>
<td>ChangeRequestStateModel_standard</td>
<td>Change Request - Standard</td>
</tr>
<tr>
<td>Emergency</td>
<td>ChangeRequestStateModel_emergency</td>
<td>Change Request - Emergency</td>
</tr>
</tbody>
</table>

Modifications to the default workflow for each change type will depend on where the new state is added in the sequences of states.

Tutorial: add a new change management state

This tutorial provides an example of adding a new state to the existing state model.

Role required: admin

Consider the following scenario:

Based on your organization’s requirements, you must add a new state Complete between the existing Implement and Review states. You must also add the ability to decide if the Review state is needed.

Perform the following steps:

Add change state tutorial: create a new choice
You must create a new choice for the change request state.

Role required: admin

To create a new choice for the State field in the change request:

1. Open the Change Request form.
2. Right click on the State field label and select the Configure Choices option.
3. Enter the following values on the Configuring State Choices form and click Add.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>New item text</td>
<td>Enter Complete.</td>
</tr>
<tr>
<td>Numeric value</td>
<td>Enter -6.</td>
</tr>
<tr>
<td>Apply to table</td>
<td>Set to Change Request</td>
</tr>
</tbody>
</table>

The new state appears in the Selected slushbucket on the form.

4. Use the up and down arrows to move the new state between Implement and Review states.
5. Click Save to create the new choice and return to the Change Request form.

_Add change state tutorial: create a custom field_
You must create a new custom choice field to indicate if a change request needs to go through the Review state.

Role required: admin
To create a new custom field:
1. Open the Change Request form.
2. Right click on the form header and go to Configure Form Layout.
3. Enter the following values in the Create new field section of the form.

<table>
<thead>
<tr>
<th>Field</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Enter Needs Review.</td>
</tr>
<tr>
<td>Type</td>
<td>Enter Choice.</td>
</tr>
</tbody>
</table>

4. Click Add add the new field to the slush bucket.

The new field appears at the bottom of the Selected slush bucket.
5. Use the Up and Down arrows next to the slush bucket to move the new field next to the Assigned to field.
6. Click Save to create the new field and return to the Change Request form.
   The new Needs review field appears on the Change Request form.
7. Right click on the Needs review field label and select the Configure choices option.
8. The Configuring choices form appears with empty slush buckets for Available and Selected.
9. Use the Enter new item field and Add button to create Yes and No choices that will appear in the
   Selected slush bucket.

10. Click Save to create the new choices and return to the Change Request form.
    The Needs review field displays the Yes and No options.
11. Right click on the Needs review field label select Configure Dictionary.
12. Update the Choice drop down in the Choice List Specification section to Dropdown with – None –.

13. Click Update to save the dictionary modification and return to the Change Request form.
    The Needs review field also displays the -- None -- option.

**Add change state tutorial: add a UI policy**
Add a UI Policy to display the Needs review field for only change type Normal and for certain states.
Role required: admin

You must create a UI policy to ensure that the new custom field Needs review is only available for
change requests with change type Normal and only displayed on the form when it reaches the new
Complete state.

To create the required UI policy:

1. Open the Change Request form.
2. Right click on the form header and go to Configure UI Policies.
3. Click New and enter the following values on the UI Policy form.

<table>
<thead>
<tr>
<th>Field</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table</td>
<td>Enter Change Request.</td>
</tr>
<tr>
<td>Short description</td>
<td>Enter Show &quot;Needs review&quot; field. Make it mandatory.</td>
</tr>
</tbody>
</table>
| Conditions          | Add the following two new conditions:
                                            • Type is Normal.
                                            • State is one of Review, Complete, Closed.  |

4. Right click on the form header and select Save to create the UI Policy record and stay on the form.
5. Click New on the UI Policy Actions related list on the form.
6. Enter the following values on the UI Policy Action form.

<table>
<thead>
<tr>
<th>Field</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field name</td>
<td>Select Needs review.</td>
</tr>
<tr>
<td>Mandatory</td>
<td>Select True.</td>
</tr>
<tr>
<td>Visible</td>
<td>Select True.</td>
</tr>
</tbody>
</table>

7. Click Submit to create the UI Policy action and return to the UI Policy form.

**Add change state tutorial: create a new ACL**
You must create a new ACL to prevent the Needs review field being modified after it has been set.

Role required: admin

The newly created UI Policy makes the Needs review field mandatory when a change request reaches the new Complete state.
The subsequent configuration of the state model ensures that a user must enter a value in the Needs review field before the change request can be saved in the Complete state. To prevent the value being changed in the Needs review field once it has been set, a new access control level record (ACL) is required to make the field read only.

To create an ACL:
1. Open the Change Request form.
2. Right click on the form header and go to Configure Security Controls.
3. Enter the following values in the Access control form.

<table>
<thead>
<tr>
<th>Field</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Set to Record.</td>
</tr>
<tr>
<td>Operation</td>
<td>Set to Write.</td>
</tr>
<tr>
<td>Name (first part)</td>
<td>Select Change Request.</td>
</tr>
<tr>
<td>Name (second part)</td>
<td>Select Needs review.</td>
</tr>
<tr>
<td>Condition</td>
<td>Add the condition State is Implement.</td>
</tr>
</tbody>
</table>

4. Click Submit to create ACL.

*Add change state tutorial: update state handler script include*

You must update the ChangeRequestStateHandler script include with the new Complete state.

Role required: admin
The ChangeRequestStateHandler script include defines the states available for the Change Request state model.

To update the ChangeRequestStateHandler script include:
1. Navigate to System Definition Script Includes.
2. Open the ChangeRequestStateHandler script include and modify the following.
   1. Add the following line to the top of the script in the Constants section:
      ```javascript
      ChangeRequestStateHandler.COMPLETE = "complete";
      ```
   2. Add the following line as the last line of the function in the Initialize function:
      ```javascript
      this.STATE_NAMES["-6"] = ChangeRequestStateHandler.COMPLETE;
      ```

3. Click Update to save your changes.

Update state model script include
You must update the ChangeRequestStateModel_normal script include to add new functions for the new Complete state.

Role required: admin
You must update the ChangeRequestStateModel_normal script include to configure the following:
- Add new canMove and moving functions for the new Complete state. These functions can return a value of true since there are no special conditions for or extra actions to perform when moving to the Complete state.
- Modify the definition of the existing object for the Implement state to ensure that the next state is Complete.
- Add a new object for the Complete state, which will define Review and Closed as the next two states.

Note: The canMove functions for the transition to these states from Complete will check the new Needs review custom field to determine the correct next state.

To update the ChangeRequestStateModel_normal script include:
1. Navigate to System Definition Script Includes.
2. Open the ChangeRequestStateModel_normal script include and modify the following.
   1. Add the following line at the end of the script include but before the line starting with type:
2. Modify the existing implement object to toComplete:

```javascript
implement: {
    nextState: [ "complete" ],

    complete: {
        moving: function() {
            return this.toComplete_moving();
        },

        canMove: function() {
            return this.toComplete_canMove();
        }
    },

    canceled: {
        moving: function() {
            return this.toCanceled_moving();
        },

        canMove: function() {
            return this.toCanceled_canMove();
        }
    }
},
```

3. Add the following new state object for complete.

```javascript
complete: {
    nextState: [ "review", "closed" ],

    review: {
        moving: function() {
            return this.toReview_moving();
        },

        canMove: function() {
            return this.toReview_canMove();
        }
    },

    if (this._gr.getValue("u_needs_review") == "Yes")
    return true;
```
```javascript
return false;
}
},
closed : {
    moving : function() {
        return this.toClosed_moving();
    },
    canMove : function() {
        if (this._gr.getValue("u_needs_review") == "No")
            return true;
        return false;
    }
},
canceled : {
    moving : function() {
        return this.toCanceled_moving();
    },
    canMove : function() {
        return this.toCanceled_canMove();
    }
}
},
4. Click Update to save changes.

Add change state tutorial: create new UI action
You must create a new UI action to display a button on a change request for the new Complete state.

Role required: admin
The new UI action must contain a condition that uses the state model script include to decide when the Complete button is displayed on the Change Request for. In this case, the Complete button will only be displayed when the change has reached the Implement state.

1. Open the Change Request form.
2. Right click on the form header and go to Configure UI Actions.
3. Search for the existing Implement UI action and open this record.
4. Right click on the form header and select the Insert and Stay option to create a duplicate record.
5. Modify the following fields with new values.

<table>
<thead>
<tr>
<th>Field</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Enter Complete.</td>
</tr>
<tr>
<td>Action name</td>
<td>Enter state_model_move_to_complete.</td>
</tr>
<tr>
<td>Hint</td>
<td>Enter Progresses change to Complete state.</td>
</tr>
<tr>
<td>Onclick</td>
<td>Enter moveToComplete();</td>
</tr>
</tbody>
</table>
| Condition | Enter complete as shown:

```
### Script

Update function, state name, and state value.

```javascript
function moveToComplete() {
  var ga = new GlideAjax("ChangeRequestStateHandlerAjax")

  ga.addParam("sysparm_name", "getStateValue");
  ga.addParam("sysparm_state_name", "complete");
  ga.getXMLAnswer(function(stateValue) {
    g_form.setValue("state", stateValue);
    gsftSubmit(null, g_form.getFormElement(), "state_model_move_to_complete");
  });
}
```

```javascript
if (typeof window == 'undefined')
  setRedirect();
```

```javascript
function setRedirect() {
  current.update();
  action.setRedirectURL(current);
}
```

<table>
<thead>
<tr>
<th>Field</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Script</td>
<td>Update function, state name, and state value.</td>
</tr>
</tbody>
</table>

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6. Click Update to save the modifications.

**Add change state tutorial: create new process flow record**

You must create and add a new process flow record for the new Complete state in order to display the state on the process flow formatter at the top of the Change Request form.

**Role required:** admin

To create and add a new process flow record for the new Complete state:

2. Search for records where the Table is Change Request.
3. Open the Normal Change – Implement state existing default record.
4. Right click on the form header and select the Insert and Stay option to create a duplicate record.
5. Modify the following fields with new values.

<table>
<thead>
<tr>
<th>Field</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Enter Normal Change – Complete State.</td>
</tr>
<tr>
<td>Label</td>
<td>Enter Complete.</td>
</tr>
<tr>
<td>Order</td>
<td>Enter 550.</td>
</tr>
<tr>
<td>Condition</td>
<td>Enter State is Complete.</td>
</tr>
</tbody>
</table>
**Update change request workflow**

You must update the change request workflow to reflect the addition of the new Complete state.

Role required: admin

The default Change Request – Normal workflow for type Normal change requests must be modified to update the change request to the new state of Complete instead of Review.

To update change request workflow:

1. Navigate to Workflow Workflow Editor.
2. Select Change Request – Normal from the list of workflows.
3. Select the Checkout option from the Context menu to create a new version of this workflow.
4. Open the Set Values activity that transitions to the End activity and modify the following fields.

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Enter Move to Complete.</td>
</tr>
<tr>
<td>Set these values template</td>
<td>Update value to State = Complete.</td>
</tr>
</tbody>
</table>
5. Click Update to save the modifications.
6. Open the Wait for conditions activity that transitions to the End activity and modify the following fields.

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Enter Change moves to Complete.</td>
</tr>
<tr>
<td>Set these values template</td>
<td>Update value to State is Complete.</td>
</tr>
</tbody>
</table>
7. Click Update to save the modifications.
8. Select the Publish option from the Context menu to publish the new version of this workflow.

Configure transitions for the state model

You can use script includes or UI policies to configure state models and the criteria for moving change requests from one state to another.

Add a new state change condition using a script include

To add new criteria for state transitions, you can edit the script includes for the state transition models of each change type.

You can add state change criteria to determine the UI actions that enable a particular state to transition to the next state.

1. Go to System Definitions Script Includes.
2. Open the script include for the state transition model that you want to edit.

<table>
<thead>
<tr>
<th>State transition model</th>
<th>Script include</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>ChangeRequestStateModel_normal</td>
</tr>
<tr>
<td>Standard</td>
<td>ChangeRequestStateModel_standard</td>
</tr>
</tbody>
</table>
3. Modify the appropriate method canMove method in the script include. For example, to add a condition for a normal change to transition from the New state to the Authorized state, modify the draft.authorized.canMove() method in the ChangeRequestStateModel_normal script include. In the script, the GlideRecord you are acting on can be referenced using the this._gr variable.

The canMove method is part of a structure that defines the transitions available to the change type. The canMove method is contained in the currentState.nextState.canMove() structure.

Add new state change conditions using UI Policy

You can use a UI policy to add new criteria for state transitions.

You can edit the default UI policies that are available or create a new policy. The type of change and the state of the change request drives the default UI policies that determine mandatory field requirements.

1. Navigate to System UI UI Policies.
2. Open a default UI policy to edit or click New to create a new policy.

These default UI policies are available:

<table>
<thead>
<tr>
<th>UI Policy</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Show</td>
<td>CAB fields for normal and emergency changes from the Authorize state and onwards</td>
</tr>
<tr>
<td>Mandatory</td>
<td>Assignment Group field</td>
</tr>
<tr>
<td>Mandatory</td>
<td>Close notes and Code fields when in the Closed state</td>
</tr>
</tbody>
</table>

Note:
In both the mandatory UI policies, the mandatory fields are determined by the state of the change request. For Show - CAB fields, the type of change is also taken into account because standard changes do not require approval.

3. Complete the form, as appropriate.
4. Click Submit.

Standard change catalog

Standard change catalog supports the standard change process by storing all the changes that have been approved by Change Management as standard changes.

Standard changes are pre-approved, low risk changes with a proven history of success. They are logically grouped under specific categories.

Change Management controls which changes become available in the catalog through a proposal process within the standard change catalog.

You must have the Service Catalog change requesters itil role to view the list of available standard changes and raise the appropriate one from the same.

This video demonstrates how standard change catalog works and how it enables change managers to manage change requests effectively.
Standard change catalog enables you to perform the following:

• Request, review, and approve standard change templates
• Request pre-approved standard changes
• Determine access to standard change templates at user level

Propose, modify, and retire standard change templates

You can propose, modify, and retire standard change templates based on the requirements of your organization.

Raise pre-approved standard changes

Raising a standard change from a standard change template ensures that pre-approved information is automatically filled into the necessary fields enabling you to raise changes faster and expediting the fulfilment of the standard change.

Note: You cannot mass update a set of CIs in standard changes. However, you can propose individual changes.

Determine access to standard change templates at user level

Standard change templates are logically grouped under specific categories. These categories are displayed to users based on user criteria such as user role, geographical location, and department.

Configure the standard change catalog

Configure the standard change catalog through standard change properties.

Role required: admin

The Standard change catalog plugin is activated.

   The Standard Change Properties form displays.
2. On the form, fill in the fields.

   Table 70: Standard change properties form

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category</td>
<td>Select the service catalog category to add the generated standard change template to. You can also choose the category or any child categories of the selected catalog.</td>
</tr>
<tr>
<td></td>
<td>Note: This value is not set automatically on the Proposal form, but must be specified before it is approved.</td>
</tr>
<tr>
<td>Catalog</td>
<td>Select the service catalog to add the generated standard change template to.</td>
</tr>
</tbody>
</table>
### Mandatory Change Request values
Specify a list of mandatory fields that require values when you propose a new standard change template or a modification to a standard change template.

This configuration ensures that when a standard change request is created from a standard change template, one or more fields on the Change Request form contain preset values.

### Default Change Request values
Specify default values for common fields on the Change Request form.

### Restricted Change Request values
Specify the list of fields that end users are not allowed to provide any value for when making a proposal.

Note: Ensure that internal columns, such as Updates, Updated, Updated by, Domain, Created, Created by are restricted.

### Read-only fields
Specify the fields that end users are not allowed to provide any value for in the created standard change request.

Note: This configuration ensures that for the specified fields, the values approved in the standard change template do not change when the standard change request is submitted.

### Fields to copy
Specify the fields whose values are copied to the Propose a New Standard Change Template record producer from a non-standard change request.

Note: If any fields not specified in this list have default values specified, the default values are copied to the record producer.

---

3. Click Update.

You can create a standard change catalog. By default, the basic Standard Change Proposal workflow sends approval records to members of the Change Management group and the members should verify and modify the records, as appropriate.

**Create a standard change proposal**

You can create standard change proposals to be evaluated for approval before being included in the standard change catalog.

Role required: change_manager

2. Click New.
3. On the form, fill in the fields.
Table 71: Standard Change Proposal form

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category</td>
<td>Category to which the template is published.</td>
</tr>
<tr>
<td>Template name</td>
<td>Unique identifiable name for the template with which the template is published in the Standard Change Catalog.</td>
</tr>
<tr>
<td>State</td>
<td>State for the new template. The default value is New.</td>
</tr>
<tr>
<td>Proposal type</td>
<td>Types of proposals available for Standard Change.</td>
</tr>
<tr>
<td>Assignment group</td>
<td>Group that works on the proposed template.</td>
</tr>
<tr>
<td>Assigned to</td>
<td>User who works on the proposed template.</td>
</tr>
<tr>
<td>Short description</td>
<td>Brief describing of the template proposal.</td>
</tr>
<tr>
<td>Description</td>
<td>Text describing of the template proposal in detail.</td>
</tr>
<tr>
<td>Business justification</td>
<td>Business justification why the template is required.</td>
</tr>
<tr>
<td>Sample Change Requests</td>
<td>List of changes that closely resemble the proposed template.</td>
</tr>
<tr>
<td>Change Request values</td>
<td>Field values that should get populated automatically on the standard change form that is created from the template.</td>
</tr>
</tbody>
</table>

4. Perform one of the following actions:
   • Click Save. The proposal is created with status New.
   • Click Request Approval. The proposal is created with the status In Progress.

   **Note:** You cannot modify a standard change proposal after it is approved. By default, approval records are created for members of the Change Management group.

Modify or retire a standard change template

You can modify and retire standard change templates based on your organization’s requirements.

Role required: admin or change manager

1. Navigate to Change All Templates.
2. Select the template you want to modify or retire.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modify a standard change template</td>
<td>1. Click Modify Template under Related Links.</td>
</tr>
<tr>
<td></td>
<td>2. Enter your modifications in the Modify a Standard Change Template form.</td>
</tr>
<tr>
<td>Retire a standard change template</td>
<td>1. Click Retire Template under Related Links.</td>
</tr>
<tr>
<td></td>
<td>2. Enter your business justification to retire the specific template in the Retire a Standard Change Template form.</td>
</tr>
</tbody>
</table>

3. Perform one of the following actions:
   • Click Save. The modifications are saved but not sent for approval.
• Click Request Approval. The template is sent for approval to the change management team.

Detect change conflicts
To identify any other changes that are scheduled at the same time or impact the same configuration items (CIs) and related CIs as a change request, you can run conflict detection automatically or manually.

You can review conflict information in the change request, such as when conflict detection was last run, affected CIs, type of conflict, schedule, and conflicting changes.

Conflict detection also highlights when a change will occur outside of the maintenance schedule or during a blackout schedule. You can then reschedule the change as necessary.

Conflict detection enables you to perform the following:

Identify the recency of the conflict information

On Conflict status and Conflict last run fields on the change request record enable you to identify if conflict detection was run and the date and time it was last run.

Run manual and automated conflict detection

You can run conflict detection manually or automate it based on your requirements. You must save the change request record prior to running conflict detection.

View conflict information

You can view the conflict information in the Conflicts section of the Change Request form after you have saved the change request and run conflict detection. The Conflicts section provides information such as affected CIs, type of conflict, schedule, conflicting changes, and time and date details regarding when the conflict detection was last run, at a glance.

Create blackout and maintenance schedules
To schedule when changes are implemented to CIs, you can create blackout and maintenance schedules.

Role required: admin

The Change Management - Collision Detector (com.snc.change.collision) plugin is activated.

Blackout schedules are periods of time where changes cannot be implemented. For example, create a blackout schedule for code freezes at the end of the year.

Maintenance schedules restrict changes to being implemented inside a specific period of time. For example, you can create a maintenance schedule implement changes only on the weekend.

Maintenance activity is represented by a span, which is displayed as a horizontal bar on the timeline and can appear in any color. Spans for requested changes that occur outside their allowed maintenance periods appear in red on the timeline.

Both blackout and maintenance schedules are condition schedules.

1. Create the schedule.
<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create a blackout schedule</td>
<td>1. Navigate to Change Administration Blackout Schedules.</td>
</tr>
<tr>
<td></td>
<td>2. Click New.</td>
</tr>
<tr>
<td>Create a maintenance schedule</td>
<td>1. Navigate to Change Administration Maintenance Schedules.</td>
</tr>
<tr>
<td></td>
<td>2. Click New.</td>
</tr>
</tbody>
</table>

**Note:** Maintenance schedules added directly to configuration items are not evaluated during conflict detection. A maintenance schedule needs to be defined matching the CI class and conditions defined.

2. Fill in the fields on the form, as appropriate.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Enter a name for the schedule.</td>
</tr>
<tr>
<td>Description</td>
<td>Enter a description for the schedule.</td>
</tr>
<tr>
<td>Time zone</td>
<td>Select the time zone for the schedule.</td>
</tr>
<tr>
<td></td>
<td>To evaluate planned start and end dates on the change request form for logged in users, select Floating.</td>
</tr>
<tr>
<td>Applies to</td>
<td>Select the CI classification to which the conflict detection is filtered.</td>
</tr>
<tr>
<td>Condition</td>
<td>Select the conditions to specify the CIs to which the schedule applies to.</td>
</tr>
<tr>
<td></td>
<td>This field appears only when a CI is selected from the Applies to list.</td>
</tr>
</tbody>
</table>

**Note:** Related fields used in conditions are not evaluated for blackout or maintenance schedules.

3. Right-click the form header and click Save.
   A blackout or maintenance schedule is created. You will now be able to associate one or more schedule entries with this newly created schedule.

Users can now start applying schedules to determine when changes are implemented to CIs.

**Maintenance schedule management**

You can assign maintenance schedules to configuration items and configure the Change Request form to show when a scheduled change to the CI is outside the schedule.

You can assign maintenance schedules to configuration items. In the Configuration application menu, navigate to the appropriate module. For example, if you want to assign a maintenance schedule to
a web server, navigate to Configuration Web Servers and select the server. In the Maintenance schedule field, you can set the value to one of the configured maintenance schedules and save the CI.

Monitor changes outside the maintenance schedule

You can also configure the Change Request form to display the Outside maintenance schedule field. This check box is informational and indicates whether the planned start date and end dates for the change occur outside the maintenance window. The instance sets this value and disregards any user changes to this check box. This field is set to true if either of the following actions occurs.

- The planned start and end dates in the change with an associated CI are compared to the maintenance schedule and determined to be outside the schedule.
- Affected CIs associated with the change request are checked against their assigned maintenance schedules, if any.

Note: Only the maintenance window for the primary CI or affected CIs are checked; the upstream and downstream CIs are not checked.

When you save a change request that is outside the maintenance schedule, a warning appears for each CI (primary or affected) that is outside the maintenance schedule, if the change request was previously not marked as outside the maintenance schedule.

You see a warning for each CI whose planned dates now fall outside the maintenance schedule.

Risk assessment and risk calculation

There are two methods to calculate the risk of a change: Change Risk Calculator (activated by default) and Change Management Risk Assessment (an optional plugin).

Change Management Risk Assessment uses information provided by the end user to assess a risk value.

Change Risk Calculation uses predefined properties and conditions to calculate a risk value.

The two methods can be used individually or together, depending on your requirements. If both methods are used together, the highest risk value from both methods is always selected.
Define risk assessment

The Change Management - Risk assessment plugin provides a flexible way to capture information from the end user to calculate the risk of the associated change request. You can define the risk assessment questions, thresholds, and conditions based on which the risk for a particular change request is calculated.

Role required: admin or change_manager

The Change Management - Risk assessment plugin is activated.

You can use libraries of questions to derive the risk of a change based on criteria contained within the change record. For example, a different set of questions are set for a hardware change versus a software change.

The assessment uses a weighted score approach for each question. The composite weighted score derived from the end user’s answers is used to calculate risk. This is based on the thresholds associated with the risk assessment.

1. Navigate to Change Risk Assessments.
2. Click New.
   The Risk Assessment form appears.
3. Fill in the fields, as appropriate.

<table>
<thead>
<tr>
<th>Field</th>
<th>Input value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Enter a name for the risk assessment. This name will be displayed to the end user.</td>
</tr>
<tr>
<td>Introduction</td>
<td>Enter an introduction for the end user, if required.</td>
</tr>
</tbody>
</table>

4. Click Submit to submit the details and create a new risk assessment record.
5. Open the newly created risk assessment record.
6. In the Assessment Questions related list, click New. The Assessment Questions related list enables you to define the questions that the end user must answer as part of assessing the risk involved in a change.
   a) Fill in the fields, as appropriate.

Table 74: Assessment Questions related list

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Question</td>
<td>Enter the question that will be displayed to the end user. You must use a select list.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> You cannot ask mandatory choice list questions because they are not supported.</td>
</tr>
<tr>
<td>Weight</td>
<td>Enter the weight to be applied to each question. This weight is multiplied to the score of the answer to calculate the weighted score.</td>
</tr>
</tbody>
</table>

b) Click Submit to submit the details and create a new risk assessment question set.

c) Open the newly created question set.

d) In the Assessment Question Choices related list, click New. The Assessment Question Choices related list enables you to define the multiple choices that the end user must answer.

e) Fill in the fields, as appropriate.

Table 75: Assessment Question Choices related list

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Order</td>
<td>Enter the order number to determine the sequence in which the choice will be displayed to the end user. The choices are sequenced from lowest order to highest.</td>
</tr>
<tr>
<td>Value</td>
<td>Enter the choice to be displayed to the user.</td>
</tr>
<tr>
<td>Score</td>
<td>Enter the score to be awarded to the choice.</td>
</tr>
</tbody>
</table>

f) Click Submit to submit and save the question choice.

7. In the Risk Assessment Thresholds related list, click New. The Assessment Thresholds related list enables you to determine the risk that will be set depending on the calculated composite score for a completed assessment. The composite score is the sum of all weighted scores for the assessment. 
   a) Fill in the fields, as appropriate.

Note: Ensure that the thresholds are set based on the questions and answer combinations.
<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment</td>
<td>Enter a name for the assessment threshold.</td>
</tr>
<tr>
<td>Score Greater Than</td>
<td>Enter the score number.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> If the score, which is totalled from all of the end user’s answers is greater than your specified score number, then the risk in the Risk field will be applied to the change.</td>
</tr>
<tr>
<td>Risk</td>
<td>Select the risk level to apply if the risk threshold is met.</td>
</tr>
</tbody>
</table>

b) Click Submit to submit and save the risk assessment threshold.

8. In the Assessment Conditions related list, click New. The Assessment Conditions related list enables you to determine the risk assessment is attached to each change. Typically, the first attachment that matches the conditions gets attached during evaluation. Therefore, ensure that the conditions result in the correct assessments being attached especially when defining multiple questionnaires.

    **Note:** Ensure that the conditions are simple and mutually exclusive so that the assessment conditions are easier to understand and maintain.

a) Fill in the fields, as appropriate.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active</td>
<td>Select the check box if you want the condition to be evaluated.</td>
</tr>
<tr>
<td>Condition</td>
<td>Enter the conditions that will determine which changes will use the specific risk assessment.</td>
</tr>
<tr>
<td>Description</td>
<td>Enter a description of the condition.</td>
</tr>
<tr>
<td>Order</td>
<td>Enter the order number that will determine the sequence in which the risk assessment will be used. If multiple conditions apply, the risk assessment with the lowest order will be used.</td>
</tr>
<tr>
<td>Table</td>
<td>Select the table on which the risk assessment will be run.</td>
</tr>
</tbody>
</table>

    **Note:** Select the Change (change_request) table if the risk assessment is used on the Change table.
b) Click Submit to submit and save the risk assessment conditions.

Users can now enter risk assessment information that will calculate the risk associated with a specific change request.

Identify risk conditions

The Best Practice- Change Risk Calculator enables dynamic calculations of the risk and impact of a change, which are displayed on the change record.

The Best Practice- Change Risk Calculator also bundles some risk calculations using CI attributes and time measures.

Specify risk and impact calculation method

You can specify how and when risk and impact rules are applied.

Role required: admin

1. Navigate to Change Administration Change Properties.
2. From the Change risk calculation method property, select one of the following options:

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
</table>
| UI Action    | Enables users to check condition rules on demand using the Calculate Risk UI action. Users will be able to click Calculate Risk to apply any matching conditions according to their order. Each time a rule is applied, an alert is displayed confirming the new values for risk and impact. The Calculate Risk button will appear as a Related Link on the Change Request form only if:
  - There are risk and impact conditions that apply to the current change record.
  - The user has the admin or itil role. |

Note: The Execute Risk Calculation button will replace the Calculate Risk button if Change Risk Assessment is activated.

<table>
<thead>
<tr>
<th>Business Rule</th>
<th>Enables conditions to be evaluated and applied dynamically through a business rule that exists on the Change Request table. The conditions are evaluated before new change request record is inserted and before any update to existing change requests is made. Users with either the admin or itil roles or both can execute this business rule.</th>
</tr>
</thead>
</table>

Note: The Run Risk Calculation business rule will replace the Calculate Risk business rule if Change Risk Assessment is activated.
<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td>Disables the processing of risk and impact rules entirely.</td>
</tr>
</tbody>
</table>

**Define risk and impact conditions**
You can define risk and impact conditions for your change records.

Role required: admin

The **Best practice- change risk calculator** plugin is activated.

You can define the rules based on which the risk and impact of a change will be calculated.

If more than one rule matches the criteria specified on a change request, the Order field determines the order in which rules are evaluated. Rules with lower numbers are evaluated first. If there are two or more rules with differing orders, the rule with the lowest order is evaluated and the others are ignored.

To define a new risk or impact condition:
1. Navigate to **Change Risk Conditions**.
2. Use one of the following options to define the new rule:
   - **Condition filter**: use the builder to construct the logic.
   - **Advanced condition**: use the Condition field to script an advanced condition.
   - **Script values option**: use to script conditions.

   **Note**: The **Active** field must be checked for a rule to be evaluated.

Users can now enter criteria based on which the risk and impact of a change request will be calculated.

**Use the condition filter to define risk and impact conditions**
You can use the condition filter to write conditions.

1. Click **New** to create a new calculation.
2. Enter a name.
3. Select either the **Risk** or **Impact** values or both. This determines which field is updated by this risk calculation.
4. Enter a Description.
5. Create a condition using the **Condition field filters**.

**Use advanced conditions to define risk and impact conditions**
You can define risk calculation rules on which the risk and impact of a change are calculated.

1. Click **New** to create a new calculation.
2. Enter a name.
3. Select either the **Risk** or **Impact** values or both. This determines which field is updated by this risk calculation.
4. Enter a description.
5. Check the **Use advanced condition box**.
6. Write the script in the **Advanced condition field** that appears. Rules are written using standard business rule syntax. The rule needs to set the global variable answer to true or false.

The figure looks at the currently selected configuration item to determine whether it is a business service. If it is a **Business Service** then it checks a field named Business
Criticality to see if the value is 1 - most critical or 2 - somewhat critical. If the condition matches, it sets ‘answer = true’, which will set the risk for the change request to ‘High’ and the impact to 1 - High.

Another common scenario that requires scripting is determining the Business Services that will be impacted as a result of a change to one or more configuration items. A sample rule has been provided in the plugin.

In this example rule, the script uses the CIUtils() class to determine which Business Services will be impacted by your change. The servicesAffectedByCI( ) method is invoked, and passed the current change record. This method grabs the Configuration Item entered on the current change request then locates all associated parent and child Business Services.

A list or array of Business Services is returned, and then evaluated in the script above to determine if there are any 1 - most critical services. If there are highly critical services then the answer will be set to true.

Use a script to define risk and impact conditions

You can set either risk or impact or both based on variable conditions.

1. Click New to create a new calculation.
2. Enter a name.
3. Select the Risk or Impact values or both.
   This determines which field is updated by this risk calculation.
4. Enter a description.
5. Check the Use script values box.
6. Write the script in the Script field that appears.

   The Critical service changed condition, which is provided with the plugin, sets risk and impact according to the values returned by the Business Services. If the criticality is 1, the script values are used to assign the appropriate risk and impact.

   Values from the current change request can be invoked to optionally set either risk or impact or both. Below is an example using current field values:

   ```java
   if (current.assignment_group.getDisplayValue == "Network") {
       current.risk = 2;
       current.impact = 1;
   } else {
       current.risk = 3;
       current.impact = 2;
   }
   ```

Edit risk and impact conditions

You can edit the risk and risk conditions from the Change Request form.

Role required: admin

1. On the Change Request form, navigate to Context Edit Risk Conditions.
2. Edit the rules based on your requirements.
3. Click Update to save the changes.

Associated CIs on a change request

You can associate CIs to change requests through related lists on the Change Request form.

The Affected CIs and Impacted Services/CIs related lists enable you to manage CI changes.
When you first access a change request and work with these related lists, you can identify CIs across CI classes using configuration class. You can change the configuration class manually to filter the list and narrow the selection of CIs. For example, to filter for Linux servers only, select Linux Servers as the Configuration Class.

You can also create and save filters to provide quick access to common CI searches. The next time you access the change request, the Configuration Class field displays the last associated CI class. This automatic filter ensures that relevant CIs are displayed.

After identifying the CIs affected by a change request, you can add them to the Affected CIs related list on the change request. After saving affected CIs, you can open the form context menu and select the Refresh Impacted Services option. This option populates the Impacted Services/CIs related list based on the primary CI i.e. the CI that is mentioned on the form.

The Impacted Services/CIs related list represents a many-to-many relationship between the Task (task) and CMDB (cmdb_ci) tables. The related list displays CIs, such as business services or other CI classes, that are impacted. You can add this related list to any task form such as an incident or problem form. You can also enter the details of the impacted services manually, as required.

---

**Note:** The manually added CIs are not deleted each time the impacted services are refreshed. However, business services related to the CIs are displayed on the Impacted Services/CIs related list.

---

**Add affected CIs to change requests using dependency views**

You can use the dependency views to identify dependent CIs affected by a change request and then add them to the Affected CI(s) related list.

**Role required:** admin, change manager

When a change request is associated to a configuration item, the change record becomes accessible from dependency views. This makes the affected services easy to assess.

---

**Note:** Ensure that you configure the change request form to display the Affected CI(s) related list.

---

1. **In the change request, click the dependency views icon next to the Configuration item field.**

   **Note:** If there are critical change requests attached to the database, the map includes the business services that rely on that database. The database icon has a blinking glyph on the lower left edge that indicates any issues with the node.

   The configuration item in the map with all its dependent CIs are displayed.

2. **Click the down arrow next to the CI to display a list of tasks and issues with the CI.**

   The list may contain one or more change requests, and follow-on audit tasks. You can open each record from this list.

3. **Click the task number to display the complete list of tasks attached to this server.**

   You can view the user assigned to the change and also open the record for more information.

4. **To change the map configuration, select a format from the Layout field or use the filter panel to filter the map.**

   The dependency views highlights the affected CIs that are dependent on the database.

5. **To add an affected CI to the change for the database, click the drop-down arrow next to the highlighted node and select Add Affected CI(s).**

   You can view the Affected CI(s) related list on the change request.
Associate multiple CIs to a change request

You can associate multiple impacted or affected CIs to a single change request.

Role required: admin, change manager

When you create a change request, you can add multiple CIs to that change request using the Affected CIs or Impacted Services/CIs related lists in the change record. Affected CIs can be added only when the change request is in the New state.

1. Navigate to Change Open and select a change request record.
2. In either the Affected CIs or Impacted Services/CIs related list, click Add.

3. Select the appropriate CIs from the list of CIs displayed in the pop-up window.

The pop-up window for the Affected CIs list is filtered for the configuration class of the last added CI. This automatic filter ensures that relevant CIs are displayed. You can change the class to list other CIs, if appropriate.
<table>
<thead>
<tr>
<th>ID</th>
<th>Name</th>
<th>Manufacturer</th>
<th>Location</th>
<th>Description</th>
<th>Class</th>
<th>Status</th>
<th>Updated</th>
<th>Maintenance schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>X650-8BM</td>
<td>Lenovo</td>
<td>1300 Wilshire Blvd, CA</td>
<td>Computer</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>X650-8BC</td>
<td>Lenovo</td>
<td>9000 West Olive Ave, CA</td>
<td>Computer</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>X650-8BN</td>
<td>Lenovo</td>
<td>13601 South Grand Blvd, CA</td>
<td>Computer</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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The Impacted Services/CIs pop-up window lists all CIs and provides standard filtering options. You can also save any filters you create to provide faster access to common CI searches.

4. Perform one of the following actions.
   • Select the CIs to add and click Add Selected to add the selected CIs to the change request.
   • Click Add All to add all the CIs in the list to the change request.

Extend multiple CI association
You can extend multiple CI association to enable it for other types of tasks.

Role required: admin
1. Enter sys_properties.list in the navigation filter to open the System Property (sys_properties) table.
2. Open the List of all the task types where user wants to associate CIs using a List (com.snc.task.associate_ci) system property.
   
   Note: The value of this property is set to change_request by default to enable association of multiple CIs to change requests.

3. To enable multiple CI association to other types of task, add the required table as a value. For example, to enable multiple CI association for problem records, add problem as a value.
4. Click Update to save and update the property.

Disable multiple CI association
You can disable multiple CI association from the related lists on change request records.

Role required: admin
1. Enter sys_properties.list in the navigation filter to open the System Property (sys_properties) table.
2. Open the List of all the task types where user wants to associate CIs using a List (com.snc.task.associate_ci) system property.
3. Remove the change_request value.
4. Navigate to System UI List control.
5. To disable multiple CI association for the related lists:

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Associated CIs</td>
<td>Open the entry with the task_ci.task related list and remove the selection from the Omit edit check box.</td>
</tr>
<tr>
<td>Impacted Services/CIs</td>
<td>Open the entry with the task_cmdb_ci_service.task related list and remove the selection from the Omit edit check box.</td>
</tr>
</tbody>
</table>

Bulk CI Changes
The Best Practice - Bulk CI Changes plugin enables you to record a single change proposal that will be linked to all affected CIs.

You can use Best Practice - Bulk CI Changes for change processes that use the following:
   • Proposed Change to update CI data
   • Affected CI related list to track impacted CIs
   • change requests based on a single CI Class
If Best Practice - Bulk CI Changes is activated, then the following changes take place within a change request:

- For change requests with no CIs, Associate CIs displays the CI class on the change request by default and the Reference field, to change the configuration class, displays all the classes that are grouped under the CI class value on the change request. For example, if the CI class on the change request is Server, then you can only select a class that is grouped under Server.
- For change request with CIs, Associate CIs displays the class of the last associated CI. For example, if the last CI associated was Linux Server, then the configuration class displays Linux Server by default.

Configure change request to perform bulk changes to CIs

You can configure the change request form to perform bulk changes to CIs.

Role required: admin

The Best practice- bulk CI changes plugin is activated.

1. Configure the change request form as follows:
   a) Add the CI Class and Proposed Change fields, if they are not already visible. The Proposed Change field is hidden by a UI policy until a CI class is selected.
   b) Add the Affected CIs related list.
   c) Remove the Configuration Item field from the form because all CIs must be tracked through the Affected CIs related list.

2. Click Save to save and submit the details.

Users can perform bulk changes to CIs on the change request form.

Change management mass update CI

Change Management - mass update CI enables users to mass update a set of CIs for a specific class.

Note: This is available for normal and emergency changes only.

For example, a series of laptops require their domain to be changed. In this case, this can be included in the proposed change. When the proposed change is saved, an XML proposed update is added to the affected CIs. This can then be applied when the change is in the implement or review state.

Create a change request

You can create, progress, review, and close a change request.

Role required: itil or admin

1. Create the change request with one of these options.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>From the Change module</td>
<td>You can create all three types of change from the Change module.</td>
</tr>
<tr>
<td></td>
<td>1. Navigate to Change Create New.</td>
</tr>
<tr>
<td></td>
<td>2. Select one of the following types of change: Normal, Emergency, or Standard.</td>
</tr>
</tbody>
</table>
### Table 78: Change request form

<table>
<thead>
<tr>
<th>Name</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Requested by</td>
<td>Select the profile of the user who requested the change.</td>
</tr>
<tr>
<td>Category</td>
<td>Enter the category of change. For example, Hardware, Network, Software.</td>
</tr>
<tr>
<td>Configuration Item</td>
<td>Select the configuration item (CI) that the change will apply to.</td>
</tr>
<tr>
<td>Priority</td>
<td>Select the priority for the change, from 1 (Critical) to 4 (Low).</td>
</tr>
<tr>
<td>Risk</td>
<td>The risk level for the change. In addition to manually evaluating the risk involved in a change, you can use the Change Risk Calculator.</td>
</tr>
<tr>
<td>Impact</td>
<td>Select the appropriate impact level (High, Medium or Low).</td>
</tr>
<tr>
<td>Short description</td>
<td>Enter a summary of the change.</td>
</tr>
</tbody>
</table>
Table 79: Change Request related lists

<table>
<thead>
<tr>
<th>Name</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>Enter a detailed description of the change.</td>
</tr>
<tr>
<td>Assignment group</td>
<td>Select the group that the change is assigned to.</td>
</tr>
<tr>
<td>Assigned to</td>
<td>Select the specific user that the change is assigned to. If an assignment rule applies, the change is automatically assigned to the appropriate user or group.</td>
</tr>
</tbody>
</table>

3. Click the Planning tab and enter information to plan the change.
4. Click the Schedule tab to enter a requested by date, a planned start and end date, and work start and end dates. For normal or emergency changes, the planned start and end dates are typically populated automatically during the Authorize state. Work start and end dates are populated automatically as the change progresses in and out of Implement state.
5. Click the Conflicts tab to detect change conflicts.
6. Right-click the form header and click Save.
7. Review entries in the related lists and modify the entries as appropriate.

<table>
<thead>
<tr>
<th>Name</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change Tasks</td>
<td>The list of tasks can be created from a workflow. The default workflow generates tasks in Implementation state.</td>
</tr>
<tr>
<td>Approvers</td>
<td>This list is automatically generated from the workflow.</td>
</tr>
<tr>
<td>Problems</td>
<td>If the change was generated from a problem, this list is generated automatically.</td>
</tr>
<tr>
<td>Affected CIs</td>
<td>List of CIs (from the CMDB) that will be affected by the change. You can associate multiple affected CIs with a change.</td>
</tr>
<tr>
<td>Impacted services / CIs</td>
<td>List of business services (from the CMDB) that will be affected by the change. You can associate multiple impacted CIs with a change.</td>
</tr>
<tr>
<td>Incidents Pending Change</td>
<td>List of incidents that require the change for resolution.</td>
</tr>
<tr>
<td>Incidents Caused by Change</td>
<td>List of incidents that were caused by implementation of the change.</td>
</tr>
</tbody>
</table>

8. Click Request Approval when the change request is ready to progress into the life cycle for authorization. Click Schedule in case of standard changes.

After a change request is created, it is sent for processing to the change manager. The change manager then reviews, approves, implements, and closes the change request as necessary.

In addition, you can associate CIs to the newly created change request.

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Create a change request template

You can create a template that can be used to create change requests with pre-defined supporting tasks.

Role required: admin

1. Navigate to System Definition Templates.
2. Click New or open an existing change request template to modify.
3. Click Configure Form Layout to add the following fields to the template: Next related template, Next related child template, Link element.
4. From the Table, choose from one of two default change request template configuration items:

<table>
<thead>
<tr>
<th>Item</th>
<th>Link element</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change_request</td>
<td>None. This object does not have a link element, because it is at root level.</td>
</tr>
<tr>
<td>Change_task</td>
<td>Parent. Because this task object is one level below root level, it uses the parent table as a link element. In this case, the parent is change_request.</td>
</tr>
</tbody>
</table>

5. Edit the fields on the change request template as needed:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Unique and descriptive name for this template.</td>
</tr>
<tr>
<td>Table</td>
<td>Select the table the template applies to.</td>
</tr>
<tr>
<td>Active</td>
<td>Check to make template available for use.</td>
</tr>
<tr>
<td>User</td>
<td>User who can configure and apply the template. If a user is defined, no other users can see the template unless the Global check box is selected.</td>
</tr>
<tr>
<td>Group</td>
<td>A group whose members can configure and apply the template. If a group is defined, no other groups can see the template unless the Global check box is selected.</td>
</tr>
<tr>
<td>Global</td>
<td>Option for allowing any user who can access templates to view and apply this template.</td>
</tr>
<tr>
<td>Short description</td>
<td>Enter a unique short description for the template.</td>
</tr>
<tr>
<td>Template</td>
<td>This field automatically displays after selecting a table and used to auto-populate records. Click and select the field from the table. You can select multiple fields. Enter the information that auto-populates.</td>
</tr>
<tr>
<td>Next related template</td>
<td>Using this field creates a record at the same hierarchical level (sibling) as the current template. Using this field on a child template specifies an extra child template under the same parent template. This field is not supported on top-level templates.</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Next related child template</td>
<td>This field creates a record at the hierarchical level below (child) the current template. You can assign a child template to a child template.</td>
</tr>
<tr>
<td>Link element</td>
<td>Use this field to link a record created from a child template to the record created from the parent template. The template script include chooses the first valid reference field that can link to the parent record when this field is left blank.</td>
</tr>
</tbody>
</table>

6. Click Save to save the change request template.

Create a change request from a CI

You can create a change request from a list of CIs, or add selected CIs from a list to a change record.

Role required: itil, admin

1. Select a list of CIs. For example, navigate to Configuration Application Servers Servers Unix.
2. Select one or more CIs from the appropriate list.
3. Select one of the following options from the Actions list.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Add to existing Change Request</td>
<td>Select this option to associate the CIs with an existing change request.</td>
</tr>
<tr>
<td>Add to new Change Request</td>
<td>Select this option to associate the CIs with a new change request.</td>
</tr>
</tbody>
</table>

Note: The CIs with a Business Service CI class are added to the change request record’s Impacted Services/CIs related list. The remaining CIs are added to the change request record’s Affected CIs related list.
Depending on your selection, either an existing change requested is updated with the selected CIs or a new change request record is created with the selected CIs.

4. You can continue to create or modify the change record as required.

Request a standard change from the catalog

Standard change catalog can be used to request a new standard change from the published standard change templates.

Role required: itil

2. Select one of the following options depending on the type of standard change you want to request.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Network Standard Changes</td>
<td>Request a standard change relating to network related changes.</td>
</tr>
<tr>
<td>Option</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Server Standard Changes</td>
<td>Request a standard change relating to servers and attached storage.</td>
</tr>
</tbody>
</table>

3. Select a template from the Items section. For example, Add network switch to datacenter cabinet in the Network Standard Changes Items section. When you select the catalog item, a standard change is created. The Standard Change Request form is displayed with values from the standard change template.

Copy a change request

You can copy details of an existing change record to a new change record.

Role required: admin or change manager

The ability to copy a change enables you to:

- Configure the content that is copied.
- Copy the configured attributes, and reset all non-copied attributes to default values.
- Copy the configured related tables.

Note: You cannot copy change details from a standard change.

New change tasks may be created when a change is copied. If your change record has associated workflows that create change tasks, then these change tasks may not be copied because they are created by the workflows. Only manually created tasks are copied, if the workflow when creating the task sets the created_from field on the change_task table to workflow. The created_from field has a default value of manual.

1. Navigate to the change request to be copied.
2. Use the Copy Change button on the change request form to copy change details.
   A preview of the new change record appears with values from the original source change record.
3. Edit values on the newly created change record, as appropriate.
4. Click Save to save and create a new change request record.

Note: If you click Cancel, the copied change request record is cancelled and no new record is created.

After an existing change request is copied and a new one created, it is sent for processing to the change manager. The change manager then reviews, approves, implements, and closes the change request as necessary.

In addition, you can associate CIs to the newly created change request.

Configure ability to copy a change request

You can configure the ability to copy a change request record and also configure the specific details that can be copied.

Role required: admin

You can configure the ability to copy a change. You can do the following:

- Disable the ability to copy a change
- Disable the ability to copy an attachment
You can configure the ability to copy a change request in the following ways:

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disable the ability to copy a change request</td>
<td>The ability to copy a change request is enabled by default.</td>
</tr>
<tr>
<td>To disable the ability to copy a change request:</td>
<td>1. Set the Enable Copy Change feature (com.snc.change_request.enable_copy) system property to false.</td>
</tr>
<tr>
<td>Disable the ability to copy an attachment</td>
<td>The ability to copy an attachment to the change request is enabled by default.</td>
</tr>
<tr>
<td>To disable this ability:</td>
<td>1. Set the Enable copying of attachments from the originating change (com.snc.change_request.attach.enable_copy) system property to false.</td>
</tr>
<tr>
<td>Disable the ability to copy the attachments to a</td>
<td>The ability to copy the attachments to a change task in the Change Tasks related list of a change request is enabled by default.</td>
</tr>
<tr>
<td>change task in the Change Tasks related list of a</td>
<td>To disable this ability:</td>
</tr>
<tr>
<td>change request</td>
<td>1. Set the Enable copying of attachments from the originating change's related change tasks (com.snc.change_request.rl.change_task.attach.enable_copy) system property to false.</td>
</tr>
<tr>
<td>Configure attributes to be copied</td>
<td>Common attributes such as columns in the change table are copied by default.</td>
</tr>
<tr>
<td>To configure the attributes to be copied:</td>
<td>1. Edit the list of values in the List of attributes (comma-separated) that will be copied from the originating change (com.snc.change_request.copy.attributes) system property to remove or add more attributes. For example, to the Assigned to attribute from being copied, remove the assigned_to value from the List of attributes (comma-separated) that will be copied from the originating change property.</td>
</tr>
</tbody>
</table>

Note: If the ability to copy attachments is enabled, the attachment will appear on the new change request form only after the change request is saved.
Configure related lists to be copied

The following related lists in a change record are copied by default:

- Affected CIs
- Impacted Services/CIs
- Change Tasks

**Note:** You can configure this property to control the copy functionality of the Affected CIs, Impacted Services/CIs, and Change Tasks related lists. You cannot add any other related list to this property.

To configure the lists to be copied:

1. Edit the list of values in the Related lists (comma-separated) that will be copied from the originating change (com.snc.change_request.copy.related_lists) system property. For example, to stop copying the Change Tasks related list, remove the change_task value from the Related lists (comma-separated) that will be copied from the originating change property.

Configure attributes of related lists to be copied

You can configure the attributes of related lists to be copied using appropriate system properties.

To configure the attributes of related lists to be copied:

1. Navigate to the appropriate system property for a specific related list to configure the attributes that must be copied. The property name will be com.snc.change_request.copy.rl.<table name>.attributes.

You can modify the following system properties to configure the attributes of related lists to be copied:

<table>
<thead>
<tr>
<th>Name of the Related list</th>
<th>System property</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change Tasks</td>
<td>com.snc.change_request.copy.rl.changetask.attributes</td>
</tr>
<tr>
<td>Affected CIs</td>
<td>com.snc.change_request.copy.rl.task_ci.attributes</td>
</tr>
<tr>
<td>Impacted Services/CIs</td>
<td>com.snc.change_request.copy.rl.task_cmdb_ci_service.attributes</td>
</tr>
</tbody>
</table>
Customize the copy a change request ability

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Customize the copy a change request ability</td>
<td>To further customize the ability to copy a change request:</td>
</tr>
<tr>
<td></td>
<td>1. Modify the ChangeUtils script include, which extends the default ChangeUtilsSNC script include. For example, the ability to copy a change request is not available by default for standard changes. However, you can provide your own implementation of the isCopyRulesValid function in the ChangeUtils script include to override the default.</td>
</tr>
<tr>
<td></td>
<td>Note: You must not modify the ChangeUtilsSNC script include.</td>
</tr>
</tbody>
</table>

Analyze risk of change and detect conflicts

After you create a change request, you can assess and analyze the risk and impact involved in the change request and also review any conflicts that may be detected.

Role required: admin or change_manager

Analyze risk of change and review detected conflicts in the following ways.

Perform risk assessment

You can perform risk assessment of your change records after the risk assessment criterion are defined.

Role required: itil or change_manager

1. Open your submitted change request and click the Fill Out Risk Assessment related link. The most appropriate risk assessment based on the definition is displayed.
2. Answer the questionnaire and click Submit.
3. After the risk assessment is complete, click the Execute Risk Calculation related link to calculate the risk based on the assessment.

The results of the risk calculation are displayed.

- **Risk assessment evaluated. Risk:** Very High
- **Risk Condition applied:** Insufficient lead time; Risk: Very High; Impact unchanged
- **Risk set to:** Very High

**View a risk assessment response**

You can view the risk assessment responses associated with a change request.

Role required: admin, survey_admin, or survey_reader

You can view the risk assessment response in one of the following ways:

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change Management</td>
<td>Users with admin role can add the Task Assessment Task related list to the change request form. The related list displays risk assessments associated with the change request. Click the reference icon for an assessment to view the responses.</td>
</tr>
<tr>
<td>Task Survey Management</td>
<td>Users with survey_admin or survey_reader roles can navigate to Survey Survey Responses and filter by Instance. Survey instances are individual assessments and are distinguished by the date and time when they are taken.</td>
</tr>
</tbody>
</table>

**Detect change conflicts manually**

You can run conflict detection manually for a change request.

Before you can run conflict detection for a change, the following fields must be completed for the change request:

- Configuration item, except in advanced mode. In advanced mode, the Affected CIs field is required instead.
- Planned start date
- Planned end date

Prior to running conflict detection, you must consider the following scenarios unique to your organization.

<table>
<thead>
<tr>
<th>CMDB list size and relationship complexities</th>
<th>If you are a large organization with a large CMDB, conflict detection might take longer to complete.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inactive changes are not evaluated</td>
<td>Conflict detection does not evaluate inactive changes when determining conflicting changes.</td>
</tr>
</tbody>
</table>
Advanced mode conflict checking is switched off by default when you upgrade. Hence, affected CIs are not considered during conflict detection. In order to evaluate all the CIs, set the mode to Advanced.

Role required: admin or change_manager

1. Navigate to Change Open.
2. Open the change request that you want to check conflicts for.
3. Click the Conflicts tab.
4. Click Check Conflicts.

Any conflicts appear in the Conflicts Detected list.

You can review the detected conflicts and resolve them.

Review detected change conflicts

You can run review the details of conflicts detected after running either automated or manual conflict detection.

Role required: admin

Before you can review the conflicts detected for a change request, you must detect conflicts in one of the following ways:

- Detect change conflicts manually
- Detect change conflicts automatically

After you run conflict detection, you can view the following information regarding conflicts that have been detected.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change</td>
<td>A reference to the scheduled change that has a conflict.</td>
</tr>
<tr>
<td>Affected CI</td>
<td>The affected CI associated with the change.</td>
</tr>
<tr>
<td>Conflicting change</td>
<td>The change that is in conflict with the scheduled change, if any.</td>
</tr>
<tr>
<td>Related CI</td>
<td>The parent CI or child CI of the current CI, if it has caused a conflict.</td>
</tr>
<tr>
<td>Schedule</td>
<td>The maintenance window or blackout window that is causing the conflict, if any.</td>
</tr>
<tr>
<td>Type</td>
<td>The issue that caused the conflict. You can change the issue to one of the following options:</td>
</tr>
<tr>
<td></td>
<td>• CI Already Scheduled</td>
</tr>
<tr>
<td></td>
<td>• Parent CI Already Scheduled</td>
</tr>
<tr>
<td></td>
<td>• Child CI Already Scheduled</td>
</tr>
<tr>
<td></td>
<td>• Not in Maintenance Window</td>
</tr>
<tr>
<td></td>
<td>• Parent Not In Maintenance Window</td>
</tr>
<tr>
<td></td>
<td>• Child Not In Maintenance Window</td>
</tr>
<tr>
<td></td>
<td>• Blackout</td>
</tr>
</tbody>
</table>
Detect change conflicts automatically

You can automate conflict detection to run at specific intervals or when a change request is updated. Prior to running conflict detection, you must consider the following scenarios unique to your organization.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMDB list size and relationship complexities</td>
<td>If you are a large organization with a large CMDB, conflict detection might take longer to complete.</td>
</tr>
<tr>
<td>Inactive changes are not evaluated</td>
<td>Conflict detection does not evaluate inactive changes when determining conflicting changes.</td>
</tr>
<tr>
<td>Advanced mode conflict checking is switched off by default</td>
<td>When you upgrade, advanced mode conflict checking is switched off by default. Hence, affected CIs are not considered during conflict detection. In order to evaluate all the CIs, set the mode to Advanced.</td>
</tr>
</tbody>
</table>

Role required: admin or change_manager

1. Navigate to Change Administration Conflict Properties.
2. Select one of these options.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
</table>
| Run conflict detection automatically after changes to Configuration item, Planned start date, Planned end date or State when a change request is updated | Runs conflict detection automatically when a change to one or more of the following fields is saved.  
  • Configuration item  
  • Planned start date  
  • Planned end date  
  • State |

Enable the scheduled change conflict checker  
Runs conflict detection at these intervals:  
Change Conflict Detection < 1 Week Away is scheduled every day  
Change Conflict Detection < 1 Month Away is scheduled every two days  
Change Conflict Detection >= 1 Month Away is scheduled every 7 days

3. Click Save.
   You can view the conflicts in the Conflicts tab on the change request.

Cancel conflict detection manually

You can cancel conflict detection jobs that are actively running for a change request.

Role required: admin

To cancel conflict detection manually:
1. Navigate to Change Open.
2. Open the change request that you want to cancel checking of conflicts for.
3. Click the Conflicts tab.
4. Click Check Conflicts.
   The Checking conflicts progress status pop-window appears.
5. Click Cancel to cancel conflict detection.
   The active conflict detection job is cancelled and all the conflicts displayed under the Conflicts tab are cleared. The Conflict Status field displays a Not Run status.

Note: If you set conflict detection to run automatically or on a scheduled basis, the future executions of conflict detection against the same change request record are not cancelled.

Process a change request
You can approve, implement, review, and close a change request.
Role required: itil, admin, or change manager
Before you process a change request, ensure that you have detected any change conflicts and performed risk assessment.

You can perform the following actions on a change request based on your role.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approve or reject a change request</td>
<td>Open the approval record and click Approve to approve the change request or Reject to reject it. The change request moves into the Scheduled state if it is approved or to New state if it is rejected.</td>
</tr>
<tr>
<td>Role required: change management</td>
<td></td>
</tr>
<tr>
<td>Implement a change request</td>
<td>Click Implement to put the change request into action. The change request moves into the Implement state and the workflow creates two change tasks: Implement and Post-implementation testing.</td>
</tr>
<tr>
<td>Role required: change management</td>
<td></td>
</tr>
<tr>
<td>Review a change request</td>
<td>Click Review after reviewing the details on the change request. The change request is moved to the Review state. All active change tasks are set to Closed Incomplete.</td>
</tr>
<tr>
<td>Role required: change management</td>
<td></td>
</tr>
<tr>
<td>Close a change request</td>
<td>Click Close after entering the change request closure information in the Closure Information section. The change request is closed.</td>
</tr>
<tr>
<td>Role required: change management</td>
<td></td>
</tr>
</tbody>
</table>

Perform bulk changes to CIs on a change request
You can perform bulk changes to CIs from the change request form.
Role required: admin
The Best Practice - Bulk CI Changes plugin is activated and the change request form is configured to perform bulk changes to CIs.
1. On the change request form, select a CI class. The form will save and submit if all required fields are completed.
2. Click Edit on the Affected CIs related list. The selection is filtered to display only CIs from the selected CI class.
3. Add the CIs that are involved in the change.

4. Enter the proposed changes in the Proposed change field.
   Whenever the Proposed change field is modified or affected CIs are added, the saved changes are linked to all affected CIs.

5. Click Update to save and update the record.
   The resulting changes are listed at the top of the form. The following messages display on the form only if there are CIs listed in the Affected CIs list.
Place a change request on hold

You can put a change request on hold if it is not in the New, Canceled, or Closed state.

Roles required: itil, admin, or change manager

When a change request is placed on hold, these conditions are applied to it:

- If the change is waiting for any approvals, then the pending approvals are marked No Longer Required. When the change request is no longer on hold, then the pending approvals are reinstated and are Awaiting approval.
- The change can progress to only the Canceled state while it is on hold.
- If a change request is cancelled while it is on hold, then its on hold flag is set to false so the change cannot be canceled and still be on hold.

1. Navigate to Change Open.
2. Open the specific change request.
3. Select the On hold check box.
4. In the On hold reason field, enter the reason for placing the change request on hold
5. Click Save.

Expense Line

Expense lines enable you to track costs and represent when a point-in-time expense incurred. Expense lines can be created manually or generated by the scheduled processing of recurring costs.

The Expense Line plugin is active for all instances. To use the Expense Allocations and Expense Allocation Rules modules, activate the Cost Management plugin.

The ServiceNow platform generates expense lines automatically when you create an asset, and updates expense lines automatically when you revise the Cost or Quantity field on an asset record.

Users with the financial_mgmt_admin and financial_mgmt_user roles can work with expense lines.

Expense lines integrate closely with asset management, CMDB, cost management, and contract management, but can be used with any application. The Source ID field on an expense line record can be linked to any record in any table. This allows expenses to be associated with a wide variety of items, such as a contract, an individual asset, a single configuration item, a software installation, a lease, a service contract, a user, or a group.
Figure 64: Example expense line for an asset monthly lease
Components installed with Expense Line

Several types of components are installed with the Expense Line plugin.

Tables installed with Expense Line

Expense Line plugin adds the following tables.

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expense Line (fm_expense_line)</td>
<td>Stores information about expense lines, including a link to the associated rate card. Contains the status and next scheduled processing date for the expense line.</td>
</tr>
</tbody>
</table>

User roles installed with Expense Line

Expense Line plugin adds the following user roles.

<table>
<thead>
<tr>
<th>Role</th>
<th>Contains roles</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial admin (financial_mgmt_admin)</td>
<td>(financial_mgmt_user)</td>
<td>Can create, write, and delete allocation units, fixed assets, depreciation, rate cards, distribution costs, expense lines, and expense allocations.</td>
</tr>
<tr>
<td>Financial user (financial_mgmt_user)</td>
<td>none</td>
<td>Can read allocation units and expense allocations. Can create, read, and write rate cards and expense lines. Can create, read, write, and delete fixed assets, depreciation, distribution costs.</td>
</tr>
</tbody>
</table>

Script includes installed with Expense Line

Expense Line plugin adds the following script includes.

<table>
<thead>
<tr>
<th>Script include</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ExpenseLine</td>
<td>Helps create new expense line records.</td>
</tr>
<tr>
<td>ExpenseManagementUtils</td>
<td>Provides utilities for financial management modules.</td>
</tr>
<tr>
<td>ExpenseManagementUtilsAJAX</td>
<td>Provides AJAX utilities for expense lines.</td>
</tr>
</tbody>
</table>

Client scripts installed with Expense Line

Expense Line plugin adds the following client scripts.

<table>
<thead>
<tr>
<th>Client script</th>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Populate sources if inherited</td>
<td>(fm_expense_line)</td>
<td>Copies the source fields of the parent expense line to the current line on the Expense Line record if an expense line is inherited.</td>
</tr>
</tbody>
</table>
### Client script

<table>
<thead>
<tr>
<th>Client script</th>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Populate source fields from asset</td>
<td>(fm_expense_line)</td>
<td>Updates related source fields on the Expense Line record if the source asset changes record. For example, if the asset source field changes, the configuration item source field is updated, as well.</td>
</tr>
<tr>
<td>Populate source fields from ci contract</td>
<td>(fm_expense_line)</td>
<td>Updates related source fields if the source configuration item changes on the Expense Line record.</td>
</tr>
<tr>
<td>Populate source fields from contract</td>
<td>(fm_expense_line)</td>
<td>Updates related source fields if the source contract changes on the Expense Line record.</td>
</tr>
<tr>
<td>Populate source fields from task</td>
<td>(fm_expense_line)</td>
<td>Updates related source fields if the source task changes on the Expense Line record.</td>
</tr>
</tbody>
</table>

### Business rules installed with Expense Line

Expense Line plugin adds the following business rules.

<table>
<thead>
<tr>
<th>Business rule</th>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create Expense Line</td>
<td>(alm_asset)</td>
<td>Automatically creates an expense line for a new asset based on asset cost unless the asset is a merged software license.</td>
</tr>
<tr>
<td>Set source allocation fields</td>
<td>(fm_expense_line)</td>
<td>Sets the related source fields when the source ID changes. For example, when an asset becomes the source ID, the asset source field and configuration item source field are automatically populated.</td>
</tr>
<tr>
<td>Update Costs</td>
<td>(alm_consumable)</td>
<td>Updates a consumable’s cost when quantity is reduced.</td>
</tr>
</tbody>
</table>

### View an expense

Expense lines can be used in a variety of ways, for example, how to view expenses that are associated with a given contract.

Role required: asset or contract_manager

2. Select a contract.
3. View the Expense Lines related list.
   All of the expense lines for the contract are listed. The total cost of the contract and its current value are also shown.
4. Select an expense line to view its details.
Expense lines and expense allocations

The Expense lines application tracks costs and record expenses incurred. Expense allocations let you associate expenses with items such as users, groups, or departments.

Expense lines are a key component of cost management because they can be generated from any application and are used to allocate expenses to business entities. Expense lines can be created manually or generated automatically when costs are created by scheduled processing.

Users with the financial_mgmt_admin and financial_mgmt_user roles can work with expense lines and expense allocation rules.

To use expense allocation rules, activate the Cost Management application.

Create an allocation rule

Expense allocation rules enable you to associate expenses with an item, such as a user, group, or department.

To use expense allocation rules, activate Cost Management.

Role required: admin, financial_mgmt_admin, or financial_mgmt_user

1. Navigate to Cost Administration Expense Allocation Rules.
2. Click New.
3. Complete the form.

Table 81: Allocation rule fields

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>The allocation rule name.</td>
</tr>
<tr>
<td>Table</td>
<td>The table to which the allocation rule is associated.</td>
</tr>
<tr>
<td>Allocation field</td>
<td>The field on the table to populate with the expense allocation.</td>
</tr>
<tr>
<td>Inherited</td>
<td>Check box that indicates whether the expense allocation is inherited.</td>
</tr>
<tr>
<td>Active</td>
<td>Check box that indicates whether the expense allocation is available to use.</td>
</tr>
<tr>
<td>Percentage</td>
<td>The percentage of the expense line allocated to the table and field combination. Not available if the Advanced check box is selected.</td>
</tr>
<tr>
<td>Summary type</td>
<td>The expense allocation category: Grow Business, Run Business, or Transform Business. Categorizing expense allocations can be useful for reporting.</td>
</tr>
<tr>
<td>Condition</td>
<td>The condition under which the expense allocation is applied. Not available if the Advanced check box is selected.</td>
</tr>
<tr>
<td>Advanced</td>
<td>Check box that indicates whether to display the Script field.</td>
</tr>
<tr>
<td>Script</td>
<td>The script field that determines expense allocations. This field is only available if the Advanced check box is selected.</td>
</tr>
</tbody>
</table>
4. Click Submit.

Automatic expense line creation

You can automatically create expense lines to facilitate the accurate reporting of expenses. The following processes generate expense lines automatically if they are enabled.

• Active CI rate cards are processed monthly to generate expense lines for each CI in the rate card. If a CI relationship is changed, existing expense lines are not affected. Changes are reflected in the next scheduled expense line.
• Active distribution costs are processed monthly to generate expense lines based on distribution rule targets.
• Closed tasks on task rate cards are processed to generate expense lines.

Expense lines can also be imported from external systems or generated from scripts. To generate an expense from a server-side script use the ExpenseLine API.

Create expense lines manually

You can create expense lines at a single level or in a hierarchy to better organize expense information. Role required: admin, financial_mgmt.admin, or financial_mgmt.user

Use a hierarchy if it makes sense for your organization. In the example below, the last two expense lines are a level under expense line number EXP0010001.
1. Navigate to Costs Expense Lines.
2. Open an expense line record, or click New to create a new expense line.
3. Complete the form.

Table 82: Expense line table

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>The unique number identifying the expense line.</td>
</tr>
<tr>
<td>Date</td>
<td>The date on which the expense line was created.</td>
</tr>
<tr>
<td>Rate Card</td>
<td>The identification number of the rate card to which the expense line is associated.</td>
</tr>
<tr>
<td>Source ID</td>
<td>The identification number of the item associated with the expense line. If this field is filled in, corresponding information is automatically added to the Source fields on this form.</td>
</tr>
<tr>
<td>Amount</td>
<td>The monetary value of the item specified in the Source ID field. Enter a negative value to indicate a credit.</td>
</tr>
<tr>
<td>Process date</td>
<td>The date the expense line is processed.</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>-------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Inherited</td>
<td>Check box that indicates whether the expense line is located on another expense line.</td>
</tr>
<tr>
<td>State</td>
<td>The current state of the expense line, either Pending or Processed.</td>
</tr>
<tr>
<td>Summary type</td>
<td>The expense line category: Grow Business, Run Business, or Transform Business. Categorizing expense lines can be useful for reporting.</td>
</tr>
<tr>
<td>Short description</td>
<td>A brief description of the expense line.</td>
</tr>
<tr>
<td>Asset</td>
<td>The identification number of the asset associated with the expense line, if any.</td>
</tr>
<tr>
<td>Fixed asset</td>
<td>Fixed asset that contains the asset in this expense line. A fixed asset is a container that holds one or more individual assets, including hardware or software assets. The system auto-populates this field with the appropriate fixed asset if the named Asset is contained within that fixed asset.</td>
</tr>
<tr>
<td>Contract</td>
<td>The identification number (not the contract number) of the contract associated with the Asset, if any.</td>
</tr>
<tr>
<td>User</td>
<td>The name of the user associated with the Asset, if any.</td>
</tr>
<tr>
<td>Configuration Item</td>
<td>The name of the configuration item associated with the expense line, if any.</td>
</tr>
<tr>
<td>Task</td>
<td>The identification number of the task associated with the expense line, if any.</td>
</tr>
<tr>
<td>Cost center</td>
<td>The cost center financially responsible for the item identified in Source ID, if any.</td>
</tr>
</tbody>
</table>

**Delete an expense line**

Deleting an expense line also deletes all expense allocations that were generated from the expense line.

**Role required:** admin or financial_mgmt_admin

Deleting expense lines and allocations should be limited to an emergency case only when they were created incorrectly.

1. Navigate to Costs Expense Lines.
2. Select an expense line.
3. Click Delete.
4. In the confirmation message, click OK.

**Create a sample allocation rule**

You can create a sample expense allocation rule that allocates the cost of an incident to the department of the caller.

To use expense allocation rules, activate the Cost Management application.
Role required: admin, financial_mgmt_admin, or financial_mgmt_user

1. Costs Administration Expense Allocation Rules
2. Click New.
3. In Name, enter Incident Caller Department.
4. In Table, select Incident.
5. In Allocation field, click the control, expand the Caller element, and select a department.
6. In Percentage, enter 100 to allocate all of the expense to the caller’s department.
7. Select the Active check box.
8. Click Submit.

After an incident expense line is created, the allocation rule processes the expense line and generates an expense allocation linking the expense and amount to the caller’s department. The expense is stored in the Target field on the Expense Allocation record.

Use a scripted allocation

Scripted allocations define custom allocation amounts and targets by executing a script.

Role required: admin, financial_mgmt_admin, or financial_mgmt_user

You can use scripted allocations to perform any of the following actions.

- Allocate an expense to all cost centers based on the current head count in the cost center.
- Query usage data to determine the allocation amount to assign to a target.
- Track the business users that are consuming business services.

1. Navigate to Costs Administration Expense Allocation Rules.
2. Select an expense allocation rule.
3. Select the Advanced check box.
4. Use the following concepts to build the script

   - Query for target records and data to use for calculating the allocation amount.
   - Create allocation records using the ExpenseAllocation API.

The following variables are available during the script processing:

- allocation: expense allocation object used to create new allocations.
- expense: GlideRecord for the expense_line that is being processed.
- rule: GlideRecord for this rule.

To create an allocation record, use the allocation object already instantiated in the script scope:

```javascript
allocation.createAllocation(targetGlideRecord, amount);
```

Incident Alert Management

Incident Alert Management enables organizations to create and manage communications related to major business issues or incidents.

This allows incident alert administrators to bring together all involved users during these events and establish quick and easy communication within this group.

For example, a major issue occurs in an organization’s server room, leading to a high-priority incident being raised. The incident could potentially impact all users, so it is important to bring together
key representatives and communicate quickly and effectively. An incident alert can facilitate this communication process and help resolve the source incident.

Incident Alert Management features

The features of Incident Alert Management allow your organization to create and manage communications related to major business issues or incidents.

You can use the Incident Alert Management application to:

• Create an incident alert when a crisis occurs.
• Set up contact responsibilities to identify the individuals who receive automatic notifications when incident alerts are created. Self-service users can subscribe to incident alerts if they want to receive notifications.
• Manage incident alerts to improve communication while dealing with the crisis.
• Use the optional Notify feature to send notifications by SMS messages and voicemails, and to set up conference calls.
• Monitor events and results with the incident alert dashboard and reports.

Activate Incident Alert Management

Administrators can activate the Incident Alert Management plugin.

1. Navigate to System Definition Plugins.
2. Find and click the plugin name.
3. On the System Plugin form, review the plugin details and then click the Activate/Upgrade related link.
   
   If the plugin depends on other plugins, these plugins are listed along with their activation status.
   
   If the plugin has optional features that are not functional because other plugins are inactive, those plugins are listed. A warning states that some files will not be installed. If you want the optional features to be installed, cancel this activation, activate the necessary plugins, and then return to activating the plugin.
4. If available, select the Load demo data check box.
   
   Some plugins include demo data—sample records that are designed to illustrate plugin features for common use cases. Loading demo data is a good policy when you first activate the plugin on a development or test instance.
   
   You can also load demo data after the plugin is activated by clicking the Load Demo Data Only related link on the System Plugin form.
5. Click Activate.

Installed with incident alert management

Incident alert management installs the following components.

Activating the Incident Alert Management plugin adds or modifies tables, user roles, script includes, and other components.

Demo data is included with incident alert management.

Tables

Incident alert management adds or modifies the following tables.
Table 83: Incident Alert Management tables

<table>
<thead>
<tr>
<th>Display name (Table name)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impacted CI (impacted_ci)</td>
<td>The CIs which have been impacted by the incident alert’s source CI.</td>
</tr>
<tr>
<td>Incident Alert (incident_alert)</td>
<td>The base table for incident alerts.</td>
</tr>
</tbody>
</table>

Plugins

The following additional plugins are activated with incident alert management.

Table 84: Incident Alert Management plugins

<table>
<thead>
<tr>
<th>Plugin name</th>
<th>Plugin ID</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact Management</td>
<td>com.snc.contact_management</td>
<td>Provides contact functionality and enables contact administration for incident alerts.</td>
</tr>
</tbody>
</table>

The following additional plugins can optionally be installed to provide additional functionality.

Table 85: Incident Alert Management additional plugins

<table>
<thead>
<tr>
<th>Plugin name</th>
<th>Plugin ID</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Notify</td>
<td>com.sncnotifynow</td>
<td>Provides functionality to send SMS notifications and set up ad-hoc conference calls for an incident alert.</td>
</tr>
</tbody>
</table>

Properties

Incident alert management adds the following system properties.

Table 86: Incident Alert Management properties

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>com.snc.iam.log_level</td>
<td>Logging level for the business rule MapUpstreamImpactedCI. Debug is the most detailed option with full trace of how the Impacted CI List is calculated. Error is the minimal logging option with only severe errors being logged.</td>
</tr>
<tr>
<td>Type: String</td>
<td></td>
</tr>
<tr>
<td>Default value: info</td>
<td></td>
</tr>
<tr>
<td>Possible Values: debug,info,error</td>
<td></td>
</tr>
<tr>
<td>Location: System Properties (sys_properties) table</td>
<td></td>
</tr>
</tbody>
</table>
### Name

#### glide.ui.incident_alert_activity.fields

Incident alert activity formatter fields. This is the list of fields tracked from the incident alert form in the activity formatter.

- **Type:** String
- **Default value:** opened_by, work_notes, comments, severity, estd_disruption_time, actual_disruption_time
- **Location:** System Properties (sys_properties) table

#### com.snc.iam.on_call_escalation_level

Escalation level shown in the selection screen for conference call participants. By default the primary and secondary on-call persons are in the recommended list. The behavior can be changed by adding this property to the system with a different value.

- **Type:** String
- **Default value:** 2 (primary and secondary on-call)
- **Possible Values:** 0, 1, 2, 3, etc. Set to -1 to include everybody in the escalation plan.
- **Location:** System Properties (sys_properties) table

### User roles

Incident alert management adds the following user roles.

#### Table 87: Incident Alert Management user roles

<table>
<thead>
<tr>
<th>Role</th>
<th>Contains roles</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ia_admin</td>
<td>notifynow_admin, contact_admin</td>
<td>Can create and edit incident alerts, and manage contact information. This role is only contained in ia_admin if Notify is active.</td>
</tr>
<tr>
<td>contact_admin</td>
<td>contact_user</td>
<td>(Requires ia_admin role) Can create and edit contact definitions and contact responsibilities.</td>
</tr>
<tr>
<td>contact_user</td>
<td></td>
<td>(Requires ia_admin role) Can view contacts, contact definitions, contact responsibilities and default overrides.</td>
</tr>
</tbody>
</table>

**Note:** Typically, incident alert administrators may need to have both ia_admin and itil roles, to have full access to incident alert functionality. For example, the itil and ia_admin role are both needed to be able to create incident alerts from within an incident form.
UI actions

Incident alert management adds the following UI actions.

Table 88: Incident Alert Management UI actions

<table>
<thead>
<tr>
<th>UI action</th>
<th>Tables</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create new incident alert</td>
<td>incident (incident)</td>
<td>Creates new incident alert from an existing incident record.</td>
</tr>
<tr>
<td>Show Live Feed (1)</td>
<td>Incident Alert (incident_alert)</td>
<td>Displays live feed for the document on a list.</td>
</tr>
<tr>
<td>Show Live Feed (2)</td>
<td>Incident Alert (incident_alert)</td>
<td>Displays live feed for the document.</td>
</tr>
<tr>
<td>Follow on Live Feed (1)</td>
<td>Incident Alert (incident_alert)</td>
<td>Adds user to the live feed for this document. If no feed exists, it is created. This is for lists, forms have the redirect.</td>
</tr>
<tr>
<td>Follow on Live Feed (2)</td>
<td>Incident Alert (incident_alert)</td>
<td>Adds user to the live feed for this document. If no feed exists, it is created. This is for forms using the redirect.</td>
</tr>
<tr>
<td>View PIR Report</td>
<td>Incident Alert (incident_alert)</td>
<td>Shows the post incident review report.</td>
</tr>
</tbody>
</table>

The following UI actions are also installed if Notify is activated:

Table 89: Incident Alert Management additional UI actions

<table>
<thead>
<tr>
<th>UI action</th>
<th>Tables</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initiate Conference Call</td>
<td>Incident Alert (incident_alert)</td>
<td>Initiate a conference call for a incident alert.</td>
</tr>
</tbody>
</table>

UI policies

Incident alert management adds the following UI policies.

Table 90: Incident Alert Management UI policies

<table>
<thead>
<tr>
<th>UI policy</th>
<th>Table</th>
</tr>
</thead>
<tbody>
<tr>
<td>Make PIR section source incident fields read only</td>
<td>Incident Alert (incident_alert)</td>
</tr>
<tr>
<td>Closure info</td>
<td>Incident Alert (incident_alert)</td>
</tr>
<tr>
<td>Resolution Info</td>
<td>Incident Alert (incident_alert)</td>
</tr>
<tr>
<td>Capturing open / closed / resolved info</td>
<td>Incident Alert (incident_alert)</td>
</tr>
</tbody>
</table>

Script includes

Incident alert management adds the following script includes.
Table 91: Incident Alert Management script includes

<table>
<thead>
<tr>
<th>Script include</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IncidentAlertAjax</td>
<td>AJAX methods for incident alert.</td>
</tr>
</tbody>
</table>

The following script includes are also installed if Notify is activated.

Table 92: Incident Alert Management additional script includes

<table>
<thead>
<tr>
<th>Script include</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IncidentAlertConferenceCall</td>
<td>Returns a list of frequent participants that have joined Notify conference calls.</td>
</tr>
</tbody>
</table>

Client scripts

Incident alert management adds the following client scripts.

Table 93: Incident Alert Management additional client scripts

<table>
<thead>
<tr>
<th>Script</th>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PIR visibility</td>
<td>Incident Alert (incident_alert)</td>
<td>Show PIR section if state is resolved or closed.</td>
</tr>
<tr>
<td>Adding info from Source Incident</td>
<td>Incident Alert (incident_alert)</td>
<td>Bring in information from source incident.</td>
</tr>
</tbody>
</table>

Business rules

Incident alert management adds the following business rules.

Table 94: Incident Alert Management business rules

<table>
<thead>
<tr>
<th>Business rule name</th>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incident Alert insertion limitation</td>
<td>Incident Alert (incident_alert)</td>
<td>Only allow one active incident alert to be associated with an incident.</td>
</tr>
<tr>
<td>MapUpstreamImpactedCI</td>
<td>Incident Alert (incident_alert)</td>
<td>Populate impacted CIs related list.</td>
</tr>
<tr>
<td>Insert in state “New” only</td>
<td>Incident Alert (incident_alert)</td>
<td>Make sure an incident alert can only be created with in a New state.</td>
</tr>
<tr>
<td>Opened, Resolved and Closed capturing</td>
<td>Incident Alert (incident_alert)</td>
<td>Capture who did what and when.</td>
</tr>
<tr>
<td>Automatically WIP if actions taken</td>
<td>Incident Alert (incident_alert)</td>
<td>Automatically change the incident alert state to Work In Progress when comments are added.</td>
</tr>
<tr>
<td>Check role is ia_admin</td>
<td>Contact (contact)</td>
<td>Make sure that the logged in user is an incident alert administrator.</td>
</tr>
<tr>
<td>Map upstream impacted CI</td>
<td>Incident Alert (incident_alert)</td>
<td>Map all impacted configuration items based on source CI.</td>
</tr>
</tbody>
</table>
The following business rules are also installed if Notify is activated.

Table 95: Incident Alert Management additional business rules

<table>
<thead>
<tr>
<th>Business rule name</th>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SMS on new Incident Alert</td>
<td>Incident Alert (incident_alert)</td>
<td>Send an SMS notification when an incident alert is created.</td>
</tr>
<tr>
<td>Conference Call Allowed</td>
<td>Incident Alert (incident_alert)</td>
<td>Check if a conference call can be initiated.</td>
</tr>
<tr>
<td>Update Conference Call Finished IA Activity</td>
<td>NotifyNow Conference Call (notifynow_conference_call)</td>
<td>Extend the Incident Alert activity log when a conference call finishes.</td>
</tr>
<tr>
<td>Update Conference Call Started IA Activity</td>
<td>NotifyNow Conference Call (notifynow_conference_call)</td>
<td>Extend the Incident Alert activity log when a conference call is initiated.</td>
</tr>
</tbody>
</table>

Incident Alert life cycle

Incident alerts are created with a New state. They follow a process that finishes with the Closed or Cancelled state.

A series of rules ensure that the alert progression is controlled and standardized.
Table 96: Incident Alert Stages

<table>
<thead>
<tr>
<th>State</th>
<th>From New</th>
<th>From Work in Progress</th>
<th>From Resolved</th>
</tr>
</thead>
<tbody>
<tr>
<td>New</td>
<td>The state can be changed</td>
<td>The state can be</td>
<td>The state can be</td>
</tr>
<tr>
<td></td>
<td>to Work in Progress,</td>
<td>changed to Resolved,</td>
<td>changed to</td>
</tr>
<tr>
<td></td>
<td>Cancelled, or Resolved.</td>
<td>or Cancelled.</td>
<td>Closed.</td>
</tr>
<tr>
<td>Work in</td>
<td>The state automatically</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Progress</td>
<td>changes from New to</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cancelled</td>
<td>Work in Progress if the</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resolved</td>
<td>Actions Taken field is</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Closed</td>
<td>updated.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Only the alert creator or a user with the admin role can cancel an incident alert.
Incident Alert contact

Contacts allow incident alerts to be associated with users and groups based on conditions defining the association.

Use contacts with incident alerts

Incident alert management uses contacts for notification purposes.

Administrators and incident alert administrators can:

• Create and edit **contact responsibilities**.
• **Create and edit contact definitions** to automatically assign contacts to alerts.
• **Add contacts manually** to an incident alert.

Create a contact responsibility

Set up contact definitions to identify individuals or groups that must be associated with an incident alert when it is created.

Contact responsibilities allow contacts to be used in specific alerts. They can be used:

• Within a **contact definition**, as part of the rules for assigning users or groups as contacts for incident alerts.
• **On an ad-hoc basis**, to be added within specific incident alerts.

To create a contact responsibility:

1. Navigate to Incident Alert Management Contact Administration Contact Responsibilities
2. Click New.

3. Fill in the fields.
Table 97: New contact responsibility

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>The responsibility name.</td>
</tr>
<tr>
<td>Type</td>
<td>User or Group to indicate whether the responsibility appears in the User Contacts or Group Contacts related list of the Incident Alert form.</td>
</tr>
</tbody>
</table>

4. Click Submit.

Create a contact definition

Contact definitions specify the conditions for assigning the associated contact responsibility record to incident alerts and the conditions for assigning specific users or groups to those responsibilities.

Contact definitions specify:

- The conditions for assigning the associated contact responsibility record to incident alerts.
- The conditions for assigning specific users or groups to those responsibilities.

For example, a contact definition may be Assign a Crisis Action Manager for Outages with an additional condition of Business/Service impact is True.

To create a contact definition:

1. Navigate to Incident Alert Management Contact Administration Contact Definitions.
2. Click New.

3. Fill in the fields.

Figure 66: Create contact definition
Table 98: New contact definition

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>The name that indicates the conditions defined for this contact definition.</td>
</tr>
<tr>
<td>Type</td>
<td>The type of contacts this definition can be associated with. Can be User or Group.</td>
</tr>
<tr>
<td>Source</td>
<td>The method to determine the user or group to associate with this definition.</td>
</tr>
<tr>
<td></td>
<td>It can be set to:</td>
</tr>
<tr>
<td></td>
<td>• None: Use no association. The incident alert administrator should associate users or groups manually, editing that responsibility entry within the Incident Alert form.</td>
</tr>
<tr>
<td></td>
<td>• Default Override: Use a default override to associate users or groups based on conditions.</td>
</tr>
<tr>
<td></td>
<td>• Form Field: Use information used from a specified field on the incident alert, as defined by the Source field value.</td>
</tr>
<tr>
<td>Source field</td>
<td>The field on the Incident Alert form that identifies the contact associated with the selected contact responsibility. Appears only when Form field is selected as the value for Source.</td>
</tr>
<tr>
<td></td>
<td>• For user contact types, values can be Assigned to, Closed by, Opened by, or Resolved by.</td>
</tr>
<tr>
<td></td>
<td>• For group contact types, the value is Assignment group.</td>
</tr>
<tr>
<td>Responsibility</td>
<td>The contact responsibility associated with this definition.</td>
</tr>
<tr>
<td>Quantity</td>
<td>The maximum number of contacts that can be associated with the selected Responsibility per incident alert record. This field appears only when None is selected as the value for Source.</td>
</tr>
<tr>
<td>Active</td>
<td>A check box to indicate whether the definition is active or not.</td>
</tr>
<tr>
<td>Condition</td>
<td>The conditions that must be met to associate this contact definition to a particular user or group. For example, (Affected users) + (is) + (0-25). If multiple conditions are defined, each condition is evaluated in the order listed.</td>
</tr>
</tbody>
</table>

4. Click Submit.

*Create a default override*

Default overrides specify the user value for each contact the definition adds to an incident alert.

The Default overrides related list is available if the Source for the contact definition is set to Default override.
For example, you could define two default overrides for a contact definition:

- If Source CI’s location is EMEA then user is Beth Anglin, with an evaluation order of 100.
- If Source CI’s location is APAC then user is Abel Tuter, with an evaluation order of 200.

If an incident alert is created that matches the conditions of the contact definition, ServiceNow then compares the alert’s source CI to these override conditions and assigns the appropriate user as the contact.

To create a new default override:

1. Click New in the Default overrides related list.
2. Fill in the fields.

Table 99: New default override

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Order</td>
<td>The order in which the condition is to be evaluated.</td>
</tr>
<tr>
<td>User value</td>
<td>The user to assign as that contact if the condition matches. If the definition type is set to Group, this field is labelled Group value and defines the group to assign as that contact.</td>
</tr>
<tr>
<td>Condition</td>
<td>The conditions defining whether the default override is to be applied. If multiple conditions are defined, each condition is evaluated in the order listed. If no conditions match, this default override is not applied.</td>
</tr>
</tbody>
</table>

3. Click Submit.

Figure 67: New default override

Add a contact manually

Contact entries can be added to an incident alert manually, within an incident alert.

1. Open the incident alert record.
2. Select the User Contacts related list.
3. Do one of the following:
   • Click New to create a new ad-hoc entry.
   • Select an entry created by a contact definition which has the Source field set to None.

4. Select a Responsibility and the User to have this responsibility for this incident alert. That contact information is now listed in the incident alert’s User Contacts related list.

   Note: If you delete an incident alert, all contacts associated with that incident alert are also deleted.

Contact administration

As an incident alert administrator, you can assign multiple users and groups as contacts.

You can assign users or groups to incident alerts automatically based on the information provided in these records:

• Contact responsibilities: these provide a name, such as Incident Duty Manager, for a set of tasks related to incident alerts. The contact responsibility record also indicates whether those tasks are performed by an individual user or a group of users. Contact responsibilities can also be used to manually add contacts to an incident alert.

• Contact definitions: identify a set of conditions to determine which specific user or group is assigned to handle particular responsibilities for an incident alert. For example, All P1 Incidents must have an Incident manager, assigned to US Incident Management group.

Contact responsibilities and contact definitions allow you to define and modify data-driven contact information for automatic notifications, rather than specifying individual users or groups directly for each incident alert.

You can use group contacts. Group contacts are available when you use on-call scheduling, notify and incident alert management. Group contacts include the people that are on-call. The group contacts do not automatically get an SMS notification when an incident alert is created. But they can be included when initiating a conference call that is the result of an incident alert. By default, the primary and secondary on-call persons are available. To modify this behavior, set the system property com.snc.iam.on_call_escalation_level.

Responsibilities for incident alerts

There are two types of responsibilities available for use with incident alerts:

• Default Responsibilities: contacts who are notified by default.

• Other Responsibilities: contacts who can be selected for notification.
Use contact definitions to view and modify the rules that determine the specific users associated with contact responsibilities.

Default Responsibilities

By default, contacts with the following responsibilities are notified when an incident alert is created:

- Duty Manager
- Incident Manager
- Duty Director

These roles are involved with resolving the source incident or original event that the incident alert relates to, and so are seen as key contacts for the incident alert.

The following sections describe typical operational roles for these responsibilities.

Table 100: Contact Administration Default Responsibilities

<table>
<thead>
<tr>
<th>Title</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duty Manager</td>
<td>The senior point of presence in the monitoring environment at the time an incident occurs. The Duty Manager assesses the incident against standard operating procedures, escalation triggers and personal knowledge and experience, to take corrective actions. To clarify the urgency and impact of an incident, the Duty Manager can contact the Incident Manager for advice.</td>
</tr>
<tr>
<td>Incident Manager</td>
<td>A senior technician, accountable for coordinating and managing all technical resources required to resolve incidents. After being notified by the Duty Manager of a serious incident, the Incident Manager assesses the seriousness and associated business impact. Based on this assessment, the Incident Manager decides whether to escalate the incident to the Duty Director. The Incident Manager may escalate to the Duty Director to gain access to resources outside of the department, if necessary.</td>
</tr>
<tr>
<td>Duty Director</td>
<td>The escalation point for all issues that affect critical services. The Duty Director works in partnership with the business directors in the organization to approve recovery plans developed by the Incident Manager, and to manage the senior level communications for the source incident.</td>
</tr>
</tbody>
</table>

Other Responsibilities

Incident alert management provides the following additional responsibilities that can be added to incident alerts. You can also create contact responsibilities, as needed. The associated users receive notifications about the alert.

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### Table 101: Contact Administration Other Responsibilities

<table>
<thead>
<tr>
<th>Title</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Director</td>
<td>Director within the business who is identified as a potential contact in the event of an incident alert.</td>
</tr>
<tr>
<td>Communication Manager</td>
<td>Business-facing role in the event communication is required in an incident alert.</td>
</tr>
<tr>
<td>Crisis Action Manager</td>
<td>Overall responsibility and accountability for managing incident alerts.</td>
</tr>
<tr>
<td>Crisis Action Team Member</td>
<td>Nominated department heads who are involved when an incident alert occurs.</td>
</tr>
<tr>
<td>Development</td>
<td>Development personnel involved in the troubleshooting and resolving an incident alert.</td>
</tr>
<tr>
<td>Operations</td>
<td>Second or third level operations support involved in troubleshooting and resolving an incident alert.</td>
</tr>
<tr>
<td>Service Owner</td>
<td>Service owner or manager who is identified as a potential contact in the event of an incident alert that relates to one or more of their services.</td>
</tr>
<tr>
<td>Technical Support</td>
<td>Second or third level technical support personnel involved in troubleshooting and resolving an incident alert.</td>
</tr>
</tbody>
</table>

### Create incident alerts

Incident alerts are typically created to help manage and track communications around a high-priority incident or other issue.

Incident alerts can be created:

- Directly as standalone alerts.
- From an existing active incident. Only one incident alert can be created for each incident.

### Create an alert directly

Create an incident alert directly if the original issue that caused the alert was not logged as an incident. For example, a significant facilities problem may not be logged as an incident in ServiceNow, but may still require an incident alert to be created.

1. Navigate to Incident Alert Management Create New.
2. Fill in the fields.
Table 102: New incident alert form

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>Automatically generated incident alert ID, in the format IAxxxxxxxx.</td>
</tr>
<tr>
<td>Severity</td>
<td>The severity for the incident alert. Values are Major, High, Medium, or Low.</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>---------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Source incident</td>
<td>The source incident for this alert, if any. If you select a source incident, the Source CI, Short description, and Background fields are populated with data from this incident, unless there is existing data in those fields.</td>
</tr>
<tr>
<td>State</td>
<td>The state of the alert. Values are New, Work In Progress, Resolved, Cancelled, or Closed.</td>
</tr>
<tr>
<td>Source CI</td>
<td>The source CI for this alert, if any. If there is a source incident selected, this field is populated with the source CI attached to that incident. If there is no source incident selected, select the source CI manually, if applicable. If the source CI has related CIs, these are automatically listed in the Impacted CIs related list.</td>
</tr>
<tr>
<td>Assignment group</td>
<td>The assignment group, if any, for that incident alert. For example, there might be a group that represents a crisis management team, including a number of Incident Managers, Duty Directors and Duty Managers.</td>
</tr>
<tr>
<td>Event type</td>
<td>The type of event. Values are: Outage, Degradation, Capacity, SLA/Delay, or Fail-Over.</td>
</tr>
<tr>
<td>Assigned to</td>
<td>The assigned user for the alert. This can be an ITIL user or an incident alert administrator, and defaults to the user who creates the alert.</td>
</tr>
<tr>
<td>Business/Service impact</td>
<td>Yes or No to indicate whether the business or a service is impacted.</td>
</tr>
<tr>
<td>Short description</td>
<td>A brief summary of the alert.</td>
</tr>
<tr>
<td>Details section</td>
<td></td>
</tr>
<tr>
<td>Opened</td>
<td>When the alert was created.</td>
</tr>
<tr>
<td>Opened by</td>
<td>The creator of the alert. This defaults to the user who creates the alert.</td>
</tr>
<tr>
<td>Estimated disruption time</td>
<td>The estimated duration of the disruption.</td>
</tr>
<tr>
<td>Description</td>
<td>More detailed information for the alert.</td>
</tr>
<tr>
<td>Background</td>
<td>Background information about the alert.</td>
</tr>
<tr>
<td>Activity section</td>
<td></td>
</tr>
<tr>
<td>Actions taken</td>
<td>The details of all actions taken while working on the alert.</td>
</tr>
<tr>
<td>Work notes</td>
<td>Any separate work notes relevant to the alert that might help in communications.</td>
</tr>
</tbody>
</table>

3. Click Submit.
Create an alert from an incident

Creating an incident alert from within an existing incident record populates the alert with information from that incident.

1. Open an existing incident.
2. Select the Create new incident alert related link.
3. A new incident alert record is created and populated with data from the incident.
   - The original incident becomes the source incident of this alert.
   - Other fields populated with data from the source incident are: Source CI, Short description, Background.
4. Fill in other fields as required, as described for creating alerts directly.
5. Click Submit.

Incident alert related lists

After you create an incident alert, several related lists are added to the form.

Table 103: Related lists

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impacted CIs</td>
<td>The Impacted CIs related list shows all the CIs that the CMDB shows as related to the source CI for this alert.</td>
</tr>
</tbody>
</table>

Figure 70: Incident alert impacted CI's

Administrators and incident alert administrators can modify this list. Click the Edit button, then add and remove CIs, as appropriate.

Note: Administrators can adjust the `com.snc.iam.log_level` property to view more log information for how this list is determined. By default the value is info. Set this to debug to see more detailed log information.
<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>User Contacts</td>
<td>After an incident alert is created, the following default user responsibilities are added to the User Contacts related list:</td>
</tr>
<tr>
<td></td>
<td>• Duty Manager</td>
</tr>
<tr>
<td></td>
<td>• Duty Director</td>
</tr>
<tr>
<td></td>
<td>• Incident Manager</td>
</tr>
</tbody>
</table>

![Figure 71: Incident alert contacts](image)

From this list:

- Click New to add a new contact.
- Click the lookup icon beside the responsibility entry to edit the details for that responsibility.
- Select the check box for the entry, then select Actions on selected rows.. and click Delete, to delete that entry from the user contacts list.

For more information, see Using Contacts with Incident Alerts.

<p>| Group Contacts     | There are currently no default group contacts defined for incident alert management. However, you can define group responsibilities for your organization, then configure the form to add the Group Contacts related list. You can then edit and modify this list, as for the user contacts. |</p>
<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Related Incidents and Related Problems</td>
<td>The Related Incidents and Related Problems related lists show incidents and problems affected, based on the source incident for the alert.</td>
</tr>
</tbody>
</table>

Figure 72: Incident alert related problems

This information is read-only. To make changes to this information, update the source incident.

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
</table>
| Notify | If Notify is active, two additional related lists appear on the Incident Alert form.  

The SMS Messages related list gives information about the SMS notifications sent to users identified as contacts on the incident alert. For example, by default, SMS notifications are sent to users who are assigned to responsibilities when an incident alert is created.  

The SMS message content depends on the fields that were filled in when the alert is created, but is generally in the following format:  

IA0000001: a \{severity\} severity \{event type\} incident alert for '\{CI name\}' has been opened  

Note: The CI name may be truncated to keep the content within 160 characters.  

The Conference Calls related list shows details of any conference calls that have been launched for the incident alert.  

For more information, see Using Notify with Incident Alert Management. |

Process incident alerts

After creating an incident alert, the incident alert administrator can process it through a set of predefined states to ensure efficient and consistent handling.

After *creating an incident alert*, the incident alert administrator can process it through a set of predefined states to ensure efficient and consistent handling. The incident alert administrator may also be assigned the contact responsibility of Duty Manager.
When an incident alert is resolved, the incident alert administrator can run a post incident review, and can generate a report for that review from within the incident alert.

The incident alert administrator can also view the dashboard and run reports on incident alerts.

Incident alert task

Incident alert tasks allow users to track the actions needed to resolve an incident alert.

As a user with the ia_admin role, you can add tasks to an incident alert.

Users without the ia_admin role that are assigned to a particular task can modify only that task record.

Resolve an alert

Typically, when the event that initiated the incident alert is resolved, the incident alert can also be marked as resolved.

When an alert is resolved, the following fields are added to the Incident Alert form:

Table 104: Incident alert form

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resolved</td>
<td>The date and time when the alert was resolved. Automatically set when the form is saved, but can be changed later.</td>
</tr>
<tr>
<td>Resolved by</td>
<td>The user who resolved the alert. Automatically set when the form is saved, but can be changed later.</td>
</tr>
<tr>
<td>Actual disruption time</td>
<td>The amount of disruption time recorded, based on the time between when the incident alert was created and the time it was marked as resolved.</td>
</tr>
<tr>
<td>Post Incident Review section</td>
<td>Information for discussion and review. For more information, see Run a Post Incident Review.</td>
</tr>
</tbody>
</table>

Run a post incident review

After an incident alert has been marked as resolved, the Post Incident Review section appears on the Incident Alert form.

After an incident alert has been marked as resolved, the Post Incident Review section appears on the Incident Alert form. This allows the incident alert administrator to initiate a post incident review (PIR) meeting to review and learn from the issues that arose from the source event.

Fill in this section as appropriate, then use the View PIR Report related link to create the PIR report. This report can be circulated or printed for the PIR meeting.
Figure 73: Post incident review
The Source Incident Details section contains read-only information, taken from the source incident. Fill in the Incident Alert Details fields as follows:

Table 105: Incident alert details

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resolution code</td>
<td>(Required) Whether the incident alert has been completed. Values can be Complete, Complete with Actions, or Not complete.</td>
</tr>
<tr>
<td>Resolution notes</td>
<td>(Required) Any notes about the resolution of the incident alert. After a user enters information in the resolution notes and saves the record, both the Resolution notes and Resolution code are set to read-only.</td>
</tr>
<tr>
<td>Summary</td>
<td>A summary of the incident alert.</td>
</tr>
<tr>
<td>Lessons learned</td>
<td>Any lessons learned from the review process.</td>
</tr>
</tbody>
</table>

Use the View PIR Report related link to create a report that can be circulated or printed for the post incident review meeting.

Close an alert

Typically, when the post incident review is complete, the incident alert can be closed.
To close an alert, mark the state as Closed.

Figure 74: Incident alert closed

The following values are then set in the Details section of the alert.

Table 106: Incident alert details

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Closed</td>
<td>The date and time when the alert was closed.</td>
</tr>
<tr>
<td>Closed by</td>
<td>The user who closed the alert.</td>
</tr>
</tbody>
</table>

These fields can be changed later, if required.
View the dashboard

The incident alert dashboard is a homepage that contains gauges and reports showing open incident alerts with a status of New or Work in Progress.

To open the dashboard, navigate to Incident Alert Management Overview or point to the homepage icon (Figure 75: Icon home)

) in the banner and select Incident Alert Homepage.
Figure 76: Incident alert dashboard

Table 107: Incident alert dashboard

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open Alerts</td>
<td>Displays all open alerts. Click an alert number to open the details for that alert.</td>
</tr>
<tr>
<td>Open Alerts By Severity</td>
<td>Groups open alerts by severity levels, as defined in the Incident Alert form.</td>
</tr>
</tbody>
</table>
Run an incident alert report

Administrators and incident alert administrators can run incident alert reports to view the current status of alerts, track them and intervene where required, and improve overall efficiency and effectiveness.

To run a report:
1. Navigate to Reports View / Run.
2. Locate the Incident Alert heading.
3. Click a report name and view the results (see table).

4. Alter parameters, as required, and click Run Report to run the revised report.

Table 108: Result table

<table>
<thead>
<tr>
<th>Report name</th>
<th>Description</th>
<th>Contains</th>
</tr>
</thead>
<tbody>
<tr>
<td>IAs opened in the last 72 hours</td>
<td>All alerts, of any state, which have been opened in the last 72 hours.</td>
<td>Number, Created by, Event Type, Severity, Title, Open time, Estimated Disruption time, Related Record, Assignee.</td>
</tr>
<tr>
<td>Open Alerts</td>
<td>Displays all open alerts. Click an alert number to open the details for that alert. Displayed on the dashboard by default.</td>
<td>Number, Severity, Short description, Source incident, State, Business/Service impact, Assignee.</td>
</tr>
<tr>
<td>Report name</td>
<td>Description</td>
<td>Contains</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Open Alerts By Severity</td>
<td>Groups open alerts by severity levels, as defined in the Incident Alert form. Displayed as a pie chart on the dashboard by default.</td>
<td>Severity.</td>
</tr>
<tr>
<td>Open Alerts by Type</td>
<td>Groups open alerts by alert type, as defined in the Incident Alert form. Displayed as a bar chart on the dashboard by default.</td>
<td>Event type.</td>
</tr>
<tr>
<td>Open IA’s this week</td>
<td>All open alerts which have been created in the current week.</td>
<td>Number, Created by, Event Type, Severity, Title, Time Created, Estimated Disruption time, Related Record number, Incident Manager.</td>
</tr>
<tr>
<td>Resolved Alerts</td>
<td>All alerts which have been resolved. This does not include closed alerts.</td>
<td>Number, Resolved by, Event Type, Severity, Title, Actual Disruption time, Source Incident number, Source Incident status.</td>
</tr>
<tr>
<td>Resolved IA’s this Week</td>
<td>All alerts which have been resolved in the current week, including any alerts closed this week.</td>
<td>Number, Resolved by, Event Type, Severity, Title, Actual Disruption time, Related Record, Assignee.</td>
</tr>
</tbody>
</table>

### Notify with Incident Alert

Using Notify enables all users involved in the issue to quickly communicate with each other and helps in the fast turnaround and resolution of the issue.

**Note:**

This content applies to the [Legacy Notify](#) and the newer Notify plugin, where there is a difference it will be noted.

Within incident alert management, Notify functions can be used to:

- **Send SMS notifications** (text messages) when an event occurs.
- **Launch a conference call** for involved users to discuss the relevant issue.

**Note:** Notify is available as a separate subscription from the ServiceNow platform. To purchase a subscription, contact your ServiceNow account manager.

### Send an SMS notification

Notify sends an SMS to the users associated to the alert when it is created.

When you create a new incident alert, Notify sends an SMS notification to the users defined as default contact responsibilities for the alert.

This text message is sent to the mobile phone number on record of each user and takes this form:
IA\langle number\rangle: a \langle Severity\rangle severity \langle Event Type\rangle incident alert for \langle CI Name\rangle has been opened. Administrators can modify the content of this message by editing the SMS on new Incident Alert business rule.

Launch a conference call

As part of processing an incident alert, a conference call can be created between involved users. Call participants can include:

- Those users who have been assigned specific responsibilities.
- Any required ad-hoc user contacts.
- Other involved parties who are not recorded as users, such as third-party contacts.

Note: Only one conference call at a time can be active for each issue.

1. Navigate to Incident Management Open.
2. Open the relevant incident alert.
3. Click the Initiate Conference Call related link.
4. Within the dialog box that appears, select the participants for the conference.

![Conference call participants](image)

Figure 78: Select participants
The dialog box displays the recommended and selected participants for the conference. All users from the User Contacts list in the incident alert are selected by default. If a rotation schedule exists for the Group Contacts, the primary and secondary on-call resources are shown in the Recommended list. This way, the current on-call persons can quickly be invited to join the conference call. Calls are placed to the number in the Mobile phone field on the user record. If that information is blank, the user cannot be contacted through Notify. The mobile phone number has to be an E.164 compliant phone number. If the phone number is a local number, without the + prefix, the number will be retrieved based on the user’s location and, if possible, converted into a valid E.164 number.

5. To select ad-hoc participants, do one of the following activities:

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Click the reference lookup icon, and select the relevant user.</td>
<td>Click Add to selected.</td>
</tr>
<tr>
<td>Enter the participant’s phone number in the field beside the telephone icon.</td>
<td>Click Add to selected.</td>
</tr>
</tbody>
</table>

6. After the participant list is finalized, click OK.

7. The conference call starts and a Conference call initiated message is displayed at the top of the Incident Alert form. Each user is called and can accept the call to join the conference. Several response types are possible from users invited to join the conference call, apart from Accepted.

8. Click the Conference call initiated message to see details of that conference call. When the final participant leaves the conference, the conference call closes.

Note: VoIP phone systems, which do not use touch tone phones, may encounter issues with recognizing key presses. To avoid problems, ensure that conference call users use touch tone phones, or configure your VoIP system settings to recognize key presses, as described in your VoIP system documentation.

Add a participant

If the conference participants decide that the input of another user is required, that user can be invited to join the current conference call.

Participants who may have involuntarily dropped out of the conference can also contact the conference call initiator, who can add them to the conference call.

Note: The content applies to the Legacy Notify plugin and not to the Notify plugin.

1. Open the form for the relevant active conference call.
2. Click the Invite to Conference Call related link.
3. Select participants as described for launching a conference call.
4. The selected participant is called directly and can join the conference. If you try to add a user that is already in another call to a conference call, the following message appears:

   (Name) is already active in a call

   If you try to start a new call with a user that is already in a conference call, two messages are shown, the first stating this is an invalid participant and the second that this person is already in another call.
View conference call information

Conference calls are listed as system activities in the Activity section of the Incident Alert form and also are listed in the Conference Calls related list.

Figure 79: Conference bridge history

In the related lists, click Conference Calls if you want to view the list of conference calls.
Figure 80: Conference Calls

Note: Conference call information can also be accessed by navigating to Notify Conference Calls starting with the Eureka release. In previous versions, navigate to NotifyNow Conference Calls.

Responses to conference call information

When a user is invited to join a conference call, Notify may receive one of several responses. These responses can be viewed in the conference call details.
### Table 109: Responses to conference call invitations

<table>
<thead>
<tr>
<th>Response</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accepted</td>
<td>The contact answered the call and accepted the invitation to join the conference.</td>
</tr>
<tr>
<td>Busy</td>
<td>A busy signal was received. Either the contact rejected the incoming call or the phone was in use.</td>
</tr>
<tr>
<td>Cancelled</td>
<td>The conference call manager cancelled the outgoing call.</td>
</tr>
<tr>
<td>Completed</td>
<td>The call was finished or the contact hung up.</td>
</tr>
<tr>
<td>Failed</td>
<td>The call could not be completed as dialed, possibly because the phone number did not exist.</td>
</tr>
<tr>
<td>Ignored</td>
<td>The contact answered the phone, but hung up or disconnected without choosing to accept or reject the incoming call.</td>
</tr>
<tr>
<td>Rejected</td>
<td>The contact answered the call and rejected the invitation.</td>
</tr>
<tr>
<td>Ringing</td>
<td>The contact is being called.</td>
</tr>
<tr>
<td>Unanswered</td>
<td>Any other action, for example, missed call, or the contact took another action.</td>
</tr>
</tbody>
</table>

Note: Depending on the contact’s phone service provider, the information the participant receives may vary. For example, contacts who have switched off their phones may or may not receive a missed call message.

### Incident Alert Management roles

Incident Alert Management uses the following roles.

<table>
<thead>
<tr>
<th>Role Title (Name)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ITIL user [itil_user]</td>
<td>Can view the dashboard and incident alerts. Can subscribe to incident alerts.</td>
</tr>
<tr>
<td>Incident alert administrator (ia_admin)</td>
<td>Can create and edit incident alerts and contact records.</td>
</tr>
</tbody>
</table>

### Incident Alert Management example

This example provides a description of the incident alert management process.

An example of how incident alerts can be used in an incident management process is:

1. An ITIL user creates a high-priority incident regarding a serious issue with the server room.
2. The incident alert administrator creates a new incident alert for this source incident.
3. As a result of a conference call discussion, a problem is identified based on the incident. This problem is assigned to the problem management team, which agrees to investigate further and identify tasks to improve service and prevent similar incidents from occurring.
4. The incident management team resolves the source incident. The source incident may also be closed at this point.
5. The incident alert administrator resolves the incident alert.
6. The incident alert administrator convenes a post incident review meeting to ensure that all identified tasks are logged and tracked to completion.
7. The incident alert administrator can now close the incident alert.

Subscribe to incident alerts

Users subscribe to incident alerts to be quickly informed about critical issues.

Any self-service user can subscribe to incident alerts, to be notified when:

- A new incident alert is created.
- An incident alert is resolved or closed.
- An incident alert is canceled.
- The Actions Taken field on an incident alert is updated.

Notifications are sent by email. If Notify is active, notifications can also be sent by SMS message or voicemail.

For example, a business manager does not log in to the system on daily basis, but needs to know when a new incident alert is created. The business manager can subscribe to receive notifications whenever a new incident alert is raised.

Filter a notification

If no filtering is applied to a subscription, then a subscribed user receives all notifications for that subscription.

For example, a user subscribed to New IA Raised, with no filtering, receives notifications every time any incident alert is created.

To make the notifications more relevant:

1. Select Advanced filter:
2. Use the condition builder to create an appropriate filter.

For example, you can choose to be notified only when an incident alert is created for a specific CI.
Figure 81: Notification Filter

Notification message content

When a relevant notification event happens, a notification message is generated and sent to all subscribed users.

This message will give the notification type, the alert number, and details of the event.
Raised: 2013-03-20 15:18:26 GMT
Description:
The network server has suffered some physical damage due to rain.

Created by: admin

Source incident: INC0000016

Impacted Systems:

Alert Type: Degradation

Actions taken:

---

2013-03-20 15:18:26

GMT - System Administrator
The server has been shut down and a replacement is being installed.

Click here to view Incident Alert: IA0001013

Ref: MSG0000012

Figure 82: Notification Message

Subscribe to a notification

You subscribe to the incident alert notifications in user notification preferences.

1. Navigate to Self-ServiceMy Profile.
2. Select Notification Preferences under Related Links.
3. Under the device to receive notifications, click in the area labeled To subscribe to a new notification click here.
4. Click the lookup icon beside Notification Message to display a list of available notifications.

5. Select one of the following notifications:
   - New IA Raised
   - IA Actions Taken
   - IA Resolved Or Closed
   - IA Cancelled

6. Fill in the details for the selected notification.

<table>
<thead>
<tr>
<th>New Notification for System Administrator’s Primary email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Notification Message: New IA Raised</td>
</tr>
<tr>
<td>Device: Primary email</td>
</tr>
<tr>
<td>Schedule: Monday thru Friday (9 - 5)</td>
</tr>
<tr>
<td>Filter: Critical issues</td>
</tr>
</tbody>
</table>

   Figure 83: New Notification

7. Click Submit.

   The notification is then listed in the Notification Preferences list.
Incident Management

The goal of Incident Management is to restore normal service operation as quickly as possible following an incident, while minimizing impact to business operations and ensuring quality is maintained.

The ServiceNow platform supports the incident management process with the ability to log incidents, classify according to impact and urgency, assign to appropriate groups, escalate, and manage through to resolution and reporting. Any ESS user can log in to an instance to record the incident and track it through the entire incident life cycle until service has been restored and the issue has been completely resolved.

Within the platform, incidents are handled with the task record system. Each incident is generated through a variety of methods as a task record, and populated with the pertinent information in individual fields. These tasks can be assigned to appropriate service desk members, who will deal with the task as appropriate. Once the incident has been properly dealt with, it is closed.

Log incidents

Any user can create an incident within the system by default.
Table 110: Log an incident

<table>
<thead>
<tr>
<th>Location</th>
<th>Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employee Self Service</td>
<td>ITIL users or administrators can use the Create New module in the Incident application, or select New from the Incident list. The Watch list, Incident state, and Impact fields are available on the ESS view of the Incident form and the variable formatter is not available. ESS users have write access to the Watch list and Impact fields.</td>
</tr>
<tr>
<td>Record producers</td>
<td>Use the Create a New Incident record producer in the service catalog. (This record producer sets the Contact Type field of the resulting incident to Self-Service.)</td>
</tr>
<tr>
<td>Inbound email actions</td>
<td>An email addressed to the instance mailbox can create an incident according to inbound email actions.</td>
</tr>
</tbody>
</table>

Note: If the Security Incident Response plugin is activated, you can click the Create Security Incident button on the New Incident form to create a security incident from the currently displayed incident.

Identifying incidents

In addition to having users log incidents, it is possible to automatically generate incidents from pre-established conditions. Business rules use JavaScript to generate an incident after a certain series of conditions has been met. It is also possible to generate incidents from outside the platform with SOAP messaging.

The incident alert management application allows you to manage communications around high-priority incidents. See Incident Alert Management.

Identify incidents

In addition to having users log incidents, it is possible to automatically generate incidents from pre-established conditions.

Business rules use JavaScript to generate an incident after a certain series of conditions has been met. It is also possible to generate incidents from outside the platform with SOAP messaging.

Log incidents

By default, any user can create an incident within the system.

There are several ways to log an incident.
Table 111: Log an incident

<table>
<thead>
<tr>
<th>Location</th>
<th>Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employee Self Service</td>
<td>ITIL users or administrators can use the Create New module in the Incident application or select New from the Incident list. ESS users can view the Watch list, Incident state, and Urgency fields on the incident form. ESS users have write access to the Watch list and Urgency fields. The variable formatter is not available.</td>
</tr>
</tbody>
</table>

**Record Producers**

Using the Create a New Incident record producer in the service catalog.

Note: This record producer sets the Contact Type field of the resulting incident to Self-Service.

**Inbound email actions**

An email addressed to the instance mailbox can create an incident according to inbound email actions.

Create an incident template

Incident templates can be used to fill in a form to reduce errors. You can also use it to create a record producer.

Role required: catalog_admin or admin

1. Navigate to System DefinitionTemplates.
2. Click New.
3. Enter the following information.
   - Name - Bond Trading Access Denied
   - Table - Incident
   - Global - Selected. This option allows any user to deploy the template, rather than simply the template’s creator.
   - Short Description - Bond Trading Access Denied
   - Template - These conditions define the fields to be filled in by the template.
     - Category is Inquiry / Help
     - Configuration Item is Bond Trading
     - Description is The user was denied access to the Bond Trading application
     - Impact is 2 - Medium
     - Urgency is 3 - Low.
4. Click Submit.

Use a template from a form

You can apply a template to a new record when the prepopulated information is applicable to the task you are creating.

Role required: itil
Many forms allow you to create a template for any type of record that you create frequently. Open the more options menu to see whether templates are allowed.

1. To use a template within a form, click the more options icon and select Toggle Template Bar.

2. Select the desired template from the list that appears in the template bar. The template is applied and a message at the top provides a link to look at the details of the fields you populated.

3. To undo the changes made by the template, for example, if you selected the wrong template, click Undo Changes in the details.

Figure 85: Apply an incident template
Use a template from a module

The following example demonstrates how to place the Bond Trade Access Denied template in a module in the Self-Service application, allowing end-users to directly file the incident with the template.

Note: Functionality described here requires the Admin role.

To use a template from a Module:

1. Right-click the application Self-Service, and click Edit Application.
2. Scroll to the Modules related list and click New.
3. Populate the form as follows:
   • Title - Bond Trading Access Denied
   • Table - Incident
   • Order - 473. This order places the new module after Requested Items in the Self-Service application. Order can be found when looking at the Module related list on the Application form.
   • Link Type - New Record
   • Hint - File an incident about the Bond Trade application.
   • Image - /images/newpage.gif
   • Arguments - incident.do?sys_id=-1&sysparm_template=Bond Trading Access Denied. This deploys the template in the new incident record.
4. Click Submit.

The new Module should appear in the Self-Service application:

Figure 86: New Module in Self-Service Application
Figure 87: Incident Template

Use a template in a script

Note: Functionality described here requires the Admin role.

For information on using the template in a script:

See Scripted templates.

Create a record producer to log incidents

Record producers allow the end user to log incidents directly from the Service Catalog. The first step in using the service catalog to log incidents is to create an incident record producer.
Role required: catalog_admin or admin

Record producers appear in the service catalog as catalog items. Instead of creating a service request, they create a record on any table in the system, populating the record as defined in the record producer.

Incident record producers are useful because they give users have one interface from which to submit requests to the IT Department. For example, the default Can We Help You? category features record producers such as Report an Incident to enable users to directly log incidents from the catalog.

The following example demonstrates how to create a record producer to request a wireless router reset.

1. Navigate to Service Catalog Record Producers.
2. Click New.
3. Enter or select the following values.

<table>
<thead>
<tr>
<th>Field</th>
<th>Entry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Request to Reset Router.</td>
</tr>
<tr>
<td>Table name</td>
<td>Incident (incident).</td>
</tr>
<tr>
<td>What it will contain</td>
<td></td>
</tr>
<tr>
<td>Short description</td>
<td>Reset wireless router request</td>
</tr>
<tr>
<td>Description</td>
<td>Please reset the building’s router</td>
</tr>
<tr>
<td>Accessibility</td>
<td></td>
</tr>
<tr>
<td>Catalogs</td>
<td>Service Catalog</td>
</tr>
<tr>
<td>Category</td>
<td>Can We Help You?</td>
</tr>
</tbody>
</table>
4. Open the form context menu and click Save. Several related lists appear at the end of the form, including Variables and Variable Sets.
5. In the Variables related list, click New.
6. Enter or select the following values.

<table>
<thead>
<tr>
<th>Field</th>
<th>Entry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Reference</td>
</tr>
<tr>
<td>Question</td>
<td>Which router needs to be reset?</td>
</tr>
<tr>
<td>Name</td>
<td>Router</td>
</tr>
<tr>
<td>Type Specifications</td>
<td>IP Router (cmdb_ci_ip_router)</td>
</tr>
</tbody>
</table>
7. Click Submit.

8. To view the new record producer as a user sees it, click Try It in the form header.
The new catalog item appears in the Service Catalog for any user to select.
Create a record producer with a template

If a pre-defined template for an incident exists, it can be used with the record producer to fill in standard information for the incident.

Role required: catalog_admin or admin

The following example uses the template used in Create an incident template.

1. Navigate to Service Catalog Record Producers.
2. Click New.
3. Populate the form as follows:

<table>
<thead>
<tr>
<th><strong>Field</strong></th>
<th><strong>Entry</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Bond Trade Access Request</td>
</tr>
<tr>
<td>Table name</td>
<td>Incident (incident)</td>
</tr>
</tbody>
</table>

4. Open the form context menu and click Save.

Several related lists appear.

5. In the Variables related list, click New.
6. Enter or select the following values.

<table>
<thead>
<tr>
<th><strong>Field</strong></th>
<th><strong>Entry</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Multi-Line Text</td>
</tr>
<tr>
<td>Question</td>
<td>Comments</td>
</tr>
<tr>
<td>Name</td>
<td>Comments</td>
</tr>
</tbody>
</table>

7. Click Submit.

The Record Producer form reopens with the variable added to the list.

8. To view the new record producer as a user sees it, click Try It in the form header.
Submitting this record producer creates the incident with the information from the template and with any comments entered on the record producer form.

New Call Wizard
The Best Practice - New Call Wizard provides a wizard interface for the service desk to track information from a new call.

It allows a support technician to begin recording call information before making a decision about whether the caller is raising an incident or making a catalog request, which improves efficiency when opening tickets from calls.

Use the new call wizard
The new call wizard adds the New Call module to the Service Desk application.

To use the wizard:
1. Navigate to Service Desk New Call.
2. Fill in the fields as appropriate.

Table 113: New Call Wizard form

<table>
<thead>
<tr>
<th>Field</th>
<th>Input Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caller</td>
<td>A reference to the user table, for the user who is reporting the incident or making the request. For an incident, this is copied to the Caller field. For a request, this is copied to the Requested By field.</td>
</tr>
<tr>
<td>Location</td>
<td>A reference to the location table. If the user has a location associated, this field auto-populates. For both incidents and requests, this is copied to the Location field.</td>
</tr>
<tr>
<td>Field</td>
<td>Input Value</td>
</tr>
<tr>
<td>------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Comments</td>
<td>A multi-line text field. For an incident, this is copied to the Additional comments field. For a request, this is copied to the Special instructions field.</td>
</tr>
</tbody>
</table>
### Call Type

A choice field that determines what type of record the wizard creates. Choices are:

- **Incident**

  ![Figure 88: New Call Incident](image)

- **Request**

  ![Figure: New Call Request](image)

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Field | Input Value
---|---
Short Description | Available if Call Type is Incident. This is copied to the Short Description field.
Item | Available if Call Type is Request. The Service Catalog item that the caller would like to request.

3. Click Submit.
   - If the Call Type is Incident, clicking Submit opens the new incident record.
   - If the Call Type is Request, clicking Submit opens a new catalog item record for the specified Item, ordered on behalf of the Caller.

Incident Management state model

Incident Management offers a flexible state model to move and track incidents through several states.

Note: While this new state model is available by default for new instances, it is not available on upgrade. Refer to KB0564465 for further details.

The following table provides a list of all the states that an incident can progress through.

Table 114: Incident states

<table>
<thead>
<tr>
<th>State</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>New</td>
<td>Incident is logged but not yet triaged.</td>
</tr>
<tr>
<td>In progress</td>
<td>Incident is assigned and is being investigated in detail.</td>
</tr>
<tr>
<td>On Hold</td>
<td>The responsibility for the incident shifts temporarily to another entity that is tasked with providing further relevant information, evidence, or in some cases, a resolution. When you select the On Hold option, the On hold reason choice list appears. You must select one of the following options:</td>
</tr>
<tr>
<td></td>
<td>• Awaiting Caller</td>
</tr>
<tr>
<td></td>
<td>• Awaiting Evidence</td>
</tr>
<tr>
<td></td>
<td>• Awaiting Problem Resolution</td>
</tr>
<tr>
<td></td>
<td>• Awaiting Vendor</td>
</tr>
<tr>
<td></td>
<td>Note: An incident can be placed in the On Hold state one or more times prior to being closed.</td>
</tr>
<tr>
<td>Resolved</td>
<td>A satisfactory fix is provided for the incident to ensure it does not occur again.</td>
</tr>
<tr>
<td>Closed</td>
<td>Incident is marked closed after it has been in the Resolved state for a specific duration and it is confirmed that the incident is satisfactorily resolved.</td>
</tr>
<tr>
<td>Canceled</td>
<td>Incident was triaged but found to be a duplicate incident, an unnecessary incident, or not an incident at all.</td>
</tr>
</tbody>
</table>
Closed incidents are read-only. Only administrators can change the state value on the incident record directly via the form.

When an incident is Closed, you receive a notification stating the change. If you reply to the email with a subject containing Please reopen a new incident, an incident is created from the information of the original incident.

When an incident is Resolved, you receive a notification stating the change. If you reply to the email with a subject containing Please reopen a current incident, the incident is updated and moved back to a state of In Progress.

If you do not have any roles in the system (ESS) and you change the incident state to Resolved, you receive a notification with a Reopen incident link.
If you do not have any roles in the system (ESS) and you are the caller, you can click Reopen incident on the incident form to reopen the incident.

Activate Incident Management Notification

You can activate the Incident Management Notification plugin (com.snc.incident_notification) if you have the admin role. This plugin includes demo data and activates related plugins if they are not already active.

Role required: admin

1. Navigate to System Definition Plugins.
2. Find and click the plugin name.
3. On the System Plugin form, review the plugin details and then click the Activate/Upgrade related link.
   If the plugin depends on other plugins, these plugins are listed along with their activation status.
   If the plugin has optional features that are not functional because other plugins are inactive, those plugins are listed. A warning states that some files will not be installed. If you want the optional features to be installed, cancel this activation, activate the necessary plugins, and then return to activating the plugin.
4. If available, select the Load demo data check box.
   Some plugins include demo data—sample records that are designed to illustrate plugin features for common use cases. Loading demo data is a good policy when you first activate the plugin on a development or test instance.
   You can also load demo data after the plugin is activated by clicking the Load Demo Data Only related link on the System Plugin form.
5. Click Activate.

Activate Incident Management - Core plugin

Incident Management - Core plugin (com.snc.incident_management) is a new incident state model that includes demo data and activates related plugins if they are not already active.

Incident Management - Core (com.snc.incident_management) is available by default in new instances but is not available on upgrade. Customers upgrading from Geneva or earlier versions must request the plugin. For more information, see KB0564465.

Note: If the new state model is installed on upgraded instances, then ensure that the old states are mapped to the new ones. The mapping is especially important if you have made customizations, implemented workflows, added script includes, and added business rules.

1. In the HI Service Portal, click Service Requests Activate Plugin.
2. Fill out the form.

<table>
<thead>
<tr>
<th>Target Instance</th>
<th>Instance on which to activate the plugin.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plugin Name</td>
<td>Name of the plugin to activate.</td>
</tr>
</tbody>
</table>
Specify the date and time you would like this plugin to be enabled

Date and time must be at least 2 business days from the current time.

Note: Plugins are activated in two batches each business day in the Pacific timezone, once in the morning and once in the evening. If the plugin must be activated at a specific time, enter the request in the Reason/Comments.

Reason/Comments

Any information that would be helpful for the ServiceNow personnel activating the plugin such as if you need the plugin activated at a specific time instead of during one of the default activation windows.

3. Click Submit.

Installed with Incident Management - Core plugin

Several types of components are installed with the Incident Management - Core plugin.

Script includes installed with Incident Management - Core plugin

Incident Management - Core plugin adds the following script includes.

Table 115: Script includes

<table>
<thead>
<tr>
<th>Script Include</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IncidentStateSNC</td>
<td>Defines out-of-the-box states for incident. The file is protected. If you want to update the state values, use IncidentState.</td>
</tr>
<tr>
<td>IncidentState</td>
<td>Defines incident state constants. Use this constant when determining which incident state to use.</td>
</tr>
</tbody>
</table>

State model mapping

Describes how the incident states from the old state model map to incident states of the new state model.

The old state model does not have the On Hold state. The new state model has three old incident states that map to the new On Hold state. When the user selects the On Hold state, a new field, On Hold Reason, appears.

Table 116: Map old state to new state

<table>
<thead>
<tr>
<th>Old incident state model</th>
<th>New incident state model</th>
</tr>
</thead>
<tbody>
<tr>
<td>New1</td>
<td>New 1</td>
</tr>
<tr>
<td>Active 2</td>
<td>In Progress 2</td>
</tr>
<tr>
<td>Awaiting Problem 3</td>
<td>On Hold 3</td>
</tr>
<tr>
<td>Awaiting User Info 4</td>
<td>On Hold 3</td>
</tr>
<tr>
<td>Awaiting Evidence 5</td>
<td>On Hold 3</td>
</tr>
<tr>
<td>Resolved 6</td>
<td>Resolved 6</td>
</tr>
</tbody>
</table>
### Old incident state model vs. New incident state model

<table>
<thead>
<tr>
<th>Old incident state model</th>
<th>New incident state model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Closed 7</td>
<td>Closed 7</td>
</tr>
<tr>
<td>Canceled 8</td>
<td></td>
</tr>
</tbody>
</table>

### Scripts modified with Incident Management - Core plugin

The Incident Management - Core plugin modifies the following script includes.

The following scripts have been updated in order to change the Incident management state model. State values have been changed from hard-coded values to references to the IncidentState script include.

The Incident state model is customizable for advanced users. The script include IncidentState holds the base states that are used by the code to make state-based decisions.

#### Table 117: Script modified for incident form

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Table</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caller Close</td>
<td>Business rule</td>
<td>sys_script</td>
</tr>
<tr>
<td>incident reopen</td>
<td>Business rule</td>
<td>sys_script</td>
</tr>
<tr>
<td>mark_closed</td>
<td>Business rule</td>
<td>sys_script</td>
</tr>
<tr>
<td>incident autoclose</td>
<td>Business rule</td>
<td>sys_script</td>
</tr>
<tr>
<td>Create Problem</td>
<td>UI action</td>
<td>sys_ui_action</td>
</tr>
<tr>
<td>Create Normal Change</td>
<td>UI action</td>
<td>sys_ui_action</td>
</tr>
<tr>
<td>Close Incident</td>
<td>UI action</td>
<td>sys_ui_action</td>
</tr>
</tbody>
</table>

#### Table 118: Script modified for incident resolution workflow

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Table</th>
</tr>
</thead>
<tbody>
<tr>
<td>SNC - ITIL - Close Related</td>
<td>Business rule</td>
<td>sys_script</td>
</tr>
<tr>
<td>Note:  This business rule is also used in service management.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SNC - ITIL - Resolve Related Incidents</td>
<td>Business rule</td>
<td>sys_script</td>
</tr>
<tr>
<td>Create Normal Change</td>
<td>UI action</td>
<td>sys_ui_action</td>
</tr>
<tr>
<td>Create Request</td>
<td>UI action</td>
<td>sys_ui_action</td>
</tr>
<tr>
<td>Close Incident</td>
<td>UI action</td>
<td>sys_ui_action</td>
</tr>
</tbody>
</table>

#### Table 119: Script modified for incident resolution fields

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Table</th>
</tr>
</thead>
<tbody>
<tr>
<td>mark_resolved</td>
<td>Business rule</td>
<td>sys_script</td>
</tr>
</tbody>
</table>
Categorize incidents

Incident forms have fields for category and subcategory, which allow for easy classification of incidents. These categories can be used by the system to create automatic assignment rules or notifications. For instance, with a certain assignment rule, an incident with a category of Database could automatically be assigned to a Database group that always handles database issues.

Another important category for incidents is the incident state. This enables the service desk to track the amount of work done and details of the next steps in the process, if any.

Categorize incidents

Assigning incident tickets to categories and subcategories can greatly improve the clarity and granularity of report data.

For example, appropriate incident categories allow you to track how many network-related versus telephone-related incidents you have from week to week.

The platform can also use an incident’s category or subcategory to automatically assign the incident to a specific fulfillment group to work on it. For example, Network tickets should automatically go to the Network group based on the category.

Table 120: Script modified for incident alert management

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Table</th>
</tr>
</thead>
<tbody>
<tr>
<td>Show Related Incident Alert</td>
<td>UI action</td>
<td>sys_ui_action</td>
</tr>
<tr>
<td>Create Incident Alert</td>
<td>UI action</td>
<td>sys_ui_action</td>
</tr>
</tbody>
</table>

Table 121: Script modified for change request form

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Table</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create Normal Change</td>
<td>UI action</td>
<td>sys_ui_action</td>
</tr>
<tr>
<td>Create Emergency Change</td>
<td>UI Actions</td>
<td>sys_ui_action</td>
</tr>
</tbody>
</table>

Table 122: Script modified for problem form

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Table</th>
</tr>
</thead>
<tbody>
<tr>
<td>Close Incident</td>
<td>UI action</td>
<td>sys_ui_action</td>
</tr>
</tbody>
</table>

Table 123: Script modified for knowledge management

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Table</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communicate Workaround</td>
<td>UI action</td>
<td>sys_ui_action</td>
</tr>
</tbody>
</table>

Table 124: Script modified for service management functionality

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Table</th>
</tr>
</thead>
<tbody>
<tr>
<td>SNC - ITIL - Close Related</td>
<td>Business rule</td>
<td>sys_script</td>
</tr>
</tbody>
</table>
Configure incident categories or subcategories

You can add to or remove category and subcategory choices from the list of incident categories or subcategories.

Role required: admin

1. Navigate to Incident Create New.
2. Right-click the Category or Subcategory field and select Configure Choices.

Note: The Subcategory field does not appear on the form by default and must be added, if required.

3. You can perform the following actions:

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Add new category</td>
<td>Click New, specify a Label and Value, and click Submit.</td>
</tr>
<tr>
<td>Add existing category</td>
<td>Highlight the required category and click Add.</td>
</tr>
<tr>
<td>Remove existing category</td>
<td>Highlight the category to be removed and click Remove.</td>
</tr>
</tbody>
</table>

Table 125: Categorize incidents

<table>
<thead>
<tr>
<th>Category</th>
<th>Subcategory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inquiry / Help</td>
<td>Anti-Virus</td>
</tr>
<tr>
<td></td>
<td>Email</td>
</tr>
<tr>
<td></td>
<td>Internal Application</td>
</tr>
<tr>
<td>Software</td>
<td>Email</td>
</tr>
<tr>
<td></td>
<td>Operating System</td>
</tr>
<tr>
<td>Hardware</td>
<td>CPU</td>
</tr>
<tr>
<td></td>
<td>Disk</td>
</tr>
<tr>
<td></td>
<td>Keyboard</td>
</tr>
<tr>
<td></td>
<td>Memory</td>
</tr>
<tr>
<td></td>
<td>Monitor</td>
</tr>
<tr>
<td></td>
<td>Mouse</td>
</tr>
<tr>
<td>Network</td>
<td>DHCP</td>
</tr>
<tr>
<td></td>
<td>DNS</td>
</tr>
<tr>
<td></td>
<td>IP Address</td>
</tr>
<tr>
<td></td>
<td>VPN</td>
</tr>
<tr>
<td></td>
<td>Wireless</td>
</tr>
<tr>
<td>Database</td>
<td>MS SQL Server</td>
</tr>
<tr>
<td></td>
<td>Oracle</td>
</tr>
</tbody>
</table>
Assign incidents

View an incident list

1. Navigate to Incident and click the type of incident list you want to view, such as Open-Unassigned to see all incidents that do not have anyone working on them yet.
   
   You see a list view with several columns, the most important being Number, Category, Priority, Incident state, and Assigned to.

2. You can add more columns by personalizing the list and selecting items from the Available box. If you want to see who resolved the incident, add Resolved by, for example.

Filter the list To narrow down the list, you can use a quick filter or create a more detailed filter query. In this example, all incidents that are waiting for user information where the priority is critical or high is shown.

Assign or reassign the incident: You can assign only one person to an incident.

1. Click the incident number (in the Number column).

2. On the Incident form that appears, click the lookup icon in the Assigned to column and select a user.

3. To narrow down the list of possible assignees when you know the group to which the assignee belongs, select the group in the Assignment group field first. Then select the user in the Assigned to field.

   Note: The sys_user_group read ACL calls the SNCRoleUtil function. The function checks to see whether the group being reviewed contains either the admin role or security_admin role. The function allows the user to view the group only if the user has the same role. As a result, an itil user cannot assign an incident to a group that has the admin role or security_admin role (or whose parent has the role).

In this example, Beth Anglin, a member of the Service Desk, has been assigned to the incident:

![Assignment group: Service Desk
Assigned to: Beth Anglin](image)

Figure 91: Incident Assignment Example

Perform other important updates: Other updates you might need to make include the following.

- Categorize the incident by choosing a value from the Category field.
- Change the Priority based on your organizational guidelines.
- Add a Configuration item (CI), which is the service or item that is experiencing trouble.

In addition to the above, you can also view details of any other user or users who might be viewing or updating the incident the same time as you through the presence of their avatars.
Define an assignment rule for incidents

To ensure that incidents are promptly dealt with by the appropriate IT service members, administrators can define assignment rules to automate the process.

To define an assignment rule for incidents:
2. Populate the form as follows:
   - Name - New York Database Issues
   - Table - Incident (incident)
   - Execution Order - 50
   - Group - NY DB

Note: The sys_user_group read ACL calls the SNCRoleUtil function. The function checks to see whether the group being reviewed contains either the admin role or security_admin role. The function allows the user to view the group only if the user has the same role. As a result, an itil user cannot assign an incident to a group that has the admin role or security admin role (or whose parent has the role).

- Conditions - “Location is New York” and “Category is Database”.

Figure 92: Assignment Rule

To test the assignment rule, navigate to Incidents › Create New and populate the form with the following:
- Location - New York
- Category - Database
Figure 93: Test Assignment Rule with Incident

When you save the incident, the proper assignment group is added:
Incident priority

ITIL uses three metrics for determining the order in which incidents are processed.

All three metrics are supported by Incident forms.

Table 126: ITIL incident order

<table>
<thead>
<tr>
<th>Metric</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impact</td>
<td>The effect an incident has on business</td>
</tr>
<tr>
<td>Urgency</td>
<td>The extent to which the incident’s resolution can bear delay</td>
</tr>
<tr>
<td>Priority</td>
<td>How quickly the service desk should address the incident</td>
</tr>
</tbody>
</table>

ITIL suggests that priority be made dependent on impact and urgency. In the base system, this is true on Incident forms. Priority is generated from urgency and impact according to the following data lookup rules.

Table 127: Data lookup rules

<table>
<thead>
<tr>
<th>Impact</th>
<th>Urgency</th>
<th>Priority</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - High</td>
<td>1 - High</td>
<td>1 - Critical</td>
</tr>
<tr>
<td>1 - High</td>
<td>2 - Medium</td>
<td>2 - High</td>
</tr>
<tr>
<td>1 - High</td>
<td>3 - Low</td>
<td>3 - Moderate</td>
</tr>
<tr>
<td>2 - Medium</td>
<td>1 - High</td>
<td>2 - High</td>
</tr>
</tbody>
</table>
By default, the Priority field is read-only and must be set by selecting Impact and Urgency values. To change how priority is calculated, administrators can either alter the priority lookup rules or disable the Priority is managed by Data Lookup - set as read-only UI policy and create their own business logic.

Initial diagnosis of incidents

Initial diagnosis of incidents is largely a human process, wherein the service desk looks at the information within the incident and communicates with the user to diagnose the problem in the incident.

To aid in the process, the service desk can consult the configuration management database, which contains information on hardware and software within a network and the relationships between them. CMDB can be populated in two ways: Introduction to Discovery and Help the Help Desk. Discovery is available as a separate product, but Help the Help Desk is available with the base system.

Escalate incidents

Two types of incident escalators available by default.

The platform has a built-in system of escalation rules which can ensure that incidents are handled speedily.

Table 128: Escalator table

<table>
<thead>
<tr>
<th>Escalator</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Service Level Agreements</strong></td>
<td>SLAs monitor the progress of the incident according to defined rules. As</td>
</tr>
<tr>
<td></td>
<td>time passes, the SLA will dial up the priority of the incident, and leave</td>
</tr>
<tr>
<td></td>
<td>a marker as to its progress. SLAs can also be used as a performance</td>
</tr>
<tr>
<td></td>
<td>indicator for the service desk.</td>
</tr>
<tr>
<td><strong>Set an inactivity monitor</strong></td>
<td>The inactivity monitors prevent incidents from slipping through the cracks</td>
</tr>
<tr>
<td></td>
<td>by generating an event, which in turn can create an email notification or</td>
</tr>
<tr>
<td></td>
<td>trigger a script, when an incident has gone a certain amount of time</td>
</tr>
<tr>
<td></td>
<td>without being updated.</td>
</tr>
</tbody>
</table>

Incident promotion

When the incident management team has determined that the cause of an incident is an error or widespread problem, the team should initiate the problem management process.

When the issue requires a change to be resolved, the team should initiate the change management process.

You can use a menu item on the Incident form to create a problem or change record and associate the incident with the new record. In this way, incidents can be used to easily create problems or changes.
Note: You cannot promote an incident to a problem or change if the incident already has an associated record of that type.

Promote an incident

An incident can be promoted to a problem or change.

To promote an incident to a problem or change:

1. Open the Incident form for the incident to promote.
2. Right-click the form header.
3. Select Create Problem or Create Change.

The form for the new record appears. At this point, the new record is created. You do not need to manually save this record.
Incident promotion UI actions

Administrators can customize incident promotion behavior. The menu items Create Problem and Create Change are *UI actions* with that name. You can edit the UI actions to customize the behavior of the menu item.

The Create Problem script carries over these fields from the Incident form:

- short_description
- cmdb_ci
- priority

The syntax for carrying a field from the Incident form to the Problem form is:

```
prob.<fieldname> = current.<fieldname>
```

The Create Change script carries over these fields from the Incident form:

- short_description
- description
- cmdb_ci
The syntax for carrying a field from the Incident form to the Change form is:

\[
\text{change.<fieldname>} = \text{current.<fieldname}}
\]

If there is another process that incidents may be promoted to, such as if an incident should really be handled by Facilities Management, you can create a new UI action modeled after the Create Change and Create Problem UI actions to promote the incident to that table.

Investigate and diagnose incidents

Like the initial diagnosis and investigation, investigation and diagnosis are largely human processes. The service desk can continue to use the information provided within by the Incident form and the CMDB to solve the problem. Work notes can be appended to the incident as it is being evaluated, which facilitates communication between all of the concerned parties. These work notes and other updates can be communicated to the concerned parties through email notifications. The administrator may need to add a notification for the work notes list.

Check related incidents

Incidents have three ways to discover related incidents from the Incident form.

The three ways to discover related incidents from the Incident form are:

- Using the Show Related Incidents icon
- Using the Related Incidents related list
- Using the Business Services Map

Show related incidents

Incidents can show related incidents with the Show Related Incidents icon.

The Show Related Incidents icon is a reference icon that appears beside the Caller field on the default incident form, when the field is populated. When clicked, it opens a browser window displaying a list of other incidents for same caller.

Display the Show Related Incidents icon

The Show Related Incidents icon displays other incidents related to the referenced record. Administrators can add this icon to any reference field by modifying the dictionary and adding the ref_contributions=user_show_incidents dictionary attribute. The icon appears only for users who have read or write access to this field.

Note: The icon’s behavior is defined by a UI Macro named user_show_incidents. If this UI Macro is not active in your instance, this reference field decoration will not be displayed.

Use the related list

Other incidents by the same caller can also be found using the Incidents by Same Caller related list.
You may need to add the related list to the form.

Use dependency views

Dependency views can help find related incidents based on configuration items (CI).
If a configuration item is attached to an incident, clicking the map icon displays the dependency views map.
To view any tasks attached to the CI, click on the down arrow next to the CI and select View Related Tasks.
The figure below displays the options available for a CI.

![Figure 97: CI options](image)

This enables the service desk can find related tasks using the information gathered by the CMDB.

Attach configuration items to an incident

To aid in the incident management process, attach as much information as possible to the incident.
The service desk often deals with an incident related to one or more specific configuration items (CIs).
If the configuration management team has populated the CMDB, the CI records may hold valuable information for the incident management team. You can associate configuration items to an incident to see how the incident affects other CIs with dependent relationships.

Associate configuration items to incidents

To associate configuration items to incidents from the Incident form, use either:

- The Configuration Item reference field.
- The Affected CI’s related list.

Use the Configuration Item field when there is a single, primary CI that is the cause of the incident, and the Affected CI’s related list when multiple CIs are affected by the incident. For example, suppose a load-balancer in a data center is no longer operational. The Configuration Item field might have the specific server which has run out of memory, while the Affected CI related list contains the load-
balancer, the data center, the servers which depend on that load-balancer, and business services that are impacted by the missing server.

These CIs can be associated manually using the fields, or can be attached using dependency views.

Use dependency views to locate affected CIs

The incident management team can use dependency views to identify CIs that are affected due to a configuration item that has caused an incident.

To locate affected CIs:

1. In the Incident record form, populate the Configuration Item field.

2. Click the dependency views icon next to the Configuration field.
   The system displays the configuration item.

3. Click on the down arrow next to the CI and select View Affected CIs.
   The list of all the affected CIs displays in a new window.

4. To add an affected CI, select the CI and click on the down arrow next to it. Select Add Affected CI(s) from the list of options.
The selected CI or CIs are now added to the incident.

Copy attachment contents into a KB field

When a user searches for a knowledge base article from an incident, problem, or change request, the displayed article includes an Attach to Task button at the top right.

The word task is replaced by the name of the form where the search was initiated.

When you click this button, the article number and contents are copied into the Comments or Description field of the incident or problem record by default. Administrators can control the field where this information is placed.

Controlling the Attach to Task button

Administrators can customize the copying behavior with a property.

1. Navigate to Knowledge Base Properties.
2. In the Other Knowledge Properties section, locate When attaching an article to an incident, copy the content into this field:

   ![Figure 98: KB Attach]

3. Specify a field into which to copy knowledge article content. This must be the Element name for the field, which is found by right-clicking the field name and selecting Configure Label.

   By default, this property is set to comment, meaning that content will be copied into the Additional comments field. If you change the value to work_notes, the article content would be copied into the Work notes field.

   The copy behavior is based on the data type of the destination field. If the destination field is a reference field to kb_knowledge, ServiceNow creates a reference link to the existing article rather than copying the article contents into the record.

Notes/Limitations

- The target field must be on the form to receive the data.
- You can (optionally) specify more than one target field, separated by commas. In this case, ServiceNow looks for each field in order and copies the contents into the first one it finds on the form. It does not copy the data into multiple fields.
- If the selected field does not exist on the form, ServiceNow checks for Comments and Description automatically.

Create change from incident

1. From the form of the record in question, right click the form header bar.
2. Select Create Change.

   Note: This option is not available for incidents that already have a change record.

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The new Change form will display.
Create problem from incident

1. From the form of the record in question, right click the form header bar.
2. Select Create Problem.

Note: This option is not available for incidents that already have a problem record.
The new Problem form will display. At this point, the problem record is created in the system. Users do not have to save the Problem form to create the record.
Incident resolution and recovery

After the incident is considered resolved, the incident state should be set to Resolved by the service desk.

The escalators will be stopped and the service desk may review the information within the incident. After a sufficient period of time has passed, assuming that the user who opened the incident is satisfied, the incident state may be set to closed.
Note: When the state of an incident changes to any state other than Resolved, Closed, or Cancelled, the Resolved by, Resolved, Resolution code, and Resolution note fields are cleared. System administrator can modify the conditions on the Clear Resolve fields business rule if a different state model is implemented or deactivate the business rule as per the requirement.

If the cause of an incident is understood but cannot be fixed, the service desk can generate a problem from the incident, which will be evaluated through the problem management process. If the incident creates the need for a change in IT services, the service desk can generate a change from the incident, which will be evaluated through the change management process.

In addition to the base system incident management workflow, a Best Practice - Incident Resolution Workflow is available to bring the incident management workflow into better alignment with ITIL v3.

Track incident resolution information

You can track who resolved or closed an incident and when, and also update the business rule to populate those fields.

Fields

Incident Resolution Fields adds the following fields to the Incident table:

- Resolved By - A reference to the user table that is automatically populated on incident resolution or closure.
- Resolved - A date-time field that is automatically populated on incident resolution or closure.

Figure 103: Incident Resolution Fields

Note: The new fields are not visible on the form by default and you can configure the form to add them.

Business rules

Incident Resolution Fields updates an existing business rule and adds a new one.

The existing mark_closed business rule runs when the incident state changes to Closed. When Incident Resolution Fields is active, this rule automatically populates the Resolved By and Resolved fields.

Note: If the mark_closed business rule was previously changed, the plugin does not update it.

Incident Resolution Fields adds the mark_resolved business rule, which runs when the incident state changes to Resolved. The business rule automatically populates the Resolved By and Resolved fields.

Activate incident resolution fields

Incident Resolution Fields is active by default.

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Best Practice - Incident Resolution Workflow

The Best Practice - Incident Resolution Workflow provides an ITIL-based best practice workflow to power the resolution of incidents.

Incident resolution guidelines suggest that instead of closing the incident, the service desk sets the incident state to Resolved. This state provides a mechanism to verify that the caller is satisfied with the resolution and agrees with closing the incident. This workflow is automatically activated on instances.

Note: Use this plugin to build a workflow (it does not install a workflow).

Figure 104: Incident Resolution Workflow

Resolve Incident

Users with the itil_admin role have the capability to resolve as well as close incidents whereas users with the itil role have the capability to resolve incidents with no option to close. Users with itil role sees a Resolve Incident button toward the top of the form as well have the option to select Resolved from the State choice list:
Incident Closed Email

If an incident is closed, an email is sent to the end user.

Date: Sunday, May 17, 2009 3:06 PM
To: Eric Schroeder <eric.schroeder@service-now.com>
Subject: Your incident 'INC10603' has been closed.

Your incident ID INC10603 has been closed.; Please contact the service desk if you have any questions.
Closed by: System Administrator

Short description: test123
Click here to view: LINK

Comments:

Figure 106: Incident Closed Email
Reopen

- Closed incidents are read-only for non-administrators.
- Incidents can only be reopened by users with the admin role.
- Users with the itil role cannot reopen closed incidents.
- ESS users have a Reopen Incident link on resolved Incidents.

Required Fields

Close code and Close notes fields are mandatory whenever an incident is Resolved or Closed. When an Incident state is set to resolved, two fields display on the incident form: Close code and Close notes. These fields require the help desk to select a Closed code and enter Closed notes detailing how the incident was resolved.

Note: If custom incident forms have been created, the Close code and Close notes fields may need to be added manually.

Figure 107: Closed Code and Closed Notes Fields

Resolve Email

When an incident is set to a ‘Resolved’ incident state an email notification is sent to the caller. If the caller is satisfied with the resolution, no action is required on the caller’s behalf. ServiceNow automatically closes the incident after 24 hours. If the caller is not satisfied, s/he can reopen the incident by clicking the link within the email notification. This creates an outgoing Please Reopen email message. The user can add text to the outgoing email if they want to add any additional remarks. The Resolved incident is automatically reactivated and displays an Active status.
Auto-Close 24 Hrs

If the incident state is Resolved, and the caller has not emailed any feedback within 24-hours, the incident is auto-closed (with no entry in the Closed by field) by a scheduled job. The duration of the auto-close function can be modified. See *Change the Duration of the Incident Auto-Close Function*.

Caller Closes Incident

When a caller closes their incident:

- an info message with a link to the incident displays
- close notes and the close code are automatically set by a business rule

Update the Resolved Incident Notification Template

To update the resolved incident notification template:

1. From the left navigation pane, select *System Policy Templates*.
2. Scroll to the incident.ess.resolve template, and then click the Name. The template displays.
3. Manually update the template’s text.
4. Click Update.
   Your incident resolved notification template is updated.

Change the Duration of the Incident Auto-Close Function

To change the duration of the incident auto-close function:

1. From the left navigation pane, select *System Properties UI Properties*.
2. Scroll to locate the field below:

Number of days (integer) after which Resolved incidents are automatically closed. Zero (0) disables this feature.

1

Figure 109: Incident Auto-Close Field

3. Change the number of days (integer only).
4. Click Save.
   The property updates the number of days after which the Resolved incident is closed. Make sure to update the resolved incident email notification text to reflect the new duration. See Update the Resolved Incident Notification Template.

Flagging VIPs

Organizations commonly designate VIP status in the user record for some of their VIP customers. If the incident forms have been customized, the VIP field may need to be added to the user record form.

Checking the VIP box on the user record sets the VIP value to true for the user. By default, users are automatically checked for VIP status. Therefore, whenever a VIP caller opens an incident, the caller’s name displays in red.
The Caller column does not display by default in the Incident Open module. To add the Caller column, complete the following steps.

1. Perform the appropriate action for your list version.

<table>
<thead>
<tr>
<th>Version</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>List v2</td>
<td>Right-click the Incident list header and select Configure List Layout.</td>
</tr>
<tr>
<td>List v3</td>
<td>Open the list title menu and select List Layout.</td>
</tr>
</tbody>
</table>

2. Add the Caller column to the Selected list.
3. Click Save.
Automatically Populating the Caller’s Location

With the Best Practice - Incident Resolution Workflow plugin, when the Caller (user) is added to the Incident form, the caller’s Location is automatically populated in the incident form.

This best practice plugin adds functionality that autofills the Location field whenever the Caller information is entered or changed. However, the option remains to manually replace the auto-filled location.

To manually replace the caller’s (autofilled) location:

- Click the magnifying list icon next to the Location field, and select another location from the list.
Incident closure

Closed incidents are filtered out of view but remain in the system for reference purposes. Closed incidents can be reopened if the user or service desk believes that it needs to be reopened.

Incidents that are on the Related Incidents list of a problem can be configured to close automatically when the problem is closed through business rules.

If the knowledge check box is selected, a business rule is triggered by closing the incident, and a knowledge article is generated with the information from the incident. This is useful for knowledge management, and knowledge-centered support, reducing the number of repeat incidents by distributing the information related to the incident.

It is also possible to generate customer satisfaction surveys upon closure of incidents. This allows the service desk to gather information about their quality of service directly from the user.

Close multiple incidents

Service desk technicians with the list_updater role can close multiple incidents from an incident list and attach the same close notes to all of them.

In addition to the default method for closing multiple incidents, an administrator can create a UI action and make the feature available to users without the list_updater role.
Closing Incidents with a UI Action

To simplify the process of closing multiple incidents with the same close notes, you can create a UI action called CloseNotes to close these incidents from the list view. This also requires a business rule for the UI action to reference and a form view.

Close incidents from a list

You can use the list view to close multiple incidents with the same close notes.

Role required: list_updater

1. Select the check box beside each incident to be closed.
2. Perform the appropriate action for the version of lists.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>List v3</td>
<td>Open the list title menu and select Update Selected.</td>
</tr>
<tr>
<td>List v2</td>
<td>Right-click any list column header and select Update Selected.</td>
</tr>
</tbody>
</table>

3. Set the State to Closed and enter notes in the Close notes field.
4. Click Update.
The changes apply to all the selected records.

Close incidents with a UI Action

You can create UI action to close multiple incidents with the same close notes.

To simplify the process of closing multiple incidents with the same close notes, you can create a UI action called CloseNotes to close these incidents from the list view. This also requires a business rule for the UI action to reference and a form view.

Create a business rule to close multiple incidents

You can create a business rule for the UI action to close multiple incidents.

1. Navigate to System Definition Business Rules.
2. Create a business rule like the one in Create Business Rule.

![Create Business Rule](image)

Copy and paste the following code to create the new rule:

```javascript
current.active = 'false';
current.short_description = "TEST CLOSE NOTES";
current.incident_state = '7';
gs.addInfoMessage("Closing");
current.update();
```

Create a UI action to close multiple incidents

You can create UI action to close multiple incidents with the same close notes.

1. Navigate to System UIUI Actions.
2. Create a UI action like the one in Closing a UI Action.
3. Click Submit.

   The new UI action appears in the Action choice list at the bottom of lists associated with the selected table.

   Note: The showQuickForm() functionality is not applicable for List V3.

---

Create a form view

You can create a view of the Incident form using specific guidelines.

Follow the steps in [Create a view](#) and include the following information:

1. Make the view Name match the first parameter to showQuickForm() in the UI action.
2. Ensure that the view contains the fields to be updated.

Use a UI action to close multiple incidents

You can use a UI action to close multiple incidents with the same close notes.

itil, itil_admin, or admin

1. Navigate to Incident Open.
2. Select the check box beside each incident to be closed.
3. Go to the Action choice list at the bottom of the list and choose CloseNotes.
4. Set the Incident state to Closed, enter close notes in the Additional comments field, and fill in any other relevant fields.
5. Click Update.
Close resolved incidents automatically

You can configure ServiceNow to automatically close tickets that have been in an Incident State of “Resolved” a specified number of days.

For example, if you set the property to 3 days, then 3 days after an incident is Resolved it will be automatically closed. Any update to the incident, for example an added comment from a Self Service user, would restart this 3-day clock.

If you set this property to zero days (the default), Incidents will not auto-close. To set the property, navigate to System Properties > System, and then look for the following property:

| The number of days after which a Resolved, un-updated incident will be automatically closed by a scheduled business rule. |
| The default, 0, means incidents will not be automatically closed. |
| 0 |

Figure 115: Auto Close

Note: If you have an inactivity monitor firing on your incident, it will reset this auto-close clock each time it fires, preventing your incident from being closed. To prevent this, put a Reset Condition on your inactivity monitor of Incident state is not Resolved.

Assign a user name to incidents closed automatically

A scheduled job called Autoclose Incidents runs the Incident Autoclose business rule to close incidents as described above. By default, it assigns the name of the administrator who is logged in when the Autoclose Incidents job runs.

Note: The Incident Autoclose rule (System Definition > Business Rules > Incident autoclose) should be set on the Incident [incident] table, not the Global [global] table, to avoid potential performance issues.

You can set a specific user name to show in the incident record as the Updated By user when the incident is closed automatically. Go to System Scheduler > Scheduled Jobs > Autoclose Incidents and add fcRunAs=<user_name> to the Scheduled Job record. The following example places System Administrator into the Updated By field when an incident is closed automatically:

```
fcRunAs=admin
cfScriptName =incident autoclose
```

View incident notifications

Incident notifications are sent during specific events in an incident life cycle. These notifications are sent to a variety of recipients including ESS and ITIL users.

1. Navigate to System Notification Email Notifications.
2. Filter the list of notifications by [Table] is [incident].
3. View the following list of default notifications for incidents.

Note: To receive these notifications, the end user must have notifications enabled using customer notification preferences.
<table>
<thead>
<tr>
<th>Incident notification name</th>
<th>Description</th>
<th>Conditions of notification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incident assigned to me</td>
<td>Send notification when the incident is assigned to the user.</td>
<td>Specify the Assigned to (assigned_to) details.</td>
</tr>
</tbody>
</table>
| Incident assigned to my group | Send notification when the incident is assigned to the user group. | 1. Specify the Assignment group (assignment_group) in the incident.  
2. Leave the Assigned to (assigned_to) blank. |
| Incident open and unassigned | Send notification when an incident is open but not assigned to any user. | 1. Subscribe a user to receive Incident Opened and Unassigned notifications.  
2. Create an incident without assigning it. |
| Incident inactive | Send notification to the user the incident is assigned to and the assignment group when the incident becomes inactive.  
Note: This notification is inactive by default. | 1. Set the notification to active=true.  
2. Create an incident that matches the conditions in the SLA Inactivity monitor.  
3. Ensure that no activity is performed on the incident and the conditions do not change for the period of time specified in the SLA Inactivity monitor. |
| Incident commented- Subscribers only | Send notification each time the incident is commented upon to the notification subscriber only. | 1. Subscribe a user to receive Incident Commented notifications.  
2. Enter a comment in the incident form and save. |
| Incident commented- ESS user | Send notification each time the incident is commented upon to the self-service user only. | Enter a comment in the incident form and save. |
| Incident commented- ITIL user | Send notification each time the incident is commented upon to the ITIL user only. | Enter a comment in the incident form and save. |
| Incident Closed | Send notification to the caller when the incident is closed. | Change the incident state to closed. Provide closed notes and close code. |
| Incident opened for me | Send notification when the incident is opened on behalf of the user. | 1. Create an incident.  
2. Change caller id. |
| Incident Resolved | Send notification to the caller when the incident is marked as resolved. | Create an incident and change the incident state to resolved. |
### Incident notification name

<table>
<thead>
<tr>
<th>Incident notification name</th>
<th>Description</th>
<th>Conditions of notification</th>
</tr>
</thead>
</table>
| Incident Escalated        | Send notification to appropriate users each time the incident is escalated to a value greater than the previous one. | 1. Subscribe a user to receive Incident Escalated notifications.  
2. Create an incident.  
3. Update the Escalation(incident.escalation) field to a value greater than the previous value. |

4. Click the notification name to view the details of the incident.

### Incident management for end users

Incident management enables you to log incidents, classify them according to urgency, assign to appropriate groups, escalate, and follow-up through to resolution and closure.

Role required: admin, ESS user

These incidents can include anything that causes a disruption to normal service operations within your organization.

To log an incident:

1. You can navigate to the Create Incident form in the following ways.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-Service</td>
<td>Navigate to the Self-Service Service Catalog Can We Help You? Click Create Incident.</td>
</tr>
<tr>
<td>Self-Service</td>
<td>Navigate to Self-Service Incidents. Click New.</td>
</tr>
</tbody>
</table>

2. Select the urgency level of the issue in the Urgency list box with 1 being the highest and 3 being the lowest.

3. Describe the nature of the issue in the Please describe your issue below text box.

4. Click Submit to submit the details and log the issue as an incident.

The Incident form with the incident details appears.

5. You can perform the following actions on the incident.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Track the progress of the incident</td>
<td>You can track the progress of your incident based on the incident number assigned to your incident and also from your system homepage. You can also choose to receive notifications each time an update is made to the incident.</td>
</tr>
</tbody>
</table>

<p>| Update the incident | You can update an incident with additional details in the Additional Comments field. |</p>
<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reopen a closed or canceled incident</td>
<td>You cannot reopen a closed or canceled incident. If you are not satisfied with the incident resolution provided, you can request to reopen the issue. You can request to reopen from the incident resolution notification email or from the incident itself. The state of the incident is then changed from Resolved to In Progress. Note: If the incident is already closed, you can reopen it by replying to any email related to that incident. The subject line should contain Please reopen. This opens a new incident and the original incident is specified as the source.</td>
</tr>
</tbody>
</table>

Incident Management service improvements

The service desk can improve the incident management process using information gathered within the platform.

Much of the data is already stored within the incident record. More information can be gathered by enabling auditing, which allows for an accurate review of the history of the problem.

The following plugins allow you to gather additional incident information:

<table>
<thead>
<tr>
<th>Plugin</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metric Definition</td>
<td>Define the key performance indicators to monitor within the system. With these metrics, and the information within the database, it is possible to generate reports that can then be added to homepages or automatically generated and distributed.</td>
</tr>
<tr>
<td>Database Views</td>
<td>Join tables for reporting purposes.</td>
</tr>
<tr>
<td>Vendor Ticketing</td>
<td>Add vendor data to incidents and integrate with Vendor Performance.</td>
</tr>
</tbody>
</table>

Using this information, it is possible to refine automatic rules such as the assignment rules, service level agreements, or inactivity monitors to better suit the service desk’s unique environment.

Unnecessary incidents can be avoided by encouraging users to consult the knowledge base before creating an incident.

Incident ticketing integrations

An incident ticketing integration exchanges ticket data between your ServiceNow instance and a third party system.

The level of data and the direction of the data that is exchanged categorizes the integration as uni-directional or bi-directional.

The advantages of an incident ticketing integration include:

- Establishing a ticket number that provides a unique key between systems
• Synchronizing the systems so that notifications can be triggered
• Transforming data for more uniform processing
• Tracking ticket activity for accurate reporting

Incident ticketing integration implementations

In a uni-directional integration, a third party system creates an incident ticket, passes data to ServiceNow, and receives a ticket ID back as confirmation. In a bi-directional integration, incident data is exchanged, synchronized, and updated while data is sent between the systems.

For both integration types, ServiceNow recommends implementing a record-based log of the individual transactions for a given time period. In the event of an outage, a record-based log can tell you what data was exchanged, how it was transformed, when processing occurred, and if there were any errors. Record-based logs also allow you to run all the validation and transformation logic away from the main form, helping performance.

Before implementing your project, develop an Integration Plan in which all of the implementation aspects and requirements are defined. Developing the Integration Plan will help you review the current data, plan for future requirements, and identify and sequence project tasks.

Uni-directional incident ticketing integrations

Consider the requirements for an external, third party system to create tickets. Define what data needs to be sent at the least to create a ticket and what validation is required.

This way, a standard web service interface can be created and published. This integration responds with a ticket number on success, or with a structured error message for validation failures and processing issues. An advantage of this implementation is that you can publish once and reuse for multiple applications, provided the additional integrations follow the integration specifications. ServiceNow recommends creating a dedicated account for each interface to provide accountability and report user statistics, and using a simple connectivity Point of Contact (POC).

Integration plan contents

• Firewall requirements
• Protocols to be used
• Required Middleware (for example, MS Biztalk)
• Error messages
• Validation Rules

Example using basic authentication

This implementation responds to the third party system with the ticket ID. The Import Set tables function as a staging area for your data.
Example using import sets

An implementation variation for the inbound path would be to use the Import Set Tables as interface tables. In this example, the Incident Interface Table stores a history of data as it was received and before the data was transformed. The destination Incident Table could store a history of how the
incident has changed over time and who changed it. The transform scripts would process the import set and the Business Rules would run on the target table.

Figure 117: Uni-directional ticketing integration using import sets

Bi-directional incident ticketing integrations

A bi-directional integration exchanges data between your ServiceNow instance and a third party system so that incident ticket information is synchronized between the systems.
This integration is more complex than a uni-directional integration because it requires comprehensive definitions of field mappings, the standardization of where transformations take place (inbound, outbound, or both), consideration of the ownership of reference data, and how updates are done on an ongoing basis. Error handling must also be implemented. All of these implementation aspects would be included in the Integration Plan.

While bi-directional implementations are developed on their own merits, it is possible to develop a framework in ServiceNow that can be reused (for example, data driven validation rules).

Integration Plan Contents

- Plan contents for all the aspects needed for a uni-directional integration
- State models for each organization
- Business Rule definitions for keeping the tickets synchronized
- Requirements to store history of individual transactions. If this is a requirement, consider creating a interface table which is populated prior to creating and updating the destination table.
- Transformation rules for all data elements
- Time lines for when reference data is transported to the information system. Include requirements to do any transformations before sending the data to and from each system.
- Statement of reference data ownership at all stages
- Update schema definitions

Example using import sets and web services

In this implementation, data authentication is done before insertion into the import set. Transform maps and scripts execute before the data reaches the Incident Table. The Incident Table is used to store the history of the incident records. For the outbound data path, the target table could trigger Business Rules before the data is queued in the outbound Web Service.
Example using import sets and the ECC queue

An implementation variation for the inbound path would be to use an import set table (in our example, the Incident Interface Table) to store historical data. Data validation is also done at this time, and you can clear exceptions with processing or manual intervention. The Incident Table uses a Third Party Information table as a reference, and messages are generated based on Business Rules.
Implementing this type of integration involves a web-service component for third-party applications for inbound data. The ECC Queue is recommended for outbound data.

Figure 119: Bi-directional ticketing integration using import sets and the ECC queue
ITSM guided setup

ITSM guided setup guides you step-by-step to configure IT Service Management (ITSM) applications on your ServiceNow instance.

Using ITSM guided setup, you can perform structured configuration activities that help you configure ITSM applications on your ServiceNow instance and can monitor the progress. Each configuration activity in ITSM guided setup is designed to simplify the configurations by providing access to:

- Contextual embedded help
- Contextual documentation on the ServiceNow product documentation site
- Guided tour (if available for an activity)

Features

Guided activities for platform configurations

ITSM Guided Setup helps you to configure the common platform settings through the following categories:

Company
Activities under this category help you to configure company name, logo, and color theme to reflect your corporate brand and to configure the default system settings such as the time zone and the date and time formats.

Connectivity
Activities under this category help you to configure your ServiceNow instance to support inbound and outbound email notification and to integrate it with your existing LDAP and single sign-on (SSO) solutions.

People
In case you do not use LDAP to import data into your ServiceNow instance, activities under this category can help you to import users, groups, group members, companies, departments, and
Guided activities for configuration of ITSM applications

ITSM guided setup helps you to configure ITSM applications through the following categories:

**Incident Management**
Incident Management helps restore normal service operations as quickly as possible after an unplanned interruption and helps minimize the impact to your business. Complete the activities in this category to configure your organization’s incident management process.

**Problem Management**
Problem Management helps identify, investigate, and resolve root causes of incidents. Complete the activities in this category to configure your organization’s problem management process.

**Change Management**
Change Management helps assess risk and reduce disruption when implementing necessary changes to IT services. Complete the activities in this category to configure your organization’s change management process.

**CMDB**
CMDB is a repository of information about your IT infrastructure and services. Complete the activities in this category to configure your organization’s CMDB.

**Service Catalog**
Service catalog helps to present the services that your organization offers to employees. Complete the activities in this category to
structure and build the services that the employees can request through the service catalog.

Knowledge Management

Knowledge Management helps capture and share the ideas, experience, and information that your users collectively possess. Complete the activities in this category to configure your organization’s knowledge management process.

Guided activities to prepare your ServiceNow instance for production use

After you complete the platform and the application configurations, you can use the guided activities under the Go Live category to take the final steps to prepare your ServiceNow instance to be deployed in your organization.

Note: Guided Setup is not supported on Tablet and mobile devices. Use one of the desktop browsers.

Access ITSM guided setup

You can access ITSM guided setup from the System Administration homepage or by navigating to the ITSM guided setup application if the Guided Setup for ServiceNow applications plugin (com.snc.guided_setup) is active.

Role required: admin

The Guided Setup for ServiceNow applications plugin is active by default for new provisioned instances. If an instance is upgraded to the Helsinki release, then the plugin must be activated to enable ITSM guided setup.

- To access ITSM guided setup from the System Administration homepage:
  a) On the System Administration homepage, click Guided Setup. The guided setup page is displayed.
  b) Click ITSM guided setup. The ITSM guided setup homepage is displayed.

- To access ITSM guided setup from the application navigator:
  a) Navigate to Guided Setup ITSM Guided Setup. The ITSM guided setup homepage is displayed.
ITSM guided setup user interface

This section describes the various components of the ITSM guided setup user interface.

Homepage

The ITSM guided setup homepage displays the following information:

- A list of prerequisites that you may need to configure ITSM applications on your ServiceNow instance.
- The overall completion percentage of the configuration activities.

Figure 120: ITSM Guided Setup homepage

Table 130: ITSM Guided Setup homepage UI components

<table>
<thead>
<tr>
<th>S. No.</th>
<th>UI Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Completion indicator</td>
<td>Displays overall completion percentage of the configuration tasks.</td>
</tr>
<tr>
<td>S. No.</td>
<td>UI Component</td>
<td>Description</td>
</tr>
<tr>
<td>-------</td>
<td>--------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>2</td>
<td>Homepage control</td>
<td>Helps navigate to the homepage from a category view or a task view page.</td>
</tr>
<tr>
<td>3</td>
<td>Progress chain</td>
<td>Represents the configuration categories and each node indicates the progress in the respective category. A node can be displayed as one of the following:</td>
</tr>
<tr>
<td></td>
<td></td>
<td><img src="image" alt="Not started." /> • Not started.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><img src="image" alt="In progress." /> • In progress.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><img src="image" alt="Skipped." /> • Skipped.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><img src="image" alt="Complete." /> • Complete.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>You can click a node to navigate to the category view page of the corresponding category.</td>
</tr>
<tr>
<td>4</td>
<td>Navigator pane control</td>
<td>Helps maximize or minimize the application navigator pane.</td>
</tr>
<tr>
<td>5</td>
<td>Pre-setup checklist</td>
<td>Displays a list of prerequisites that you may need to configure ITSM applications.</td>
</tr>
<tr>
<td>6</td>
<td>Get Started button</td>
<td>Opens the category view page.</td>
</tr>
</tbody>
</table>

### Category view page

The ITSM guided setup category view page displays the configuration categories and the configuration tasks under each category.
Figure 121: ITSM Guided Setup category view page
### Table 131: Category view page components

<table>
<thead>
<tr>
<th>S. No.</th>
<th>UI Component</th>
<th>Description</th>
</tr>
</thead>
</table>
| 1     | Status       | Displays the current status of the configuration tasks in a category. The status can be one of the following:  
- Not started: Indicates that the configuration tasks in the category are not started. You can click the Get Started button to start the configurations on the task view page.  
- In progress: Indicates that the configurations tasks are in progress and the indicative completion percentage is displayed. You can click the Continue button to continue with the configurations on the task view page.  
- Complete: Indicates that the configuration tasks are complete. You can click the Edit button to change the configurations on the task view page.  
- Skipped: Indicates that the configuration tasks in the category are skipped. You can click the Activate button to revert to the active state. In the active state, the status changes to Not started, In progress, or Complete depending on the status at the time of skipping. |
<p>| 2     | Category name | Displays the category name and its brief description. You can click Skip to skip the configuration tasks in the category. If a category is skipped, its description and configuration tasks are not displayed. |</p>
<table>
<thead>
<tr>
<th>S. No.</th>
<th>UI Component</th>
<th>Description</th>
</tr>
</thead>
</table>
| 3      | Tasks        | Lists the configuration tasks in the category and displays their completion status. One of the following status icon is displayed for each task:  

- ![Not started.](image)
- ![Locked.](image)
- ![Skipped.](image)
- ![Complete.](image)

If a category has a large number of configuration tasks in it, a Show More link is displayed at the bottom of the displayed tasks in the list. Click the Show More link to display all the tasks in the category. You can then click the Show Less link to revert to the default display. |
| 4      | Filter       | Helps filter the display of the categories according to their completion status. The filter has the following choices:  

- Show all
- Incomplete
- Complete |

Note: For details on the components that are common between the category view page and the homepage, see [Homepage](#).

**Task view page**

The ITSM guided setup task view page displays the configuration tasks, their descriptions, and their current statuses. It also provides controls for the operations on the configuration tasks – to start configuration, to mark completion, to skip, and to unlock.
Figure 122: ITSM Guided Setup task view page

Table 132: Category view page components

<table>
<thead>
<tr>
<th>S. No.</th>
<th>UI Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Completion indicator</td>
<td>Displays overall completion percentage of the configuration tasks in the selected category.</td>
</tr>
<tr>
<td>S. No.</td>
<td>UI Component</td>
<td>Description</td>
</tr>
<tr>
<td>-------</td>
<td>--------------</td>
<td>-------------</td>
</tr>
</tbody>
</table>
| 2     | Category name | Lists the configuration tasks in the category and displays their completion status. One of the following status icon is displayed for each task:  
  - Not started.  
  - Locked.  
  - Skipped.  
  - Complete. |
| 3     | Tasks        | Displays the task name and its brief description.  
You can click Skip to skip the configuration task. If a task is skipped, its controls become unavailable.  
If a task is locked, its controls are unavailable. You can click View plugins to unlock the task. For details, see Unlock a task. |
| 4     | Task controls | Help perform the configuration tasks. The following controls are available:  
  - Configure: Use this control to start a configuration task.  
  - Mark as complete: Use this control to mark a configuration task as complete.  
You can mark a configuration task as complete after you complete the required configurations or beforehand if you want to accept the default configuration settings. |

**Note:** For details on the components that are common between the task view page and the homepage, see [Homepage](#).

**Configuration view page**

The ITSM guided setup configuration view page helps you to set configurations through the corresponding forms, lists, properties, and so on. It also provides you access to contextual embedded help, contextual documentation on the ServiceNow product documentation site, and guided tour (if available for an activity).
Figure 123: ITSM Guided Setup configuration view page

Table 133: Configuration view page components

<table>
<thead>
<tr>
<th>S. No.</th>
<th>UI Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Configuration workspace</td>
<td>Displays forms, lists, properties, and so on to set the required configurations.</td>
</tr>
<tr>
<td>2</td>
<td>Embedded help</td>
<td>Displays contextual help information and instructions for the configuration task.</td>
</tr>
</tbody>
</table>
Unlock a task

Role required: admin

A configuration task may have prerequisites that must be completed before the configurations for the task can be started. Such tasks are displayed as locked until the prerequisites are completed. In ITSM guided setup, the prerequisites can fall under one of the following categories:

**Dependency on a plugin**
You must activate the required plugins to unlock the configuration task.

**Dependency on other configuration activities**
You must complete the required activities to unlock the configuration task.

- To unlock a plugin-dependent task:
  a) Click the View plugins link.
  b) In the Required plugins window, select one of the required plugins. If only one plugin is required, it gets selected by default.
  c) Under Related Links, click Activate/Upgrade.
  d) Proceed with the onscreen instructions to activate the plugin and reload the form.

The configuration task is unlocked.

- To unlock an activity-dependent task:
  a) Complete the prerequisite configuration activity.
  b) If the prerequisite configuration activity itself is dependent on other configuration activities, loop through the prerequisite activities to complete them.

The configuration task is unlocked.
Mark a configuration task as complete or incomplete

After you finish configurations for a task or decide to accept the default configurations for a task, you can mark the task as complete to update completion status. After marking a task as complete, if you decide to make further changes at a later date, you can mark the task as incomplete to update completion status accordingly.

Role required: admin

When you mark a configuration task as complete or incomplete, the completion status of the corresponding category and the overall completion status are updated. You can click Configure and make the required configuration changes irrespective of whether the task is marked as complete or incomplete. When you mark a task as incomplete, only the completion status is updated, no configuration changes are reverted.

• To mark a configuration task as complete:
  a) Click Mark as complete.

• To mark a configuration task as incomplete:
  a) Click Mark as incomplete).

On-call scheduling

On-call scheduling provides a way to determine which member of a user group is available to complete a task.

For example, finding the right person to assign an incident. It does this by rotating an on-call position within some or all members of that group of users on a regular basis.

On-call scheduling can help answer questions like:

• For a specific group, who is the primary contact person right now?
• Who is the primary contact at any given time?
• How do I escalate notifications for this group?
• When am I on-call for this group this year?

Activate on-call scheduling

You can activate the On-Call Scheduling (com.snc.on_call_rotation) plugin if you have the admin role.

Activating the On-Call Scheduling plugin activates the following third-party libraries:

• FullCalendar library
• DHTMLX scheduler

1. Navigate to System Definition Plugins.
2. Find and click the plugin name.
3. On the System Plugin form, review the plugin details and then click the Activate/Upgrade related link.

   If the plugin depends on other plugins, these plugins are listed along with their activation status.

   If the plugin has optional features that are not functional because other plugins are inactive, those plugins are listed. A warning states that some files will not be installed. If you want the optional
features to be installed, cancel this activation, activate the necessary plugins, and then return to activating the plugin.

4. If available, select the Load demo data check box.

Some plugins include demo data—sample records that are designed to illustrate plugin features for common use cases. Loading demo data is a good policy when you first activate the plugin on a development or test instance.

You can also load demo data after the plugin is activated by clicking the Load Demo Data Only related link on the System Plugin form.

5. Click Activate.

Installed with on-call scheduling

Several components are installed with on-call scheduling.

Tables installed with on-call scheduling

On-call scheduling adds the following tables.

<table>
<thead>
<tr>
<th>Display name (Table name)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>On-call Member (cmn_rota_member)</td>
<td>Table with the selected group members participating in the on-call schedule and escalations.</td>
</tr>
<tr>
<td>Roster (cmn_rota_roster)</td>
<td>The table that determines the members on-call, the rotation interval and escalation settings.</td>
</tr>
<tr>
<td>Rota (cmn_rota)</td>
<td>The table that holds the on-call schedule for a particular shift.</td>
</tr>
<tr>
<td>Roster Schedule Span (roster_schedule_span)</td>
<td>Table that contains the schedule span definitions. On-call scheduling adds a group reference and the On-call type to the Type field.</td>
</tr>
<tr>
<td>Trigger Rule (trigger_rule)</td>
<td>This table extends the Assignment Rule (sysrule_assignment) table and stores when the escalation process is triggered and what actions to take.</td>
</tr>
<tr>
<td>On-call Notifications (v_on_call)</td>
<td>Lists the reminder notifications that were sent.</td>
</tr>
<tr>
<td>Rotation Schedule (v_rotation)</td>
<td>Lists rotation schedules by start date and time and includes user contact information, if available.</td>
</tr>
<tr>
<td>User Rotation Schedule (v_user_rotation)</td>
<td>Lists the rotation schedule by user.</td>
</tr>
<tr>
<td>Alternate Rotation Schedule (v_alternate_rotation)</td>
<td>Lists the alternate user schedules by rota and roster and the start and end date and time stamps.</td>
</tr>
<tr>
<td>Rotation Escalation (cmn_rota_escalation)</td>
<td>Lists the escalations including the event and last updated time stamp.</td>
</tr>
</tbody>
</table>
Properties installed with on-call scheduling

On-call scheduling adds the following properties.

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
</table>
| com.snc.on_call_rotation.log.level           | Enable logs for debugging.  
|                                               | • Location: System Property \{sys_properties\} table                        |
| com.snc.on_call_rotation.contrast            | Enables text color to display either in white or black depending on which of the two has the highest contrast to the background color on the calendar. There following algorithms determine text color that is used:  
|                                               | • ContrastYIQ  
|                                               | • ContrastPercent  
|                                               | • ContrastLuminance  
|                                               | Note: If the property is not enabled, the default algorithm used is ContrastYIQ.  
|                                               | • Location: System Property \{sys_properties\} table                        |
| com.snc.on_call_rotation.access.debug        | Enable logs for debugging.  
|                                               | • Location: System Property \{sys_properties\} table                        |
| com.snc.on_call_rotation.reminders.showtz    | Include a user’s timezone in their On Call Rotation Reminder notification email.  
|                                               | • Location: System Property \{sys_properties\} table                        |
| com.snc.on_call_rotation.show_legacy_calendar| Show the legacy On-call calendar.  
|                                               | • Location: System Property \{sys_properties\} table                        |
| com.snc.on_call_rotation.calendar_read_roles | List of roles, comma-separated, that can read the calendar.  
|                                               | • Location: System Property \{sys_properties\} table                        |
### Property Description

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>com.snc.on_call_rotation.cover.color</td>
<td>Set the color of the span when it is an on-call coverage for another roster member.</td>
</tr>
<tr>
<td></td>
<td>• Location: System Property (sys_properties) table</td>
</tr>
<tr>
<td>com.snc.on_call_rotation.timeoff.color</td>
<td>Set the color of the span when the type is time-off.</td>
</tr>
<tr>
<td></td>
<td>• Location: System Property (sys_properties) table</td>
</tr>
</tbody>
</table>

### Roles installed with on-call scheduling

On-call scheduling adds the rota_admin and rota_manager roles.

<table>
<thead>
<tr>
<th>Role</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>rota_admin</td>
<td>A user with the rota_admin role can create, edit, and delete rotations. They can manage all aspects of a rotation such as the rosters, roster members, coverage, and time-off.</td>
</tr>
<tr>
<td>(rota administrator)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>assignment_rule_admin</td>
</tr>
<tr>
<td>rota_manager</td>
<td>A user with the rota_manager role must fulfill one of two requirements to be able to manage the rotations for their respective group:</td>
</tr>
<tr>
<td>(rota manager)</td>
<td>• The user must be the manager of the group.</td>
</tr>
<tr>
<td></td>
<td>• The user must be delegated the rota_manager role via Delegate roles.</td>
</tr>
<tr>
<td></td>
<td>Note: When a user is delegated a role on behalf of a group, the user can manage the rotations only for that particular group.</td>
</tr>
<tr>
<td>roster_admin</td>
<td>DEPRECATED. This role should not be used for new users, the rota_admin and rota_manager roles should be used instead. This is a legacy role and is only present to support old upgrade customers that still make use of this role.</td>
</tr>
<tr>
<td>(roster admin)</td>
<td>none</td>
</tr>
</tbody>
</table>

### Script includes installed with on-call scheduling

On-call scheduling adds the following script includes.

<table>
<thead>
<tr>
<th>Script include</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OnCallFilters</td>
<td>Reference qualifiers for on-call rota or roster lookup.</td>
</tr>
<tr>
<td>Script include</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>OnCallReminderEmailGenerator</td>
<td>Generates an HTML email used to send reminders to users that have on-call duty.</td>
</tr>
<tr>
<td>OnCallRemindersNG</td>
<td>This is run by a schedule job to send reminders to on-call persons on a daily basis.</td>
</tr>
<tr>
<td>OnCallRotation</td>
<td>This class wraps the On-call Rotation support to make it easy to use from a business rule or script. gs.include(&quot;OnCallRotation&quot;); var rota = new OnCallRotation(current);</td>
</tr>
<tr>
<td>SncOnCallRotation</td>
<td>Legacy wrapper to maintain old GlideScriptable calls that have been migrated to use reflection rhino prefixes.</td>
</tr>
<tr>
<td>OnCallRotationProcessor</td>
<td>Helper functions to determine which on-call calendar to render.</td>
</tr>
<tr>
<td>OnCallRotationCalculator</td>
<td>Calculate the rotation for a group, storing the results in the Rotation Schedule (v_rotation) table.</td>
</tr>
<tr>
<td>OnCallRotationPersonal</td>
<td>API for quickly getting on-call rotation data relevant to current logged in user.</td>
</tr>
<tr>
<td>OnCallRotationRecalc</td>
<td>Recalculates on-call rotation schedules. Called from Update Rotation Schedules business rules on On-call Member (cmn_rota_member) and Roster (cmn_rota_roster) tables.</td>
</tr>
<tr>
<td>OnCallScheduleGenerator</td>
<td>Generates a schedule in table form for any given groups for a specified date range.</td>
</tr>
<tr>
<td>OnCallSecurity</td>
<td>Checks security for an on-call rotation rota.</td>
</tr>
</tbody>
</table>
| OnCallSecurityNG                   | New security model checks for on-call rotas, rotations, and associated data. Access model:  
|                                   | • ‘rota admin’ role gives access to manipulate all aspects of rotas.  
|                                   | • ‘rota manager’ role gives access to a specific group’s rota and can manipulate this group’s rota and associated data. |
| OnCallUserReminder                 | User reminder data for sending on-call user reminder emails. Used by the On-Call Reminders NG script include. |
| RotaScheduleEntryValidation        | Specific validation for rota schedule entries. Called by Rota Schedule Item Validate business rule. |
| ValidateSchedule                   | Checks if schedule spans start and end dates are valid and that they don’t overlap with any other rotation schedule. |
| RosterMember                       | Handles roster and member requests.                                         |
| FormattedScheduleReport            | Generates formatted report on the on-call schedule for the selected groups or the given rotation in the a time span. |
Client scripts installed with on-call scheduling

On-call scheduling adds the following client scripts.

<table>
<thead>
<tr>
<th>Script</th>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Handle Group Visibility</td>
<td>Schedule Entry (cmn_schedule_span)</td>
<td>Handles group visibility when creating schedule entries for on-call.</td>
</tr>
<tr>
<td>Question Choice Related List</td>
<td>Question (question)</td>
<td>Handles the choice related list when sending on-call notifications.</td>
</tr>
</tbody>
</table>
| Rota Notification Rule - Allowable types | (cmn_rota_notif)             | Remove the On-call only notification type for automatically populated rotas.  
• Only a manually populated rota (one where based_on is null), where coverage is manually added, can use the On-call only type (type=='single') in a notification rule.  
Remove the Rotate through members notification type for manually populated rotas.  
• Only an automatically populated rota can use the Rotate through members option; manually populated rotas don’t have rosters. |

| Handle Group Visibility         | (cmn_schedule_span)           | Show or hide Group field.                                                                                                                                 |
| Validate                        | (cmn_rota_roster)             | Client side validation for Roster fields.                                                                                                                                 |
| Escalation info message         | (cmn_rota_notif)              | Clarifies Time before escalation field.                                                                                                                                 |

Business rules installed with on-call scheduling

On-call scheduling adds the following business rules.

<table>
<thead>
<tr>
<th>Business rule</th>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>OnCallEscalation</td>
<td>(sys_script)</td>
<td>Default escalation handler for on-call rotation escalations.</td>
</tr>
<tr>
<td>Remove rotation records</td>
<td>(sys_user_grmember)</td>
<td>Rotation records removed for a user group member.</td>
</tr>
<tr>
<td>Change active</td>
<td>(cmn_rota_roster)</td>
<td>Activate or deactivate the roster.</td>
</tr>
<tr>
<td>Update Rotation Schedules (Member)</td>
<td>(cmn_rota_member)</td>
<td>Recompute the rotation schedules if a member order value was changed.</td>
</tr>
<tr>
<td>Initial Roster Members</td>
<td>(cmn_rota_roster)</td>
<td>Creates a new group member when a roster is created.</td>
</tr>
<tr>
<td>Business rule</td>
<td>Table</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Show records for user</td>
<td>(v_on_call)</td>
<td>Show schedules for a specific user.</td>
</tr>
<tr>
<td>Rota Updated</td>
<td>(cmn_rota)</td>
<td>Recompute the rotation schedules for the roster members after the rota has been updated.</td>
</tr>
<tr>
<td>Update Rotation Schedules (Roster)</td>
<td>(cmn_rota_roster)</td>
<td>Recompute the rotation schedules when the m2m or the roster definition change.</td>
</tr>
<tr>
<td>Delete roster member schedule</td>
<td>(cmn_rota_member)</td>
<td>Recalculate the rotation when a member is removed.</td>
</tr>
<tr>
<td>Delete group member on-call schedule</td>
<td>(sys_user_grmember)</td>
<td>Delete all spans associated to the group member being deleted.</td>
</tr>
<tr>
<td>Delete Rota Schedule</td>
<td>(cmn_rota)</td>
<td>Delete the schedule when the rota is deleted.</td>
</tr>
<tr>
<td>Validate Rota</td>
<td>(cmn_rota)</td>
<td>Verify the schedule entry being updated is valid.</td>
</tr>
<tr>
<td>Edit Schedule</td>
<td>(v_rotation)</td>
<td>Redirects to the schedule page passing the group as parameter.</td>
</tr>
<tr>
<td>Show records for user</td>
<td>(v_rotation)</td>
<td>Display notification.</td>
</tr>
<tr>
<td>Rota Schedule Item validate</td>
<td>(cmn_schedule_span)</td>
<td>Validate that the schedule entry is valid</td>
</tr>
<tr>
<td>Roster Properties</td>
<td>(v_rotation)</td>
<td>Redirects to a list of rosters filtered by groups.</td>
</tr>
<tr>
<td>Refresh Report</td>
<td>(v_rotation)</td>
<td>Refreshes the UI when UI action is executed.</td>
</tr>
</tbody>
</table>

Email notifications installed with on-call scheduling

On-call scheduling adds the following email notifications.

<table>
<thead>
<tr>
<th>Email notification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>User removed from rostered group</td>
<td>User removed from rostered group.</td>
</tr>
<tr>
<td>On-Call Reminder</td>
<td>Send reminders to group.</td>
</tr>
</tbody>
</table>

Events installed with on-call scheduling

On-call scheduling adds the following events.

<table>
<thead>
<tr>
<th>Event</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>rota.on_call.reminder</td>
<td>Reminder for upcoming on-call shift.</td>
</tr>
<tr>
<td>incident.on_call.user</td>
<td>On-call user for an assignment group should be notified.</td>
</tr>
<tr>
<td>incident.on_call.device</td>
<td>On-call device for an assignment group should be notified.</td>
</tr>
<tr>
<td>incident.on_call.escalation.device</td>
<td>On-call escalation to a device occurred for a particular roster.</td>
</tr>
</tbody>
</table>
Scheduled jobs installed with on-call scheduling

On-call scheduling adds the following scheduled jobs.

<table>
<thead>
<tr>
<th>Schedule job</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>On-Call Reminders</td>
<td>Run by a schedule to send reminders to on-calls on a daily basis.</td>
</tr>
</tbody>
</table>

On-call schedule concepts

What on-call schedules contain.

- **Rota**: the calendar definition of on-call shift hours, personnel lists, and escalation settings such as escalation type and a catch-all for a group. Rotas define the time slots within which the duty schedule is active.
- **Rosters**: a list of users who are part of the schedule. Rosters define which users are assigned to which time slots within the rota.
- **Schedules**: the basic entity from which rotas and rosters are defined. For example, a company that wants coverage of tasks around the clock would use a 24-7 schedule. Companies that provide support around the globe, could use a follow the sun schedule to cover different time zones across different continents.
- **Holidays**: *time off for participants* in a rota can be planned and managed in the on-call calendars.
- **Escalations**: the chain of persons and the actions to be taken, for example, when a P1 incident comes in.
- **Notifications**: can be sent to remind people on-call of their obligations or if an important event occurs, either by sending emails with on-call scheduling, or by sending a voice mail or an SMS with Notify.

On-call scheduling roles

For more information, see User Roles.

<table>
<thead>
<tr>
<th>Role</th>
<th>Description</th>
<th>Contains roles</th>
</tr>
</thead>
<tbody>
<tr>
<td>rota_admin</td>
<td>A user with the rota_admin role can create, edit, and delete rotations. They can manage all aspects of a rotation such as the rosters, roster members, coverage, and time-off.</td>
<td>assignment_rule_admin</td>
</tr>
<tr>
<td>Role</td>
<td>Description</td>
<td>Contains roles</td>
</tr>
<tr>
<td>--------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>----------------</td>
</tr>
</tbody>
</table>
| rota_manager | A user with the rota_manager role must fulfill one of two requirements to be able to manage the rotations for their respective group:  
  • The user must be the manager of the group.  
  • The user must be delegated the rota_manager role via Delegate roles.  
  Note: When a user is delegated a role on behalf of a group, the user can manage the rotations only for that particular group. | none           |
| roster_admin | DEPRECATED. This role should not be used for new users, the rota_admin and rota_manager roles should be used instead. This is a legacy role and is only present to support old upgrade customers that still make use of this role. | none           |

Delegate rota manager role

As a rota manager, you can delegate your role to a member of your rota.

Role required: admin or rota_manager

1. Navigate to User Administration Delegate Roles in Group.
2. Follow the instructions to delegate the rota manager role to a member of your rota.

  Note: Ensure that you select your rota group within which you want to delegate the rota manager role.

3. Submit the role delegation request.

On-call scheduling security

Assign users the appropriate access to the features of on-call scheduling.

In on-call scheduling, the three important roles that are considered are:

• rota_admin
• rota_manager
• itil

The rota_admin role gives the user the ability to create, read, update, and delete rotations in the instance. The rota_admin can create rotations, modify rotations and rosters, and maintain coverage and time-off on the on-call calendar.
The rota_manager role is for the users who are the manager of a group or it can be delegated to the members of a group using Delegate roles. The role cannot be used to manage all groups in the system. The purpose of the role is to distinguish a member that has been delegated the role of managing rotations of particular groups.

A user with the itil role can view the on-call calendar, on-call commitments via the report, and general read access to their groups rotations.

Note: roster_admin is a deprecated role that is not fully supported and has been maintained for old upgrade customers. Do not use the roster_admin role. Use the roles that are mentioned at the beginning of the topic.

On-call scheduling wizard

A simple way to set up a new on-call schedule is to use the wizard functionality.

On-call scheduling can easily be used with Notify, which can send notifications by SMS and voice mail. See Use Notify with on-call scheduling.

After running the on-call wizard, you can adjust individual rosters, and escalation and reminder settings to fine-tune your setup. You can also enable on-call notifications by setting up rotation workflow triggers.

Schedule templates

You can also define schedule templates that are used in the new schedule wizard. For more information, see Use Schedules.

Set up a new on-call schedule

You can use the on-call scheduling wizard to add a new on-call schedule.

Role required: rota_admin or admin

1. Navigate to On-Call Scheduling Administration Create New Schedule.
   The first page of the wizard opens where you define the basic information for your schedule.
2. Answer the questions, and then click Next.

<table>
<thead>
<tr>
<th>Question</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>What would you like your schedule’s name to be?</td>
<td>The friendly name users see when they view the rotas.</td>
</tr>
<tr>
<td>Which group does this schedule apply to?</td>
<td>The group this on-call schedule affects. Only members of this group can be added to this schedule’s rosters. A group is not allowed to have overlapping schedules. For example, if a group has a 24x7 schedule, you cannot create another schedule for the same group. However, for a group with an 8 A.M. to 8 P.M. schedule, you can create an 8 P.M. to 8 A.M. schedule.</td>
</tr>
<tr>
<td>When would you like your new schedule to begin?</td>
<td>The starting date for the on-call schedule. By default, this value is set to the current date.</td>
</tr>
</tbody>
</table>
The Schedule Definition page opens.
3. Answer the questions, and then click Next.

Table 136: Schedule definition questions

<table>
<thead>
<tr>
<th>Question</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Would you like to use an existing schedule?</td>
<td>Select Yes, and then select one of the predefined options in the next question. Select No to set up the schedule’s configuration manually.</td>
</tr>
</tbody>
</table>
| What type of schedule would you like to use?                             | Some options are available in the base system, for example, 24x7, Workday 8-5. Select the value to base your schedule on. This question appears only if you answer Yes to the first question. 
The logged-in user’s time zone is used to build these schedules. If the logged-in user does not have a time zone specified, the system time zone is used. |
| The following questions appear if you answered No to the first question.  |                                                                                                                                                                                                            |
| What would you like your new schedule’s name to be?                      | The friendly name of the schedule that appears on the On-call calendar page.                                                                                                                                 |
| Is the shift for this schedule all day?                                  | Option for indicating whether each shift is a 24-hour shift. If you select Yes, the shift start time is reset to 00:00:00 and the end time is no longer required.                                                  |
| When must the shift for your new schedule start?                         | The time of day the shift is scheduled to start. For a 24-hour shift, this is set to 00:00:00.                                                                                                                   |
| When must the shift for your new schedule end?                           | The time of day the shift is scheduled to end. The start and end time represent one shift, and the date is only different if the shift spans midnight. For example, for the 8 A.M. to 8 P.M. shift, the start is 2014-01-01 08:00:00 and end is 2014-01-01 19:59:59. For the 8 P.M. to 8 A.M. shift, the start is 2014-01-01 20:00:00 and the end is 2014-01-02 07:59:59. This field is available only for shifts that are not 24-hour. |
| In which time zone does your schedule apply?                             | By default the logged-in user’s time zone is selected. If the schedule needs to be set up in a different time zone, change the value.                                                                         |
The values on this page must meet the following guidelines before you can continue.

- The start of the shift must be before the end.
- The schedule configuration must not overlap an existing schedule for the same group.
- The values in shift start, end, and repeat fields must not create an overlapping schedule.

The Escalations and notifications setup page opens.

4. Answer the questions, and then click Next.

Table 137: Escalation and notification settings

<table>
<thead>
<tr>
<th>Question</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>How many duty rotations are there in your on-call schedule?</td>
<td>The simplest on-call schedule contains only one roster. Selecting more than one generates multiple rosters with the same members shifted by one position in each.</td>
</tr>
<tr>
<td>Which members would you like to be in your schedule?</td>
<td>Select from the people in the group that you entered on the Basic Information page.</td>
</tr>
<tr>
<td>How many reminders should be sent out before escalating?</td>
<td>When escalations are configured for this group, the system first sends the number of reminders designated here before notifying the backup personnel.</td>
</tr>
<tr>
<td>How long should we wait until sending the next reminder?</td>
<td>By default, there is a 15 minute wait before the next reminder is sent. If the needed value is not available, select the closest match and edit the roster to update the number of reminders after the on-call schedule is generated.</td>
</tr>
</tbody>
</table>
• An on-call schedule is created.
• A roster is created for the number of duty rotations specified.
  • Each roster follows the specified schedule.
  • A lineup of the selected members from the group is created. For multiple duty rotations, the order of the members is offset by 1 to prevent scenarios where users are scheduled as their own backup during an escalation.
• Escalation settings are created.

Change rota escalation settings

Rota escalations are set after the wizard has been completed.

Role required: rota_admin or admin

Escalation type determines the order in which certain members of a group are notified about the escalation. The escalation type depends on the number of rosters. Its value is automatically set to Rotate Through Members if a rota has only one roster. The escalation chain goes through all members of that roster. If a rota has more than one roster, its value is Rotate Through Rosters. The escalation chain goes through all the rosters to determine who to notify.

Catch-all identifies the user who should receive notifications in case none of the persons who are on-call accepted the incident assignment. It can be none, a group manager, an individual, or all roster members.

1. Navigate to On-Call Scheduling My Group Schedules.
2. Select the rota to edit.
3. Change the escalation settings.
4. Click Update.

Change rota reminder settings

The Send on-call reminders and Reminder lead time (days) settings send an email notification to the on-call person a specified number of days before the on-call obligation.

Role required: rota_admin or admin

The reminder is sent to the email address specified in the user record, unless it is specified somewhere else in the notification preferences. Notification preferences take precedence over the user record.

Note: If you set the value of Reminder lead time (days) to more than one day and the roster to daily rotation, you do not get reminder emails.

1. Navigate to On-Call Scheduling My Group Schedules.
2. Select the rota to edit.
3. Change the reminder settings.
4. Click Update.

Access the roster for a rota

The Rosters related list contains the defined rosters, each of which identifies a subset of group members who participate in the on-call roster.
Role required: rota_admin or admin

1. To access rosters for a specific rota, navigate to On-Call Scheduling On-Call Calendars.
2. Right-click a rota and select Edit rota.
   - If a roster’s rotation should begin at a particular time of day, perhaps on-call responsibility transfers at 8 A.M. instead of midnight, clear the All day rotation check box so you can specify a start time.
3. Open a roster to see the members.
   - Initially, roster members are automatically populated from the Group.
4. To remove users who do not participate in a rotation, click the Edit button on the Members related list, use the slushbucket to remove members, and then click Save.
   - You cannot add members to a roster who are not in the group.

Escalation and reminder settings

Escalation settings allow you to control how and when escalations occur and notifications are sent.

Escalation settings

- Forced communication channel: If Notify is active, you can specify a mandatory communication channel, either SMS or email. Keep in mind that if the on-call member does not have an SMS device, they are not contacted. No further communication attempts are made and the lack of an SMS device is logged.
- # reminders: The number of times the ServiceNow platform sends reminders to a person who doesn’t reply within the time frame defined in Time between reminders.
- Time between reminders: The time between the reminders being sent.

Values in these fields determine the value in the Time before escalation field. For example, if # reminders is 2 and Time between reminders is 10 minutes, then the Time before escalation is 30 minutes. That is the time that passes between the first notification of a specific person and the first notification of the next person if the first one does not reply to the notification or reminders.

Reminder settings

Reminder settings can be defined for each individual roster. They enable configuration of sending reminders and the reminder lead time in days.

On-call notifications

To enable on-call notifications so that rota workflows have an effect, you must define trigger rules. Trigger rules determine the conditions that must be met before a notification is sent and what action must be taken. For more information, see Trigger rules upgrade.

On-call scheduling management

You can edit a rotation schedule directly from the calendar.

After you create a rotation schedule, you can edit it directly from the calendar. This allows easy access to the rotation, especially for one-time changes. Users with the admin, rota_admin, or rota_manager role can edit schedule data. Only users with the admin or rota_admin role can delete schedule data.
Adjust an existing shift

You can adjust an existing schedule from the on-call calendar.

Role required: rota_admin or rota_manager

1. Navigate to On-Call Scheduling On-Call Calendars.
2. Select a Group.
   The rotation schedules are shown for that group.
3. Double-click an existing shift.
4. Select one of the following options.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specify extra times when a rota is active</td>
<td>Select the Rota to change if multiple rotas are available. If a span overlaps with another rotation schedule, an error is shown.</td>
</tr>
</tbody>
</table>
| Schedule time off for a group membe | Select the Member to schedule time off for.  
Time off is shown as a different color, and the member’s name is followed by a time off notation.  
To give a group member time off for more than one day, double-click to open the time-off record you just created and set it to repeat, for example, daily until a specified date. |

Note: When you specify time off for a group member, it only applies to the current group selected. If users are on multiple rotas, time off must be entered separately for each rota.

5. Click OK.

Designate a substitute for a shift

You can substitute a shift from the on-call calendar.

Role required: rota_admin or rota_manager

1. Navigate to On-Call Scheduling On-Call Calendars.
2. Select a Group.
   The rotation schedules are shown for that group.
3. Double-click the appropriate shift.
4. Select Provide on-call coverage for another roster member.
5. Select the Member scheduled to work the shift as a substitute.
6. In Covering on, select the desired roster or All.
7. Click OK.

The changed shift is shown in orange and the information for the roster schedule entry states the selected shift, for example, Primary coverage, or Secondary coverage. If you selected All, the member you selected covers for all rosters at that particular time and as many entries are made as there are rosters.

The final result looks like the following illustration.
Change the rota or span for a group

You can change the rota or span for a group from the on-call calendar. You can use different background colors to help visually identify the different teams.

Role required: rota_admin or rota_manager

Note: When creating or changing calendar entries manually via On-Call Scheduling On-Call Calendars, enter the start time as a whole hour and the end time minus one second to prevent
unintentional overlap with other entries, resulting in an incorrect on-call lineup. For example, a span from 16:00 to 24:00 P.M. should be entered as: 16:00:00 to 23:59:59.

1. Navigate to **On-Call Scheduling On-Call Calendars**.
2. Right-click the appropriate rota and select one of the following options.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Edit rota</td>
<td>To change the schedule or related information, including the background color.</td>
</tr>
<tr>
<td>Edit span</td>
<td>To change the dates and frequency that the rota is active.</td>
</tr>
</tbody>
</table>

3. Make the changes as appropriate.
4. To change the background color of the roster entries, enter the hex number in the Background Color text box.
   - When you click away from the text box, the color preview beside the box is updated and the colors change in the calendar. The associated rota in the calendar is a darker shade of the color you entered.
5. Click Update.
   - If you click Resend Reminders on the Rota form, you can inform the rota members of the changes you made.

**On-call scheduling ITIL functions**

Users with the itil role can use on-call scheduling functions to keep track of rotation schedules.

The following list describes these ITIL functions.

- View schedules for their groups.
  - **View their personal schedule**.
  - **View on-call calendar**
  - **View reports**

**View my group schedules**

You can see the on-call schedules for groups that you are a member of.

- Role required: itil
  1. Navigate to **On-Call Scheduling My Group Schedules**.
  2. Open a schedule to see the details.
  3. To view a roster, click its order number in the Rosters related list.

**View my schedule**

You can view when you are on-call and the escalation lineup for a particular date range.

- Role required: itil
  1. Navigate to **On-Call Scheduling My Schedule Report**.
  2. In Show for, select a date range.
  3. Click Submit.
This shows the rota, the roster, and the start and end times for each timeslot.

4. To view alternate rosters, expand an entry by clicking the arrow.
This shows other rosters for that timeslot. For example, if you are the primary contact, this shows secondary and tertiary contacts for that timeslot.

View on-call calendar

The on-call calendar provides daily, weekly, and monthly views of the selected rotation and roster schedules.

A new on-call calendar view replaces the legacy view. It provides an on-call manager with daily, weekly, and monthly views of the selected rotation and roster schedules.

The new on-call calendar view is enabled by default for instances that are upgrading from any previous release. To switch back to the legacy view, set the com.snc.on_call_rotation.show_legacy_calendar property to true.

If there is more than one rotation schedule on the same day, the secondary and tertiary rotation schedules are also available to view.

Roles required: admin, itil, roster_admin, or rota_admin

To view the on-call calendar:
Note: The following steps only describe how to view the new calendar view. Refer to previous releases for details on viewing the on-call calendar with the legacy view.

1. Navigate to On-Call Scheduling On-Call Calendars.

The on-call coverage for the calendar of the selected group is displayed.

2. To select the group, rotations, and rosters that you would like to view, click the Settings icon.

You can use the choice list to select a specific group whose on-call rotation calendar you would like to view. You can use the toggle buttons to select the primary, secondary, and tertiary rosters for the selected group.
Add item

You can add extra coverage, specify extra times for when a rota is active, and schedule time off.

Role required: rota_admin or rota_manager

1. Navigate to On-Call Scheduling On-Call Calendars.
   The on-call coverage for the selected group’s calendar displays.
2. Double-click the time-slot for which to add a schedule entry.
   The Add Item pop-up window displays.
3. Select one of the following options, as appropriate.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
</table>
| Provide on-call coverage for another roster member | Select details of the member who will provide coverage for another roster member. The following options appear when you select this option:  
  • Member: Select the member to provide extra coverage  
  • Covering on: Select the roster for which the member will provide coverage. |
| Specify extra times when a rota is active    | Specify extra coverage for the selected rotation.                           |
| Schedule time off for a group member         | Specify the group member who will take scheduled time-off during the selected time frame. |

Modify schedule entry

You can make updates to a schedule entry such as changing schedule entry type, date, and time.

Role required: rota_admin or rota_manager

1. Navigate to On-Call Scheduling On-Call Calendars.
   The on-call coverage for your group’s calendar displays.
2. Double-click the schedule entry on the calendar to modify.
3. Update in the fields on the pop-up form.

Table 138: Schedule Entry

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Modify the name of the schedule entry, if required.</td>
</tr>
<tr>
<td>Type</td>
<td>Select the type of schedule entry. For example, on-call or time off.</td>
</tr>
<tr>
<td>Group</td>
<td>The Group field is left empty by design. Caution: If the Group field is</td>
</tr>
<tr>
<td></td>
<td>populated, then the spans for that entry are not displayed.</td>
</tr>
<tr>
<td>Show as</td>
<td>Select what the schedule entry must be displayed as. For example, busy or on-call.</td>
</tr>
<tr>
<td>When</td>
<td>Select the appropriate start and end date, and time for the schedule entry.</td>
</tr>
<tr>
<td>All day check box</td>
<td>Select the check box to make the schedule entry active for the entire duration.</td>
</tr>
<tr>
<td>Timezone</td>
<td>Displays the time zone for the schedule entry. This cannot be modified.</td>
</tr>
<tr>
<td>Repeats</td>
<td>Select the frequency with which the schedule entry repeats. For example, daily or weekly.</td>
</tr>
<tr>
<td></td>
<td>The following fields appear if you select Monthly:</td>
</tr>
<tr>
<td></td>
<td>• Monthly type: specify the date of the month when the schedule entry repeats.</td>
</tr>
<tr>
<td></td>
<td>The following fields appear if you select Yearly:</td>
</tr>
<tr>
<td></td>
<td>• Yearly type: specify the date of the year when the schedule entry repeats or if it is floating. If you select the Floating option, then the following fields appear:</td>
</tr>
<tr>
<td></td>
<td>• Float week: Select the week of the month when the schedule entry repeats.</td>
</tr>
<tr>
<td></td>
<td>• Float day: Select the day of that week when the schedule entry repeats.</td>
</tr>
<tr>
<td></td>
<td>• Month: Select the month when the schedule entry repeats.</td>
</tr>
<tr>
<td>Repeat every</td>
<td>If the schedule entry is selected to repeat, then specify how often it repeats. For example, if you select weekly repetitions, specify the frequency such as every week or every two weeks.</td>
</tr>
<tr>
<td>Repeat on</td>
<td>If the schedule entry is selected to repeat, then specify when it repeats. For example, if you select weekly repetitions, specify the days of the week when it would repeat.</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>---------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Repeat until</td>
<td>If the schedule entry is scheduled to repeat, then specify an end date until which the schedule entry repeats itself.</td>
</tr>
</tbody>
</table>

4. Click Update to save changes.

View a report for on-call scheduling

You can schedule a report of users who are on-call or a catch-all for one or more groups during a specific time period.

Role required: itil

1. Navigate to On-Call Scheduling Schedule Report.
2. Select the start and end dates for the report.
3. Enter the first few letters of the desired group into the Name field to see a list of groups that start with those letters, or select the All groups check box to see a list of all available groups.
4. Select at least one group in the slushbucket.
5. For Report style, select one of the following.
   - Table: to display the report on-screen as a list that can be sorted, filtered, and configured, like other lists.
   - Formatted: to generate a report in PDF format.
6. Click Run Report.
7. If you selected Formatted, click the Click to Print button to print the report.

The report shows the on-call commitments for all selected groups during the selected date range.
View an escalation report

The escalations report shows you what the escalation sequence is and which rules apply for the selected date. For each group, you can choose to show either the active roster members or the on-call person.

Role required: itil

You can see the on-call persons only for the groups you are authorized to see. If you select an unauthorized group, a message appears stating that a number of rows have been removed due to security constraints.

1. Navigate to On-Call Scheduling Escalations Escalations Report.
2. Select the date for the report.
3. Enter the first few letters of the desired group into the Name field to see a list of groups that start with those letters, or select the All groups check box to see a list of all available groups.

4. Select at least one group in the slushbucket.

5. For Report style, select one of the following.
   - Active roster members: to display the on-call persons and catch-all persons in the escalation order, along with their delay times.
   - On call person: to quickly find out who is currently on duty.

6. Click Run Report.

Define lead time for email reminders

On-call scheduling includes a scheduled job that checks if any on-call members need to be notified about upcoming on-call commitments. The lead time for when reminders are sent can be modified.

Role required: rota_admin or rota_manager

The On-Call Reminders job runs the OnCallRemindersNG script include to generate the notifications.

1. Navigate to On-Call Scheduling OnCall Calendars.
2. Right-click the rota and select Edit rota.
3. Change the Reminder lead time (days) field for the on-call schedule record or for any of its rosters.

   The reminder lead time defined on a roster is always respected. If no lead time is defined, the on-call schedule’s reminder lead time is used. If the reminder lead time is not defined for either the on-call schedule or its rosters, then a default of 2 days is used.

   Note: Keep in mind that the Reminder lead time on the Roster form is different from the # reminders and Time between reminders fields in the Escalation Settings section of the form. The escalation settings are only used to configure reminders for escalations. The Reminder lead time is in the Reminder Communication section of the Roster form, and is used to email reminders for upcoming on-call commitments.

Resend on-call email reminders

You can resend email reminders, which can be useful to inform group members about changes in their shift.

Role required: rota_admin or admin

1. Navigate to On-Call Scheduling My Group Schedules.
2. Open the rota to resend email reminders.
3. Click Resend reminders.

   The option is also available when you edit a rota for a group in On-Call Calendars.

On-call scheduling escalations

Escalations provide a mechanism to ensure important issues are addressed in a timely manner within on-call scheduling.

Escalations use a mechanism similar to SLAs to monitor response time and take time measurements. You can take action if these times are breached. The actions, like sending out an email or an SMS, are
fired by trigger rules. You define trigger rules to determine the conditions under which specified actions are taken.

For example, a critical incident is raised for Acme Pharmaceuticals regarding a problem with their network access. An SMS notification is sent to James Jones, the third-line support engineer who is currently on-call for this type of incident. However, James is unavailable, and does not respond within the defined 30-minute response time.

Trigger rules defined for Acme Pharmaceuticals’ critical incidents initiate an escalation after 30 minutes without a response. The person defined as the next point-of-contact is Ken Kramer, James’ line manager, so an SMS notification is sent to Ken.

Users with the rota_admin role can configure escalation settings and define trigger rules.

Escalation triggers

Escalation triggers define the conditions under which escalation actions occur. These actions can be defined with a workflow or server-side JavaScript.

When a task is created or updated, the system compares the assignment rules with the trigger conditions, to see if any of the trigger conditions are matched. If a match is found, the system activates the associated workflow or script, which holds the escalation steps and actions.

For example, a new P1 incident is created and assigned to the Software Group. A trigger condition states that if P1 incidents are created and assigned to this group, then an associated script or workflow should run.

Escalation trigger rules

Escalations use trigger rules to define conditions under which a trigger action is to be executed. A trigger action can be either a script or workflow. Trigger rules are an extension of assignment rules and are therefore run by the system. The behavior of assignment rules is used for trigger rules.

Trigger rules and trigger actions allow users to quickly set up escalation scenarios.

Example escalation scenario

View an example of how on-call scheduling escalates a critical issue using trigger points and actions.

Acme Pharmaceuticals needs to support a simple escalation process. When a critical or high incident is raised, a member of the Network group should be assigned to the incident based on the Network group’s on-call schedule.

First, the trigger rule is defined with its conditions.
The trigger action runs a custom workflow, *On-Call: Escalations by Email*, by which the Network group’s current on-call resource automatically receives an email notification.

**Create a trigger rule**

You can create trigger rules to define conditions under which a trigger action is to be executed.

Role required: rota_admin or admin

Trigger rules fire only if the assigned_to and assignment_group fields are not populated on a record.

1. Navigate to *On-Call Rotations Escalations Trigger Rules*.
2. Click New.
3. Complete the form.

Table 139: Trigger rule form

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>The name of this trigger rule.</td>
</tr>
<tr>
<td>Order</td>
<td>The execution order of this trigger rule.</td>
</tr>
<tr>
<td>Table</td>
<td>A task table that applies to the trigger rule.</td>
</tr>
</tbody>
</table>

**Note:** The list shows only tables and database views that are in the same scope as the trigger rule.
<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Match conditions</td>
<td>How the conditions should be applied. If you select All, all of the conditions have to be matched. If you select Any, it is sufficient if any one of the conditions is matched.</td>
</tr>
<tr>
<td>Conditions</td>
<td>The conditions which must be met before the trigger rule executes.</td>
</tr>
<tr>
<td>Group</td>
<td>Define the group that is applied to the Tasks assignment group field when the trigger rule is applied to the task.</td>
</tr>
<tr>
<td>Trigger action</td>
<td>Run a Workflow or Script when the trigger conditions are met.</td>
</tr>
<tr>
<td>Trigger workflow</td>
<td>The workflow to execute. This field is available only if Trigger action is set to Workflow.</td>
</tr>
<tr>
<td>Trigger script</td>
<td>The script to execute. This field is available only if the Trigger action is set to Script.</td>
</tr>
</tbody>
</table>

4. Click Submit.

**Escalations by email workflow for on-call scheduling**

The workflow enables sending an email notification regarding a newly raised incident to the on-call members of a particular group.

The workflow does not expect a response to the email notifications it sent, but instead checks the source incident record for changes in the assigned_to field. Depending on the value of the assigned_to field of the source record, the workflow branches or loops until the escalation chain is exhausted or the assigned_to field of the source incident is populated. If none of the users accepts assignment in time, the catch-all person is notified, if configured.

The workflow respects time-off as specified in the rosters. People who have time-off are not included in the escalation chain and no notifications are sent to them.

The workflow is intended to be used on a trigger rule based on the Incident table but other tables can be used as well. If you want to use a different table for this workflow, select the appropriate table, for example, Problem, in the Trigger Workflow field on the trigger rule form. This workflow is provided with on-call scheduling.
Escalation chain

An escalation chain describes the order in which rosters and roster members receive escalation notifications.

Depending on the number of rosters, the rota escalation type is one of the following.

- **Rotate through members**: the escalation chain goes through the member list of a specific roster (primary, secondary, tertiary) to determine who is to be notified.
- **Rotate through rosters**: the escalation chain goes through all the rosters to determine who is to be notified.

Depending on the escalation type you chose, the Escalations Report result can vary greatly. Following are example reports for each choice.
Figure 126: Rotate through rosters

The image shows the case in which reminders are defined for the Primary, Secondary, and Tertiary rosters. The members of the primary roster are notified first, then the members of the secondary, and so on for as many rosters as there are.
For this example, users can see which rotas they are part of in the My Schedule Report module. Users who are not the first on-call person are displayed as well. This enables the user to view the rota from a personal perspective, which is the preferred method for most users.

Use Notify with on-call scheduling

Within on-call scheduling, you can use Notify functions to send an SMS to on-call resources when an incident gets assigned to them.

A mobile number is required in their user record. Be aware that some phone numbers have only voice mail capabilities.

Notify is available as a separate subscription from the ServiceNow platform. To purchase a subscription, contact your ServiceNow account manager.

Notify workflow for on-call scheduling

The On-Call: Assign by Acknowledgement workflow is provided with Notify. The workflow uses data from the escalation settings of rotas and rosters. Depending on these settings, the workflow iterates through the defined escalation chain and sends notifications by SMS or email to users asking them for incident assignment.
If Force communication channel is specified in the Escalation settings for rosters, the preferred user device is used, either SMS or email. The setting Force communication channel is only available if Notify is installed.

If the preferred device is SMS, and the on-call member does not have an SMS device defined, the user is not contacted even if the user has an email address. When forcing a communication channel on an escalation level does not succeed, no further communication attempts are made. The fact that the user could not be reached is logged in the log files.

The workflow respects time-off as specified in the rosters. People who have time-off are not included in the escalation chain and no notifications are sent to them.

Before you can send notifications, you must define trigger rules. Trigger rules determine the conditions that must be met before a notification is sent and what action must be taken. Keep in mind that trigger rules supersede some of the on-call business rules in previous versions.

Note: If you have customized on-call business rules in previous versions, you need to deactivate these business rules before you can work with trigger rules.

Upgrade to on-call scheduling

Group on-call rotation is replaced with on-call scheduling.

Upgrading from a previous version is completely automatic, and all events are recorded in the upgrade logs (System Diagnostics Upgrade History).

- The existing On-Call plugin has been changed. When you upgrade, the plugin changes will be applied automatically (this is not optional).
- The group device functionality is deprecated in favor of a Catch All person.
- On-call Scheduling replaces the existing business rules for escalations with escalations based on Graphical Workflow.
- The workflow uses Notification Activities, so it will send emails and not SMS messages. It must be modified to use Create Events activities to send SMS messages.

Keep these and the following changes in mind as you transition to on-call scheduling.

Additional workflows for Notify

Workflows have superseded the notification rules on rotation schedules.

Some example workflows are provided in the demo data available with the plugin. When you upgrade an instance running group on-call rotation, some data from the notification rules is migrated to other tables. The migration results and detailed messages about migrated records are visible in the Notification rules - migration report, which can be run by the administrator in Reports View/Run.

Please be aware that in on-call scheduling some business rules related to escalations and notifications were deprecated and replaced with workflows.

When you use Notify with on-call scheduling, additional workflows enable users to receive notifications and accept or reject auto-assignment via SMS.

On-call wizard

This wizard enables users to create a basic rotation schedule and one or more rosters, along with escalation and reminder settings.

The Create New Schedule module presents an enhanced wizard for creating schedules. The Create New Rota module and the option for manually creating rotas are deprecated.
Option rotate through rosters

The Rotate through rosters option has been added to the My Group Schedules module.

Navigate to On-Call Scheduling My Group Schedules and choose a rota to view this setting. It is part of the escalation settings. The option is automatically used when there is more than one active roster. It helps to prevent on-call users from being their own backups, as the on-call lineup order is staggered by one for each roster.

Trigger rules upgrade

When an instance running group on-call rotation upgrades, some data from the notification rules is migrated to other tables.

The migrated information is recorded in the Notification rules - migration report, which the administrator can run in Reports View/Run.

![Notification rules migration report](image)

Figure 128: Notification rules migration report

Trigger rules supersede the On-call Rotation Notify and On-call Rotation Cancel on-call business rules used in previous releases. If you customized on-call business rules in previous versions, you must deactivate these business rules before you can work with trigger rules.
Problem Management

Problem Management helps to identify the cause of an error in the IT infrastructure that is usually reported as occurrences of related incidents.

Resolving a problem means fixing the error that will stop these incidents from occurring in the future. While Incident Management deals with fighting symptoms to incidents, Problem Management seeks to remove the causes of incidents permanently from the IT infrastructure. Problem resolution and elimination of root cause often calls for applying a change to the configuration item in the existing IT environment.

The ServiceNow platform supports the Problem Management process with capabilities to record problems, create knowledge from problems, request changes, assign to appropriate groups, escalate, and manage through to resolution and reporting. The platform provides out-of-box functionality to manage problems in accordance with the ITIL process.

Within the platform, problems are handled using the task record system. Each problem is generated as a task record through a variety of means, and is populated with the pertinent information. These tasks can be assigned to problem management team members to deal with the task as appropriate. After the problem is resolved, the problem task is closed.

Data for problem resolution

The quick resolution of problems requires gathering as much information as possible about the problem. In addition to the information within the problem ticket, useful information is often found in other tables.

Pertinent related records

You can find information pertinent to the problem in related records.

Common related records include changes (through the Change request field) and incidents in the Incidents related list. All of the directly related records are accessible through related lists. If the appropriate related list does not appear on the form, configure the form to add it.

Known errors and knowledge articles

Another source of information about a problem is documentation about known errors and the knowledge base.

Information about already known issues can be found in two places: the Known Errors module in the Problem Management application, or in the Knowledge application. The Known Errors module filters the problem table to present all of the problems whose cause has been identified but cannot be fixed. The knowledge base may have information that was gathered from incidents, and may also have useful workarounds for problems.

CMDB information

The Configuration Management Database stores information about all of the configuration items and their relationships.
In addition to providing basic information about the configuration item to serve as a reference, there are two tools within the CMDB that can provide important information about problems.

- The Business Service Map, which can help isolate problems caused by problems in related items
- The CMDB Baseline, which can help track planned and unplanned changes

**Business Service Map for related issues**

The Business Service Map provides a visual representation of the configuration items and their relationships and displays information about related issues.

For example, the following image is a BSM for the CI NY-02-02, which is a server rack.

![BSM for server rack NY-02-02](image)

The caution symbol in the top right-hand corner indicates that there is a problem attached.
The light color in on the rack indicates that it is affected by a downstream CI’s incident. In this case, the orange-colored Data Center Zone NY2A has the caution symbol, which indicates that there is an incident attached.
Lastly, one of the upstream CIs is colored in blue. This indicates that the CI has an attached change record.
With this information, we can see not only the CI, but also its relationships upstream and downstream. The rack’s problem might be caused by an improper change to the web server software on one of its Linux servers, or it might be caused by the incident logged on the data center zone where it resides.

**CMDB baseline history**

You can view the history of changes to a configuration item by checking the CMDB baseline.

If a baseline has been generated, any changes (planned or unplanned) are tracked within the system. Because one major cause of problems is improperly executed changes, being able to see the history of changes to a configuration item can help the problem management team track problems caused by improper changes.

To check the CMDB Baseline, view the CI’s record and check the fields Baseline Differences and Scheduled Changes. You may need to configure the form to add these fields.
This information provides a window into the history of the configuration item. The changes are recorded, including the time of change and the person who recorded the change. In the example above, because
the change in RAM is associated with a change request, it is possible to review the change and see what was planned and what was implemented.

Also in the example, the computer recorded both a planned and an unplanned change. System Administrator changed RAM according to CHG30002, changed the disk space, removed QuickTime, and associated the CI with CHG30002.

Close related incidents from a problem

After a problem is considered resolved, all of the incidents related to the problem with the state On Hold may be closed using a UI action from the Problem form.

Role required: itil

1. Open a resolved problem that has associated incidents.
2. Right-click the form header and select Close Incidents.

Note: Only the incidents are in the On Hold state and have Awaiting Problem Resolution as the on hold reason can be closed.

The problem list reopens and the associated incidents are closed.

Problem management service improvements

The problem management process can be improved if the service desk uses information gathered within the platform.

Much of the data is already stored within the problem record. You can gather more information by enabling auditing for the table, which provides an accurate review of the history of the problem. You can use Metrics to define the key performance indicators to monitor within the system.

With these metrics, and the information within the database, it is possible to generate reports, which can be added to homepages or scheduled for automatic generation and distribution. You can also use database views to join tables for reporting purposes.

Using this information, it is possible to refine automatic rules such as the assignment rules, service level agreements, or inactivity monitors to better suit the problem management team’s unique environment.

Create knowledge

The ServiceNow knowledge bases house the information an organization needs to keep and share. For example, it might include desktop support information, company/department processes and procedures, and documentation about internally developed applications.

Add information to the knowledge base by performing any of the following tasks.

- Create articles manually.
- Create articles automatically from an incident.
- Create articles automatically from a problem.
- Link to or import content stored in another knowledge base.
- Publish managed documents to the knowledge base.

By default, most new articles are created as drafts and move through a review state before they are published. An exception to the standard workflow is posting news from the Problem form.
If the administrator enables the optional knowledge submission workflow, articles created from incidents or problems become knowledge submissions, which are processed through a different path. For more information, see *Knowledge workflows*.

Create knowledge manually

You can create knowledge base articles directly in the Knowledge form.

Role required: admin, knowledge_admin, or knowledge

1. Navigate to Knowledge Create New.
2. Select a Category for the article using the category picker.
   
   When you select a category in the category picker, any associated subcategories appear in the next column. Select the most appropriate category from any column.
3. Enter a Short description to identify the article in the knowledge portal and search results.
4. In the Text field, enter the article’s content.
   
   Use HTML or Wiki markup to format the content, according to the Article type selection.
5. Complete the form, as appropriate.

   This table describes all fields and buttons on the Knowledge form. Some fields are available only to users with specific roles.

   Table 140: Create knowledge article form

<table>
<thead>
<tr>
<th>Field</th>
<th>Input value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>Do not modify. The record number is assigned by the system and should not be changed.</td>
</tr>
<tr>
<td>Knowledge base</td>
<td>Select the knowledge base in which the article belongs.</td>
</tr>
<tr>
<td>Category</td>
<td>Select a category using the category picker.</td>
</tr>
<tr>
<td>Published</td>
<td>Enter the date the article was published. The current date is used by default.</td>
</tr>
<tr>
<td>Valid to</td>
<td>Enter the date when the article expires. Only published articles within the valid date range are visible to most users.</td>
</tr>
<tr>
<td>Image</td>
<td>Click the lookup icon to select an image that was previously uploaded to the database. The image appears as an icon beside the article name in the knowledge portal.</td>
</tr>
<tr>
<td>Article type</td>
<td>Select the markup language to use for formatting the article.</td>
</tr>
<tr>
<td></td>
<td>• HTML: the Text field offers a WYSIWYG interface with a toolbar to apply formatting and create links. Click the HTML icon on the toolbar to display HTML mode, where you can view and format with HTML markup.</td>
</tr>
<tr>
<td></td>
<td>• Wiki: the Text field offers the Wikitext icon that toggles between a preview of the formatted text and an edit field where you can enter text with Wiki markup language to define formatting.</td>
</tr>
<tr>
<td>Field</td>
<td>Input value</td>
</tr>
<tr>
<td>------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Workflow</td>
<td>The workflow state for the article: Draft, Review, or Published. Generally, only published articles appear in the portal. Users with role-based permissions might also see articles in the draft or review state in the portal and search results, depending on administrator settings.</td>
</tr>
<tr>
<td>Source</td>
<td>Click the lookup icon to select the task that formed the basis for this article, if any.</td>
</tr>
<tr>
<td>Roles</td>
<td>Specify user roles to limit who can view the article. Otherwise, all users can view the article after it is published.</td>
</tr>
<tr>
<td>Attachment link</td>
<td>Select this check box to have this article’s link open a file attachment. To upload the attachment, click the paperclip icon in the upper right corner. The link in the knowledge portal or search results opens the attachment instead of navigating to the text of the article. You can link to one attachment per article.</td>
</tr>
<tr>
<td>Display attachments</td>
<td>Select this check box to display a list of attachments below the article. Although you can link to only one attachment (see the Attachment link field), you can attach multiple files and list them below the article in article view.</td>
</tr>
<tr>
<td>Short Description</td>
<td>Enter text to appear as a title for the article in the knowledge portal and search results.</td>
</tr>
<tr>
<td>Text/Wiki</td>
<td>Enter the text of the article. This area accepts either HTML or Wiki Markup, according to the selected Article type.</td>
</tr>
<tr>
<td>Update</td>
<td>Click the Update button to save any changes made to the form and return to the article list. To save changes and stay on the form, right-click the header bar and click Save.</td>
</tr>
<tr>
<td>Mark Public / Mark Internal</td>
<td>Click the Mark Public button to make the article accessible to everyone. This action sets public as the role for the article. Click the Mark Internal button to make the article accessible only to the roles specified by the administrator. If no roles are specified, the article is available to the public and there is no change.</td>
</tr>
<tr>
<td>Search for Duplicates</td>
<td>Click this button to search the knowledge base for existing articles that contain similar content.</td>
</tr>
<tr>
<td>Delete</td>
<td>Click this button to delete the knowledge article from the system. You must confirm the request before the record is deleted.</td>
</tr>
</tbody>
</table>

Note: If you include a permalink URL to another knowledge article, do not include the `<span id="permatext">` tag that is part of the permalink CSS. If you do, the normal permalink at the bottom of the article does not render correctly.
6. Click Submit.

Access an external knowledge article

You can add new search engines to the advanced search function or add links at the top of knowledge pages.

Role required: admin

This lets you configure access to a knowledge base, either public or private, or to a public search engine.

1. Navigate to Knowledge Administration Navigation Add-ons.
2. Click New.
3. Complete the form.

Table 141: Navigation Add-on form fields

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Enter the search engine name or link text.</td>
</tr>
<tr>
<td>Type</td>
<td>Select Search or Link.</td>
</tr>
<tr>
<td>Order</td>
<td>Enter a number to indicate the sequence of this search option or link.</td>
</tr>
<tr>
<td>URL</td>
<td>For a link, enter the URL. Leave blank for a search engine.</td>
</tr>
<tr>
<td>Script</td>
<td>For a search engine, enter a script that opens the search engine’s results page for the search text. Leave blank for a link.</td>
</tr>
</tbody>
</table>

4. Click Submit.

Make an attachment visible

As with other records, you can add attachments to knowledge articles.

Role required: admin, knowledge_admin, or knowledge role

By default, the attachments appear only to users with the admin, knowledge_admin, or knowledge role, who can view the knowledge record.

1. Navigate to Knowledge Published and select the article, or click the Edit Article button when viewing the article.
2. Select the Display attachments check box to display a list of attachments to users viewing the article. You may need to configure the Knowledge form to display this field.

A list of attachments appears below the article.

Create knowledge from an incident

Incidents within ITIL processes often generate information that may be needed in the future.

Role required: itil
The instance can automatically submit relevant information to the knowledge management process when the incident is closed.

1. Select the Knowledge check box in the Closure Information section.
2. Resolve and close the incident.

Closing the incident triggers the business rule Incident Create Knowledge. By default, the business rule creates a knowledge article in the Draft workflow state. The incident Short description becomes the article Short description. The incident Additional comments become the article Text.

If the knowledge submission workflow is enabled, the incident Short description and Additional comments become a knowledge submission instead of an article. For more information, see Knowledge workflows.

Following is an example of an incident being closed.

And this is the article that appears in the knowledge base.
Options for creating knowledge from a problem

You can create knowledge base articles directly from a problem.

The ServiceNow Problem form includes four options for creating knowledge directly from the problem:

- Knowledge check box
- Communicate Workaround related link
- Post Knowledge related link
- Post News related link

Communicate a workaround

You can enter a workaround note into a problem record, and then post the information into every associated incident.

Role required: itil

The Communicate Workaround option on the Problem form quickly and easily communicates workarounds to multiple users from one place, eliminating the need to manually update each incident.

1. Open the problem for which you have a workaround.
2. Enter the information in the Work notes text box and select the Workaround check box.
3. Click Post.
4. Click the Communicate Workaround related link.
   This adds the problem number and the contents of the Workaround field as a new entry in the Activity field on all related incidents. By default, any entries made in an incident Activity field generate an email notification to the Caller on the Incident form.

   If group on-call rotation scheduling is in effect when you communicate a workaround, the system stops the escalations on the associated incidents because the workaround has been communicated to the end users. This effectively communicates knowledge to the appropriate audience, but does not create a knowledge article.

Use the knowledge check box

As with incidents, problems within ITIL processes often generate information that may be needed in the future.

Role required: itil

The system can automatically submit a knowledge article when a problem is closed.

1. Select the Knowledge check box on the Problem form.
2. Resolve and close the problem.

   Closing the problem triggers the business rule Problem Create Knowledge. By default, the business rule creates a knowledge article in the Draft workflow state, ready for a knowledge team member to review and publish. The problem Short description becomes the article Short description, and the problem Work notes become the article Text.

   If the knowledge submission workflow is enabled, the problem Work notes become a knowledge submission instead of an article. For more information, see Knowledge workflows.

Post knowledge

You can create a knowledge article from the problem immediately, and not wait for when the problem is closed.

Role required: itil, knowledge

1. Open a problem from which to post a knowledge article.
2. Click the Post Knowledge related link.

   The resulting knowledge article contains the following information.
   • The problem number and Short description become the knowledge article Short description.
   • The problem Description and Workaround become the knowledge article Text.
   • The problem Configuration item becomes the knowledge article Configuration Item.
   • The article Topic is set to Known Error.

   By default, the system creates a knowledge article in Draft workflow state. If the knowledge submission workflow is enabled, the problem Short description and Workaround are placed into a knowledge submission instead of an article. For more information, see Knowledge workflows.

Post news

You can quickly create and publish a knowledge article in the News category.

Role required: itil

1. Open the problem from which to post news.
2. Click the Post News related link.

   The resulting knowledge article contains the following information.
• The problem number and Short description become the knowledge article Short description.
• The problem Description and Work notes become the knowledge article Text.
• The problem Configuration Item becomes the knowledge article Configuration Item for the Affected Products related list.

By default, the Post News related link creates an article in the Published workflow state. These articles appear in the News category of the knowledge portal immediately.

Note: The glide.knowman.submission.workflow property determines whether Post News is published as news or as a draft submission. If the value of the property is true then a kb_submission record is created which is a draft version. If the value of the property is false then a kb_knowledge with topic News is created and the workflow_state is set to published.

If the knowledge submission workflow is enabled, the problem Short description and Work notes are placed into a knowledge submission instead of an article. For more information, see Knowledge workflows.

Modify the UI action

You can modify the behavior of the Communicate Workaround, Post Knowledge, and Post News related links.

Role required: admin

1. Navigate to System Definition UI Actions.
2. Locate and open the UI action with the same name as the related link to modify.
3. Edit the UI action and click Update.

For more information, see UI actions.

Problem Management process

You can record problems, create knowledge from problems, request changes, assign to appropriate groups, escalate, and manage through to resolution and reporting.

Identify and log problems

A problem can be generated in a number of ways:

• An IT staff member can generate one manually using Problem Create New or by clicking New from the problem record list.
• An IT staff member can generate a problem from an incident.
• A record producer can be created to allow users to log problems in the service catalog.
• If a user attempts to create a generic task, the task interceptor asks them to specify what type of task to create. In this way, tasks are always assigned a handling process.
• If an appropriate inbound email action is configured, a problem can be generated from an email.

A problem can be associated with a configuration item using CMDB to help the problem management team see the affected item and its relationships to other configuration items.

A problem can be assigned to a user or group. This can be done manually, or using an assignment rule.

A problem can be associated with one or more incidents in the Incidents related list. The association is automatic if the problem is generated from an incident. This allows the problem management team to access the knowledge generated by the service desk during incident investigation.
Investigate and update problems

If the problem management team has a problem model process for dealing with certain problems, they can be codified in the system with workflows. This allows for standardization and automation of the process.

Note: The ServiceNow platform also provides the Structured Problem Analysis application as a method for identifying the true root cause of a problem.

As a problem is updated, email notifications are sent to concerned parties. If inbound email actions are specified, the problem can be updated via email.

The platform has an in-built system of escalations rules which can ensure that problems are handled speedily. Two escalators are available in the system.

- **Service level agreements**: SLAs monitor the progress of the problem according to defined rules. As time passes, the SLA will escalate the priority of the problem, and leave a marker as to its progress. SLAs can also be used as a performance indicator for the problem management team.
- **Inactivity monitors**: The inactivity monitors prevent incidents from being overlooked by generating an event, which can create an email notification or trigger a script, when a problem has not been updated within a certain amount of time.

Resolve problems

If a problem needs a change request to be resolved, it is possible to request a change, which is resolved using the change management process. After a change has been requested, the problem appears on a related list on the change item’s form. After the problem is associated with a change item, change the problem state to Pending Change.

You can create a business rule to close the problem automatically if the change associated with it is closed. This automates the process of closing problems that are Pending Change. You can also create a business rule that automatically resolves all incidents associated with the problem if the problem is closed.

If the cause of a problem has been determined but there is no permanent fix, changing the problem state to Known Error communicates this fact to the IT staff. This helps reduce the time spent on other incidents that have the known problem by making known errors easy to find, as a list of Known Errors is automatically generated. To communicate knowledge related to a problem to users, you can open the problem and communicate a workaround, create a knowledge base article, or create a news item.

Define a Problem Management workflow

The Graphical Workflow Editor lets you automate common processes. Workflows allow standard Problem Management processes to be defined and automated.

Role required: admin

The following example workflow is a workflow for database problems. If the problem involves a configuration item of class Database, this workflow runs and guides the problem management team through diagnosis and resolution. It then asks the problem manager to verify the solution. It also generates a change request when necessary.

When using a Problem Management workflow, add the Tasks.Parent related list to the Problem form to see the tasks generated by the workflow.

1. Navigate to Workflow Workflow Editor.
2. Click New Workflow.
3. Click the Diagrammer view related link to configure more workflow properties.

![Workflow Properties](image)

4. Complete the form with the following information.

<table>
<thead>
<tr>
<th>Field</th>
<th>Entry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Database Problem Workflow</td>
</tr>
<tr>
<td>Table</td>
<td>Problem [problem]</td>
</tr>
<tr>
<td>Conditions tab</td>
<td>Problem (problem)</td>
</tr>
<tr>
<td>If condition matches</td>
<td>Run the workflow always</td>
</tr>
<tr>
<td>Field</td>
<td>Entry</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Run after bus. rules run</td>
<td>True (selected). This field must be checked before any workflow that uses approvals, or the business rules conflict with the workflow and fail to run properly. If this field does not appear on the Workflow Properties form, configure the form layout to add it.</td>
</tr>
<tr>
<td>Condition</td>
<td>Dot-walk to [Affected CI.Class] (is) (Database).</td>
</tr>
</tbody>
</table>

**Schedule tab**

<table>
<thead>
<tr>
<th>Delivery based on</th>
<th>User-specified duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expected Time</td>
<td>Days 7 Hours 00:00:00</td>
</tr>
<tr>
<td>Stage Field</td>
<td>Problem State. As the workflow passes from activity to activity, the stage field is updated. The requester can see how far along in the workflow the problem management team is.</td>
</tr>
</tbody>
</table>

5. **Click Submit.**
   The Workflow Properties window closes and the workflow diagram appears.
6. Select the Core tab on the right and expand Tasks. Drag Create Task onto the arrow between Begin and End. This activity generates a task to diagnose the problem.

7. Complete the Create Task form with the following information, and then click Submit.
   - Name: Diagnosis
   - Stage: Open
   - Fulfillment Group: Database
8. Drag Create Task onto the arrow between the previous task and End. This activity generates a task to generate a solution to the problem.

9. Complete the Create Task form with the following information, and then click Submit.
   - Name: Generate Solution
   - Stage: Open
   - Fulfillment Group: Database

10. Drag the activity Approval - User onto the arrow between the previous task and End. This activity asks the manager of the assignment group to verify the solution to the problem.
11. Complete the Create Task form with the following information, and then click Submit.
   • Name: Verify Problem Solution
   • Stage: Open
   • In Users in the Approvers section, dot-walk to ${assignment_group.manager}

12. Drag the activity Rollback To into the workflow area, and drag the arrow from the Rejected tab under Approval - User to the Rollback To activity. Then drag the arrow from the Rollback to the Create Task for generating a solution. Click Submit.
   This activity forces the database team to repeat the Generate Solution task if the problem manager rejects the proposed solution.

13. Complete the form with the following information, and then click Submit.
   • Name: Rejected Solution
   • Stage: Open

14. Drag the activity Create Task onto the arrow between Verify Problem Solution and End.
   This activity generates a task to resolve the problem.

15. Complete the form with the following information, and then click Submit.
   • Name: Resolve Problem
   • Fulfillment Group: Database

16. Drag the activity If onto the arrow between the previous task and End, and then click Submit.
   This activity checks whether the problem management team set the Problem State field to Pending Change without generating a Request for Change.

17. Complete the form with the following information, and then click Submit.
   • Name: Generate Request for Change
   • Conditions: (Problem state) (is) (Pending Change) and (Change request) (is) (empty).

18. Drag the activity Create Task onto the arrow between the previous activity and End.
   This activity generates a Request for Change if the previous activity conditions are met.

19. Complete the form with the following information, and then click Submit.
   • Name: Request for Change
   • Task Type: Change Request (change_request)
   • Short description: Solution for Problem

20. Publish the workflow in the Workflow Actions menu.
Request a change from a problem

After a problem is identified and isolated, it may require changes to be made through the organization’s Change Management process.

Role required: itil

This is easily accomplished from within the problem record.

1. Open the problem record.
2. Right click the form header bar and select Create Change.
   
   The Change Request form opens with information populated from the problem.

To modify how the Create Change UI action works, navigate to System Definition UI Actions. Select the Create Change UI action that specifies Problem in the Table column.
Problem templates

You can create templates that store populated versions of the problem form for reuse, which saves time by reducing the amount of time spent filling out the form.

Role required: admin

By defining common problems as templates, an administrator can save time for service desk members later, allowing them to focus on solving the incidents at hand.

After a template is defined, it can be used from a record producer or from a module.

Create a problem template

You can practice creating a problem template to use for reporting performance issues.

Role required: admin

1. Navigate to System Definition Templates and click New.
2. Complete the form using the following information.
   • Name: Performance Issues
   • Table: Problem
   • Global: Selected (true). This allows any user to use the template.
   • Short Description: Performance Issues
   • Template: Select each field and enter the value listed below.
     • Description: Significant performance issues have affected the configuration item.
     • Impact: 2 - Medium
     • Urgency 1 - High
     • Contact Type: Self-service

   This defines the field values that are filled in by the template.
3. Click Submit.

Use a template from a module

This example demonstrates how to place the Performance Issues template in a module in the Self-Service application to enable end users to directly file the problem using the template.

Role required: admin

1. Perform the appropriate action for your version of the UI:

   | UI16 | 1. Navigate to System Definition Application Menus.  
   |      | 2. Open the Self-Service application menu.  

   | UI15 or UI11 | Right-click Self-Service, and select Edit Application Menu. |

2. Scroll to the Modules related list and click New.
3. Complete the form with the following information.
   • Title: Report Performance Issues
   • Application menu: Self-Service
• Order: 473. This order places the new module after Requested Items in the Self-Service application. Order can be viewed by looking at the Modules related list on the Application form.
• Hint: Log a problem about performance issues.
• Link Type: New Record
• Table: Problem [problem]
• Arguments:

  problem.do?sys_id=-1&sysparm_template=Performance Issues

This argument deploys the template in the new problem record.

4. Click Submit.
The new module appears in the Self-Service application.

Problem record producers

You can create a problem record producer to allow your users to log problems from the service catalog.

Note: Functionality described here requires the Admin role.

Record producers appear in the Service Catalog. They are similar to other catalog items, but when they are submitted, they create a record on the specified table with the information provided by the user or by a template.

You can create a record producer with or without a using a template.

Create a problem record producer

You can create a record producer that let users log problems from the service catalog.

Role required: admin

1. Navigate to Service Catalog Record Producers.
2. Complete the form with the following information

  • Name: Performance Issues
  • Table Name: Problem [problem]
  • Category: Can We Help You?
  • Roles: itil, admin. This restricts the record producer to IT employees. Typically, other users file an incident rather than filing a problem directly.
3. Right click the form and select Save. The related lists Variables and Variable Sets appear at the bottom of the form.
4. Scroll to the Variables related list and click New.
5. Complete the New Variable form with the following information.
   - Type: Reference
   - Name: configuration_item
   - Reference: Configuration Item [cmdb_ci]
   - Question: Which configuration item is experiencing performance issues?
6. Click Submit.
7. Create another variable with the following information.
   - Type: Multi-Line Text
   - Name: Description
   - Question: Describe the issue:
8. Click Submit.
9. Click Save.

Click the Preview Item link to see how the new record producer appears.
Create a record producer with a template

If a predefined template for a problem exists, it can be used with the record producer to fill in standard information.

Role required: admin

The following example uses the sample template defined in Create a problem template.

1. Navigate to Service CatalogRecord Producers.
2. Complete the form with the following information.
   - Name: Report Performance Issues
   - Table Name: Problem (problem)
   - Template: Performance issues
   - Category: Can We Help You?
3. Right click the form and select Save. The related lists Variables and Variable Sets appear at the bottom of the form.

4. Complete the New Variable form with the following information.
   - Type: Reference
   - Name: configuration_item
   - Reference: Configuration Item (cmdb_ci)
   - Question: Which configuration item is experiencing performance issues?

5. Click Submit.

6. Create a new variable with the following information.
   - Type: Multi-Line Text
   - Name: Description
   - Question: Describe the issue:
7. Click Submit.
8. Click Save.

Test the record producer to verify that it completes fields based on the template.

**Task outage**

The task-outage relationship enables users to create an outage from an incident or problem form.

The Task-Outage Relationship plugin creates a many-to-many relationship between the Task (task) table and the Outage (cmdb_ci_outage) table, and includes the UI Action Create Outage Record. The Task-Outage Relationship plugin can be activated by an administrator.

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task Outage (task_outage)</td>
<td>A many-to-many table that stores references to the Task (task) and Outage (cmdb_ci_outage) tables.</td>
</tr>
</tbody>
</table>

The business rule Add Short Description is included in the plugin, to add a short description to outages in the following format “CI Name Outage.”

The UI Action Create Outage Record is added to the Task (task) table to create outages directly from the task form.

**Add the UI action to another task form**

By default, the create outage record is available on the incident and problem tables and can be added to other task forms.

Role required: admin

1. Navigate to System Definitions UI Actions.
2. Select the UI Action Create Outage.
   
   By default, the condition is:

   ```java
   current.getRecordClassName() == 'incident' || current.getRecordClassName() == 'problem'
   ```

3. Alter the Conditions field as described in the examples below.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>To add this UI Action to the Ticket (ticket) table</td>
<td>current.getRecordClassName() == 'incident'</td>
</tr>
<tr>
<td>To use the UI Action on only the Incident (incident) table</td>
<td>current.getRecordClassName() == 'incident'</td>
</tr>
</tbody>
</table>

4. Click Update.

**Associate a task to an outage**

You can associate a defined outage with tasks.

Role required: itil

1. Navigate to the outage record.
2. Add the Task related list to the form.
3. Click Edit on the related list to add or remove tasks.

Create an outage from a task
You can create an outage from within a task record.
Role required: itil
1. Navigate to the task record.
2. Right-click the form header and select Create Outage Record.
3. Complete the Outage form.
4. Click Update.

Use a UI action to create a record
You can create a record on one table based on information contained in a record on another table, for example, create a change request from a problem record.
Role required: itil
Three record UI actions are available in the base system.
• Incident forms have Create Problem
• Incident forms have Create Change
• Problem forms have Create Change

1. Navigate to an incident or problem record to be created from.
2. Right click the form header.
3. Click the desired UI action.

The new record opens, and you can complete the information and save it.

Configure a custom UI action
You can configure a custom UI action to create a record on another table.
Role required: admin
The set of default UI actions can be used as a template for configuring similar UI actions on other pages. For example, you can use the Problem UI action to create a Create Change UI action on any release form. The Problem UI action is a better template to use than the Incident UI action.

Note: This functionality requires a knowledge of Javascript.

1. Navigate to System Definition UI Actions.
2. Select the Create Normal Change record that has Problem in the table field.
3. Right click the header bar and select Insert and Stay.
4. Update the condition and script as appropriate.
5. Change the table to the desired new table. This is the table from which new records will be created.

After the table is changed, the new record is automatically saved and the record view is displayed.
Add related list to display original record

After you configure a new UI action to create a record on a different table, you can add a related list on the new record form to keep track of records on the original table.

Role required: admin

For example, the Problem form has a related list of incidents, which may include the incident the problem was created from, if the problem was created from an incident.

If the related list is present on the form, the record appears in the related list. More records can be added to the related list by clicking the Edit button.

1. To add a related list, open a new record for the form.
   For example to add the Changes related list to the Problem form, create a new problem.
2. Right-click the form header and select Configure Related lists.
3. Use the slushbucket to add the appropriate related list and click Save.

Typically, task records on the related list do not close by default when the current task record is closed. You can achieve this by scripting a custom business rule.

Customize UI action behavior

You can customize the behavior of UI actions, for example, to customize the UI action that closes related incidents when a problem is closed.

Role required: admin

The following example customizes the behavior of the Close Incidents UI action to close all incidents related to the current problem

1. Navigate to System UI UI Actions.
2. Select Close Incidents on the Problem (problem) table.
3. Alter the script as necessary.
   For example, remove the following line to close all incidents related to the current problem, regardless of the incident state.
   
   ```java
   incident.addQuery("incident_state", ",", 3);
   ```
4. Click Update.

Define an assignment rule for problems

After a problem is logged, it must be assigned to the appropriate group or individual to handle the problem. You can define assignment rules to automate the assignment process.

Role required: admin

In this example, define an assignment rule to assign database problems to the database group.

1. Navigate to System Policy Assignment and click New.
2. Complete the form using the following information.
   - Name: Database Problems
   - Applies To section:
     - Table: Problem (problem)
     - Conditions: Dot-walk to (Configuration Item.Class) (is) (Database).
   - Group in the Assign To section: Database
3. Click Submit.
4. Test the assignment rule by completing the following steps.
   a) Navigate to Problem Create New.
   b) Complete the problem form and select a configuration item with a class of Database.
   c) Click Submit.
   d) Open the problem and verify that the assignment group was added.

Define an inbound email action for problems

Inbound email actions enable users to log or update incidents or other tasks on an instance via email. You can define an inbound email action to log problems.

Role required: admin

The inbound email action parses the email and responds using a script. No problem management inbound email actions are provided in the base system.

1. Navigate to System Policy Inbound Actions and click New.
2. Complete the form with the following information.
   - Name: Log Problem
   - Type: New
   - Active: True
   - Target Table: Problem (problem)
   - Condition in When to run section:
     \email.subject. indexOf ( "Problem: " ) == 0\
   - Script in Actions section: Insert the following:
     //Note: current.opened_by is already set to the first UserID that matches the From: email address
     current. description = email_ body_text ;
     current. short_description = email. subject. toString ( ) . substring ( 9 ) ;

     current. assignment_group. setDisplayValue ( "Development" ) ;

     if ( email. body. assign != undefined )
       current. assigned_to = email. body. assign ;

     current. insert ( ) ;

3. Click Submit.

Request Management

Agents need to regularly access request records as they resolve requests and correspond with the submitters. They can also access built-in reports to see information like the number of active or unassigned requests for a SM application.

Request creation

Requests are created differently based on the role that has been granted to the user. Department administrators can create requests differently than an employee can.
Create a request through the catalog

The catalog provides several different categories so users can choose the one that closely relates to their request.

1. Navigate to Self-Service (SM application) Catalog.
2. Choose from the displayed categories.
3. Select a subcategory, if necessary.
4. Fill in the fields on the form.

Note: Each service management application displays different fields.

Table 143: Catalog fields

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opened for</td>
<td>The name of the person submitting this request. Select a new name if you are opening this request on behalf of another user.</td>
</tr>
<tr>
<td>Location</td>
<td>The location for this request.</td>
</tr>
<tr>
<td>Priority</td>
<td>The priority that describes the importance of this request.</td>
</tr>
<tr>
<td>Short Description</td>
<td>A brief summary of the request.</td>
</tr>
<tr>
<td>Detailed Description</td>
<td>A detailed description of the request.</td>
</tr>
</tbody>
</table>

5. Click Submit.

Note: If the catalog fields do not display on the request form, you can configure the form and add the SM Variable Editor related list.

Create a request using the request form

The request form allows you to associate a request with a configuration item, which is affected by the request in an SM application.

Associating a CI to a request helps your configuration management team understand which services could be negatively impacted by the request issue. You can also use this form if you want to include additional comments and work notes for the request.

1. Navigate to (SM application) Requests Create New.
2. Fill in the fields on the form, as appropriate.

Table 144: Request form fields

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>An auto-generated number that identifies the request record.</td>
</tr>
<tr>
<td>Company</td>
<td>The name of the company from which the request initiated.</td>
</tr>
<tr>
<td>Caller</td>
<td>The name of the requester.</td>
</tr>
<tr>
<td>Affected CI</td>
<td>A CI affected by this request.</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>---------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Location</td>
<td>The location associated with this request. Verify that the location is correct. If it is not, you can select another location record.</td>
</tr>
<tr>
<td>Template</td>
<td>The template for creating this request (optional). Click the reference lookup icon and select a template. The request will be populated with all fields in the selected template including all subtasks and part requirements (if applicable).</td>
</tr>
<tr>
<td>Opened</td>
<td>Auto-filled with the date and time the request was opened.</td>
</tr>
<tr>
<td>Priority</td>
<td>The priority that describes the importance of this request. By default, all requests are set to 4-Low.</td>
</tr>
<tr>
<td>State</td>
<td>The state that describes what work stage this request is in. By default, all requests are set to Open.</td>
</tr>
<tr>
<td>Assignment group</td>
<td>Select the group from which an agent is assigned to the request. You can select only assignment groups associated with the service management application you are using.</td>
</tr>
<tr>
<td>Assigned to</td>
<td>Select the agent to assign the request to. If you already selected an assignment group, you can only select agents who belong to that group. If email notifications are enabled on your instance, a built-in email notification automatically sends an email to this user when you save the request record.</td>
</tr>
</tbody>
</table>

Notes:
- If you selected the (SM application name) will use the dispatch queue option on the Configuration screen, only users with the Dispatcher role can edit this field. If you selected the (SM application name) will not use the dispatch queue option, all users except those with the Basic and Initiator roles can edit this field.
- If you selected an assignment group and want to assign the work to a new user, click the reference lookup icon next to Assigned to, click New, and create a new user. Be aware, however, that you must navigate to User Administration \ Groups and add the user to the assignment group before the request can be assigned.
### Field Description

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initiated from</td>
<td>Specify the incident or task from which this request was created.</td>
</tr>
<tr>
<td>Billable</td>
<td>Select this check box if the request is billable.</td>
</tr>
<tr>
<td>Short description</td>
<td>(Required) A brief summary of the request. Optionally, you can click the</td>
</tr>
<tr>
<td></td>
<td>search knowledge icon to view articles in the knowledge base relating to</td>
</tr>
<tr>
<td></td>
<td>this product model, plan, or CI. Doing so could provide a solution related</td>
</tr>
<tr>
<td></td>
<td>to the reason you are submitting this request.</td>
</tr>
<tr>
<td>Description</td>
<td>A detailed description of the request. The description is always visible to</td>
</tr>
<tr>
<td></td>
<td>the submitter. Therefore, if you add or modify the description for a</td>
</tr>
<tr>
<td></td>
<td>request that another user submitted, the user is able to see the changes.</td>
</tr>
<tr>
<td>Work notes</td>
<td>Additional notes that you want to share between users who can access the</td>
</tr>
<tr>
<td></td>
<td>request form. A user who submits the request through the service catalog</td>
</tr>
<tr>
<td></td>
<td>cannot see the work notes.</td>
</tr>
</tbody>
</table>

**Note:** If you specify an Assignment group, and you want to assign the work to a user who is not already in your user table, you can click the magnifying glass icon in the Assigned to field, click New, and create the new user record. Be aware, however, that the new user will not be recognized.

3. Click Submit

---

### Request creation using inbound email actions

Requests can be automatically created or updated from the information in inbound emails as long the functionality has been enabled on the SM application’s configuration screen and the emails are sent to a mailbox defined by criteria in the appropriate inbound email action.

After the functionality has been enabled by selecting the Requests can be created and updated by inbound email option on the application configuration screen, three inbound email actions are available for the SM applications available in the base system, as well as for new applications created using the SM application creator.

#### Create a request from an inbound email

Requests can be automatically created from the information in inbound emails as long the functionality has been enabled on the SM application’s configuration screen and the emails are sent to a mailbox defined by criteria in the appropriate inbound email action.

1. Navigate to System Policy Email Inbound Actions.
2. Select the inbound email action called Create [application name] Request.

   The inbound email action record opens and displays the default conditions that trigger the inbound email action.

   When an email is sent to the mail list defined by the criteria in Actions, a request is created with the following information:
   - The Contact type is set to Email.
   - The email sender (if found) populates the opened_by and Caller fields for a newly-created sm_order based item.
• The email subject populates the Short description field.
• The email body populates the Description field.
• The email sender’s company (Sender->Company) populates the Company field.
• The email sender’s location (Sender->Location) populates the Location field.
• The entire email is copied into the Work notes field.

3. You can use the email action as it is or modify it to meet the needs of your organization.

Create a request from a forwarded inbound email

Requests can be automatically created from the information in forwarded inbound emails as long the functionality has been enabled on the SM application’s configuration screen and the emails are sent to a mailbox defined by criteria in the appropriate inbound email action.

1. Navigate to System Policy Email Inbound Actions.
2. Select the inbound email action called Create [application name] Request (Forwarded).
   The forwarded inbound email action record opens and displays the default conditions that trigger the inbound email action.
   When an email is forwarded to the mail list defined by the criteria in Action, a request is created with the following information:
   • The Contact type is set to Email.
   • The email sender (if found) populates the opened_by and Caller fields for a newly-created sm_order based item.
   • The email subject populates the Short description field.
   • The email body populates the Description field.
   • The email sender’s company (Sender->Company) populates the Company field.
   • The email sender’s location (Sender->Location) populates the Location field.
   • The entire email is copied into the Work notes field.

3. You can use the email action as it is or modify it to meet the needs of your organization.

Update a request from an inbound email

Requests can be automatically updated from the information in inbound email replies as long the functionality has been enabled on the SM application’s configuration screen and the emails are sent to a mailbox defined by criteria in the appropriate inbound email action.

1. Navigate to System Policy Email Inbound Actions.
2. Navigate to the inbound email action called Update [application name] Request and click its Name.
   The update inbound email action record opens and displays the default conditions that trigger the inbound email action.
   When an email reply is received in the mail list defined by the criteria in the email action, the associated request is opened and update information is added to the Work notes field.

3. You can use the email action as is or modify it to meet the needs of your organization.

Request states

SM requests follow a specific life cycle. The State field on the record is always read-only.

The request states displayed depend on the SM application, as indicated in the table.
Table 145: Service management request states

<table>
<thead>
<tr>
<th>State</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Draft</td>
<td>Request initiator adds information about the work to be done.</td>
</tr>
</tbody>
</table>
| Awaiting Qualification| Request has been fully described by the initiator and can be processed by a qualifier. This state is valid only for the following SM applications:  
  • Field Service Management |
| Qualified            | Request is fully qualified, meaning that all technical information to complete the request tasks has been added, but work has not started. This state is valid only for the following SM applications:  
  • Field Service Management |
| Awaiting Approval    | When the information is complete enough for review by an approver, the request is marked ready for approval. This state is valid only for the following SM applications:  
  • Facilities Service Management  
  • Finance Service Management  
  • Legal Service Management  
  • Marketing Service Management |
| Approved             | The appropriate approver approves the request. This state is valid only for the following SM applications:  
  • Facilities Service Management  
  • Finance Service Management  
  • Legal Service Management  
  • Marketing Service Management |
| Work In Progress     | Work has started.                                                                               |
| Closed Complete      | Request was completed to specification.                                                         |
| Closed Incomplete    | Request could not be completed as specified.                                                     |
| Cancelled            | Request was cancelled.                                                                          |

In addition to the State field, the different request task states are also shown visually at the top of each task record with the process flow formatter.

![Process flow formatter](image)

Figure 134: Process flow formatter

Note: If the State flows are enabled option in the configuration screen is not selected, the process flow formatter is removed. If you added states to the request and task tables, those states will be visible on the request form.
Request approvals

Approving a request in a SM application means that the request is ready for task creation and assignment.

When a request is sent to a user with the (SM application)_approver_user role, the approver has several choices. If you select Approval is required for new requests in the application’s Configuration screen, a newly-created request automatically moves to the Awaiting Approval state. Otherwise, the request moves to the next configured state.

Table 146: Request approval states

<table>
<thead>
<tr>
<th>Approval Choice</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approved</td>
<td>The request is approved.</td>
</tr>
<tr>
<td>Rejected</td>
<td>The request is not qualified and it will be moved to the cancelled state. Additionally, the following work note is added to the request: The (SM application) request is rejected.</td>
</tr>
<tr>
<td>More information required</td>
<td>The request does not contain enough information. It reverts back to the Draft state and the following work note is added to the request: The (SM application) request needs more information for further approval.</td>
</tr>
<tr>
<td>Duplicate</td>
<td>The request is no longer required, because the work was already performed by another request. The request is moved to the Cancelled state and the following work note is added to the request: This is a duplicate (SM application) request.</td>
</tr>
</tbody>
</table>

Agent assignment

Depending on your settings in the SM application’s configuration screen, you can assign agents manually or using auto-assignment.

Manually assign agents to active requests

Use this procedure to assign agents to active requests in service management (SM) applications.

1. Navigate to one of the following:
   - (SM application)_Open - Unassigned for a list of requests that no one is assigned to.
   - (SM application)_All (SM application)_Requests for a list of all open requests, regardless of their current assignment.

2. Open the request you want to assign.
3. In the Assignment group field, enter the group that handles this kind of request. If no groups are available, leave this field blank.

   To look up the assignment group, click the look up using list icon (🔍) beside the Assignment group field.
4. In the Assigned to field, enter the agent to handle this request.

To look up an agent, click the look up using list icon ( ) beside the Assigned to field.

Note: The users in the search results are limited to the users in the Assignment group, if one was selected.

5. Click Update.
An email notification is automatically sent to the assigned agent if email notifications are set up for the instance.

Agent auto assignment

When auto assignment is enabled and a task is qualified or marked as Ready for Work, an appropriate agent is automatically assigned to the task and it is moved to the Assigned state. If the task cannot be auto-assigned, a user with the dispatcher role must adjust the values in the request or task form and then save the record.

The Auto-Assignment feature can be enabled for requests or tasks, depending on the Service Management (SM) application’s configuration settings:

- If the Requests are assigned via auto-assignment option is enabled, requests are automatically assigned.
- If the Tasks are assigned via auto-assignment option is enabled, the tasks in a request are automatically assigned.

Agent auto assignment using rating-based criteria

Rating-based methods, such as location, skills, and time zones, help you auto assign agents based on configuration settings and optional properties. The calculated ratings are used to determine the best agent to perform the task.

Any combination of rating-based methods can be enabled in the application configuration screen.

When a task is created, a rating for each type of enabled selection criteria is calculated for each available agent. The agent whose average rating is highest is considered for auto-assignment. The settings for the auto-assignment weighting properties, found in (SM application) Administration Properties, are included in the rating calculations.

These values help you prioritize which auto-assignment selection criteria is more important to your organization. The priority values should be (1, 10) and they are factored between 1 and 0. That is, 10 is a factor of 1, 5 is a factor of .5, and so on. For an example of how the weighting properties affect agent ratings, see Agent auto assignment using multiple selection criteria.

Agent auto assignment using location

Agents can be auto assigned based on the location defined in their user record and the location of the tasks.

Auto assignment by location can be performed in a task- or request-driven processing environment, if the Auto-selection of agents will consider location of agents configuration is enabled.

When a task is created, agent locations are compared to the following ranges to determine each agent’s location rating.
Table 147: Location rating calculation

<table>
<thead>
<tr>
<th>Distance (mi.) from agent to task</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 0.1</td>
<td>1</td>
</tr>
<tr>
<td>0.11 to 0.5</td>
<td>0.9</td>
</tr>
<tr>
<td>0.51 to 5</td>
<td>0.7</td>
</tr>
<tr>
<td>5.1 to 10</td>
<td>0.5</td>
</tr>
<tr>
<td>10.1 to 20</td>
<td>0.4</td>
</tr>
<tr>
<td>20.1 to 30</td>
<td>0.3</td>
</tr>
<tr>
<td>30.1 to 40</td>
<td>0.2</td>
</tr>
<tr>
<td>40.1 to 100</td>
<td>0.1</td>
</tr>
<tr>
<td>&gt;100</td>
<td>0</td>
</tr>
</tbody>
</table>

When a task is qualified or marked as Ready for Work, the agent closest to the task location will be considered for the task. If the application is configured so that only location is considered, the closest agent will be auto-assigned to the task.

If the application is configured to use other selection criteria—such as skills, time zone, or schedule—the ratings of all selection criteria are averaged, and the agent with the highest overall rating is auto-assigned for the task. See Agent auto assignment using multiple selection criteria for details.

Agent auto assignment using skills

Agents can be auto assigned based on the agent’s skills and the skills required to perform the task. Assign skills to an agent’s user records using Skills Users.

Auto assignment by skills can be performed in either a task- or request-driven processing environment if the Auto-selection of agents for tasks requires them to have skills configuration option must be set to all or some for the application.

When a task that includes skills is qualified or marked as Ready for Work, each agent’s skills are compared with the skills required to perform the task and a rating is calculated based on the skills configuration option. If the option is set to some, the agent with the closest skills match is auto-assigned the task. If the option is set to all, only agents who possess all of the required skills will be considered. If no agents possess all of the required skills to perform the task, none are auto-assigned.

An agent’s skills rating is calculated as:

\[
\frac{\text{Skills}_\text{agent}}{\text{Skills}_\text{task}}
\]

where:

- \(\text{Skills}_\text{agent}\) is the number of skills possessed by the agent that match the skills required for the task.
- \(\text{Skills}_\text{task}\) is the total number of skills required for the task.

For example, if a task requires 4 skills, and Agent A possesses three of them and Agent B possesses two of them:

- Agent A’s skill rating = \(\frac{3}{4}\) or 0.75
- Agent B’s skill rating = \(\frac{2}{4}\) or 0.5

If the application is configured to use other selection criteria, such as location or time zone, the ratings of all selection criteria are averaged, and the agent with the highest overall rating is auto-selected for the task. See Agent auto assignment using multiple selection criteria for details.
Agent auto assignment using time zones
Agents can be auto assigned based on the time zone defined in their user records and the time zone of the tasks.

Auto assignment by time zone can be performed in either a **task- or request-driven processing** environment if the Auto-selection of agents will consider time zone for the task configuration option must be enabled for the application.

When a task is qualified or marked as Ready for Work, agents in the time zone closest to the task time zone will be considered for the task. If the application is configured so that only time zone is considered, an agent in the same time zone will be auto-assigned the task.

**Note:** It is important that the time zones for the agent and the task be set correctly.

When a task is created, agents are rated based on the time zone of the task and the agent’s time zone using the following formula:

\[ 1 - \left( \frac{\text{abs}(\text{Task}_tz - \text{Agent}_tz)}{12} \right) \]

where:

- abs is the mathematical function to compute the absolute value.
- Task_tz is the offset between the time zone of the task and GMT.
- Agent_tz is the offset between the time zone of the agent and GMT.

For example, a task is created in New York City (GMT-4), and two agents are available to perform the task, one in Los Angeles (GMT-7) and one in Paris, France (GMT+1).

The rating of the agent in Los Angeles is calculated as:

\[ 1 - \left( \frac{\text{abs}(-4 - (-7))}{12} \right) = 0.75 \]

The rating of the agent in Paris is calculated as:

\[ 1 - \left( \frac{\text{abs}(-4 - (+1))}{12} \right) = 0.58 \]

So if the auto assignment of the task is based on the time zone alone, it will be assigned to the agent from Los Angeles.

If the application is configured to use other selection criteria, such as skills or location, the ratings of all selection criteria are averaged, and the agent with the highest overall rating is auto-selected for the task. See **Agent auto assignment using multiple selection criteria** for details.

Agent auto assignment using time-based criteria
Time-based methods, such as schedules and priority assignment, help you auto assign agents based on configuration settings and optional properties. The calculated ratings are used to determine the best agent to perform the task.

Any combination of time-based methods can be enabled in the application configuration screen.

When a task is created, the schedule of the agent and the task to be performed are combined with rating-based criteria to auto-assign an agent.

**Agent auto assignment using schedules**
Agents can be auto assigned based on the agent or the task schedule.

Auto assignment by schedule can be performed only in a **task-driven processing** environment, and the Auto-selection of agents will consider agent or task schedules configuration option must be enabled for the application. If this option is turned off, only the **agent ratings** will be used for auto-assignment.

When a task is qualified or marked as Ready for Work, agents ratings are evaluated, and the schedules of qualified agents are compared against the schedule of the task to determine the agent with the best matching schedule.
Note: If the task includes specific time entries in the Window start and Window end fields, and no agent’s schedule falls within that task window, no agents will be assigned. Also be aware that if the customer wants a task to be performed at or near a specific time, the Window start time should be set as close to that time as possible. If, for example, the Window start and Window end fields are set to 1:00 pm and 8:00 pm, respectively, and the customer prefers the job to be started at 4:00 pm, it is possible that an agent will be dispatched at 1:00 pm. So setting the Window start closer to 4:00 can help ensure that the work is performed when the customer prefers it to be done.

If the application is configured to use other selection criteria, such as skills or time zone, the ratings of all selection criteria are averaged, and the agent with the highest overall rating is auto-selected for the task. See **Agent auto assignment using multiple selection criteria** for details.

**Agent auto assignment using priority assignment**

The priority assignment feature enables you to configure auto assignment so that agents can be assigned to perform tasks or provide services on a continual, 24x7x365 basis. Priority assignment is triggered when the priority of a task matches the priority set in the application configuration page.

Priority assignment can be used in conjunction with location and skills settings; however, it can also operate independently.

To use priority assignment, you must set the following configuration options for the application.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process lifecycle</td>
<td>Set to task driven (subtasks are required).</td>
</tr>
<tr>
<td>Assignment method for tasks</td>
<td>Set to auto-assignment.</td>
</tr>
<tr>
<td>Auto-selection of agents will consider agent or task schedules</td>
<td>Enabled.</td>
</tr>
<tr>
<td>Enable priority assignment</td>
<td>Enabled.</td>
</tr>
<tr>
<td>Select priorities for assignment</td>
<td>Select one or more priorities.</td>
</tr>
</tbody>
</table>

Only tasks of the selected priority or priorities will trigger auto-assignment based on priority assignment.

When a task is qualified or marked as Ready for Work, and the priority of the task matches a priority selected for the application, the agent that best matches the schedule of the task will be auto-assigned. If the location and skills options are enabled, agents are first evaluated on their physical proximity to the location of the task, and then on how their skills match the skills required to perform the task. The agent whose location, availability, and skills best match the requirements of the task will be auto-assigned.

When a task has a priority that matches a priority in the priority assignment list, the Location Rating and Timezone Rating are ignored, even if they have been enabled.

If the priority of a task matches a priority selected in the Select priorities for assignment option, and no agents in the assignment group are available to be auto-assigned, the task is assigned to the group manager, regardless of whether the manager is available. It is the responsibility of the manager to locate an agent to perform the task.

Note: If no agent is located in the same time zone as the task, priority assignment will fail.

**Agent auto assignment using multiple selection criteria**

At its simplest, auto assignment involves identifying a set of selection criteria and automatically assigning the task to the agent who most closely meets the criteria. You can, however, select multiple sets of criteria, including both rating-based and time-based criteria.
When a task is qualified or marked as Ready for Work, the following evaluations are performed:

1. The agents’ ratings are calculated. If the Auto-selection of agents will consider agent or task schedules configuration option is disabled for the application, the agents’ ratings are used exclusively for auto-assigning an agent.

   For more information on how the ratings are calculated, see:
   - Agent auto assignment using location
   - Agent auto assignment using skills
   - Agent auto assignment using time zones

2. If the Auto-selection of agents will consider agent or task schedules configuration option is enabled, the schedules of the agents whose ratings are acceptable for auto-assignment are compared to the schedule for the task, and the agent with the best match is auto-assigned. For more information on time-based methods for auto-assigning agents, see:
   - Agent auto assignment using schedules
   - Agent auto assignment using priority assignment

Auto assignment is based on the following calculation:

\[
\frac{(\text{Criteria}_1 \text{ rating} \times \text{Criteria}_1 \text{ weight}) + (\text{Criteria}_2 \text{ rating} \times \text{Criteria}_2 \text{ weight}) + (\text{Criteria}_3 \text{ rating} \times \text{Criteria}_3 \text{ weight})}{\text{Number of criteria types used}}
\]

where:

- Number of criteria types used = 1, 2, or 3 depending on the location, skill, and time zone settings used.

This example calculates agent auto-assignment based on location and skills. The example is based on the following assumptions.

- The Auto-selection of agents will consider location of agents configuration option is enabled for the application.
- The Auto-selection of agents requires them to have some of the required skills for the task configuration option is enabled for the application.
- The Skills Weight property is set to 10 for the application.
- The Location Weight property is set to 5 for the application.
- Agents A and B are available to perform a task, and the task requires four specific skills.
- Agent A’s location is 5 miles from the site of the task and he possesses three of the four required skills.
- Agent B’s location is one-quarter mile from the site, and she possesses two of the required skills.

Auto assignment for the agents uses this calculation:

\[
\frac{(\text{Location rating} \times \text{Location weight}) + (\text{Skills rating} \times \text{Skills weight})}{2}
\]

- The auto assignment calculation for Agent A is: \((0.7 \times 0.5) + (0.75 \times 1)/ 2 = 0.55\)
- The auto assignment calculation for Agent B is: \((0.9 \times 0.5) + (0.5 \times 1)/ 2 = 0.475\)

In this example, Agent A is auto assigned the task.
Collaborate on a request

Within a request, you can enter comments that are visible to the submitter, allowing for collaboration between the two of you. For collaboration with other agents, you can enter comments that are not visible to the submitter.

2. Open the request you want to collaborate on.
3. In the Additional comments (Customer visible) field, enter the comments that you want the person who submitted the request to see. The submitter can see the comments in this field and add more comments as necessary. Update this field as many times as necessary to correspond with the submitter.
4. To correspond with other agents, enter content that you do not want the submitter to see in the Work notes field.

Close a request

When you close a request, you can add details that you want the submitter to be aware of.

1. Navigate to [SM application] Assigned to me.
2. Click the request number.
3. In the Additional comments field, enter any final notes or comments.
4. Change the State field to the appropriate closed state.
5. Click Update.

Closed and completed requests

When the Request lifecycle option is set to request-driven, the assigned agent can complete and close the request once all the tasks in the request are complete.

A Close Complete button is visible to the agent assigned to the request. The agent enters work notes before clicking Close Complete. When the button is clicked, the open task is automatically completed (if applicable) and the request transitions to the Complete state.

Request task management

A request contains one or more tasks. These tasks allow qualifiers to define activities that must be done to complete a request.

Administrators can create multiple tasks under a single request.

Splitting a request into separate tasks, when necessary, enables qualifiers to:

- Assign different aspects of a request to different staff members.
- Assign tasks to staff members who have different skill sets or are in different locations.
- Schedule tasks so they are either done one after another, or at the same time by different staff members.
- Schedule additional tasks, if necessary, to complete the request.

Note: If you have the Request lifecycle is request driven configuration option activated, you can manually add tasks as needed. If you have Request lifecycle is task driven activated, an initial task is automatically created when the request record is created.
Create request tasks

Tasks are created in support of requests.

Role required: \((SM\ application)\_admin\) or \((SM\ application)\_qualifier\)

1. Navigate to \((SM\ Application)\ Requests\ All\ (SM\ Application)\ Requests\).
2. Open the request for which you want to create tasks.
3. Click the Add Task related link.

The Task screen for the SM application opens.
4. Fill in the fields on the form.

Note: Not all fields display for all SM applications.

Table 149: Request task fields

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>Auto-generated identification number for the task.</td>
</tr>
<tr>
<td>Parent</td>
<td>Request that this task is associated with.</td>
</tr>
<tr>
<td>Cloned from</td>
<td>Record number of the task this task was cloned from, if any.</td>
</tr>
<tr>
<td>Location</td>
<td>Geographical area where the work needs to be done. The location is critical for determining the staff member who is assigned to the task.</td>
</tr>
<tr>
<td>Template</td>
<td>Template for creating this request (optional). Click the lookup icon and select a template. The description of the selected template will populate the Description field.</td>
</tr>
<tr>
<td>Skills</td>
<td>Abilities necessary to execute the task. This fields is automatically completed based on the selection in the Affected CI field on the associated request. If you change the affected CI on the request, the system adds any skills required by the new CI to the skills already listed here.</td>
</tr>
<tr>
<td>State</td>
<td>Current state of the task, such as Accepted or Closed Complete. The ServiceNow advances the state automatically as users complete the work for each successive state.</td>
</tr>
<tr>
<td>Assignment group</td>
<td>Group from which an individual legal staff member should be selected to complete the task. The lookup list shows only the assignment groups associated with the selected Location. If the Assignment Group field is empty, the system searches for the group covering the territory that includes the location of the task.</td>
</tr>
</tbody>
</table>
### Field Description

**Assigned to**

Individual staff members who should complete the task, selected from the Assignment group. If you defined skills and assigned them to staff members, the Assigned to field lookup list shows only those staff members in the assignment group who have all the Skills required. If no exact match of skills is found, the lookup list shows all assignment group members.

*Note: If state flows are disabled, this field is not mandatory.*

**Short description**

Brief explanation of the task.

**Description**

Exact technical description of the unit of work to be performed. Qualifiers should provide as much detail about the problem as possible to avoid extra communication with the caller in later stages of the request.

**Work notes**

Information about the task as it progresses through each state. Work notes are not visible to customers.

**Scheduling - These fields display for Finance Service Management and Marketing Service Management.**

**Scheduled start**

Date and time when the earliest task is scheduled to start.

*Note: If state flows are disabled, this field is not mandatory.*

**Estimated end**

Estimated work end date. This is the estimated date when the latest task will be completed.

**Actual work start**

Date and time when the earliest task actually started.

**Actual work end**

Date and time when the latest task actually ended.

**Requested due by**

Estimated date when the latest task will be completed.

*Note: The workflow appears at the top of the form, with the completed states shown in green.*

### Request task states

Like service management requests, their associated tasks follow a specific life cycle. The **State** field on the request task record is always read-only.

The request task states displayed depend on the SM application, as indicated in the table.
Table 150: Service management request task states

<table>
<thead>
<tr>
<th>State</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Draft</td>
<td>Qualifier is not done describing the work.</td>
</tr>
<tr>
<td>Pending Dispatch</td>
<td>Request task is ready to be assigned. The parent request state changes to</td>
</tr>
<tr>
<td></td>
<td>Qualified if all associated tasks are in Pending Dispatch or a later state.</td>
</tr>
<tr>
<td>Assigned</td>
<td>Request task is pending acceptance from the assigned agent.</td>
</tr>
<tr>
<td>Accepted</td>
<td>Request task has been accepted by the agent and is ready to be done. This</td>
</tr>
<tr>
<td></td>
<td>state is valid only for Marketing Service Management.</td>
</tr>
<tr>
<td>Work In Progress</td>
<td>Work on the request task has started. The parent request state changes to</td>
</tr>
<tr>
<td></td>
<td>Work In Progress if no associated tasks are in Draft state.</td>
</tr>
<tr>
<td>Closed Complete</td>
<td>Request task was completed to specification.</td>
</tr>
<tr>
<td>Closed Incomplete</td>
<td>Request task could not be completed as specified.</td>
</tr>
<tr>
<td>Canceled</td>
<td>Request task was canceled.</td>
</tr>
</tbody>
</table>

In addition to the State field, the different request task states are also shown visually at the top of each task record with the process flow formatter.

Note: If the State flows are enabled option in the configuration screen is not selected, the process flow formatter is removed.

Task windows

A task window is the time period, bordered by start and end times, in which a task is performed.

Task windows can be flexible or fixed and are used by the auto-routing and auto-dispatch features when determining the daily schedule of staff members. A flexible window has start and end times that the application attempts to respect when dispatching or routing a task automatically. The system can reschedule a flexible task window if necessary, to make it fit into the schedule of a staff member. A fixed task window cannot be rescheduled. If the auto-router or auto-dispatcher cannot schedule the task for the fixed window time period, that task is not scheduled at all. The time interval configured for a window cannot be less than the time required to perform the task.

Use a task template for multiple request templates

If you have tasks that are often repeated across multiple jobs, you can create a task template and reuse it in multiple request templates. You can also use it on a Facilities request to pull common and repeatable information into a request.

Role required: facilities_admin

Create a request template and an associated task template that contains the information you want to reuse.

Note: Checklist templates are a way to populate a checklist of tasks to be completed. Checklist templates are created on a Facilities request or on a Facilities task. After being created, they can be saved as a template and be reused. See Create a request with the facilities request form.
When you create subsequent request templates, you can select the task template from the Task Template field and save the file.

1. **Navigate to Facilities Catalog & Knowledges Facilities Request Templates**.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>A descriptive name for the Facilities Request Template.</td>
</tr>
<tr>
<td>Short description</td>
<td>A short description of the template.</td>
</tr>
<tr>
<td>Description</td>
<td>A detailed description of the template.</td>
</tr>
<tr>
<td>Checklist template</td>
<td>A Checklist template saved from the Facilities Request Form.</td>
</tr>
</tbody>
</table>

2. **Under Task information, create a task template**.

3. **Click Copy Task Template to use a previously created template. Information pre-fills the fields**.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task type</td>
<td>The type of task being requested. Select:</td>
</tr>
<tr>
<td></td>
<td>• Facilities Request Task</td>
</tr>
<tr>
<td></td>
<td>• Move Task</td>
</tr>
<tr>
<td>Name</td>
<td>Descriptive name of the task.</td>
</tr>
<tr>
<td>Description</td>
<td>Detailed description of the task.</td>
</tr>
<tr>
<td>Depends on</td>
<td>Indicates if the task depends on another task. For example, if you have two</td>
</tr>
<tr>
<td></td>
<td>tasks, you can make task 2 dependent on task 1 completing before task 2 can</td>
</tr>
<tr>
<td></td>
<td>start.</td>
</tr>
<tr>
<td></td>
<td>After a task and task type are defined, you can select it in the next task</td>
</tr>
<tr>
<td></td>
<td>in the Depends on choice list.</td>
</tr>
<tr>
<td>Checklist template</td>
<td>A Checklist template saved from the Facilities Request Form.</td>
</tr>
<tr>
<td>Assignment group</td>
<td>The group assigned to the task.</td>
</tr>
<tr>
<td>Skills</td>
<td>The skills required to be assigned to the request.</td>
</tr>
<tr>
<td>Estimated work duration</td>
<td>An estimation of the number of days, hours, or minutes to complete the request.</td>
</tr>
</tbody>
</table>

4. **Click Submit or Save**.

**Clone a request task**

Existing tasks can be cloned to create new tasks with the same populated fields.

Role required: admin, itil, creator, or catalog admin

In the cloning process, the following information is copied from the source task:

- Parent request reference
- Short description
- Description
- Assignment group
- Location
• Required skills

Open the request task and select Clone Task under Related Links. The application creates a new task in Draft state. The Work Notes contain the original task number and text stating that the task is a clone.

Service Catalog

The Service Catalog application helps you create service catalogs that provide your customers with self-service opportunities. You can customize portals where your customers can request catalog items, such as service and product offerings. You can also define catalog items and standardize request fulfillment to ensure the accuracy and availability of the items provided within the catalogs.

Explore
• Release notes
• Upgrade to Helsinki

Set up
• Set up a catalog
• Set up a service catalog
• Set URLs for catalog modules
• Set up multiple service catalogs

Use
• Service catalog items
• Place an order

Develop
• Service Catalog customization

Administer
• Service catalog administration

Troubleshoot and get help
• Video: Service Catalog: How to Debug UI Policies
• Ask or answer questions in the Service Catalog community
• Search the HI knowledge base for known error articles
• Contact ServiceNow Support

Service Catalog Management roles

The Service Catalog Management application uses these roles.

The Service Catalog Management roles are:

Table 151: Service Catalog Management Roles

<table>
<thead>
<tr>
<th>Role Title (Name)</th>
<th>Role Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrator (admin)</td>
<td>Can manage all aspects of the Service Catalog application, including scripting functions such as creating UI macros or business rules.</td>
</tr>
<tr>
<td>Catalog administrator (catalog admin)</td>
<td>Can manage the Service Catalog application, including catalogs, categories, and items, but not including scripting functions available to administrators.</td>
</tr>
<tr>
<td>Catalog manager (catalog manager)</td>
<td>Can edit and update a service catalog, as well as the categories and catalog items within the catalog. The manager can assign editors and also a different manager for the service catalog.</td>
</tr>
<tr>
<td>Role Title (Name)</td>
<td>Role Description</td>
</tr>
<tr>
<td>------------------</td>
<td>------------------</td>
</tr>
<tr>
<td>Catalog editor (catalog_editor)</td>
<td>Can edit and update a service catalog, as well as categories and catalog items within the catalog. The editor can assign other editors, but cannot change the catalog manager.</td>
</tr>
</tbody>
</table>

Service Catalog terms

The Service Catalog application uses these terms.

Execution Plans

Define how something gets delivered. For example, a PDA might go through procurement / activation / and installation of the desktop software.

Execution Plan Tasks

Plan Tasks represent a step in the Execution Plan, are associated with a Fulfillment Group, and have an approximate duration.

Fulfillment Groups

Fulfillment Groups work execution tasks. For example, one group may activate a cell phone while a different group installs the desktop software.

Tickets

Tickets represent work done by Fulfillment Groups as part of an Execution Plan.

Service Catalog properties

The Service Catalog application contains these properties.

To configure service catalog system properties, navigate to Service Catalog Catalog Policy Properties.

The following service catalog properties are available with all releases.

Table 152: Service Catalog Properties

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>glide.sc.enable_order_now</td>
<td>Determines whether the Order Now button exhibits new or old behavior. If this property is true, clicking the Order Now button in the Service Catalog only orders the item currently selected. Any items saved in shopping cart are left untouched for future ordering. The legacy order now feature and the Order Item button are deprecated.</td>
</tr>
<tr>
<td>glide.sc.restrict.quantity.changes</td>
<td>Prevents changes to the requested item quantity when approved (except for catalog_admin users).</td>
</tr>
<tr>
<td>glide.sc.render_order_guide_column</td>
<td>Renders order guide on cart preview and order status page. If an item is part of an order guide, the order guide is listed next to the item. If a user attempts to delete an item belonging to an order guide, a confirmation message is displayed first.</td>
</tr>
<tr>
<td>glide.approval_engine.sc_request</td>
<td>Service Catalog requests approval engine.</td>
</tr>
<tr>
<td>Name</td>
<td>Description</td>
</tr>
<tr>
<td>------</td>
<td>-------------</td>
</tr>
<tr>
<td>glide.approval_engine.sc_task</td>
<td>Service Catalog Tasks approval engine.</td>
</tr>
<tr>
<td>glide.sc.allow.checkout.clone</td>
<td>Enable cloning requests during checkout.</td>
</tr>
<tr>
<td></td>
<td>Note: This property is deprecated when cart layouts are enabled</td>
</tr>
<tr>
<td>glide.sc.allow.clone.roles</td>
<td>List of roles (comma-separated) that can use bulk ordering functionality. Blank means all users.</td>
</tr>
<tr>
<td>glide.sc.allow.quantity</td>
<td>List of roles (comma-separated) that can use the quantity selector in the shopping cart. Blank means all users.</td>
</tr>
<tr>
<td>glide.sc.approval.hover</td>
<td>Show the current pending approver’s name in the stage widget mouseover.</td>
</tr>
<tr>
<td>glide.sc.audit.variables</td>
<td>Audit changes to Service Catalog variables.</td>
</tr>
<tr>
<td>glide.sc.can_search</td>
<td>List of roles (comma-separated) that can search the Service Catalog. Blank means all users.</td>
</tr>
<tr>
<td>glide.sc.category.canview.override</td>
<td>List of roles (comma-separated) that override entitlements so that they can view any category within the Service Catalog.</td>
</tr>
<tr>
<td></td>
<td>• Default value: admin and catalog_admin</td>
</tr>
<tr>
<td>glide.sc.checkout.cancel</td>
<td>Allow ess users the option to cancel their requests from the checkout screen.</td>
</tr>
<tr>
<td>glide.sc.checkout.cancel.condition</td>
<td>Condition under which users may cancel a request. Requires Allow ess users the option to cancel their requests from the checkout screen to be True.</td>
</tr>
<tr>
<td>glide.sc.checkout.request.number</td>
<td>Show the request item number for each line item on the checkout screen.</td>
</tr>
<tr>
<td></td>
<td>• Default value: false</td>
</tr>
<tr>
<td></td>
<td>Note: This property is deprecated when cart layouts are enabled</td>
</tr>
<tr>
<td>glide.sc.checkout.twostep</td>
<td>Use the two step catalog checkout model.</td>
</tr>
<tr>
<td></td>
<td>• Default value: false</td>
</tr>
<tr>
<td>glide.sc.checkout.twostep.back</td>
<td>Show the Back to Catalog button on the two step checkout screen.</td>
</tr>
<tr>
<td>glide.expert.checkout.twostep</td>
<td>Use the two step checkout model when placing a catalog order from a wizard.</td>
</tr>
<tr>
<td></td>
<td>• Default value: true</td>
</tr>
<tr>
<td>glide.sc.remove_inactive_cat_items_from_cart</td>
<td>Enables removal of inactive catalog items from cart.</td>
</tr>
<tr>
<td>glide.sc.variable.reference.clickthrough</td>
<td>Disables clickthrough via the info icon on a reference variable. Set value to true to enable this functionality.</td>
</tr>
<tr>
<td>glide.sc.cart.add_on_ref_click</td>
<td>Enables add to cart when navigating away from an item via the info icon on a reference variable.</td>
</tr>
<tr>
<td>Name</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>glide.sc.checkout.task.display</td>
<td>Show tasks related to requests on the Order Status page, the screen you see in the service catalog after a successful order is placed.</td>
</tr>
<tr>
<td>glide.sc.delivery_summary.name</td>
<td>Use the delivery task name instead of the short_description for the delivery plan summarizer field.</td>
</tr>
<tr>
<td></td>
<td>• Default value: false (uses the short_description)</td>
</tr>
<tr>
<td>glide.sc.enhance.labels</td>
<td>Append pricing information to option labels.</td>
</tr>
<tr>
<td>glide.sc.entitlement.override</td>
<td>List of roles (comma-separated) that can override normal entitlement checking inside the catalog. A role of “itil” means that the itil role can order any catalog item, even one protected by entitlement restrictions.</td>
</tr>
<tr>
<td>glide.sc.category.canview.override</td>
<td>List of roles (comma-separated) that override entitlements so that they can view any category within the Service Catalog.</td>
</tr>
<tr>
<td>glide.sc.ess.description</td>
<td>Field name to use for the description column of the checkout form. If blank, the default is used.</td>
</tr>
<tr>
<td></td>
<td>• Default value: short_description</td>
</tr>
<tr>
<td>glide.sc.home.filter</td>
<td>List of content types (comma-separated) to allow on the catalog homepage. Blank allows all content types.</td>
</tr>
<tr>
<td>glide.sc.price.display</td>
<td>When to show prices and sub-totals on the service catalog cart.</td>
</tr>
<tr>
<td>glide.sc.use_custom_pricegenerator</td>
<td>When set to true then the two script includes CatalogPriceCalculator and CatalogRecurringPriceCalculator are used to generate prices (enabling custom functionality).</td>
</tr>
<tr>
<td>glide.sc.req_for.roles</td>
<td>List of roles (comma-separated) that can view the “Requested for” widget in the Service Catalog. Blank means all users. Controls access to the Requested For widget on the catalog homepage. Users with access to this widget can request items for another person. Users without access can place orders in their own name, only.</td>
</tr>
<tr>
<td>glide.sc.reset_cascade</td>
<td>On an order guide, reset cascading variable values on an item when a user goes back using the “describe needs” button.</td>
</tr>
<tr>
<td>glide.sc.reset_cascade_all</td>
<td>On an order guide, reset the values of cascading variables and non cascading values on an item when a user navigates back and forth between the Described Needs and Choose Options screens. If set to false, only the values for the cascading variables are reset.</td>
</tr>
<tr>
<td>glide.sc.restrict.quantity.changes</td>
<td>Prevent changes to requested item quantity when approved (except for catalog_admin users).</td>
</tr>
<tr>
<td>glide.sc.round.delivery.times</td>
<td>Round all delivery plans ( \geq ) 1 day to the nearest day (true) or display the precise time (false).</td>
</tr>
<tr>
<td>Name</td>
<td>Description</td>
</tr>
<tr>
<td>------</td>
<td>-------------</td>
</tr>
<tr>
<td>glide.sc.search.rowcount</td>
<td>Number of Service Catalog matches returned for global searches. Limits the number of results returned by a catalog search to improve search performance.</td>
</tr>
<tr>
<td>glide.sc.variable.snapshot</td>
<td>Render variables on a request item as they appear on the order panel, followed by the delivery plan variables (true), or merge the two based on their order values (false).</td>
</tr>
<tr>
<td>glide.sc.request_for.columns</td>
<td>Additional columns for the “request for” Service Catalog widget. Choose fields in the user (sys_user) table. Must be semicolon separated.</td>
</tr>
<tr>
<td>glide.sc.request_for.order_by</td>
<td>Ordering of matches for the “request for” Service Catalog widget. Choose fields in the user (sys_user) table.</td>
</tr>
</tbody>
</table>
| glide.sc.search.suggestions | Specify whether search suggestions should be enabled.  
  - Type: true | false  
  - Default value: true |
| glide.sc.homepage.show.collapse | Toggle whether the expand/collapse icon is rendered for category widgets on the service catalog homepage.  
  - Type: true | false  
  - Default value: false |
| glide.sc.item.cannot_add_to_request | List of class names for catalog items that cannot be added to an existing request.  
  - Type: string  
  - Default value: sc_cat_item_guide, sc_cat_item_producer, sc_cat_item_wizard |
| glide.sc.item.cannot_try_it | List of class names for catalog items that do not use the default “Try It” UI Action.  
  - Type: string  
  - Default value: sc_cat_item_guide, sc_cat_item_producer, sc_cat_item_wizard, sc_cat_item_service |
| glide.sc.item.not_normal_cart_item | List of class names for catalog items that do not generate a normal cart item.  
  - Type: string  
  - Default value: sc_cat_item_guide, sc_cat_item_producer, sc_cat_item_wizard |
| glide.sc.item.cannot_show_price | List of class names for catalog items that do not show the price in listings.  
  - Type: string  
  - Default value: sc_cat_item_guide, sc_cat_item_producer, sc_cat_item_wizard |
<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>glide.sc.item.cannot_show_search</td>
<td>List of class names for catalog items that do not have the search field displayed.</td>
</tr>
</tbody>
</table>
|                                                | • Type: string  
• Default value: sc_cat_item_guide, sc_cat_item_producer, sc_cat_item_wizard                                                                                                                     |
| glide.sc.guide.tab.validate                    | Validate mandatory fields when switching tabs in Choose Options section of Order Guides.                                                                                                                |
|                                                | • Type: true | false  
• Default value: true                                                                                                               |
| glide.sc.max_items                             | Number of Catalog Items or Categories to preview in a section.                                                                                                                                           |
|                                                | • Type: integer  
• Default value: 5                                                                                                               |
| glide.sc.show_additional_cats                  | Show the additional categories section when viewing a catalog item.                                                                                                                                     |
|                                                | • Type: true | false  
• Default value: true                                                                                                               |
| glide.sc.cat_view_use_popup_for_details        | When browsing a category, use the popup icon to show item details.                                                                                                                                     |
|                                                | • Type: true | false  
• Default value: false                                                                                                               |
| glide.sc.auto_expand                           | Number of Catalog Items to expand in browsing and search when not using popup icons to view details.                                                                                                    |
|                                                | • Type: integer  
• Default value: 2                                                                                                               |
| glide.sc.use_breadcrumb_links.cms              | Use links for breadcrumbs rendered in Service Catalog pages accessed via a CMS site.                                                                                                                    |
|                                                | This enables users with the CMS administrator (content.admin) role to choose whether service catalog breadcrumbs are displayed with or without links for greater navigation control. |
|                                                | • Type: true | false  
• Default value: false                                                                                                               |
| glide.sc.use_sub_cat_section                   | In category view, display subcategories in a panel.                                                                                                                                                    |
|                                                | • Type: true | false  
• Default value: true                                                                                                               |
<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
</table>
| glide.sc.search.disabled_cats | Service catalog searches return items in inactive categories. Search results can include catalog items in non-accessible categories, as specified by the active flag or by security constraints.  
  - Type: true | false  
  - Default value: true |
| glide.sc.placeholder.image | Name of placeholder picture for items that do not have a picture defined. This is applicable only to Mobile and not Desktop. ServiceNow provides two possible images: sc_placeholder_image.png and sc_placeholder_image-01.png. In addition, the default can be replaced with a custom image.  
  - Default value: sc_placeholder_image.png |
| glide.sc.mobile.home.category.render | Specify how sub-categories are rendered in the Mobile UI, prior to user selection of Card or List layout. Note: The service catalog homepage parent category layout cannot be modified from the default Card layout.  
  - Type: choice list  
  - Default value: card |
| glide.sc.mobile.limit.description | Limit descriptions in category and item listings to two rows in the Mobile UI.  
  - Type: true | false  
  - Default value: true |
| com.glide.servicecatalog.view_includes_category_descriptions | Shows category descriptions in the category view page.  
  - Type: yes | no  
  - Default value: yes |
| glide.sc.use_user_criteria | Use “User Criteria” to define access to catalog items and categories. Entitlements are not honored if set to true.  
  - Type: true | false  
  - Default value: true |
| glide.sc.user_criteria_migration | Enable “User Criteria” related lists for catalog items and categories when migrating from entitlements. Set this to true to display the user criteria related lists without needing to switch to user criteria functionality.  
  - Type: true | false  
  - Default value: false |
<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>glide.sc.remove_inactive_cat_items_from_cart</td>
<td>Enable removal of inactive catalog items from cart. If enabled, this automatically removes all deactivated catalog items from the shopping cart. This avoids users ordering items which are placed in the cart while active and then are made inactive.</td>
</tr>
</tbody>
</table>
|                                                           | • Type: true | false  
|                                                           | • Default value: false                                                                                                                     |
| glide.sc.auto.cart.address.reset                         | Automatically update the delivery address for catalog carts when the details of a user’s location changes. If enabled, when changes are made to a user’s address, and the user has an active cart, updates the user’s address in the cart, if not enabled, the old address is retained in the cart. |
|                                                           | • Type: true | false  
|                                                           | • Default value: false                                                                                                                     |
| glide.sc.use_cart_layouts                                | Use the sc_layout driven cart macros. Activates the new cart layout mechanism, which allows customisation of cart and checkout related widgets and pages without the need to own the UI macros or pages.   |
|                                                           | • Type: true | false  
|                                                           | • Default value: true                                                                                                                     |
| glide.sc.use_custom_pricegenerator                       | When set to true, the script includes CatalogPriceCalculator and CatalogRecurringPriceCalculator are used to generate prices, which enables custom functionality. To use your own price calculation logic, set this property to Yes, and then edit the calcPrice method inside the CatalogPriceCalculator and CatalogRecurringPriceCalculator script includes, using your own price calculation algorithm. |
|                                                           | • Type: yes | no    
|                                                           | • Default value: no                                                                                                                       |
| glide.sc.ui_policy.variable_set_run_first                | Enable the UI policies related to variable set to be run first. If enabled, UI policies related to variable set are run first, then the UI policies on items. |
|                                                           | • Type: true | false  
|                                                           | • Default value: false                                                                                                                     |

Service Catalog setup

Service Catalog enables users with the Catalog Administrators role (catalog_admin) to set up the service catalog.
Service catalogs

Service catalog enables you to set up one or more service catalogs.

Set up a catalog

You can set up a catalog to define its details such as categories, items, and layouts.

To set up a new catalog:

1. Define catalog details and content such as categories and catalog items.
2. Manage the catalog homepage details such as defining mobile layout.
3. (Optional) Create a navigation module for the new catalog.
4. (Optional) Add the catalog to the multi-catalogs home page.

Set up a service catalog

Administrators and catalog administrators, users with the catalog_admin role, can use the Service Catalog application to define service catalog content and layout. Catalog managers, users with the catalog_manager role, can define and manage a single service catalog. Catalog editors, users with the catalog_editor role, can manage a single service catalog.

Administrators and catalog administrators can define and manage multiple service catalogs. A catalog manager can define and manage a single catalog. One or more catalog editors can manage a single catalog.

To set up a service catalog:

1. Assign roles to the users working with the service catalog.
2. Customize the service catalog homepage to meet your requirements.
3. Define content to provide in the service catalog:

<table>
<thead>
<tr>
<th>Catalog items</th>
<th>The goods and services available within the catalog.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Categories</td>
<td>The groups of items displayed on the catalog home page</td>
</tr>
<tr>
<td>Variables</td>
<td>The options available for tailoring a catalog item to meet specific needs.</td>
</tr>
</tbody>
</table>

4. Define the request fulfilment processes your organization uses to deliver ordered catalog items.

Administrators and catalog administrators can further extend the service catalog to provide more powerful features, using specialized catalog items, configuration options, and scripting functions. For example, administrators can customize the checkout process used when ordering catalog items.

Set URLs for catalog modules

You can direct users to a specific catalog via a URL to a module in that particular catalog.

When you create a module for your catalog page, you can direct users to a specific catalog and view from this module via a URL.

In the Link Type section, select URL (from Arguments), then in the Arguments field, enter a URL of the form catalog_home.do?sysparm_catalog=id of sc_catalog record&sysparm_catalog_view=view name of sys_portal_page.

For example, catalog_home.do?sysparm_catalog=742ce428d7211100f2d224837e61036d&sysparm_catalog_view=catalog_technical_catalog
Note: If you make the default catalog inactive, then deactivate the Catalog module otherwise users can continue to access the inactive catalog using that module.

If a URL has a valid sysparm_catalog parameter, but an invalid or missing sysparm_catalog_view parameter, the view with the default value from the corresponding Catalog Portal Page record is used.

If a URL has a valid sysparm_catalog_view parameter, but an invalid or missing sysparm_catalog parameter, the corresponding Catalog Portal Page record is used to set the catalog.

Note: To ensure peak performance, define both parameters correctly.

Set up multiple service catalogs

Multiple service catalogs enable your organization to offer different sets of services.

Administrators and catalog administrators can manage multiple service catalogs to provide services to different teams within the organization, such as IT services, human resources, and facilities management.

End users can access multiple catalogs from a single homepage, can search across all catalogs, or can search directly within each catalog.

Enabling Access for Catalogs

You can enable read access to the catalogs by applying the rule read ACL on Catalog (sc_catalog) table. See Access Control Rules for more information.

Create a catalog

Service catalog enables you to create new catalogs.

1. Navigate to Service Catalog Catalog Definition Maintain Catalogs.
2. Select New.
3. Enter the new catalog details (see table).
4. Right-click the form header and select Save.
5. Define catalog items and categories to include in the catalog.
6. Define additional portal pages for the catalog.
7. Manage sites if you are using a CMS system

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title</td>
<td>Descriptive name for the catalog.</td>
</tr>
<tr>
<td>Application</td>
<td>The application scope for this catalog.</td>
</tr>
<tr>
<td>Manager</td>
<td>Name of the catalog manager assigned to this catalog.</td>
</tr>
<tr>
<td></td>
<td>The manager is able to edit and update the catalog, as well as the categories and catalog items within the catalog. The manager can assign editors and also a different manager for the catalog, if desired.</td>
</tr>
<tr>
<td></td>
<td>Only one manager can be assigned to a catalog and must have the catalog manager role or catalog admin role assigned.</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>--------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Active</td>
<td>A check box to indicate whether the catalog is available to end users.</td>
</tr>
<tr>
<td>Editors</td>
<td>Name of the catalog editor.</td>
</tr>
<tr>
<td></td>
<td>The editor is able to edit and update the catalog, as well as categories and catalog items within the catalog. The editor can assign other editors, but cannot change the manager.</td>
</tr>
<tr>
<td></td>
<td>Multiple editors can be assigned to a catalog. Each user must have the catalog editor role assigned.</td>
</tr>
<tr>
<td>Description</td>
<td>Information about the catalog, displayed on the multi-catalog homepage.</td>
</tr>
<tr>
<td>Background Color</td>
<td>The background color used for the catalog on the multi-catalog homepage.</td>
</tr>
<tr>
<td>Desktop image</td>
<td>The larger image to display with the catalog on the multi-catalog homepage.</td>
</tr>
<tr>
<td></td>
<td>This is only shown if image display is included in the renderer selected, such as the default Title and Image renderer.</td>
</tr>
<tr>
<td>‘Catalog Home’ page</td>
<td>The location to direct service catalog users to when they click the Catalog Home button. This field is designed to reference a content page url suffix.</td>
</tr>
<tr>
<td>‘Continue Shopping’ page</td>
<td>The location to direct service catalog users to when they click the Continue Shopping button. This field is designed to reference a content page url suffix.</td>
</tr>
</tbody>
</table>

To add a module in the navigator for the new catalog, see Create a module

Manage items in a catalog

Service catalog enables you to manage items within a catalog.

Use the Catalog Items related list on the Catalog form to view and manage the items available in the catalog.
To define a new catalog item for the catalog, click New and enter the details for the item.

Manage catalog portal pages
Service catalog enables you to create and manage multiple portal pages for a catalog.

A catalog portal page provides a homepage for a specific catalog. You can use portal pages to create different catalog views for different user groups. Each portal page accesses the same catalog content and presents that content in different ways.

Catalog portal page details include the owner, title, and view to use for that page.

Note: The View field on a portal page is the value used when you refer to the homepage in a URL or module. When you upgrade to the Eureka release, this view value for the default service catalog portal page is automatically set to catalog_default. If you previously changed this value, you should manually reapply this change after upgrade.

1. The Catalog Portal Pages related list shows portal pages available for that catalog. Each catalog has a default page, created automatically when the catalog is created.

2. Select an appropriate action:
   - Click New to create a new portal page.
   - Click Edit to select an additional portal page for the catalog.
   - Select a portal page to view and edit details for that page.

Upgrade to multiple service catalogs
Administrators and catalog administrators must consider these points before they upgrade to multiple service catalogs.
Before upgrading, you should be aware of changes made to the underlying service catalog data model. These changes are made to implement multiple catalogs and should not affect a standard upgrade. However, the changes may impact the instance if you have made customizations, such as changes to the data model.

The following tables are provided with multiple service catalogs:

Table 153: Tables provided with multiple service catalogs

<table>
<thead>
<tr>
<th>Table (name)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Catalog Site (sc_catalog_site)</td>
<td>Associates catalogs to sites.</td>
</tr>
<tr>
<td>Catalog Portal Page (sc_catalog_view_mtom)</td>
<td>Links catalogs to CMS portal pages. Defines the default catalog to portal page combination used by default links.</td>
</tr>
<tr>
<td>Catalog Items Catalog (sc_cat_item_catalog)</td>
<td>Stores the catalogs an item is available in.</td>
</tr>
<tr>
<td>Catalog Item Category (sc_cat_item_category)</td>
<td>Stores the categories an item is available in.</td>
</tr>
</tbody>
</table>

Use catalog site records

A new default catalog site record is automatically created after an upgrade.

Catalog site records appear in the Sites related list on the Catalog form.

The Catalog Site (sc_catalog_site) table associates catalogs with CMS web sites.

Several service catalog system properties are deprecated and replaced with fields on the catalog site record. This enables you to specify values for different sites used by different catalogs.

Table 154: Catalog site records properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Catalog site field (name)</th>
</tr>
</thead>
<tbody>
<tr>
<td>glide.sc.home.cms_page</td>
<td>CMS homepage (cms_home)</td>
</tr>
<tr>
<td>glide.sc.search.cms_page</td>
<td>CMS search page (cms_search)</td>
</tr>
<tr>
<td>glide.sc.continue.shopping.target</td>
<td>CMS ‘Continue Shopping’ page (cms_continue_shopping)</td>
</tr>
</tbody>
</table>

When you upgrade, a new default catalog site record is automatically created. It is populated with the default system properties from the previous version, which associate the Employee Self-Service site to the default service catalog. The ‘Continue Shopping’ page field on the Catalog form is also populated with the previous version’s glide.sc.continue.shopping.target property value.

Service catalog categories

Categories organize service catalog items into logical groups.

Categories can have a parent-child relationship, for example, IT and Laptops. A child category is a subcategory of its parent category. Each catalog item, order guide, record producer, content item, and subcategory appears as a single item within the category.
Administrators and catalog administrators can create and configure categories, defining their characteristics and adding content such as catalog items to them. Catalog managers and catalog editors can also configure categories, but only categories to which they are assigned.

**Note:**

- If there are no active items in a category’s hierarchy, that category does not appear in the catalog, and cannot be added to the catalog.
- Users with the admin or catalog_admin roles can view categories only if there is an active item in the category and Availability is set to either Desktop or Both.
- Configure the glide.sc.category.canview.override property to change the roles for this behaviour.

Create a category

Administrators and catalog administrators can create or edit a category.

To create or edit a category:

1. Navigate to Service Catalog Catalog Definition Maintain Categories.
   A list of existing categories appears. If the Parent field is blank, the category does not have a parent category.
2. Click New or select the category to edit.
3. Group the Service Details form with one of the following options.
<table>
<thead>
<tr>
<th>Option</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group by the type of change from the baseline.</td>
<td>Select Change Type from the list.</td>
</tr>
<tr>
<td>Group by the class of the CI.</td>
<td>Select Class from the list.</td>
</tr>
</tbody>
</table>

4. Fill in the fields on the form, as appropriate.

Table 155: Name of form

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title</td>
<td>The descriptive name for the category.</td>
</tr>
<tr>
<td>Parent</td>
<td>Any parent category for which this category is a subcategory.</td>
</tr>
<tr>
<td>Catalog</td>
<td>The catalog this category belongs to.</td>
</tr>
<tr>
<td>Active</td>
<td>A check box for indicating whether the category is available to add to the service catalog homepage.</td>
</tr>
<tr>
<td>Location</td>
<td>Any location information relevant for the category.</td>
</tr>
<tr>
<td>Header icon</td>
<td>The icon displayed beside the category header, when the category is a top-level category.</td>
</tr>
<tr>
<td>Icon</td>
<td>The small icon displayed beside the category name, when the category is listed as a subcategory.</td>
</tr>
<tr>
<td>Roles</td>
<td>Roles permitted to view this category. Leave the field blank, or use the role public, to allow access for all users. Category-level access restrictions may be overridden by restrictions on the individual items within that category.</td>
</tr>
<tr>
<td>Description</td>
<td>Information about the category. The description appears when the category is collapsed on the service catalog homepage. The description also appears in the Related Categories list when a user clicks the parent category title.</td>
</tr>
<tr>
<td>Homepage image</td>
<td>A larger image to display with the category on the service catalog homepage. This is visible only if the relevant renderer defines it to be used (the default renderer does not display this).</td>
</tr>
<tr>
<td>Mobile Subcategory Render Type</td>
<td>The rendering option to control how subcategories are displayed. Select List for a single-column list, or Cards for a multi-column display.</td>
</tr>
<tr>
<td>Hide description (mobile browsing)</td>
<td>Option for displaying the description at the top of the list on mobile devices.</td>
</tr>
<tr>
<td>Mobile Picture</td>
<td>A picture to use on mobile devices for this category. If a mobile image is not selected, the Homepage image appears if the Mobile Subcategory Render Type is set to Cards.</td>
</tr>
</tbody>
</table>
Configure dynamic categories

Dynamic categories display commonly requested items and knowledge articles on the right side of the service catalog homepage by default.

Use dynamic categories to provide users with an access option that automatically adjusts to changing request trends.

To configure dynamic catalog categories:

1. Navigate to Service Catalog Catalog Definition Maintain Dynamic Categories.
2. Select New or open an existing dynamic category.
3. Fill in the fields on the Dynamic category form, as appropriate.

The Dynamic category form contains many of the same fields as the Category form. Additional fields are:

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>The kind of items to display. Can be Requested items or KB Articles</td>
</tr>
<tr>
<td>Search how long?</td>
<td>For catalog items only, the period during which to search for the most common requests. For example, enter 7 00:00:00 to display the most commonly requested items in the previous seven days.</td>
</tr>
<tr>
<td>Number of Entries</td>
<td>The number of items to display in the dynamic category.</td>
</tr>
</tbody>
</table>

4. Use this example of a step with additional info.

The results displayed are limited to those items or knowledge articles available in the currently-viewed catalog.

Service catalog items

The overall catalog is made up of a collection of discrete catalog items.

A catalog item can be a good or service. If something can reasonably be ordered by itself, it’s a catalog item. If something only really makes sense as part of a greater whole, it’s part of an item, rather than an item in and of itself. For example a new Dell server is a catalog item, as is a new Executive Desk.
Create a catalog item

Service catalog enables you to define individual catalog items.

1. Navigate to Service Catalog Catalog Definition Maintain Items.
2. Click New.
3. Enter the catalog item details (see table).
4. Click Submit.
5. Assign the item to additional catalogs and categories.
6. Define variables for the item, if applicable.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Enter the item name to appear in the catalog.</td>
</tr>
<tr>
<td>Catalogs</td>
<td>Select the catalogs this item appears in.</td>
</tr>
<tr>
<td>Category</td>
<td>Select a category for the item. Categories can only be selected after the</td>
</tr>
<tr>
<td></td>
<td>Catalogs field is populated. Catalog searches find only items that are</td>
</tr>
<tr>
<td></td>
<td>assigned to a category.</td>
</tr>
<tr>
<td>Model</td>
<td>[Read-only] Click the reference icon to view the product model to which the</td>
</tr>
<tr>
<td></td>
<td>item is linked. This field is visible by default only for items created by</td>
</tr>
<tr>
<td></td>
<td>publishing models.</td>
</tr>
<tr>
<td>Workflow or Execution</td>
<td></td>
</tr>
<tr>
<td>Plan</td>
<td>Select either a workflow or an execution plan (formerly named delivery plan)</td>
</tr>
<tr>
<td></td>
<td>to define how the item request is fulfilled. If you select a workflow, the</td>
</tr>
<tr>
<td></td>
<td>Execution Plan field is hidden. Clear the Workflow field to select an</td>
</tr>
<tr>
<td></td>
<td>execution plan.</td>
</tr>
<tr>
<td>Price</td>
<td>Set a price for the item and select the currency from the choice list.</td>
</tr>
<tr>
<td>Recurring Price</td>
<td>Set a price that occurs repeatedly at a regular interval. For example, a</td>
</tr>
<tr>
<td></td>
<td>printer maintenance service may have a $100.00 monthly recurring price.</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Recurring Price Frequency</td>
<td>Select the time frame for recurrence, such as Monthly or Annually, only if the Recurring Price field has an entry.</td>
</tr>
<tr>
<td>Omit Price in Cart</td>
<td>Select this check box to hide the item price in the cart and the catalog listing.</td>
</tr>
<tr>
<td>Active</td>
<td>Select this check box to make this item active (available to be ordered).</td>
</tr>
<tr>
<td>Icon</td>
<td>Upload a 16x16 pixel image to appear as an icon beside the item name in the catalog. If no image is uploaded, the default icon appears beside this item. To use your own default icon, upload an image. The uploaded image overwrites the default image stored in images/service_catalog/generic_small.gif.</td>
</tr>
<tr>
<td>Preview Link</td>
<td>Click Preview Item to preview in a new window how the current item definition would look in the catalog.</td>
</tr>
<tr>
<td>Short Description</td>
<td>Enter text that appears on the service catalog homepage, search results, and the title bar of the order form.</td>
</tr>
<tr>
<td>Ordered Item Link</td>
<td>Specify the record defining a link to preview, as shown on the ordered item screen.</td>
</tr>
<tr>
<td>Description</td>
<td>A full description of the item. This description appears in the catalog when a user selects the item or clicks the associated Preview link.</td>
</tr>
<tr>
<td>Picture</td>
<td>(Optional) Upload an image of the item.</td>
</tr>
<tr>
<td>Availability</td>
<td>Define which devices display the item: Desktop and Mobile, Desktop Only, or Mobile Only.</td>
</tr>
<tr>
<td>Mobile Picture Type</td>
<td>Define the type of picture to display for the item on mobile devices. Set to Desktop to use the standard desktop picture, Mobile to use a specific image for the mobile device using the Mobile picture field, or None to not use a picture.</td>
</tr>
<tr>
<td>Mobile Picture</td>
<td>Appears if Mobile picture type is set to Mobile. Select the image file to upload for the mobile picture.</td>
</tr>
<tr>
<td>Hide Price (mobile listings)</td>
<td>Select this check box to hide the item price on mobile devices. Clear the check box to display the price.</td>
</tr>
</tbody>
</table>

Fields that can be added by configuring the form

<p>| Template                      | Select a template to populate the generated record with predefined values. This is available for Record Producer items only.                                                                                                                                                                                                               |
| No Quantity                   | Select this check box to hide the quantity selector for the item.                                                                                                                                                                                                                                                                       |
| No Cart                       | Select this check box to hide the shopping cart for the item.                                                                                                                                                                                                                                                                         |</p>
<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>No search</td>
<td>Select this check box to prevent this item being listed in search results.</td>
</tr>
<tr>
<td>Order</td>
<td>Control the ordering of items in category lists.</td>
</tr>
<tr>
<td>Item Diagnostic</td>
<td>Generates a report and score to identify possible issues within the Service Catalog data and configuration.</td>
</tr>
</tbody>
</table>

### Related Links

- **Variables** - Define variables for the item to provide options for ordering the item.
- **Variable Sets** - Link an existing variable set to the item to provide multiple options for ordering the item.
- **Approved By Group** - Add the groups that must approve requests for this item.
- **Approved By** - Add the users who must approve requests for this item.
- **Categories** - Add any additional categories associated with this item.
- **Catalogs** - Add any additional catalogs associated with this item.
- **Catalog UI Policies** - Add any catalog UI policies associated with this item.
- **Catalog Client Scripts** - Add any catalog client scripts associated with this item.

### Edit a catalog item

Catalog administrators can edit an item from the service catalog listing. Catalog managers and catalog editors can also edit an item, but only items for catalogs to which they are assigned.

To edit a catalog item from the service catalog listing:

- Right-click the header and select one of the following options:
  - **Configure Variables**: add or remove variables from an item.
  - **New Variable**: create a new variable for the item.
  - **Configure Item**: edit the item definition.
  - **Configure Client Scripts**: edit the catalog client scripts for the item.
  - **Configure UI Policies**: edit the catalog UI policies for the item.

### Copy a catalog item

Copy an item to create a full duplicate of the item, including the item details, attachments, variables, client scripts, and approvals.

This may be more useful than using the Insert function, which only copies the item details.

1. Open a catalog item form.
2. Use the Copy button to create a new copy of a catalog item, named Copy of [item name].
Add a catalog item

Service catalog enables you to add a catalog item to multiple catalogs and categories.

A catalog item may be available in more than one catalog and category. For example, a laptop carrying case may be available from both Laptops and Cases and Accessories categories.

Within an item:

- The Catalogs related list defines the catalogs the item is available in.
- The Categories related list defines the categories the item is available in.

To assign an item to an additional category or catalog, enter the new details in the appropriate related list.

Note: The values in these lists override the values of the Catalogs and Category fields in the catalog item form. If you change values for either related list, these changes automatically update the values in those fields.

**Share catalog items across catalogs**

You can share a catalog item, enabling users to order that item from different catalogs. For example, you can share a Password Reset item across catalogs serving different teams.

To share a catalog item across several catalogs:

1. Navigate to Service Catalog Catalog Definition Maintain Items
2. Open the item to share.
3. Select the additional catalogs for that item in the Catalogs field.
4. Select Update.
   The shared item then appears in the Catalog Items related list for each catalog selected.

Types of catalog items

Service catalog offers a few types of catalog items.
The basic service catalog item functions can be extended, with functions including:

- Order guides: to group multiple catalog items in one request.
- Record producers: giving alternative ways of adding information such as Incidents via the service catalog.
- Content Items: catalog items which provide information instead of goods or services.

Record Producer

A record producer is a specific type of catalog item that allows end users to create task-based records, such as incident records, from the service catalog.

Record producers provide a simplified alternative to the regular form interface for creating records.

Note: Use record producer to create task-based records only.

You can create a record producer for tables and database views that are in the same scope as the record producer and for tables that allow create access from applications in other scopes.

Define a record producer in the service catalog or from the table record.

Note: To ensure that standard service catalog processes are followed, such as initiating workflows as expected, do not create requested item records from record producers. Instead, create requested item using catalog items.

Create a record producer

You can create a record producer for tables and database views that are in the same scope as the record producer and for tables that allow create access from applications in other scopes.

1. Navigate to Service Catalog Catalog Definition Record Producers.
2. Click New or select the record producer to edit.
3. Fill in the fields on the Record Producer form (see table).
4. Click Submit.

   After you submit the form, the Variables, Variable Sets, Categories, and Catalogs related lists become available.
5. Open the record again to define variables for the record producer.
Note: You may need to configure the form to see all fields.

Table 157: Record Producers in the Service Catalog

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>The descriptive name for the record producer.</td>
</tr>
<tr>
<td>Table name</td>
<td>The table in which the record producer creates records.</td>
</tr>
<tr>
<td>Active</td>
<td>A check box for making the record producer active. Only active record producers are available to users if they meet the role criteria.</td>
</tr>
<tr>
<td>Preview Link</td>
<td>A link that opens a preview of the item.</td>
</tr>
<tr>
<td>Accessibility</td>
<td></td>
</tr>
<tr>
<td>Catalogs</td>
<td>The service catalog this record producer belongs to.</td>
</tr>
<tr>
<td>Category</td>
<td>The service catalog category this record producer belongs to. When users perform catalog searches, only items that are assigned to a category appear in search results.</td>
</tr>
<tr>
<td>View</td>
<td>The CMS view in which the item is visible.</td>
</tr>
<tr>
<td>Roles</td>
<td>The roles required to use the record producer.</td>
</tr>
<tr>
<td>Availability</td>
<td>The interface the record producer is available from: Desktop and Mobile, Desktop Only, or Mobile Only.</td>
</tr>
<tr>
<td>Can cancel</td>
<td>A check box for displaying a Cancel button on the record producer. Users can click Cancel to cancel the record producer and return to the last-viewed screen.</td>
</tr>
<tr>
<td>What it will contain</td>
<td></td>
</tr>
<tr>
<td>Short description</td>
<td>A short summary of the record producer.</td>
</tr>
<tr>
<td>Description</td>
<td>The full description of the record producer. The description appears under a More information link on the record producer to give users any additional information they may need.</td>
</tr>
<tr>
<td>Script</td>
<td>Scripts that should be run to dynamically assign values to specific fields on the created record.</td>
</tr>
<tr>
<td>Icon</td>
<td>The small icon that appears on the list of service catalog items. Click the Click to add link and upload the photo.</td>
</tr>
<tr>
<td>Picture</td>
<td>The picture that appears at the top of the record producer form on the desktop view. Click the Click to add link and upload the photo.</td>
</tr>
</tbody>
</table>
## Field Description

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mobile picture</td>
<td>The small picture that appears on the list of service catalog items. Click the Click to add link and upload the photo. This field is available when you select the Mobile for the Mobile picture type.</td>
</tr>
</tbody>
</table>
| Mobile picture type          | The picture that the mobile interface uses on the list of service catalog items. Select one of the following:  
  - Desktop: Uses the icon specified in the Icon field. Selecting this option hides the Mobile picture field.  
  - Mobile: Uses the icon specified in the Mobile picture field.  
  - None: Does not use any picture on the mobile view. Selecting this option hides the Mobile picture field. |

## Generated Record Data

| Template                      | Static assignments for fields on the created record.                                                                                          |

### Create record producers from tables

You can create service catalog record producers directly from a table record.

To create a record producer from a table record:

1. Navigate to System Definition Tables and open the table record.

   Note: When using a workflow with a Record producer, set the condition to Run the workflow.

2. Under Related Links, click Add to Service Catalog.
3. Complete the Name, Short Description, and Category fields as you would for service catalog items.
4. Use the slushbucket to select the fields and the order in which you want them to appear. To use container variables, select |- container start -| and |- container start -|.
5. Click Save and Open to open the record producer and define additional options. Alternatively, click Save to return to the table record.

- A record producer is created with these values:
  - Table name: table record opened in step 1
  - Name, Short Description, and Category: information entered in step 3

- A variable is created for each of the selected fields with these values:
  - Name: Column name of the field
• Type: variable type that corresponds to the field type
• Order: position selected in the slushbucket (for example, 100 for the first field and 200 for the second field)
• Question: Column label of the field

• If the field type is Choice, a corresponding question choice is created for each field choice.
• The new record producer is added to the Record Producers related list on the table record.

Set up a record producer
You can enter data for all records created by the record producer, and redirect an end user to a particular page after the record producer is submitted.

To enter data with a record producer, use any combination of the following methods:

• Create a variable on the record producer with the same name as the field in the target record. For example, a variable named caller_id on a Create a New Incident record producer populates the caller_id field on the new incident record. Use a variable type that corresponds to the field type.
• Define a template to assign a static field value for all records created by the record producer.
• Define a script that uses any variable or server-side objects and functions to assign values.
  • Use current.*FIELD_NAME* to reference fields on the record being created.
  • Use producer.*VARIABLE_NAME* to reference values entered by the end user.

Redirect After Submitting a Record Producer
To redirect an end user to a particular page after the record producer is submitted, define the redirect link in the Script field using producer.redirect. For example, the following code redirects users to their homepage after the record producer is submitted:

```
producer.redirect="home.do";
```

Variables to collect data for record producer fields
Use variables to collect data for record producer fields.

You can use the following variable types to collect data for the corresponding record producer fields.

<table>
<thead>
<tr>
<th>Field type</th>
<th>Recommended variable type</th>
</tr>
</thead>
<tbody>
<tr>
<td>True/False</td>
<td>Yes/No</td>
</tr>
<tr>
<td>Reference</td>
<td>Reference</td>
</tr>
<tr>
<td>Date or Due Date</td>
<td>Date</td>
</tr>
<tr>
<td>Date/Time</td>
<td>Date/Time</td>
</tr>
<tr>
<td>Choice or any field with an associated choice list</td>
<td>Select Box</td>
</tr>
<tr>
<td>HTML</td>
<td>HTML</td>
</tr>
<tr>
<td>List or UI Action List</td>
<td>List Collector</td>
</tr>
<tr>
<td>String with length greater than 256</td>
<td>Multi Line Text</td>
</tr>
<tr>
<td>String, Integer, Decimal, Floating Point Number</td>
<td>Single Line Text</td>
</tr>
<tr>
<td>All other field types</td>
<td>Multi Line Text</td>
</tr>
</tbody>
</table>
Values Returned

When you construct a record producer, you should be aware of the return value.

Most of these field types return a string. However, there are some exceptions. For example, a Reference value returns the sys_id of the target object, and a List value returns a comma-separated list of sys_ids.

Example 1: For a List value, return an array which can be iterated to retrieve the individual values submitted by your user:

```javascript
var sys_id_string = producer.glide_list_field; var sys_id_list = string.split(' , ');
```

Example 2: For a Date or Date/Time value, return a date which can be evaluated by GlideDate.

```javascript
var glideDateTime = new GlideDateTime(producer.date_field);
```

Order guides
Order guides enable customers to make a single service catalog request that generates several items.

For example, a New Employee Hire order guide could contain several items that new employees commonly need, such as business cards, computer, and cell phone. After selecting this order guide, the customer can then provide information about the new employee, including location and job title. The order guide then submits an order for catalog items like business cards, based on the details provided.

Order guides determine which catalog items to order by evaluating order guide rule conditions. Information the customer enters within the order guide can be passed as cascading variables to the ordered items, allowing common information to be reused across multiple items.

Administrators and catalog administrators can create order guides for the service catalog.

Order guides can be run automatically, generating a set of ordered items without needing to manually submit a service catalog request. For example, an onboarding workflow for a new employee can automatically run an order guide to order items for that employee.

The script field in an order guide can be used to add or remove catalog items to or from the order guide. It can be added to the order guide form by configuring the form layout.

- To add a catalog item that is not added to the order guide via a rule base, write the following code in the script field:
  ```javascript
  guide.add("<sys_id_of_cat_item>"
  ```

- To remove a catalog item that is added to the order guide via a rule base, write the following code in the script field:
  ```javascript
  guide.remove("<sys_id_of_cat_item>"
  ```

Video tutorial
The video demonstrates how to set up an order guide.

Create an order guide
You can create an order guide with a two-step or three-step ordering process.

To create an order guide:
1. Navigate to Service Catalog Catalog Definition Order Guides.
2. Click New.
3. Fill in the fields as appropriate (see table).
4. Right-click the form header and click Save.
5. [Optional] In the Rule base related list, define the rules that determine which items are included in an order.
6. [Optional] In the Variables related list, define any variables required.
Table 159: Order guide

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Order guide name that appears in the catalog.</td>
</tr>
<tr>
<td>Active</td>
<td>Check box to indicate whether the order guide is active or not.</td>
</tr>
<tr>
<td>Category</td>
<td>Category heading under which the order guide appears in the catalog.</td>
</tr>
<tr>
<td>Two step</td>
<td>Check box to enable two-step ordering instead of the default three-step ordering, omitting the final step. With two-step ordering, selecting Check out submits the request immediately, then displays the order confirmation screen. This is not applicable for Service Portal.</td>
</tr>
<tr>
<td>Icon</td>
<td>A 16x16 pixel image to appear as an icon beside the order guide name in the catalog. If no image is uploaded, the default icon appears beside this order guide.</td>
</tr>
<tr>
<td></td>
<td>To use your own default icon, upload an image, overwriting the image stored in images/service_catalog/generic_small.gif.</td>
</tr>
<tr>
<td>Cascade variables</td>
<td>Check box to select whether the variables used should cascade, which passes their values to the ordered items. If this check box is cleared, variable information entered in the order guide is not passed on to ordered items.</td>
</tr>
<tr>
<td>Ordered Item Link</td>
<td>Link to more information about an ordered item. Select a predefined link item to appear on the ordered item screen. Customers can click the link to access more information. This is not applicable for Service Portal.</td>
</tr>
<tr>
<td>Roles</td>
<td>Roles that users must have to access this order guide.</td>
</tr>
<tr>
<td>Short description</td>
<td>Summary of the order guide purpose.</td>
</tr>
<tr>
<td>Description</td>
<td>Description that appears on the first page of the order guide. Apply formatting with the HTML editor.</td>
</tr>
<tr>
<td>Picture</td>
<td>(Optional) Image of the item.</td>
</tr>
<tr>
<td>Order to cart</td>
<td>Check box allowing users to add order guides to their cart, then continue shopping rather than checking out immediately. This is not applicable for Service Portal.</td>
</tr>
</tbody>
</table>

Note:  This only works when the Two step check box is also set to true.

Review an order guide example
Consider a scenario where you have a New Employee Hire order guide that provides services and items as part of the onboarding process.
To place an order from the order guide:

1. **Describe Needs**: The order guide prompts the end user for information.

   ![Order guide - Employee Onboarding IT](image)
   
   **HR onboarding order guides for IT**
   
   - Permanent

2. **Choose Options**: The order guide uses the information entered and predefined rules to generate options.

   ![Order guide - Email Account](image)
   
   **Standard email service with Outlook and Outlook Web**
   
   - Service Level Agreement: 24x7x365 with the exception of scheduled maintenance
   - Support Coverage: 24x7x365 via 800 HELP
   - Dependencies: Internet, Email servers, Firewalls
   - SLA: 99.99% availability for internal and external services
   - Is this a new account? No
   - Special Requirements

   The end user selects configuration options for the ordered items, and provides any additional information needed.

3. **Check Out**: The end user reviews and edits item information, then clicks Submit Order to place the request.
Request an order guide

Order guides present the customer with a three-step ordering process by default.

1. Describe Needs: Enter information as prompted. Order guide rules evaluate this information to determine which catalog items to order.
2. Choose Options: Select configuration options for the ordered items and provide any additional information needed.
3. Check Out: Review and edit item information, then click Submit Order to place the request. If the requested item was ordered as part of an order guide, the Order Guide field on the Requested Item form shows the order guide name.

Note: The Check Out step can be omitted from an order guide to provide a quicker two-step process. To omit this third step, select the Two step check box when creating the order guide.

Add a catalog item

You can add a catalog item to an order guide using specific rules.

Order guide rules define conditions that must be met for a specific item to be included in an order. For example, a New Employee Hire order guide rule might state that if the new employee’s job title is CTO or Director, and the department is IT, then add an executive desktop item to the order.

To create an order guide rule:

1. Navigate to Service Catalog Catalog Definition Order Guides .
2. Open an order guide.
3. In the Rule base related list, click New.
4. Fill in the fields as appropriate and click Submit.
Table 160: Rule guide

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guide</td>
<td>The order guide to which the created rules are applied.</td>
</tr>
<tr>
<td>At this position</td>
<td>Tab positions are numbered in order from left to right, with the lowest number appearing at the left of the screen.</td>
</tr>
<tr>
<td>Application</td>
<td>Name of the application that is being used.</td>
</tr>
<tr>
<td>If this condition is true</td>
<td>Conditions that must be true for this rule to apply. Create conditions using the condition builder. Conditions can be evaluated against Keywords, Requested By, Requested For, or any variables defined for that order guide.</td>
</tr>
<tr>
<td>Include this item</td>
<td>Item to include in the order if all conditions defined in If this condition is true are matched.</td>
</tr>
<tr>
<td>Ignore Mandatory Evaluation</td>
<td>Check box to allow customers to proceed without completing mandatory fields for the Describe Needs and Choose Options screens. The mandatory status of a field is determined by the variable defining that field. If mandatory fields are not enforced, then relevant information is not passed on to the ordered items. For example, in a New Employee Hire order guide, if the address is not provided then this information is not included in business cards ordered.</td>
</tr>
<tr>
<td>Use cart layout</td>
<td>Check box to use the cart layout that has been configured. Uncheck this check box to access the Show quantity check box option.</td>
</tr>
<tr>
<td>Show quantity</td>
<td>Check box to show the quantity ordered within the order confirmation. (Only visible if Use cart layout is unchecked.)</td>
</tr>
<tr>
<td>Quantity</td>
<td>Default quantity for the order guide. When quantity is shown, this value can be modified during checkout.</td>
</tr>
</tbody>
</table>

Create an item variable assignment

Set an item variable value to match an order guide variable value, or an order guide default value, using an item variable assignment.

An item variable assignment lets the catalog admin set up a default value mechanism in the order guide context so the user focuses only on required values.

For example, you can set the default storage of an iPhone to 64GB for Sales, and to 16KB for Development. This is configured in the new hire order guide by using mutually exclusive rules and setting the storage variable accordingly for Sales and Development.

The value for an item variable is determined in the following order:

1. Item variable assignment
2. Cascading value (if no item variable assignment exists)
3. Default value defined in the variable definition (if no cascading value or item variable assignment exists)

1. Navigate to Service Catalog Catalog Definition Order Guides.
2. Open an order guide.
3. Open a rule.
4. In the Item Variable Assignments related list, click New.
5. Fill in the fields as appropriate and click Submit.

Table 161: Item Variable Assignment

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item Variable</td>
<td>Item variable name. Select an item variable from the list or create a new one.</td>
</tr>
<tr>
<td>Active</td>
<td>Check box to indicate whether the item variable assignment is active or not.</td>
</tr>
<tr>
<td>Assignment Type</td>
<td>Assignment type name. Select either Order Guide Variable, or Value. When Order Guide Variable is selected, the Order Guide Variable field is enabled.</td>
</tr>
<tr>
<td>Order Guide Variable</td>
<td>Order guide variable name. Select an order guide variable from the list or create a new one. (This field is only visible if Assignment Type is Order Guide Variable.)</td>
</tr>
</tbody>
</table>

Create an order guide variable
You can create variables within an order guide.

To create or edit order guide variables, open an order guide, then select an entry from the Variables related list. Service catalog variables within order guides define the questions and potential answers presented to the customer while ordering. This information can then be used by order guide rules. Variables can also be cascaded, which passes the variable values along to individual ordered items.

Pricing is not supported for an order guide variable, even when you define the pricing for the variable though a variable set, and associate the variable set to the order guide.

Add a variable set to an order guide
You can add a variable set to an order guide.

To add a variable set to an order guide:
1. Navigate to Service Catalog Catalog Definition Order Guides.
2. Open an order guide.
3. In the Variable Sets related list, click Edit.
   You may need to configure the form to add the Variable Sets related list.
4. Select and add a variable set.
5. Click Save.

Cascade an order guide variable
Cascading enables values entered for variables in the initial order form to be passed to the equivalent variables in the ordered catalog items.

Cascading allows values entered for variables in the initial order form to be passed to the equivalent variables in the ordered catalog items. For example, a variable on the initial order form prompts the
customer to enter a delivery location value. If you enable cascading, the value for this variable then populates delivery location fields on each of the ordered items.

To enable cascading, select the Cascade variables check box when creating the order guide. Then, create variables on the catalog items that match the names of the corresponding variables in the order guide. When a customer places an order, the variables on the ordered items inherit the values of the identically named variables in the order guide.

Use a variable set

You can use a variable set with an order guide.

To cascade variables requires the same variable on both the order guide and the ordered items. It can be useful to define each variable just once in a variable set, then assign the variable set to both the order guide and the individual catalog item. This approach avoids duplication and ensures the variable is the same in both locations.

To use a variable set with an order guide:

1. Create the variable set.
2. In the Variable Set form, create each variable.
3. Add the variable set to the order guide and to each catalog item involved.

Note: The individual variables in a variable set do not appear in the Order guide or Catalog Item forms. To view the variables in a variable set, open the variable set record.

Hide cascaded variables

You can hide the duplicated variables on the Choose Options screens to keep your screen clean.

When cascading variables, you may want to hide the duplicated variables on the Choose Options screens, making these screens simpler.

To hide duplicate variables on all screens after the initial Describe Needs screen in the Service Catalog Platform UI, run an onLoad catalog client script.

For example,

```javascript
function onLoad() {
  var item = $('current_item');
  var guide = $('sysparm_guide');
  if (item !== null && guide !== null && item.value === guide.value)
  
    g_formsetDisplay('YOUR_VARIABLE_NAME', false);
}
```

To hide duplicate variables on all screens after the initial Describe Needs screen in Service Portal, use the isOrderGuide() API.

For example,

```javascript
if (g_service_catalog.isOrderGuide())
  
  g_formsetDisplay('variable_name', false);
```

Avoid enforcement of a mandatory field

You can avoid enforcing a mandatory field within tabs.

By default, mandatory fields must be filled in before switching tabs in the Choose Options section of order guides.
In this example, if the customer attempts to select another tab without filling in the Street Address field, a warning prompt appears. The customer cannot switch tabs without entering this information.

To avoid this enforcement in all order guides:

1. Navigate to Service Catalog Catalog Policy Properties.
2. Locate the property Validate mandatory fields when switching tabs in ‘Choose Options’ section of Order Guides (glide.sc.guide.tab.validate).
3. Clear the Yes check box.

If you make this change, mandatory fields are still mandatory, but the customer can switch between tabs before filling in the mandatory fields. Enforcement is then checked when the customer chooses to proceed to the next step.

To avoid enforcement of mandatory fields altogether, use the Ignore Mandatory Evaluation check box within the relevant order guide rule.

Run order guides automatically
An order guide automatically from within a workflow or a server script, passing parameters to that order guide to define variable values.

You can run an order guide automatically from within a workflow or a server script, passing parameters to that order guide to define variable values.

This enables you to automatically generate a set of ordered items as part of a wider process, without needing to manually submit a service catalog request and reenter existing information.

For example, you can run an order guide to fulfill HR onboarding requests, passing parameters such as the new employee’s position and department. The order guide then generates a set of requested items such as laptop and email account, based on those parameters.

Content items
A content item is a service catalog item that provides information instead of goods or services.
Content items may reference knowledge articles, static blocks of text, or external web-based content.

To define content items:
1. Navigate to Service Catalog > Catalog Definition > Content Items.
2. Click New.
3. Fill in the form to define the item.

![Figure 141: Content Item form](image)

4. Click Submit.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name, Category, Icon, Roles, Active,</td>
<td>As for standard catalog items.</td>
</tr>
</tbody>
</table>
| Content type              | The type of information to display when a user selects the item.  
  • KB Article: a ServiceNow knowledge article available to users with the specified roles.  
  • Catalog Content: a static block of text, formatted with HTML.  
  • External Content: documents or web pages stored outside the ServiceNow ITSA Suite instance. |
<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target</td>
<td>Location where the content appears.</td>
</tr>
<tr>
<td></td>
<td>• Within Catalog: displays the content within the catalog iframe window (which may not render some external websites properly).</td>
</tr>
<tr>
<td></td>
<td>• New Window/Tab: displays the content in a new browser window or tab. Choose this option if the content does not display properly within the catalog.</td>
</tr>
<tr>
<td>URL</td>
<td>The full URL (including the prefix http:// or https://) for external content to display when a user selects the item. This field is available only if the Content type is External Content.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> Since ServiceNow ITSA Suite instances are accessed via HTTPS, links to HTTP sites may result in a mixed mode content error or warning, depending on browser security settings.</td>
</tr>
<tr>
<td>KB article</td>
<td>The knowledge article to display when a user selects the item. This field is available only if the Content type is KB Article.</td>
</tr>
<tr>
<td>Short description, Description, Picture</td>
<td>As for standard catalog items. These fields are only available if the Content type is Catalog Content.</td>
</tr>
</tbody>
</table>

**Item diagnostic report**

The item diagnostic report is used to identify possible issues with Service Catalog item data and configuration.

The item diagnostic report includes a score that measures the health of the item, and a list of diagnostic result entries that consist of a rule, a document (record that violates the rule), and a count (the number of violations in the record). Violations should be corrected for best performance and to maintain expected behavior.

The lower the score, the better (0 is ideal). A higher score means there are more issues with the item. Each rule has a different weight and level of importance. For example, a violation of duplicate variables is more likely to result in user issues, whereas an AJAX usage violation is less likely to cause issues since the result may simply cause a delay in the UI.
<table>
<thead>
<tr>
<th>Rule</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duplicate variables</td>
<td>Identifies variables with the same name associated to a catalog item (or an associated variable set).</td>
</tr>
<tr>
<td>Unique lookup</td>
<td>Identifies select-box type variables that have the unique_lookup attribute enabled to show only unique entries in the select box.</td>
</tr>
<tr>
<td>AJAX calls in catalog client scripts</td>
<td>Identifies all AJAX calls in catalog client scripts because, although AJAX calls in catalog client scripts are allowed, they must be asynchronous. All AJAX calls are listed because even asynchronous calls may cause some delay. You can view detailed information for each client script by clicking the information icon.</td>
</tr>
<tr>
<td>DOM Manipulation in catalog client scripts</td>
<td>Identifies any DOM violation in catalog client scripts. The DOM is not guaranteed to be the same between releases and may affect catalog client scripts during upgrades. Therefore, it is not recommended for customers to do any kind of DOM manipulation. You can view detailed information for each client script by clicking the information icon.</td>
</tr>
</tbody>
</table>
Add an ordered item link

Catalog administrators can provide a link on the ordered item screen, linking to more information about an item.

After users order the catalog item, they can click the link to see relevant information about the item they ordered, for example, for standard delivery terms and conditions. The URL text and link can be defined once and reused across multiple items.

Links are rendered with an added parameter providing the sys_id of the requested item. For example, if the link is mylink.com, it is rendered as mylink.com?req_item=abcde12345. This can be useful for virtual provisioning situations.

Note: The ordered item link cannot be configured for mobile devices.

To create an ordered item link, then add an ordered item link to an item:

1. Navigate to Service Catalog Catalog Definition Ordered Item Links.
2. Click New.
3. Enter a Name for the ordered item link.
4. Enter Link text to display as the link. For example, Click here to see more information about the iPhone.
5. Enter the exact Link URL. For example, http://www.mylink.com.
6. Select the Target. You can choose to open the link in a new window or tab, or within the catalog. If Within Catalog is chosen, the link must be within the same site. An HTTP site cannot be called from within HTTPS.
7. Click Submit.
8. Navigate to Service Catalog Catalog Definition Maintain Items.
9. Click an item Name.
10. In the Ordered Item Link field, click the reference lookup icon.
Service catalog UI policy

UI policies can be used to define custom process flows for tasks. **UI policies** are useful when applied to service catalog items. Keep the following points in mind when creating service catalog UI policies:

- A catalog UI policy applies to either a specific catalog item or any item that uses a specific variable set.
- A catalog UI policy can only contain and reference variables that are defined for the catalog item or variable set.
- Exactly like UI policy conditions, the variables in a service catalog UI policy condition must be visible (even if hidden by UI policy or read-only) on the form for the condition to be tested. Also, ensure that the variables have names. For more information see [Create a catalog client script](#).
- Limited UI policy functionality applies to following variables:
  - Mandatory and Read Only policy do not apply to the following variable types: Break, Container Start, Container Split, Container End, UI Macro, UI Macro with Label, Label, UI Page
  - Set visible policy does not apply to the following variable types: Break, Container Split, Container End
- Service catalog UI policies are applied to variables and variable sets of catalog items ordered in the service catalog. Policies can also be applied when the variables are present in a Requested Item or Catalog Task form.
- Catalog UI policies are supported for catalog items viewed in a service catalog wizard.

Note: The UI policy for catalog items always takes precedence over UI policy for variable sets.

Create a UI policy for catalog items

You can apply UI policies to variables and variable sets of catalog items ordered in the service catalog.

To create a UI policy for Service Catalog items:

1. Navigate to Service Catalog Catalog Policy Catalog UI Policies.
2. Click New.
3. Right-click the form header and select Views Default view or Advanced.
4. In the Applies to field, select A Catalog Item.
5. Fill in the remaining fields.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Applies to</td>
<td>Select the type of item this UI policy applies to:</td>
</tr>
<tr>
<td>A Catalog Item:</td>
<td>enables the Catalog item field.</td>
</tr>
<tr>
<td>A Variable Set:</td>
<td>enables the Variable set field.</td>
</tr>
<tr>
<td>Catalog Item or Variable Set</td>
<td>Select the catalog item or a variable set this UI policy applies to. The field name and options available depend on the Applies to selection.</td>
</tr>
<tr>
<td>Short description</td>
<td>Enter a brief description (example, Out-of-state move).</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>--------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Active</strong></td>
<td>Select the check box to enable the UI policy. Clear the check box to disable it.</td>
</tr>
<tr>
<td><strong>When to Apply</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Catalog Conditions</strong></td>
<td>Create conditions for the UI policy using catalog item variables. The policy is applied if the conditions evaluate to true. For example, a catalog item of Schedule a Move may have a condition of move_from ≈ San Diego. The UI policy is applied when an employee schedules a move from San Diego to any other company location.</td>
</tr>
<tr>
<td><strong>Applies on a Catalog Item view</strong></td>
<td>Select the check box to apply the UI policy to catalog items within the order screen.</td>
</tr>
<tr>
<td><strong>Applies on Catalog Tasks</strong></td>
<td>Select the check box to apply the UI policy on a Catalog Task form.</td>
</tr>
<tr>
<td><strong>Applies on Requested Items</strong></td>
<td>Select the check box to apply the UI policy on a Requested Item form.</td>
</tr>
<tr>
<td><strong>On load</strong></td>
<td>Select the check box to apply the UI policy when the form is loaded. Clear the check box to apply the policy only when the form is changed.</td>
</tr>
<tr>
<td><strong>Reverse if false</strong></td>
<td>Select the check box to reverse the UI policy if the Catalog Conditions statement evaluates to false.</td>
</tr>
<tr>
<td><strong>Script</strong></td>
<td>Select the check box to use the Execute if true and Execute if false scripting fields. Scripts are necessary to apply a UI policy other than Read Only, Mandatory, or Visible. For example, you must create a script to apply a UI policy to a specific role.</td>
</tr>
<tr>
<td><strong>Other fields</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Order</strong></td>
<td>Enter the sequence in which this UI policy is evaluated if more than one matching UI policy exists. The order is evaluated from the lowest value to the highest value.</td>
</tr>
<tr>
<td><strong>Global</strong></td>
<td>This field is not used for the service catalog.</td>
</tr>
<tr>
<td><strong>Inherit</strong></td>
<td>This field is not used for the service catalog.</td>
</tr>
<tr>
<td><strong>UI Action</strong></td>
<td>Changes the form view to the default or advanced view. The fields change based on the view.</td>
</tr>
<tr>
<td><strong>Variable name</strong></td>
<td>Select the variable that belongs to the catalog item or variable set.</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Mandatory</td>
<td>Choice list for specifying how the UI policy affects the mandatory state of the field. Choices are:</td>
</tr>
<tr>
<td></td>
<td>• Leave alone • True • False</td>
</tr>
<tr>
<td>Visible</td>
<td>Choice list for specifying how the UI policy affects the visible state of the field. Choices are:</td>
</tr>
<tr>
<td></td>
<td>• Leave alone • True • False</td>
</tr>
<tr>
<td>Read Only</td>
<td>Choice list for specifying how the UI policy affects the read-only state of the field. Choices are:</td>
</tr>
<tr>
<td></td>
<td>• Leave alone • True • False</td>
</tr>
</tbody>
</table>

6. Click Submit.
Figure 142: Catalog UI Policy Advanced View

Note: Configure the variable form to display all fields.

Service catalog UI policy examples

The following is an example of how service catalog UI policies work.

Example

The following UI policy makes it mandatory for any department to specify the name of the department if Department is selected for the question Department or group?:

---

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Figure 143: Catalog UI Policy

Service catalog client script

You can create client scripts to customize the catalog.
To create a catalog client script:

1. Navigate to Service Catalog Catalog Policy Catalog Client Scripts. A list of current custom catalog client scripts appears.
2. Click New.
3. Fill in the fields, as appropriate.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Enter a unique name for the catalog client script.</td>
</tr>
<tr>
<td>Applies to</td>
<td>Select the item type this client script applies to:</td>
</tr>
<tr>
<td></td>
<td>• A Catalog Item: enables the Catalog item field.</td>
</tr>
<tr>
<td></td>
<td>• A Variable Set: enables the Variable set field.</td>
</tr>
<tr>
<td>Active</td>
<td>Select the check box to enable the client script. Clear the check box to disable the script.</td>
</tr>
<tr>
<td>UI Type</td>
<td>Whether to apply this to desktop, mobile, or both.</td>
</tr>
<tr>
<td>Script</td>
<td>Enter the client script that should run on the service catalog item.</td>
</tr>
<tr>
<td>Type</td>
<td>Select when the script should run, such as onLoad or onSubmit.</td>
</tr>
<tr>
<td>Catalog item or Variable set</td>
<td>Select a catalog item or variable set from the list. The field name and options available depend on the selection in the Applies to field.</td>
</tr>
<tr>
<td>Applies on a Catalog Item view</td>
<td>Select the check box to apply the catalog client script to catalog items displayed within the order screen on the service catalog.</td>
</tr>
<tr>
<td>Applies on Requested Items</td>
<td>Select the check box to apply the catalog client script on a Requested Item form, after the item is requested.</td>
</tr>
<tr>
<td>Applies on Catalog Tasks</td>
<td>Select the check box to apply the catalog client script when a Catalog Task form for the item is being displayed.</td>
</tr>
</tbody>
</table>

4. Click Submit.

Service catalog variables

Administrators and users with the catalog_admin role can define service catalog variables.

A service catalog variable provides the ability to capture and pass on information about choices a customer makes when ordering a catalog item. Some variables can be defined to affect the order price, depending on the selected value.

For example, a New PC catalog item can use a variable called "Memory", which provides choices to allow customers to select extra memory, for associated extra prices.
Variables can be stored, accessed from multiple places, and passed between tasks in a process when fulfilling a request.

Variables can be displayed on the Requested Item and Catalog Task forms after an item has been ordered.

ServiceNow ITSA Suite provides a full set of variable types.

Types of variables

ServiceNow provides a set of 26 variable types.

The Service Catalog supports several types of variables, which are also referred to as questions. Some variable types accept variable attributes. You can also attach help text to any service catalog variable.

Refer to each variable for more information:

- **Break**
- **Check box**
- **Container variables**
- **Date**
- **Date and Time**
- **HTML**
- **Label**
- **List Collector**
- **Lookup Multiple Choice**
- **Lookup Select Box**
- **Macro**
- **Macro With Label**
- **Masked**
- **Multi-Line Text**
- **Multiple Choice**
- **Numeric Scale**
- **Reference**
- **Select Box**
- **Single-Line Text**
- **UI Page**
- **Wide Single-Line Text**
- **YesNo**

The following table shows the UI policy that does not apply to the variable/s listed against it.

<table>
<thead>
<tr>
<th>UI policy</th>
<th>Variable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mandatory</td>
<td>Break, Container Start, Container End, Container</td>
</tr>
<tr>
<td></td>
<td>Split, Label, Macro, Macro with Label, UI Page</td>
</tr>
<tr>
<td>Read only</td>
<td>Break, Container Start, Container End, Container</td>
</tr>
<tr>
<td></td>
<td>Split, Label, Macro, Macro with Label, UI Page</td>
</tr>
<tr>
<td>Visible</td>
<td>Break, Container End, Container Split</td>
</tr>
<tr>
<td>Show Attributes When Type is One of</td>
<td>Macro, Macro with Label</td>
</tr>
<tr>
<td>Certain Values</td>
<td></td>
</tr>
</tbody>
</table>
Break

Displays a horizontal line across the form. Breaks are formatting elements. No data is collected. The break variable is not yet supported on service portal and mobile devices.

Once this request is fulfilled and the category is created, you will be notified via email and sent a link to begin creating your items.

Figure 144: Break

Check box

Creates a check box to enable/disable options by selecting/clearing it. List check boxes in order under a label to create a multi-option question (as shown in the figure).

Consecutive check box variables are automatically grouped under an Options label. If you want to define a label of your own, then group check boxes under a label variable. The default Options label is replaced with the label variable.

Point to remember:

- Hiding the label hides the entire check box group.

Optional Software

- Microsoft PowerPoint
- Adobe Acrobat
- Adobe Photoshop
- Siebel Client

Figure 145: Check box

The following video provides more information on the check box variable:
Container start, container split, container end

All three variables are used to define a layout for a container that can hold more variables. Use container start and container end variables to define the start and end points of a container layout. The container end must be used along with container start to close a container.

A container layout can be split into two or three columns using the container split variable. By default, the split is calculated at the 50% mark.

A container is similar to a variable set. Unlike a variable set, containers can be used anywhere (including inside a variable set) and can be nested (a container inside a container). Refer to KB0539982 for more information on using container variables.

To reproduce the container format as shown in the figure, do the following in the container start variable:

- Select a Layout with 2 Columns Wide, alternating sides.
- Select the check box for Display title to use a collapsible title bar.

The container variables are not yet supported on service portal and mobile devices.

**Memory & CPU Options**

- **CPU Speed**
  - Intel Xeon Processor (2.66GHz 1.333GHz FSB)
  - Intel Xeon Processor (3.73GHz 1.333GHz FSB)

- **Memory**: 1GB

Figure 146: Container

**Date**

Creates a date input widget to display a date value.
Date and time

Creates a date and time input widget to display both date and time values. Time value is stored in Greenwich Mean Time (GMT) and displayed in the time zone of the current user.
HTML variables are useful for providing more content for an item that requires more advanced formatting, including images.

The variable can be:

- Used for user input.
- Used for reusable content when put into a variable set (for example, terms and conditions).
- Available in two modes: Edit and Read-only. In edit mode, a toolbar is available, and links do not work. In read-only mode, no toolbar is available, and links work. To switch between modes, use entitlements or create a UI policy to set the HTML field to read-only mode.

Attention: HTML variables are not supported for display on the shopping cart summary or approval summary screens. If the type is ‘HTML’, the available in summaries field is hidden in the variable form.

The HTML variable is not yet supported on service portal and mobile devices.
Your comments are valuable to us.

Figure 149: HTML

Label

Displays a label across the form. Labels are formatting elements. No data is collected.

Tip: You can use labels to arrange questions into sections. Use labels to create a multi-option question (for example, using check boxes).
List collector

Uses the list collector slushbucket interface to add multiple records from a table.

The list collector variable is not yet supported on service portal and mobile devices.

Note: Table with large data causes performance issues when loading the page. Use reference qualifiers to reduce data or use the glide_list attribute.

The following video provides more information on the list collector variable:

Note:
• Reference Qualifier and glide_list attribute applies to releases from Helsinki onward only. It does not apply to Geneva.
• Only when the glide_list attribute is true, you can set a value for this variable using a setValue() function in a catalog client script.

Lookup multiple choice

Creates radio buttons using data from a table. Functionality is similar to lookup select box, which creates a choice list from queried data.

The lookup multiple choice variable is not yet supported on service portal and mobile devices.

Note: Table with large data causes performance issues when loading the page. Use reference qualifiers to reduce data or use the reference type variable.

Figure 152: Lookup multiple choice

Lookup select box

Creates a choice list using data queried from a table. Functionality is similar to lookup multiple choice, which creates radio buttons from queried data.

To create the lookup select box shown in the figure, enter the following values:
• Lookup from table: Incident (incident)
• Lookup value field: Sys ID
• Lookup label field: number, category, priority
• Reference qual: caller_id=javascript:gs.getUserID()^active=true

The lookup select box variable is not yet supported on service portal and mobile devices.

Note: Table with large data causes performance issues when loading the page. Use reference qualifiers to reduce data or use the reference type variable.

Figure 153: Lookup select box

Macro

Inserts a UI macro into the catalog item.

UI macros in the service catalog do not support the following glide_list functions: clickthrough, slushbucket editing, and email field.

Attention: Use phase one Jelly only for any UI macros added as variables. Phase two Jelly within the macro is not processed and appears on the page as standard content.

The macro variable is not yet supported on service portal and mobile devices.

Figure 154: Macro

Macro with label

Inserts a UI macro with a label.
The macro with label variable is not yet supported on service portal and mobile devices.

![Macro with label](image)

**Figure 155:** Macro with label

Masked

The masked variable inserts a field that masks text entered by users. Each character entered by users is displayed as an asterisk (*). Use this variable to ask users for sensitive or confidential data such as passwords.

Since a masked variable uses platform encryption using TripleDES, the values for this variable are also encrypted. These values can be decrypted by using gr.variables.var_name.getDecryptedValue() on RITM, Catalog Task, or any task extension record created using a record producer.

![Password masked](image)

**Figure 156:** Masked

Multi-line text

Creates a multiple line text input widget.

![Multi-line text](image)

**Figure 157:** Multi-line text
Multiple choice

Creates radio buttons for question choices.

Is this service category for a Department or a Group?

- Department
- Group

Figure 158: Multiple choice

Numeric scale

Creates a horizontal set of radio buttons with numeric options from Scale min to Scale max (a Likert scale).

How well did we do? 0 1 2 3 4 5

Figure 159: Numeric scale

Reference

References a record in another table. For example, a variable named point_of_contact references the User [sys_user] table.

Keep the following information in mind as you work with reference variables:

- Reference variables use the auto-complete feature. To ensure that users have enough information, configure the reference lookup list.
- Reference variables store the sys_id of the selected record (like reference fields). To use the display value in a script, use the same methods as for a reference field.

```java
current.variables.<variable name>.getDisplayValue()
current.variable_pool.<variable name>.getDisplayValue()
```

Figure 160: Reference

Select box

Creates a choice list from pre-defined question choices.
Do you need this today?

Yes

Figure 161: Select box

Single-line text

Creates a single-line text input field.

The single-line text variable is not yet supported on service portal and mobile devices.

Last Name

Johnson

Figure 162: Single-line text

UI page

Inserts a UI page into the catalog item.

Note:

• Use phase one Jelly only for any UI macros added as variables. Phase two Jelly within the macro is not processed and appears on the page as standard content.

• The client scripts of a UI page are ignored when you define the associated UI Page variable for a catalog item. This behavior is applicable as long as the glide.ui.escape_text and glide.ui.escape_all_script properties are set to true. For information about these high security settings, see High Security Settings.

• The UI page variable is not yet supported on service portal and mobile devices.

Wide single-line text

Creates a single-line text input field that spans the form, allowing for longer input.

The wide single-line text variable is not yet supported on service portal and mobile devices.
Yes/No

Creates a choice list with Yes and No as options.

Service portal and mobile support for variables

The service catalog on mobile devices and service portal do not support the following variable types:

- Break
- Container variables
- HTML
- Label
- List Collector
- Lookup Multiple Choice
- Lookup Select Box
- Macro
- Macro With Label
- Masked
- Single-Line Text
- UI Page
- Wide Single-Line Text

Create a variable

Create service catalog variables to ask questions for ordering a catalog item.

To create a variable for a catalog item:

1. Navigate to Service Catalog Maintain Items.
2. Select the desired catalog item.
3. In the Variables related list, click New.
4. Select the variable type - some additional fields are displayed depending on the type.
5. Fill in the fields.
Table 165: Catalog variable form

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Select a <a href="#">variable type</a> to create.</td>
</tr>
<tr>
<td>Application</td>
<td>Read-only field that indicates which applications can use this variable.</td>
</tr>
<tr>
<td>Cat item</td>
<td>Displays the catalog item using the variable.</td>
</tr>
<tr>
<td>Mandatory</td>
<td>Select to make the variable mandatory as part of the ordering process.</td>
</tr>
<tr>
<td>Active</td>
<td>Select to make the variable active (available).</td>
</tr>
<tr>
<td>Order</td>
<td>The sequence order for the placement of variables. Variable with the least</td>
</tr>
<tr>
<td></td>
<td>value is placed at the top followed by variable with the next greatest</td>
</tr>
<tr>
<td></td>
<td>value. For example: 1, 2, 3, 4... 100, 200, 300, 400...</td>
</tr>
<tr>
<td>Global</td>
<td>If selected, the variable is available for all catalog tasks within service</td>
</tr>
<tr>
<td></td>
<td>catalog workflows or execution plans by default. If deselected, the</td>
</tr>
<tr>
<td></td>
<td>variable must be associated with individual catalog tasks.</td>
</tr>
<tr>
<td>Fields displayed when the variable belongs to record producers</td>
<td></td>
</tr>
<tr>
<td>Map to field</td>
<td>Maps the variable to a specific field on the table for the record producer.</td>
</tr>
<tr>
<td>Field</td>
<td>The field that the variable maps to.</td>
</tr>
<tr>
<td>Record producer table</td>
<td>The table that the record producer creates a record in.</td>
</tr>
<tr>
<td>Question</td>
<td>Compose a question to display to the end user.</td>
</tr>
<tr>
<td>Name</td>
<td>Enter an identifying name for the question to be stored in the system.</td>
</tr>
<tr>
<td>Tooltip</td>
<td>When the user rests the pointer on the variable, the tooltip is displayed.</td>
</tr>
<tr>
<td></td>
<td>Enter a brief note to describe the purpose of the “Question”.</td>
</tr>
<tr>
<td>Description</td>
<td>Enter a detailed description of the question. It is not visible to the</td>
</tr>
<tr>
<td></td>
<td>customer.</td>
</tr>
<tr>
<td>Show help</td>
<td>If selected, displays the <a href="#">help information</a> for the variable.</td>
</tr>
<tr>
<td>Help tag</td>
<td>If the Always Expanded check box is deselected, click the value specified</td>
</tr>
<tr>
<td></td>
<td>in this field to display the Help text field value.</td>
</tr>
<tr>
<td>Help text</td>
<td>Help information for a service catalog variable.</td>
</tr>
</tbody>
</table>

Note: It is not available for break and check box variables.
<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instructions</td>
<td>Information that requires rich text formatting or adding images to support help information.</td>
</tr>
<tr>
<td></td>
<td>Note: For HTML tables, use sizes that are within the width of the variable.</td>
</tr>
<tr>
<td>Type Specifications</td>
<td>Options in this section differ depending on the variable type.</td>
</tr>
<tr>
<td>Default Value</td>
<td></td>
</tr>
<tr>
<td>Default value</td>
<td>The default value for the variable.</td>
</tr>
<tr>
<td>Variable attributes</td>
<td>The attributes for this variable.</td>
</tr>
<tr>
<td>Availability</td>
<td></td>
</tr>
<tr>
<td>Visible Elsewhere</td>
<td>If selected, the variable is visible in the item form before ordering the item, in VEditor after ordering the item, and in the cart view of the item.</td>
</tr>
<tr>
<td>Visible on Bundles</td>
<td>If selected, the variable is visible when the item is added to a bundle.</td>
</tr>
<tr>
<td>Visible on Guides</td>
<td>If selected, the variable is visible only when the item is added to an order guide.</td>
</tr>
<tr>
<td></td>
<td>Note: If an order guide has too many items and variables, consider clearing this check box on as many items as possible, to improve loading performance on order guides.</td>
</tr>
<tr>
<td>Visible on Summaries</td>
<td>If selected, the variable is visible on any variable summarizer of the catalog item. In Service Portal, the variable is visible in the RITM ticket view and the Approval page.</td>
</tr>
</tbody>
</table>

6. If applicable, apply roles to control who can create, read, or update the information in the variable.

7. Click Submit.
Note: Configure the variable form to display all fields.

Define help information
Additional user assistance helps to fulfill a variable’s purpose.

To include help information for variables:
1. Select the Show Help option. Additional fields appear, to define the Help tag and Help text.
2. In the Help tag field, enter the short descriptive text that should appear between the question and the responses. For example, Click here for help or Preview.
3. In the Help text field, enter the expanded help text that appears when the user clicks the Help tag.

Note: Help Text and Help Tag are not designed to support HTML tags. If you choose to use HTML tags, the glide.ui.escape_text property in High Security Settings is honored. See KB0562895.
**Variable type specifications**
List of fields displayed for variable type specifications.

Table 166: Type specifications for catalog variables

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
<th>Displayed for</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price if checked</td>
<td>The price of the item.</td>
<td>CheckBox</td>
</tr>
<tr>
<td>Recurring price if checked</td>
<td>The price that increments for the order, when the user requests more than a single quantity.</td>
<td>CheckBox</td>
</tr>
<tr>
<td>Layout</td>
<td>Sets the layout for the container, whether one or two columns.</td>
<td>Container Start</td>
</tr>
<tr>
<td>List table</td>
<td>The table with the values for the list collector.</td>
<td>List Collector</td>
</tr>
<tr>
<td>Reference qual</td>
<td>Supports <a href="#">reference qualifiers and advanced reference qualifiers</a>.</td>
<td>List Collector, Lookup Multiple Choice, Lookup Select Box, Reference</td>
</tr>
<tr>
<td></td>
<td>Returns all matching results (no maximum).</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Note: For security reasons, the use of scripts in the Reference qual field is restricted to system administrators through the Allow javascript in Default Value business rule.</td>
<td></td>
</tr>
<tr>
<td>Lookup from table</td>
<td>Specify a database table for the variable to look into. The values from this table are populated in the Lookup value field.</td>
<td>Lookup Multiple Choice, Lookup Select Box</td>
</tr>
<tr>
<td>Lookup value field</td>
<td>Specify a database field for the variable to look into. Values associated to the database field are loaded as selection options for the variable.</td>
<td>Lookup Multiple Choice, Lookup Select Box</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
<td>Displayed for</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>Lookup label field(s)</td>
<td>A comma-separated list of fields on the lookup table whose values are used to display the selections in the select box.</td>
<td>Lookup Multiple Choice, Lookup Select Box</td>
</tr>
<tr>
<td>Lookup price field</td>
<td>The field whose value is used to modify the price of the item being ordered.</td>
<td>Lookup Multiple Choice, Lookup Select Box</td>
</tr>
<tr>
<td>Lookup recurring price field</td>
<td>The field whose value is used to modify the recurring price of the item being ordered.</td>
<td>Lookup Multiple Choice, Lookup Select Box</td>
</tr>
<tr>
<td>Choice direction</td>
<td>Sets the direction for choice list. Across arranges choices horizontally. Down arranges choices vertically.</td>
<td>Lookup Multiple Choice, Multiple Choice</td>
</tr>
<tr>
<td>Include none</td>
<td>Select the check box to include the term None in a list of choices.</td>
<td>Lookup Multiple Choice, Lookup Select Box, Multiple Choice, Select Box</td>
</tr>
<tr>
<td>Unique values only</td>
<td>Permit the field to have a unique value. The system does not allow two records to have the same value for that field.</td>
<td>Lookup Multiple Choice, Lookup Select Box, Select Box</td>
</tr>
<tr>
<td>Macro</td>
<td>The UI macro to insert into the catalog item.</td>
<td>Macro, Macro with Label, UI Page</td>
</tr>
<tr>
<td>Use confirmation</td>
<td>Select to provide the user with a confirmation prompt. Users reenter data when prompted to confirm their data entry.</td>
<td>Masked</td>
</tr>
<tr>
<td>Use encryption</td>
<td>Select to store the answer in encrypted format in the database. If not encrypted, the answer is stored in plain text format. Encryption uses <strong>Triple DES</strong> with system encryption.</td>
<td>Masked</td>
</tr>
<tr>
<td>Do not select the first choice</td>
<td>Applies to default choice selection on loading the page. If checked, no choices are selected. If unchecked, the first choice is selected by default.</td>
<td>Multiple Choice, Numeric Scale</td>
</tr>
<tr>
<td>Scale min</td>
<td>Enter the lowest value/level on the selectable scale.</td>
<td>Numeric Scale</td>
</tr>
<tr>
<td>Scale max</td>
<td>Enter the highest value/level on the selectable scale.</td>
<td>Numeric Scale</td>
</tr>
<tr>
<td>Reference</td>
<td>Specify a reference table for the variable.</td>
<td>Reference</td>
</tr>
<tr>
<td>Use reference qualifier</td>
<td>Select the type of qualifier - simple, dynamic, or advanced.</td>
<td>Reference</td>
</tr>
<tr>
<td>Reference qual condition</td>
<td>Simple qualifier - Option to build conditions.</td>
<td>Reference</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
<td>Displayed for</td>
</tr>
<tr>
<td>-----------------------</td>
<td>---------------------------------------------------------------------------------------------------</td>
<td>---------------</td>
</tr>
<tr>
<td>Dynamic ref qual</td>
<td>Dynamic qualifier - Select a dynamic filter to run a query against a reference field.</td>
<td>Reference</td>
</tr>
<tr>
<td>Choice table</td>
<td>Specify a database table. The values from this table are populated in the Choice field.</td>
<td>Select Box</td>
</tr>
<tr>
<td>Choice field</td>
<td>Specify a database field. Select box variable loads the field choices as selection options. If no choices are defined for a field, then the variable loads field-related distinct values from the database table.</td>
<td>Select Box</td>
</tr>
</tbody>
</table>

**Variable attributes**

Some service catalog variables support specific attributes.

In the catalog variable form, attributes are entered in the Variable attributes field. You can enter multiple attributes for a variable type by separating each with a comma.

---

Note: If you do not see the Variable attributes field, then enable the Show attributes when Type is One of Certain Values UI policy.

---

**List collector**

- no_filter: Hides the filter fields that appear above a list collector.
- glide_list: Changes the list collector interface from slushbucket to glide list.
- ref.qual_elements: A list of fields to be sent back to the server to get an updated reference.

**Lookup multiple choice, Lookup select box**

- ref.qual.elements: A list of fields to be sent back to the server to get an updated reference.

**Reference**

- ref.auto_completer: Specifies the name of a JavaScript class (client-side) that creates the list for auto completion choices.
- ref.ac.columns: Specifies the columns whose display values appear in an auto completion list in addition to the name.
- ref.ac.order_by: Specifies the column that is used to order the auto completion list.

**Single-line text, Wide single-line text**

- max_length: Sets the maximum character length. For example, max_length=200. The maximum value for max_length is 4000.

---

Attention: Attribute behavior is specific to the service catalog.

**Question choice**

Service catalog enables you to define a question choice for a variable.

Some variable types present the user with a list of choices. For example, a multiple choice variable that asks how much memory you want in a computer requires you to define the available choices, such as 1GB and 2GB.
To define a question choice for a variable:

1. Open the variable definition.
2. In the Question Choices related list, click New.

3. Enter the question choice details and click Submit to save the record.
   - **Price** and **Recurring price**: variables may affect the item’s price and recurring price (if used).
   - **Order**: the number defining the order this appears when displayed.
   - **Question**: the actual question being asked for that variable.
   - **Text**: the choice presented to the user.
   - **Value**: the value stored in the database.

4. Repeat the steps for each available choice to define the full set of choices for that variable.

   **Note**: When you modify variable choices that are attached to a catalog item, the existing requested items (RITMs) are also affected. For example, if you add a variable choice for the catalog item, the value of that choice is also considered in the existing RITMs. If you delete a variable choice that is selected for a RITM, the value of that choice still persists in the RITM.
Pass variables between tasks

Variables are passed from one step of the fulfillment process to another.

They can be processed by any workflow or execution plan that is associated with the requested items.

Note: To pass a variable between tasks, select the Global check box when you create a Service Catalog variable.

For example, consider the following tasks within the fulfillment process for a New PC catalog item.

1. Procure a PC.
2. Install corporate standard software.
3. Set up email account.
4. Deliver and set up PC for requester.

Step 4 may require a piece of information from step 3 (the email account credentials for setting up email on the PC). If steps 3 and 4 are executed by different fulfillment groups, you can use variables to make this information visible in the tasks for steps 3 and 4, and to pass it between groups so that the second group can access the email account credentials.

Service catalog data lookup

The Data Lookup and Record Matching Support for Service Catalog plugin offers similar features to the general Data Lookup and Record Matching Support plugin.

The Data Lookup and Record Matching Support for Service Catalog plugin offers similar features to the general Data Lookup and Record Matching Support plugin. Use the plugin for service catalog to perform data lookups for variables on service catalog item screens, on requested items, and on catalog tasks as a user fills out the values contained in variables.

Service catalog data lookup roles

Service catalog enables specific roles to participate in the process of creating and using service catalog data lookups.

Table 167: Service catalog data lookup roles

<table>
<thead>
<tr>
<th>Role</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>catalog_lookup_admin</td>
<td>Similar to data_lookup_admin. Can create, update, and delete catalog data lookup definitions, matcher variable definitions, and setter variable definitions.</td>
</tr>
<tr>
<td>catalog_lookup_manager</td>
<td>Can read catalog data lookup definitions, matcher variable definitions, and setter variable definitions. The role can be granted to anyone using catalog data lookups so they can see the definitions for which they are creating rules. As required, grant create, read, write, or delete access to the individual data lookup rules tables created to delegate maintenance.</td>
</tr>
</tbody>
</table>

Create a catalog lookup definition

You can create a catalog data lookup definition record.

Note: The Run on Insert and Run on Update options are not supported for catalog data lookups. Other options operate the same as for normal data lookup.

2. Click New.
3. Select Catalog Data Lookup Rule.
4. Enter a Name.
5. In Applies to, select catalog item or variable set.
6. In Catalog item/Variable set, select a specific item or set.
7. Select a Matcher Table.
8. Select other options, as required.
9. Right-click the form header and click Save.
10. From the Catalog Matcher Variable Definitions related list, click New.
11. In Source Variable name, select the variable name of the item or variable set that contains the values to be matched.
12. In Matcher table field, select the field from the matcher table that contains the value to be matched.
13. Fill in the other fields, as appropriate.

For example:

![Figure 166: Service catalog lookup](image)

14. Click Submit.
15. From the Catalog Setter Variable Definitions related list, click New.
16. In Source Variable name, select the variable name for the item or variable set to be updated.
17. In Matcher table field, select the field from the matcher table that contains the value to be set.
18. Fill in the other fields as appropriate.
19. Click Submit.
20. Click Update.

For example:
Catalog lookup definition fields
A data lookup rule can apply to a catalog item or a variable set to perform data lookup on service catalog item screens, requested items, and catalog tasks.

Table 168: catalog data lookup definition fields

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Enter a unique name to identify the definition record.</td>
</tr>
<tr>
<td>Applies to</td>
<td>Select what the data lookup rule should apply to: a catalog item or a variable set.</td>
</tr>
<tr>
<td>Catalog item/Variable Set</td>
<td>Select the catalog item or variable set to which the data lookup rule should apply.</td>
</tr>
<tr>
<td>Matcher Table</td>
<td>Select the table containing the lookup values. This table normally begins with a <code>u_</code> prefix. Note: The list shows only tables and database views that are in the same scope as the catalog data lookup definition.</td>
</tr>
<tr>
<td>Active</td>
<td>Select this check box to run this catalog data lookup rule. Clear the check box to ignore this catalog data lookup rule.</td>
</tr>
<tr>
<td>Run on form change</td>
<td>Select this check box to automatically look up values whenever a user changes a variable value on a catalog item or form. This is the only supported method for catalog data lookup rules. Note: This does not include changes automatically made by other data lookup rules, such as the priority lookup rules.</td>
</tr>
</tbody>
</table>

Setter variable definition fields
The setter fields determine what variable the data lookup changes when the matching conditions are true.
Table 169: Setter variable definition fields

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Lookup</td>
<td>Displays the name of the parent data lookup definitions record.</td>
</tr>
<tr>
<td>Source variable field</td>
<td>Select the variable from the source item or variable set that the data lookup updates.</td>
</tr>
<tr>
<td>Matcher table field</td>
<td>Select the field from the matcher table that provides the new value for the update.</td>
</tr>
<tr>
<td>Always replace</td>
<td>Select this check box to replace any existing value with a value from the data lookup. Clear this check box to ignore the update if the field has an existing value.</td>
</tr>
</tbody>
</table>

Add a data lookup value
The columns of a data lookup table contain both matcher and setter field data.

Each data lookup is a query that searches for a row containing values that match the matcher fields. The data lookup then returns the value listed in the setter fields.

For example, you can define the matching settings for bronze, silver, and gold offerings as described previously.

To add values to the lookup table:
1. In the navigation filter, enter the name of the new custom lookup table.
2. Configure the list and create appropriate fields for the lookup table.
3. From the table list, click New and enter appropriate matcher and setter field values. For example:

![Image of Service catalog lookup 1]

Figure 168: Service catalog lookup 1

Note: Each row in a data lookup table must be unique.

Custom data lookup
You can create a custom table to store lookup data.

The custom table must extend the Data Lookup Matcher Rules (dl_matcher) table.

For example, you can create a Server Offering Lookups table to store information about matcher offerings (bronze, silver, and gold) and associated setter values (memory and disk space) for each matcher offering.

Create a custom data lookup
Creating a new catalog data lookup is similar to creating a normal, custom data lookup except when creating the catalog data lookup definition record.
1. Create a custom data lookup table. It must extend the Data Lookup Matcher Rules (dl_matcher) table.

2. Add data lookup values to the data lookup table.

3. Create a catalog data lookup definition record.

4. (Optional) Create a data lookup module.

**Troubleshooting**

If the custom data lookup definition rules are not behaving as expected, check for certain conditions.

If the custom data lookup definition rules are not behaving as expected, check for the following conditions:

- Ensure that the matcher variable is not read-only. Since users cannot change read-only variables, there cannot be an on form change event for read-only variables.
- Ensure that the data in the matcher table is correct.
- If the lookup requires an exact match, verify that there is a matcher table row for each possible combination (including blank values). The lookup fails if cannot find a matching value.
- If the variable is an option or check box, it always has a value, so you must select Always replace.
- Verify that you have not created a recursive rule, such as:
  
  If Variable A = 1, then Variable B =2. If Variable B = 2, then Variable A = 2.

**Audit service catalog variables**

The audit history records all changes to named service catalog variables.

Auditing is enabled by default for service catalog variables.

These changes are displayed in:

- The requested item history for all variables associated with the item.
- The catalog task history for all variables that would normally be used by the task.

This auditing allows service catalog administrators to view a full history of changes to variables that may have affected the parent record, including their creation.

**Note:** Unnamed variables are not audited

**Enabling Auditing**

To enable auditing:

1. Navigate to System Properties › Service Catalog.
2. Locate the line Audit changes to Service Catalog Variables.
3. Select the Yes check box to enable auditing.

**Service catalog variable sets**

Administrators and catalog administrators often define multiple catalog items that use the same group of service catalog variables. Catalog managers and catalog editors can attach a variable set for items and categories to which they are assigned. However, neither catalog managers nor catalog editors can create a variable set.

For example, a catalog administrator defines ten catalog items for types of servers, and the request process for all of these items asks the same five questions, using the same variables.
Associating these variables individually per catalog item is repetitive, time-consuming and error-prone. Also, to make a single change to multiple catalog items involves manually changing each item. For example, to add a new variable to ten catalog items, you would need to manually associate this new variable with each item.

Variable sets allow you to group variables together, and share this group between multiple catalog items and order guides. Changes made to a variable set affect all items that use the variable set, allowing you to change the set once, then apply the changes to all items using that set.

Note: Variables in a set use the same rules as other variables to determine when the variables in a set appear on a task. For example, variables must either be global or be attached directly to an item. A note indicates neutral or positive information that emphasizes or supplements important points of the main text. A note supplies information that may apply only in special cases. Examples are memory limitations, equipment configurations, or details that apply to specific versions of a program.

Create a variable set

Service catalog allows you to define a set of variables to be stored as a variable set for future use.

To create a variable set:

1. Navigate to Service Catalog Catalog Variables Variable Sets.
2. Click New.

3. Enter details.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>The variable set name.</td>
</tr>
<tr>
<td>Order</td>
<td>The order number. See Define variable set order.</td>
</tr>
<tr>
<td>Display title</td>
<td>A check box to give the variable set its own title and header bar, with collapse and expand buttons on the right.</td>
</tr>
<tr>
<td>Title</td>
<td>The variable set title. Appears if the Display title check box is selected.</td>
</tr>
</tbody>
</table>
### Field Description

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Layout</td>
<td>The layout display. Set to 1 Column Wide or 2 Columns Wide, alternating sides or 2 Columns Wide, one side, then the other.</td>
</tr>
</tbody>
</table>

4. Right-click and select Save.

5. Create the variables to use in that set.
   1. In the Variables related list, click New.
   2. Follow the steps for creating variables.

6. Click Submit to save the record.

**Add a title and header bar**

Variable sets can display an optional title, along with a section header bar to collapse and expand the section.

To give the variable set a title and header bar:

Within a variable set record, select Display Title.
Note: When a user requests the item, all check box variables are grouped together under a default title of Options. To use a custom title, insert a variable of type Label, with an Order value that puts it directly above the check box variables.
Define variable set layout

Variable sets can have one of many layouts.

- **1 column wide**: Variables appear in a single vertical column, ordered from top to bottom. This is a simple way to display information, but can result in empty space to the right of questions. This is the default layout.
- **2 columns wide, alternating sides**: Variables are laid out in two columns with variables placed alternately in the left and right columns.
- **2 columns wide, one side, then the other**: The first half of the variable set is laid out sequentially in the left column and the second half is laid out sequentially in the right column.

**Note**: Variables with several possible choices defined, such as *multiple choice* variables, are considered a single entity in layouts. All choices are displayed as a single, contiguous unit.

For additional layout options, you can also add *container variables* to a variable set.

For example, create the following variables and orders:

Table 170: Table title

<table>
<thead>
<tr>
<th>Variable</th>
<th>Order</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alfa</td>
<td>100</td>
</tr>
<tr>
<td>Bravo</td>
<td>200</td>
</tr>
<tr>
<td>Charlie</td>
<td>300</td>
</tr>
<tr>
<td>Delta</td>
<td>400</td>
</tr>
<tr>
<td>Echo</td>
<td>500</td>
</tr>
<tr>
<td>Foxtrot</td>
<td>600</td>
</tr>
</tbody>
</table>

Table 171: Table title

<table>
<thead>
<tr>
<th>1 Column Wide</th>
<th>2 Columns Wide, alternating sides</th>
<th>2 Columns Wide, one side, then the other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alfa</td>
<td>Alfa Bravo</td>
<td>Alfa Delta</td>
</tr>
<tr>
<td>Bravo</td>
<td>Charlie Delta</td>
<td>Bravo Echo</td>
</tr>
<tr>
<td>Charlie</td>
<td>Echo Foxtrot</td>
<td>Charlie Foxtrot</td>
</tr>
<tr>
<td>Delta</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Echo</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foxtrot</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Define variable set order

A variable set is a discrete unit with an order number by default.

All variables within the set are included wherever the set is included.

For example, if you set the following order for some example variables and a variable set:

- Variable A (100)
• Variable B (200)
• Variable C (300)
• Variable Set 1 (250) - containing three variables (VS1, VS2, VS3) with incremental order values (150, 250, 350)

The variables are displayed in this order:
• Variable A (100)
• Variable B (200)
• Variable Set 1 (250): Variable VS1 (150)
• Variable Set 1 (250): Variable VS2 (250)
• Variable Set 1 (250): Variable VS3 (350)
• Variable C (300)

*Set an item specific order*
You can set the order value on a per item basis.

When a variable set is used by more than one catalog item, you can define item-specific ordering to provide more flexibility in the layout, using the catalog variable set record associated with the item.

Use the Order field in this catalog variable set record to set this order value on a per-item basis, overriding the default value defined in the variable set.

To view and edit the catalog variable set order for an item:
1. Navigate to Service Catalog Catalog Definition Maintain Items.
2. Open the catalog item to edit.
3. Navigate to the Variable Sets related list
4. Click the reference icon for the variable set.
5. Set the order value as required. As the catalog variable set order is specific to the link between the item and the variable set, it overrides the default order defined on the variable set itself:

*Set orders flexibly examples*

The following example demonstrates the layout of variables when variable sets and item variables are associated with an item under different scenarios.

The order for display of the variables and variable sets is specified using the Information icon in the Related Lists.
In Layout 1, order values are specified for both Variable Set A and Variable Set B at the Related Lists level and those order values always takes precedence. Hence, the layout is organized based on the order value specified for the variable sets at the Related Lists level.

In Layout 2, an order value is not specified for Variable Set A whereas an order value is specified for Variable Set B at the Related Lists level. In this case, the empty value for Variable Set A is considered as zero. Hence, the layout is organized based on the order value of 0 for Variable Set A and 300 for Variable Set B.
- In Layout 3, order values are not specified for both Variable Set A and Variable Set B at the Related Lists level. In this case, the order values specified within the variable sets are considered. Hence, the layout is organized based on the order value of 400 for Variable Set A and 150 for Variable Set B.

Add a variable set to a catalog item

Service catalog enables you to add a variable set to one or more catalog items.

1. Navigate to Service Catalog Catalog Definition Maintain Items.
2. Open a catalog item.
3. In the Variable Sets related list, click Edit.
   - You may need to configure the form to add the Variable Sets related list.
4. Select and add a variable set.
5. Click Save.

Service catalog security

Service catalog enables you to set the security for catalog by means of user criteria.

Set security for items and categories

Administrators can control access to content in the service catalog by creating and applying user criteria records.

Catalog managers and catalog editors can apply existing user criteria for items and categories to which they are assigned. However, catalog managers and catalog editors cannot create or edit user criteria directly.

You can create user criteria records that define conditions for user information. Then apply these criteria records to catalog items and categories, controlling access to these items and categories.

For example, create a USA Sales user criteria record matching users who are both in the sales team and based in the USA. Then apply this record to the USA IT Hardware catalog category, so only users matching the record can access that category.

The feature is active by default in new Fuji instances and upgraded instances that do not use entitlement-based access controls. If you upgrade an instance that uses entitlements, you can migrate to user criteria to take advantage of the improved control, flexibility, and reuse.

Access controls allow you to:

- Manage access to multiple items and categories in one user criteria record. For example, create a single UK Employees user criteria record and apply it to multiple items and categories that are available to employees in the UK.
- Allow access if one condition matches, or if all conditions match. For example, define that only users who are both in a specific location and who belong to a specific department can have access.
- Use Available For and Not Available For lists to allow or prohibit access to users matching the conditions in a criteria record. For example, specify that a US-based catalog category is available for the users located in the USA but is not available for users belonging to the Sales department (whether in the US or not).
- Extend matching to create conditions matching additional fields in the User [sys_user] table, without having to use a script. For example, you can add a condition to match items against the Cost center field in user records.

Note: For changes in User [sys_user] table records to be effective, you should log out and log in.
Create a user criteria record
User criteria records define conditions that are evaluated against user records.

You can apply several user criteria records to a single catalog item or category. In this situation, users need to match only one of these criteria records to have access.

1. Navigate to Service Catalog Catalog Definition User Criteria and create a record.

![User Criteria Record](image)

Figure 169: Service Catalog User Criteria Record

2. Fill in the fields on the form, as appropriate.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>The name of the criteria record.</td>
</tr>
<tr>
<td>Users</td>
<td>The individual user records to match.</td>
</tr>
<tr>
<td>Groups</td>
<td>The group records to match.</td>
</tr>
<tr>
<td>Roles</td>
<td>The roles to match.</td>
</tr>
<tr>
<td>Advanced</td>
<td>A checkbox to display or hide the Script field.</td>
</tr>
<tr>
<td>Script</td>
<td>A script to define any additional criteria, and return true or false. This field is available only if Advanced is selected.</td>
</tr>
</tbody>
</table>

Note: Because scripts are evaluated dynamically, including scripts in user criteria records can decrease performance.
<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Check box</td>
<td>For check boxes, describe the selected condition. For example: “Check box for enabling the feature” or “Select the check box to enable the feature.” Describe the cleared condition only when it is not obvious.</td>
</tr>
<tr>
<td>Active</td>
<td>A check box to activate or deactivate this criteria record.</td>
</tr>
<tr>
<td>Companies</td>
<td>The companies to match.</td>
</tr>
<tr>
<td>Locations</td>
<td>The locations to match.</td>
</tr>
<tr>
<td>Departments</td>
<td>The departments to match.</td>
</tr>
<tr>
<td>Match All</td>
<td>A check box to determine whether all elements from each populated criteria field must match. If selected, only users who match all criteria are given access. If cleared, the user must meet one or more of the set criteria to be given access. By default, this check box is cleared so that any condition met provides a match. For example, consider a user criteria record for the following: • Locations A or B • Company C or D With Match All selected, only users meeting all of these conditions are matched. For example, a user with a location A and a company C. With Match All cleared, users meeting any of these conditions are matched. For example, a user with a location B.</td>
</tr>
</tbody>
</table>

Note: If you select Match All, ensure that you do not create contradictory conditions which can never be met. For example, if all users in location A work for company G, then the conditions in this example can never be met.

Apply user criteria to items
Service catalog enables you to apply user criteria to an item, defining which users can and cannot access that item.

You can apply user criteria to all types of catalog item, including order guides, content items, and record producers.

Note: The user criteria restriction applies only within Service Catalog for the specific item it is applied for. However, the user criteria restriction is not applied outside the Service Catalog where the user has access to the item via the table.

To apply user criteria to an item:
1. In an item record, navigate to the Available For or Not Available For related lists.
2. Click Edit to add an existing user criteria record, or click New to create a new one.
3. Save the record to associate the user criteria record with the item.

Note:
The Not Available For settings override Available For settings. A user on the Not Available For list for an item cannot access that item, even if that user is also on the Available For list for that item.

---

Apply user criteria to categories
You can apply user criteria to a category, defining which users can and cannot access that category.

1. In a category record, navigate to the Available For or Not Available For related lists.
2. Click Edit to add an existing user criteria record, or click New to create a new one.
3. Save the record to associate the user criteria record with the category.

Note:
- The Not Available For settings override Available For settings. A user on the Not Available For list for a category cannot access that category, even if that user is also on the Available For list for that category.
- The user criteria restrictions of a category do not automatically apply to the catalog items within the category. If required, you should apply the user criteria restrictions to the individual catalog items.

---

Apply user criteria to items and categories
You can apply a user criteria record to items and categories, either from the item or category form or from the user criteria form.

Note: The user criteria restriction applies only within Service Catalog for the specific item it is applied for. However, the user criteria restriction is not applied outside the Service Catalog where the user has access to the item via the table.

To apply criteria directly to an item or category, use the Available For or Not Available For related lists in the Item or Category form.

Note:
- When a change is made to the end-user profile, such as location, and it affects their ability to view items, those changes do not take effect until the end user has relaunched the session.
- The user criteria restrictions of a category do not automatically apply to the catalog items within the category. If required, you should apply the user criteria restrictions to the individual catalog items.

To apply criteria directly from the User Criteria form, add items to the Available For Catalog Items and Not Available For Catalog Items related lists, and add categories to the Available For Categories and Not Available For Categories related lists. You may need to configure the User Criteria form to add these lists.

Note:
The Not Available For settings override Available For settings. A user on the Not Available For list for an item cannot access that item, even if that user is also on the Available For list for that item.
Extend user criteria
Service catalog enables you to extend user criteria to match against additional reference fields in the User [sys_user] table, such as hidden or custom fields, without using a script.

You can then add a matching field in the User Criteria [user_criteria] table, allowing you to define conditions based on this field in user criteria records.

Note: The column on the User table must be a reference field, and the matching column on the User Criteria table must be a glide_list type field. Also, both columns must have matching names. Columns with a “U” prefix are catered for, so, for example, “cost_center” and “u_cost_center” are considered as matching.

1. Navigate to System Definition Tables.
2. Locate and open the User Criteria record.
3. In the Columns section, insert a row for the new field.
4. Set the type to List and select the appropriate reference field. For example, select cmn_cost_center to set criteria based on cost centers.
   You have a step with a list, note, and image.
5. Navigate to Service Catalog Catalog Definition User Criteria.
6. Select or create a user criteria record, and see that you can now use the new field.

You can further extend the User Criteria table to match against any columns in other tables. In the User [sys_user] table, add a new reference field to the other table, then extend the user criteria table to refer to that reference field, as described above.

Implementing user criteria
When creating user criteria for your system, consider the following recommendations.

• Design Criteria for Reuse:
   Ensure that you design user criteria for maximum reuse. Create user criteria records with common sets of conditions matching your organization’s requirements. Allow them to be shared across as many items and categories as possible, rather than creating multiple similar criteria records for individual items and categories
• Naming conventions: Give each user criteria record a meaningful name, to help you determine the function for that record. For example,
  • Users in company Cloud Dimensions AND in London
  • Users in company Cloud Dimensions OR in London
  • Users belonging to the Group Development, IT, or Sales
  • Users with role itil, asset_manager, or catalog_admin
• Test user criteria on a non-production instance: Consider testing user criteria on a development or test instance, and then transferring the records from the user criteria tables and catalog records to your production instance using update sets.

User criteria migration
Service catalog user criteria records provide access control for service catalog items and categories.

You may need to migrate your access controls to use user criteria. The user criteria feature is automatically enabled for new instances. If you upgrade your instance, a script runs to determine current access control usage.

• If your instance does not use entitlement-based access controls, the user criteria feature is automatically enabled.
• If your instance does use entitlements, the user criteria feature is not enabled. If you want to use user criteria, use the procedure described on this page to migrate your access controls from entitlements to user criteria.
Migrate to user criteria to provide more reuse, control, and flexibility compared to entitlements.

For example, you can use a single criteria record to make multiple catalog items available to only users who meet all these requirements:

- Are located in EMEA or APAC
- Belong to ACER
- Are in the Training department

Migrate to service catalog user criteria

Service catalog enables you to maintain the required access controls to your service catalog while migrating from entitlements to user criteria.

To maintain the required access controls to your service catalog while migrating from entitlements to user criteria:

1. Navigate to Service Catalog Catalog Policy Properties and verify that the user criteria feature is not already enabled on your system.
   - If the property Use “User Criteria” to define access to catalog items and categories (glide.sc.use_user_criteria) is set to true, you can skip the following steps. The user criteria feature is automatically enabled because entitlements were not used in your old system.
   - If this property is set to false, continue with the following steps. The user criteria feature has not been enabled yet on your system.

2. To preview the user criteria feature, set the service catalog property Enable both “User Criteria” and “Entitlement” related lists for catalog items and categories when migrating from entitlements (glide.sc.user_criteria_migration) to true. This option lets you compare user criteria records and entitlements before you fully switch to user criteria.

3. Inspect your service catalog items and categories to identify access control sets that you can configure user criteria records for. Review your current entitlements and record your organization’s current design for access controls. Focus on identifying patterns where multiple items have the same combination of location, group, and so on. Each combination is a possible access control set.

4. Create a user criteria record for each access control set that you identified from your inspection of the service catalog.

You have a step with a list, note, and image.

5. Apply these user criteria records to the items and categories identified, replacing the equivalent entitlements.

6. Enable user criteria on your system by setting the service catalog property Use “User Criteria” to define access to catalog items and categories (glide.sc.use_user_criteria) to true. When this property is set to true, any remaining entitlements are no longer used.

Note: Scripts in user criteria cannot reference the category or catalog item as current as entitlement scripts do. For scripts in user criteria, use the user_id available for the user currently being evaluated against the category or catalog item.

Data structure differences

There are significant data structure differences between entitlements and user criteria, which you must be aware of while migrating.

Using entitlements, the following tables are loaded into memory and evaluated before rendering.

For catalog items:
For categories:

- Category Available for \( \text{sc_category_user_criteria_mtom} \)
- Category Not Available for \( \text{sc_category_user_criteria_no_mtom} \)

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Set security for a variable

Add permissions to a variable by specifying the roles that can perform read, write, or create actions on the variable. If a role is specified for the read, write, or create actions, only users with the specified roles can perform these actions. If no role is specified for the read, write, or create actions, all users who can access the catalog item can perform these actions irrespective of their role. For example, if no role is specified for the Write roles field, all users who can access the catalog item can edit the variable value in the variable editor. A user with a role that does not match any of the following roles cannot set variable values even through scripting.

To apply role-based restrictions to a catalog variable:

1. Click the lock icon next to each field.
2. Select the roles that should have the associated access.

   This example shows that, for the the CPU Speed variable used by the Executive Desktop catalog item, only users with the itil role can write (update) or create a value for that variable.
Note: You might need to configure the variable form to add the Create roles, Read roles, and Write roles fields.

Legacy service catalog access controls

Service catalog supports several ways to control access to a catalog item or category; this is also known as catalog entitlements.

A service catalog item with no specific access controls is available to all users. If access controls are specified, only users who meet all conditions have access.

The following entitlements are available:

- **Role**
- **Custom script**
- **Company, Department, Group, User, or Location**

Access controls are checked in the following order: roles, then scripts, then Company, Department, Group, User, or Location.
Note: The functionality described here is superseded by access controls using user criteria. Migrate to user criteria for a more flexible and re-usable way to define access controls.

Service catalog administration

Service catalog enables an administrator to configure the service catalog.

To restrict items and categories by company and department:

1. Navigate to Service Catalog Maintain Items or Service Catalog Maintain Categories.
2. Open an item or category, and then configure the related lists in the form to add Available for Department and Available for Company.
3. Click Update to save the form layout.
4. Open the item or category you wish to secure and add companies and departments to related lists.

   The item or category is available only for the companies and departments listed. If no companies or departments are listed, then the item or category is available to all companies or departments.

Restrict access

Service catalog enables an administrator to grant or deny access to a service catalog item or category by company, department, group, user, or location.

1. Navigate to Service Catalog Maintain Items or Service Catalog Maintain Categories.
2. Open the relevant catalog item or category.
3. Configure the form to add the appropriate Available or Not available lists.
4. Add the companies, departments, groups, users, or locations to the appropriate list.
5. Click Update.

Restrict access by role

By default, individual catalog items and categories do not have access restrictions. Administrators can grant or deny access to a service catalog item or category based on role.

1. Navigate to Service Catalog Maintain Items or Service Catalog Maintain Categories.
2. Open the relevant catalog item or category.
3. Add the required roles to the Roles field.

   You may need to Configure the form or change to Default View to see the Roles field.
Restrict access by a script

Service catalog enables you to control access to a service catalog item or category with a custom script.

1. Navigate to Service Catalog Maintain Items or Service Catalog Maintain Categories.
2. Open the relevant catalog item or category.
3. **Configure the form** to add the Entitlement Script field.

4. In the Entitlement Script field, enter the access control script.

**Sample Scripts**
The following example script grants access to a catalog item named French Blackberry to users with a language of Fr (French):

```javascript
gs.log ( 'Running Entitlement script for French Blackberry' ) ;
if (gs. getUser ( ). getLanguage ( ) == 'fr' )
    answer = true ; else
    answer = false ;

answer ;
```

The following example script could be used to distinguish between two categories of users (one with full access and one with restricted access) on the catalog of services:

```javascript
var userid  = gs. getUserID ( ) ; var gr  = new GlideRecord
 ( 'sys_user' ) ;
gr. get ( 'sys_id' , userid ) ;
if (gr. source )
    answer = true ; else
    answer = false ;

answer ;
```

Overriding Entitlement Scripts by Role

1. Navigate to Service Catalog Properties.
2. Enter the roles for which to override the entitlement script (grant access) in the property List of roles (comma-separated) that can override normal entitlement checking inside the catalog. A role of "itil" means that the itil role can order any catalog item, even one protected by entitlement restrictions.

Service Catalog customization

Service Catalog enables you to customize the catalog in various ways.

Maintain cart layout

Service catalog enables you to configure the layout and functionality of the service catalog cart used in your organization to place requests for catalog items.

You can:

Role required: admin
- Remove components. For example, hide prices throughout the cart if your catalog does not use pricing.
- Change labels. For example, change the Order now button label to Request Item in the shopping cart.
- Change the order of elements. For example, change the order of the columns on the order status screen.
- Configure, hide, or create functionality. For example, add a Requested For reference field to the shopping cart.

Configure cart layout

Configure cart layout records to define functionality for widgets or screens in the shopping cart.
To configure cart layout:

1. Navigate to Service Catalog Catalog Definitions Maintain Cart Layouts.

2. Select a widget or screen:
   - Cart widgets: Item Ordering Widget, Shopping Cart Widget, or Item Ordering Widget (Order Guide)
   - Shopping cart screens: Cart Preview Screen, Cart Preview Screen (Two Step), or Cart Preview Screen (Mobile)
   - Order status screens: Order Status Screen or Order Status Screen (Mobile)

3. Update the Title field to change the title that appears on the widget.

4. Leave the default Target value. Do not change this value because it identifies the cart element being defined.

5. Update the other sections of the cart layout record, as required. The availability of these sections varies for each widget and screen record.
• In the Components section, select the components to display, such as delivery times, item descriptions, and prices.
• In the Columns section, select which columns to display, such as the item description column, delivery time column, or price column.
• In the Buttons section, select the buttons to display, such as Add to Cart, Edit Cart, and Delete Item.
• In the Button Labels section, enter new labels to replace the default button labels.
A new label is used on all screens that the button appears on. For example, the Continue Shopping button is used on several screens, so changing its label affects all those screens.

6. If required, configure the widget and column macros.

7. Save the record, and then test the results of your configuration by ordering items from your service catalog.

Some settings and properties in your instance may override or affect your cart layout. See Overriding Cart Layouts for Items for more details.

Configure widget and column macros
Service catalog enables you to configure macros that define functionality for elements within each widget or screen.

Some widgets or screens also have column macros that define the horizontal layout and configuration of shopping cart contents.

You can configure these macros to alter the display order of elements, or hide elements, within the widget or screen. You can also create new macros to implement any extra requirements.

1. Navigate to Widget Macros Column Macros related list.
2. Click the order number entry of a macro to edit its display order, or to activate or deactivate it.
3. Click Update.
4. Click the Widget / View Macro entry of a macro to view its functionality settings. You cannot edit functionality settings for default macros, but these settings can be a useful reference for creating your own widget macros.

Create macros for cart layout

Service catalog enables you to create macros for cart layout records using Jelly scripts to define customized behavior and display within a widget or screen.

Macros that you create do not affect upgrades because customized widget functionality is isolated from general cart behavior.

To create a new macro:
1. Open the relevant cart layout record.
2. Navigate to Widget Macros or Column Macro related list.
3. Click New.
4. Enter details for the macro.

Table 173: Macro form

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>The name for the new macro.</td>
</tr>
<tr>
<td>Active</td>
<td>A check box to indicate whether the macro is displayed or not.</td>
</tr>
<tr>
<td>Description</td>
<td>A summary of how the macro is used.</td>
</tr>
<tr>
<td>Active</td>
<td>A check box to indicate whether the macro is displayed or not.</td>
</tr>
<tr>
<td>XML</td>
<td>The Jelly script to apply for your macro.</td>
</tr>
</tbody>
</table>

5. Save the macro record.

Create macros for cart layout example

This example demonstrates the script to add a Requested for reference field as a widget macro to a cart layout record.

```xml
<?xml version="1.0" encoding="utf-8" ?>
```
Configure cart layout for specific items

Service catalog enables you to set fields in the Catalog Item form to configure the cart layout for specific items.

This overrides any general cart layout settings. For example, you can hide an item’s price by setting the Omit price in cart field to true for that item.

1. Navigate to Service Catalog Catalog Definition Maintain Items.
2. Select the catalog item.
3. Configure the form to add both Use cart layout and any of the following item configuration fields you require:
   - Omit price in cart
   - No cart
   - No order
   - No order now
   - No proceed checkout
   - No quantity
4. Clear the Use cart layout check box to display the configuration fields for that item.
5. Set the item configuration field values as required.
6. Click Update.

**Override cart layouts for items**

Service catalog enables you to use additional methods to configure cart behavior or layouts, which override cart layout record settings.

For example, your cart layout record settings might hide item prices, but you may decide to display the price of the Sales Laptop. In that case, you would set the relevant configuration values on that catalog item. Be aware of the impact of these additional methods, to ensure your cart behaves in the way you want.

---

**Note:**

If you are *migrating to cart layouts*, you may have defined additional settings and properties that impact your cart layout settings.

---

**Configure order guide widgets**

You can customize the widget that provides details of the current catalog item on an order guide or wizard.

Role required: admin, catalog_admin

Order guide cart widget is visible when an order guide item is ordered.

1. Navigate to Service Catalog Catalog Definitions Maintain Cart Layouts.
2. Open the Item Ordering Widget (Order Guide) record.
3. You can add/remove components and rename widget title.
4. Click Update.
Figure 177: Cart widget displayed for an order guide item

Note: By default, order guides use a two-step process, and catalog items use a one-step checkout process. If you configure the checkout process, keep in mind that order guides and catalog items will provide different cart experiences if they use different checkout processes.

Configure catalog item widgets

You can customize widgets that appear for catalog items.

Role required: admin, catalog_admin

Both shopping cart and item ordering widgets are visible on the standard catalog page and any ESS catalog page. The shopping cart widget is also available in additional locations, such as the catalog homepage.

1. Navigate to Service Catalog Catalog Definitions Maintain Cart Layouts.
   a) Open the Item Ordering Widget record to modify the widget for ordering item.
b) Open the Shopping Cart Widget record to modify the widget for shopping cart.

2. You can add/remove components, buttons, rename widget title and button labels.
3. Click Update.
### Macbook Pro

The Apple Macbook Pro is laptop that is second to none. It provides a Retina display that fights glare and weights approximately five pounds. High powered enough to complete computing tasks.

**Technical Specs:**

- Intel Core i7 processor
- 512GB PCIe-based flash storage
- Intel Iris Pro Graphics
- Backlit keyboard

### Additional software requirements

- Adobe Acrobat
- Adobe Photoshop
- Eclipse IDE

---

**Optional Software:**

- Adobe Photoshop
- Eclipse IDE

---

**Ordering Information:**

- **Price:** $4,499.00 + $100.00 Annually
- **Quantity:** 1
- **Subtotal:** $4,599.00 + $100.00 Annually
- **Delivery Time:** 5 Days

**Shopping Cart:**

- 1 x Apple Watch: $1,354.00 + $15.00 Daily
- **Subtotal:** $1,369.00

**Procedures:**

- Proceed to Checkout
- Continue Shopping

---

**Figure 178:** Item ordering and shopping cart widgets
Configure desktop order status screen

Service catalog allows you to customize the order status screen that is displayed on desktops.

Role required: admin, catalog_admin

To configure the order status screen that displays on desktops:
1. Navigate to Service Catalog Catalog Definitions Maintain Cart Layouts.
2. Open the Order Status Screen record.
3. You can add/remove components, columns, buttons, and rename labels. See Configure cart layout.
4. Click Update.
```
<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
<th>Delivery Date</th>
<th>Stage</th>
<th>Price</th>
<th>Quantity</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>12345</td>
<td>Radio 1</td>
<td>2023-09-03</td>
<td></td>
<td>$500.00</td>
<td>1</td>
<td>$500.00</td>
</tr>
</tbody>
</table>
```

Copy this Request for:

```
%
% %
% %
% %
% %
% %
% %
% %
% %
```

Order Now
Configure mobile order status screen

Service catalog allows you to customize the order status screen that is displayed on mobile devices.

Role required: admin, catalog_admin

You cannot modify widget macros or button labels on mobile devices.

1. Navigate to Service Catalog Catalog Definitions Maintain Cart Layouts.
2. Open the Order Status Screen (Mobile) record.
3. You can add/remove components and buttons.
4. Click Update.

![Order status screen on mobile](image)

Figure 180: Order status screen on mobile

Configure mobile shopping cart screen

Service catalog allows you to customize the shopping cart screen that is displayed on mobile devices.

Role required: admin, catalog_admin
The shopping cart on mobile devices always uses a two-step checkout process. You cannot modify widget macros or button labels on mobile devices.

1. Navigate to Service Catalog Catalog Definitions Maintain Cart Layouts.
2. Open the Cart Preview Screen (Mobile) record.
3. You can add/remove components and buttons.
4. Click Update.

Configure one-step shopping cart screen

Service catalog allows you to customize the shopping cart display screen for a one-step checkout process.

Role required: admin, catalog_admin

One-step checkout is the default checkout process for catalog items.

1. Navigate to Service Catalog Catalog Definitions Maintain Cart Layouts.
2. Open the Cart Preview Screen record.
3. You can add/remove components, columns, buttons, and rename title and button labels. See Configure cart layout.
4. Click Update.

Figure 182: Shopping cart screen displayed for default one-step checkout process

Configure two-step shopping cart screen

Service catalog allows you to customize the shopping cart display screen for a two-step checkout process.

Role required: admin, catalog_admin

Changes made to the two-step record are visible only if the two-step checkout process is enabled in properties. By default, catalog items use a one-step checkout process.

1. Navigate to Service Catalog Catalog Definitions Maintain Cart Layouts.
2. Open the Cart Preview Screen (Two Step) record.
3. You can add/remove components, columns, buttons, and rename title and button labels. See Configure cart layout.
4. Click Update.
Figure 183: Shopping cart screen displayed for a two-step checkout process
Cart layout considerations

When you enable cart layouts, service catalog properties are impacted. You should consider the possible outcomes and alter the settings or properties to achieve the cart layout and functionality you require.

Some of these properties are impacted when you use cart layouts. For example, with the order status screen, the When to show prices and sub-totals on the Service Catalog Cart (glide.sc.price.display) property overrides cart layout settings for displaying prices.

<table>
<thead>
<tr>
<th>Property</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allow ESS users the option to cancel their requests from the checkout screen. (glide.sc.checkout.cancel)</td>
<td>Overridden when the Cancel Request check box in cart layout settings is selected. If this check box is selected, the Cancel button is displayed even if the property is set to No.</td>
</tr>
<tr>
<td>Enable cloning requests during checkout. (glide.sc.allow.checkout.clone)</td>
<td>Not used (deprecated) if cart layouts are enabled. It is replaced by the Clone Checkout check box in cart layout settings. The Clone Checkout check box is cleared by default for new instances. For upgraded instances, the check box is set to the existing value of the glide.sc.allow.checkout.clone property.</td>
</tr>
<tr>
<td>List of roles (comma-separated) that can use the quantity selector in the shopping cart (glide.sc.allow.quantity)</td>
<td>Overrides any relevant cart layout settings.</td>
</tr>
<tr>
<td>Show the request item number for each line item on the checkout screen (default false). (glide.sc.checkout.request.number)</td>
<td>Not used (deprecated) if cart layouts are enabled. It is replaced by the Request Item Number column check box in cart layout settings.</td>
</tr>
<tr>
<td>Show the 'Back to Catalog' button on the two step checkout screen. (glide.sc.checkout.twostep.back)</td>
<td>Not used (deprecated) if cart layouts are enabled. It is replaced by the Back to Catalog check box in cart layout settings.</td>
</tr>
<tr>
<td>When to show prices and sub-totals on the Service Catalog Cart. (glide.sc.price.display)</td>
<td>Overrides any relevant cart layout settings.</td>
</tr>
</tbody>
</table>

Migrate cart layouts

Service catalog enables you to configure cart layouts to add, remove, or change elements of the service catalog shopping cart.

Role required: admin

This feature is enabled by default and default cart layout settings implemented. For upgrades, an upgrade script checks to see if your current cart macros are customized.

- If cart macros are not customized, cart layout configuration is enabled by default.
- If cart macros are customized, cart layout configuration is disabled. You must migrate your system to use this feature.
**Review cart layout configuration settings**

Before you migrate your system to use cart layouts, familiarize yourself with existing configurations for catalog content and decide whether to discard or retain these configurations.

Check your current configurations for:

- UI macros defining custom shopping carts that have been linked to items.
- Service catalog properties that might be impacted by cart layouts.
- Item-specific settings that may override cart layout record settings.

**Review item-specific cart layout settings**

Some catalog items may have cart layout settings that are specific to them.

For example, these items might show prices even though the general cart layout record settings hides prices.

To retain item-specific settings, clear the Use cart layout check box in the catalog item form.

![Figure 184: Item-specific settings](image)

**Note:** You may need to configure the form to display the Use cart layout check box.

**Migrate customized macros to cart layouts**

When you customize a few UI macros, you should migrate the customizations to cart layout widgets before you enable cart layouts.

Following are the UI macros whose customizations need migration before you enable cart layouts:

- `sc_catalog_homepage_cart`
In addition, if you have customized the com.glideapp.servicecatalog_category_view UI page, or the Catalog Cart dynamic content, you must migrate these customizations before you enable cart layouts.

**Move customizations to cart layouts**

To move customizations to cart layout widgets:

1. Save copies of the customizations for later reference.
2. Revert the customizations to restore the customized macros or other content to their standard state.
3. Remove the record for the customization from the Customer Update \( \text{sys\_update\_xml} \) table.
4. Run the following script in Background Scripts to set the property and set the correct state for all the items in the catalog:
   ```javascript
   var cm = new CartLayoutMigration();
   cm.configureLayoutProperty();
   cm.setLayoutFalse();
   cm.setEmptyLayout();
   ```
5. Reimplement any cart layout customizations that you want to maintain in the upgraded instance by configuring widget macros.

**Enable cart layouts**

After you review configuration settings and migrate any customized macros, you can enable cart layouts.

To enable cart layouts:

Set the Use the sc_layout driven cart macros glide.sc.use_cart_layouts service catalog system property to Yes to enable cart layouts for your system.

---

**Legacy flexible checkout and delivery forms**

ServiceNow includes several options that provide administrators some control over content in service catalog’s template-driven forms.

Some service catalog forms, such as the checkout form, are generated from templates, instead of being data-driven like other forms in the system, such as the Incident form.

Template-driven forms provide enhanced look-and-feel over standard data-driven forms, but they provide more limited control over the form content.

**Note:**

It is recommended that you use cart layout records to configure cart layouts. Using cart layout records lets you configure the service catalog cart without writing and maintaining scripts.

---

**Modify the delivery screen**

In the final checkout step, a summary screen provides a list of all items and services ordered.

**Warning:** Modifying the Order Status or Summary screen requires advanced scripting and a knowledge of Jelly. Also, the upgrade process skips updates to the summary screen after a customization. With these constraints in mind, you can modify the summary screen by editing the com.glideapp.servicecatalog_checkout_view UI page.
Requester search results

After you enable the two-step checkout process, the Requested for field appears on the Request form. The Requested for field references the User (sys_user) table and has an auto-complete feature. Two service catalog properties (Service Catalog Catalog Policy Properties) enable an administrator to add columns to the search results for this field and to order the list by one of the columns.

Table 175: Service catalog properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional columns for the “request for” Service Catalog widget. (glide.sc.request_for.columns)</td>
<td>Choose fields from the User (sys_user) table. Must be semicolon separated.</td>
</tr>
<tr>
<td>Ordering of matches for the “request for” Service Catalog widget. (glide.sc.request_for.order_by)</td>
<td>Choose fields from the User (sys_user) table.</td>
</tr>
</tbody>
</table>

Modify the checkout form

You can modify the checkout form to add additional columns or to add request item number for each line.
By default, the checkout forms list the Description, Delivery Date, Stage, Price, Quantity and Total columns. For example:

<table>
<thead>
<tr>
<th>Description</th>
<th>Delivery Date</th>
<th>Stage</th>
<th>Price (ea.)</th>
<th>Qty</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>A BlackBerry Wireless Device</td>
<td>2007-04-08</td>
<td></td>
<td>$500.00</td>
<td>1</td>
<td>$500.00</td>
</tr>
</tbody>
</table>

**Total:** $500.00

Administrators can use specific control options, to modify the checkout form to:

- Use an alternate description field
- Add the request item number for each line

Add an ordered item link

Catalog administrators can provide a link on the ordered item screen, linking to more information about an item.

After users order the catalog item, they can click the link to see relevant information about the item they ordered, for example, for standard delivery terms and conditions. The URL text and link can be defined once and reused across multiple items.

Links are rendered with an added parameter providing the sys_id of the requested item. For example, if the link is mylink.com, it is rendered as mylink.com?req_item=abcde12345. This can be useful for virtual provisioning situations.

**Note:** The ordered item link cannot be configured for mobile devices.

To create an ordered item link, then add an ordered item link to an item:

1. Navigate to Service Catalog Catalog Definition Ordered Item Links.
2. Click New.
3. Enter a Name for the ordered item link.
4. Enter Link text to display as the link. For example, Click here to see more information about the iPhone.
5. Enter the exact Link URL. For example, http://www.mylink.com.
6. Select the Target. You can choose to open the link in a new window or tab, or within the catalog. If Within Catalog is chosen, the link must be within the same site. An HTTP site cannot be called from within HTTPS.
7. Click Submit.
8. Navigate to Service Catalog Catalog Definition Maintain Items.
9. Click an item Name.
10. In the Ordered Item Link field, click the reference lookup icon.
11. Click an ordered item link Name.
12. Click Update.

Add the request item number
By default, the request item number is not displayed in the list.
To display this number as an additional column:
1. Navigate to Service Catalog Catalog Policy Properties.
2. Locate the property: Show the request item number for each line item on the checkout screen (default false).
3. Select the Yes check box to add the number column to the checkout form.

<table>
<thead>
<tr>
<th>Number</th>
<th>Description</th>
<th>Delivery Date</th>
<th>Stage</th>
<th>Price (ea.)</th>
<th>Qty</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>RNM10005</td>
<td>Blackberry</td>
<td>2007-04-08</td>
<td>✔ ✔ ✔ ✔ ✔</td>
<td>$500.00</td>
<td>1</td>
<td>$500.00</td>
</tr>
</tbody>
</table>

Total: $500.00

Figure 187: Checkout number

Use an alternate description field
By default, the short_description column of the catalog item appears as the item description.
1. Navigate to Service Catalog Catalog Policy Properties.
2. Locate the property Field name to use for the description column of the checkout form. If blank, the default (short_description) is used.
3. Enter the name of the alternative field (a column in the Catalog Item (sc_cat_item) table) and save it. For example, if you selected name:
In the Service Catalog, the default quantity choices are 1 to 5. Administrators can configure the quantity selector with additional choices.

To configure the quantity selector:
1. Navigate to System Definition Choice Lists.
2. Search for the table sc_cart_item and the element quantity. The existing quantity choices appear.
3. Add quantity choices, modeling them after the existing ones.
To reduce the quantities available for catalog items, delete the relevant quantity records. For example, to reduce the quantity range to 1-3, delete the records for 4 and 5.

To restrict the roles allowed to change quantities, edit the List of roles (comma-separated) that can use the quantity selector in the shopping cart (glide.sc.allow.quantity) service catalog property. For example, you might limit this ability to the admin and catalog admin roles.

Remove item restrictions

Service catalog enables you to remove or apply restrictions on all order guides, record producers, and wizard launchers.

Catalog administrators can use service catalog properties to configure the behavior and usage of a catalog item.

By default, all order guides, record producers, and wizard launchers have these restrictions:

- They cannot be added to a requested item
- They do not provide a Try It action
- They are not added to the cart as items

To remove these restrictions or apply these restrictions to other types of items:

Modify the comma-separated lists of tables in the following properties:

- List of class names for catalog items that cannot be added to an existing request (glide.sc.item.cannot_add_to_request): restricts the items that can be added to a requested item, after an end user places a request. For example, to restrict content items from being added to an existing request, add sc_cat_item_content to the list for this property.
- List of class names for catalog items that do not use the default “Try It” UI Action (glide.sc.item.cannot_try_it): restricts the items which allow you to click Try It on the item form to preview how it appears in the service catalog. Items with such restrictions do not display Try It on the form.
- List of class names for catalog items that do not generate a normal cart item (glide.sc.item.not_normal_cart_item): restricts which item types are added to the cart by default.
Define item price
You can define a price for every item.

Multiple choice
For a multiple choice variable, there are two options for pricing.

• Specify the price difference in the Price field on the question choices.
• Specify the recurring price difference in the Recurring Price field on the question choices.

Note:
Select Boxes operate the same as multiple choice variables but are displayed as select boxes.

Check box
A check box variable can modify the price or recurring price of the item being ordered.

Use the Price if checked or Recurring price if checked field to specify the price or recurring price
difference for that variable when the option is selected

Set up variable price
The price or recurring price of a catalog item can be modified with variables, increasing the base price
for that item.

This is useful if you want the price or recurring price dynamically calculated based on how a user
completes the ordering form. For example, the cost of an item can be increased based on options the
user selects, such as extra memory in a PC.

The following variable types can be configured to modify the total cost of an item:

• Check box
• Multiple choice
• Reference
• List collector
• Select box
• Lookup select box

Reference
A reference variable includes a Pricing implications field.

If this field is selected and there is a price, u_price, recurring_price or u_recurring_price field on the
referenced table, the value of that field is used to modify the cost of the item being ordered when a
reference value is selected.

For example, suppose that computers in Phoenix cost $100 more than the ordering price and
computers in Boise cost $100 less than ordering price.

1. Set up a reference variable to the Location [cmn_location] table.
2. Put a u_price field on the Location table.
3. Set that field to 100 for the Phoenix location.
4. Set that field to -100 for the Boise location.

When ordering a computer, if Phoenix is selected as the location for this variable, the ordering price is
increased by $100. If Boise is selected, the ordering price is decreased by 100.
Note: List collectors operate the same as a reference variable, but use the List table field to specify the table being referenced. Since it is a list collector variable, multiple selections can be made that all modify the ordering price or recurring price.

**Check box**
A check box variable can modify the price or recurring price of the item being ordered.

Use the Price if checked or Recurring price if checked field to specify the price or recurring price difference for that variable when the option is selected.

**Set a recurring price**
A catalog item can have a recurring price in addition to an initial price.

For example, a subscription to a mobile phone contract may cost $500.00, with an $30.00 monthly recurring price.

The price and the recurring frequency are set on the catalog item record. After the price and frequency are set, the recurring price appears in the catalog, catalog search results, catalog page for the item, shopping cart, and order summary screen.

If multiple items with the same recurring price frequency are placed in the shopping cart, they are grouped together. The grouping makes it easier to view how much items cost for each frequency (for example, weekly, monthly, and annually). If the shopping cart contains items with and without recurring costs, they are grouped separately.

If multiple items with the same recurring price frequency are placed in the shopping cart, they are grouped together. The grouping makes it easier to view how much items cost for each frequency (for example, weekly, monthly, and annually). If the shopping cart contains items with and without recurring costs, they are grouped separately.
On a request record, recurring prices are grouped by frequency and shown in the Recurring Prices related list. In the example below, two items each have a monthly recurring cost of $100.00 and their prices are grouped as a single record of $200.00 monthly. Another item with an annual recurring cost of $500.00 is listed as a separate record.
If a request record contains multiple items with the same recurring frequency, click the arrow next to the corresponding recurring prices record to view details. In the example below, two items (the mobile phone and the sales laptop) each have a monthly recurring cost and are grouped together under the Monthly recurring prices record, but are listed separately when the recurring prices record is expanded. Only one item has an annual recurring cost.
Hide prices in the service catalog
Administrators can configure options to hide catalog item prices in the service catalog for listings of specific items, for specific types of items, or for all items.

Item prices may appear in these places:
A catalog item listing in the Order This Item panel

A subcategory listing

The shopping cart panel

The edit cart page

The order confirmation page
The order status or summary screen

Hide prices globally
Service catalog enables you to configure service catalog properties to hide prices.
Navigate to Service Catalog Catalog Policy Properties to view and edit service catalog properties.

Hiding Prices by Item Types
By default, prices do not appear for order guides, record producers, and wizard launchers.
You can change which catalog item types show prices using the List of class names for catalog items that do not show the price in listings property (glide.sc.item.cannot_show_price). Provide a comma-separated list of table names for item types that you want to hide prices for.
For example, to hide prices for standard catalog items, add sc_cat_item to the list.
You can also remove an existing entry to display prices for that item type. For example, to display prices for order guides, remove the order guide entry sc_cat_item_guide from the list.

Hiding Prices for All Items
By default, zero-priced items have prices hidden in listings and carts.
You can configure this behavior to always hide or show prices, using the When to show prices and subtotals on the Service Catalog Cart property (glide.sc.price.display).
Set this to Always show prices to display prices for all items on all service catalog screens, or to Never show prices to hide prices for all items on all service catalog screens.

Hide prices for specific items
To hide prices of specific items:
1. Navigate to Service Catalog Catalog Definition Maintain Items.
2. Open the relevant item definition.
3. Select the Omit Price on Cart check box.
   The price does not appear in the catalog listing or when the item is added to the cart. The price is listed as "-" on the edit cart, order confirmation, and order status screens.

Extend the pricing model
The pricing model is useful if you want the price or recurring price to be dynamically calculated based on how a user completes the ordering form. You can extend the pricing model of a catalog item by editing the item price or the recurring price.
To customize the catalog item price or recurring price:
1. From the left navigation pane, select System Definition Script Includes.
2. Edit the CatalogPriceCalculator script to customize the item price and the CatalogRecurringPriceCalculator script to customize the recurring price.

Enable bulk requests

Bulk requests enable a customer to create up to 10 copies (clones) of the same Service Catalog request, for different users, without having to enter the same information multiple times.

For example, you can request a new piece of equipment for several specified people, generating multiple individual requests quickly from a single initial request.

To enable bulk requests:
1. Navigate to Service Catalog > Properties
2. Locate the property Enable cloning requests during checkout.
3. Select the Yes check box.
4. Locate the property List of roles (comma-separated) that can use bulk ordering functionality.
5. Enter the roles for which to enable bulk Service Catalog requests, or leave the field blank to enable the function for all users with a role.
6. Click Save.

Create scripts

Service catalog enables you to use certain scripts.

Some functions are available, specifically for service catalog:
- Client-side scripting: allows catalog designers to use the same functionality available on other forms.
- The Service Catalog Script API makes catalog ordering easier from inside business rules.
- Scriptable Assignment of Execution Plans allows selection of an execution plan at the time of ordering, based on scripted conditions.

Create a custom cart

Administrators with a knowledge of Jelly can customize the look and feel of service catalog carts, either globally or for specific catalog items, using our UI macro capability.

Note:
You can configure cart layouts without scripting.

Once created, a custom cart can be reused and linked to catalog items.
1. Navigate to System UI UI Macros.
2. Click New to create a new macro.
3. Fill in the details and write the script to define your custom cart.

Note: Designing a custom cart requires knowledge of the Jelly expression language. For reference purposes, the default cart script appears in the list as catalog_cart_default.

4. Click Submit.

Link a cart to an item

Service catalog enables you to link a cart to an item.
1. Navigate to Service Catalog Catalog Items.
2. Open an item to test your new cart.
3. In the Cartfield, select the cart to use.
   You may need to configure the form layout to add this field to the form.
4. Save the changed form.

In the example below, the HP bl35p uses the irm_technical_cart.
Catalog items are goods or services available to order from the service catalog. Items can be anything from hardware, like tablets and phones, to software applications, to furniture and office supplies.

- Enter a Name and Short description to display for the item.
- Enter a Price, approvals, variables, and other information as needed.

<table>
<thead>
<tr>
<th>Name</th>
<th>Sales Laptop</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active</td>
<td>Check</td>
</tr>
<tr>
<td>Availability</td>
<td>Desktop and Mobile</td>
</tr>
<tr>
<td>Catalogs</td>
<td>Service Catalog</td>
</tr>
<tr>
<td>Cart</td>
<td>catalog_cart_default</td>
</tr>
<tr>
<td>Category</td>
<td>Hardware</td>
</tr>
<tr>
<td>Workflow</td>
<td>Service Catalog Item Request</td>
</tr>
<tr>
<td>Icon</td>
<td></td>
</tr>
<tr>
<td>Application</td>
<td>Global</td>
</tr>
<tr>
<td>Price</td>
<td>$1,100.00</td>
</tr>
<tr>
<td>Recurring price</td>
<td>$100.00</td>
</tr>
<tr>
<td>Recurring price frequency</td>
<td>Annually</td>
</tr>
</tbody>
</table>

This cart appears as follows:
Configure catalog pages

Service catalog enables you to configure the pages within a catalog.
Configure content types

You can configure content types for the service catalog.

You can use service catalog properties to configure content types, which are also called widgets.

Navigate to Service Catalog Catalog Policies Properties to view service catalog properties.

Navigate to System UI Widgets to see a list of content types available.

Enable content types for the Service Catalog

By default, only service catalog categories are displayed on the service catalog homepage.

To select additional content types, add these types in a comma-separated list in the List of content types (comma-separated) to allow on the catalog homepage property (glide.sc.home.filter).

For example, to include service catalog categories and gauges, set the property to Catalog Categories, Gauges.

Display the expand / collapse icon

By default, the expand / collapse icon is not displayed for categories on the service catalog homepage.

To display this icon on the left of each category, check Yes beside the Toggle whether the expand/collapse icon is rendered for category widgets on the service catalog homepage property (glide.sc.homepage.show.collapse).
Configure search and navigation

You can use service catalog properties to configure search and navigation within the service catalog homepage.

Navigate to Service Catalog Catalog Policies Properties to view service catalog properties.

Restrict search access

Each catalog homepage provides a search bar to help locate items not displayed on the homepage. By default, any user who can access the catalog homepage can search using this search bar.

To restrict access to this search function by role, use the List of roles (comma-separated) that can search the service catalog property (glide.sc.can_search).

For example, to only allow logged-in users to access search, set this to blank. To remove the search function for all users, set this to None.
Note: Search results only show items that the logged-in user can access.

Hide search results from inactive categories

By default, search results are returned from all categories, including inactive categories.

To avoid returning results from inactive categories, set the Service catalog searches return items in inactive categories property (glide.sc.search.disabled_cats) to No. For example, when designing a new category, you may want to avoid users seeing search results from this category until you are ready to make it active.

Note: Security constraints may also make a category or catalog item inaccessible.

Restrict search by item type

By default, a search field does not appear when viewing order guides, record producers, and wizard launchers.

To define which catalog item types do not show the search field, list these types in the List of class names for catalog items that do not have the search field displayed (glide.sc.item.cannot_show_search) property.

For example, to enable searching when viewing record producers, remove sc_cat_item_producer from this list.
Request a reset of a password for a service or an application.

Whose password needs to be reset?

Joe Employee

What application password do you need reset?

How would you like to be contacted with your new password?

- [ ] More Information
- [ ] Email
- [ ] Telephone
- [ ] SMS

Submit

Figure 196: Service catalog search bar removed
Enable breadcrumb links

By default, breadcrumbs appear without links when using content management pages as service catalog homepages.

To display these breadcrumbs with links, set the Use links for breadcrumbs rendered in Service Catalog pages accessed via a CMS site property (glide.sc.use_breadcrumb_links.cms) to Yes. This provides greater navigational control for end users.

Disable search suggestions

By default, service catalog searches display “Did you mean?” suggestions if a search does not return any results and an alternate spelling or similar recent search does.

To disable these suggestions, set the Specify whether search suggestions should be enabled property (glide.sc.search.suggestions) to No.

Refine search results

Service catalog enables you to use properties in order to refine search results.

The auto-completion feature returns values that contain an exact match to the letter combination entered.
Administrators can use the Additional columns for the “request for” Service Catalog widget (glide.sc_request_for.columns) property to add columns to this list, to further refine the search results, and help determine which user to select when two users have the same name.

In this example, the property is set to display two additional columns, Department and Title:
Administrators can use the Ordering of matches for the “request for” Service Catalog widget. (glide.sc.request_for.order_by) property to configure the columns to sort by one of the values. In this example, the is set to sort the results list by department.
Figure 200: Catalog auto complete 7

Auto-completion also applies to the Request for field, which can be added to the service catalog homepage.

1. Navigate to Service Catalog Catalog.
2. Click Add Categories.
3. Select Request for.
4. Place the category on the page.
Figure 201: Catalog auto complete 4
Configure preview

Service catalog enables you to configure the number of items that have the Preview section expanded to display item details.

By default, if not showing item details using pop-ups, the first two items listed in the category display have the Preview section expanded to display item details.

To change the number of items with this information expanded, set the Number of Catalog Items to expand in browsing and search when not using pop-up icons to view details (glide.sc.auto_expand) property to the number required.

| Expanding to 2 items | Expanding to 1 item |
## Hardware

Order from a variety of hardware to meet your business needs, including phones, tablets, and laptops.

<table>
<thead>
<tr>
<th>Product</th>
<th>Price</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Apple iPhone 5</strong></td>
<td>$999.00</td>
<td>Product specifications are not provided.</td>
</tr>
<tr>
<td><strong>Apple MacBook Pro 15”</strong></td>
<td>$2,799.99</td>
<td>Product specifications are not provided.</td>
</tr>
</tbody>
</table>
Set number of items and categories to preview

By default, up to five items or categories appear in each category on the homepage.

To change this number, set the Number of Catalog Items/Categories to preview in a section (glide.sc.max_items) property to the required value.

Customize a catalog homepage

1. Navigate to Service Catalog Catalog.
2. Click the add content icon (+) at the top of the page to add a category.
3. Select a category in the middle panel of the pop-up window that appears.
Figure 204: Service Catalog add categories pop-up window
4. Click Add here in the location where the category should appear on the homepage.
5. Repeat steps 3–4 to add more categories.
6. Close the pop-up window.
7. To change a category’s location, drag it to the appropriate place.
8. To remove a category, click the (X) icon on the top right of the category header.
9. Add a shopping cart on the page.

Select a renderer
To select a renderer for a category:
1. Navigate to Service Catalog Catalog.
2. Click Add Categories.
3. Select a category in the middle panel of the pop-up window.
4. Select a renderer from the list displayed in the right-hand panel, for example Category Items No Title.
5. Click the close (x) button to save the catalog with the renderer settings you defined.

The following default category renderer schemes are available:
- Category Items: shows desktop image, title, and description.
- Category Items No Title: shows desktop Image and description.
- Category Details: shows the sub-categories and items in that category.

Enable content types
To select content types, also called widgets, to use for a catalog:
1. Navigate to Service Catalog Catalog Policies Properties.
2. In the List of content types (comma-separated) to allow on the catalog homepage (glide.sc.home.filter) property, enter the content types to use in the service catalog.

To see a list of content types available, navigate to System UI Widgets.

The default value is Service Catalog, which includes only service catalog categories. For example, to include service catalog categories and gauges, set the property to Service Catalog, Gauges.

Use service catalog renderers
Renderers define a specific look and feel for a catalog or category.
Administrators and catalog administrators can use renderers to control:
- How categories appear on a catalog homepage.

Administrators and catalog administrators can apply renderers to catalogs and categories.
Administrators can create or modify renderers.
You can apply renderers to catalogs and categories.

To select a renderer for a catalog:
1. Navigate to Service Catalog Catalogs.
2. Click Add Catalogs.
3. Select a catalog in the middle panel of the pop-up window.
4. Select a renderer from the list displayed in the right-hand panel, for example Title Only.
5. Click Close to save the catalog with the renderer settings you defined.

The following default catalog renderer schemes are available:
• All Details: shows desktop image, title, and categories.
• Title and Image: shows title and desktop image.
• Title Only: shows title only.
• Image Only: shows desktop image only.

**Configure categories**
Service catalog enables you to configure categories.

Service catalog properties available to configure:
• Appearance: how categories are displayed to users. For example, display subcategories in a panel or as a list in the category view.
• Homepage content types and search and navigation elements. For example, enable or disable service catalog searching for all users.
• Catalog item behavior: how items, item class names and item categories appear to users. For example, define the number of catalog items or categories to preview in a section.

**Customize the multi-catalog homepage**
You can customize the multi-catalog homepage to provide end users with access to multiple catalogs from one homepage.

This is similar to customizing the homepage for an individual catalog.

1. Navigate to Service Catalog Catalogs.
2. Select Add Catalogs at the top of the page to add catalogs to this page.
3. Select a catalog in the middle panel of the pop-up window.
Figure 207: Multi-catalog home page arrangement

Note: Only administrators can see catalogs that do not contain active categories or items.

4. (Optional) Select a renderer from the right-hand panel, for example Title Only.
5. Click Add here in the location where the catalog should appear on the homepage.
6. (Optional) Repeat steps 3-5 to add more catalogs.
7. Close the pop-up window to save the changes.
You can modify the arrangement of catalogs within the homepage:

- To change a catalog’s location, drag it to the appropriate place.
- To remove a catalog, click the X in the catalog title bar.
- To edit details for a catalog, click the pencil icon in the catalog title bar.

The catalogs appear on the homepage.

Create a renderer

Administrators can create or modify renderers using UI macros to provide the rendering instructions.

For example, you can create a renderer showing the category homepage image, the description, and the first two catalog items in a category.

To create a renderer:

1. (Optional) Create a UI macro to define specific rendering instructions.
2. Navigate to Service Catalog Catalog Definition Renderers.
3. Click New.
4. Select to create a catalog or category renderer.
5. Enter the renderer details.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>A name for the renderer.</td>
</tr>
<tr>
<td>Macro</td>
<td>The UI Macro to use.</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Render catalog title</td>
<td>Appears for catalogs renderers. A check box to display the catalog title bar on the multi-catalog homepage.</td>
</tr>
<tr>
<td>Render title</td>
<td>Appears for category renderers. A check box to display the category title bar on the catalog homepage.</td>
</tr>
</tbody>
</table>

Note: The admin and catalog_admin roles can view the Render title even when the check box is not selected.

6. Click Submit.

Note: To modify a default catalog or category renderer, follow a similar process, by selecting one of the default renderers listed.

This new renderer is added to the list of available choices when applying a renderer.

Display subcategories in a panel

By default, when viewing a category, subcategories are displayed in a panel at the bottom of the display.

To display categories as a list at the top:

   Use the In category view display subcategories in a panel property (glide.sc.use_sub_cat_section).
Table 177: Name of form

<table>
<thead>
<tr>
<th>When set to Yes, the subcategories appear in a panel at the bottom.</th>
<th>When set to No, the subcategories appear as a list at the top.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 210: Set to Yes</td>
<td>Figure 211: Set to No</td>
</tr>
</tbody>
</table>

Search a service catalog

If your organization has multiple service catalogs, you can search for the required catalogs using the Search field. The search results list items in active categories along with their short description.

**Note:** If your organization has multiple service catalogs, searches return results only from the currently viewed catalog.

To find a specific item in a catalog, use the Search field. Click the down arrow to see a list of previous searches. Catalog search is available on catalog and category pages.
Search results list items in active categories along with their short description. Use the breadcrumbs in the header bar or below the short description to quickly navigate to a different page. The Found In list shows the categories related to the search results in hierarchical format.
You can control the number of results shown on one page with the search results selection list.
In the catalog listing, click a link in the breadcrumbs at the top of the screen to quickly navigate back one or more levels in the hierarchy.

To remove the search term from the breadcrumbs, click the x next to the term.

If a search returns multiple results, obtain details about a specific catalog item by clicking Preview.

Note: The system performs the typeahead search based on keywords only.

Show item details in collapsible sections

Service catalog enables you to change the number of items that display the preview.

By default, if not showing item details in pop-up windows, the first two items listed in the category display have the Preview section expanded to display item details.

To change the number of items with this information expanded:

Set the Number of Catalog Items to expand in browsing and search when not using pop-up icons to view details (glide.sc.auto_expand) property to the number required.
Show item details using popup icons

Service catalog enables you to view item details using a Preview link, which expands the items details below the item.

To make these details accessible as a pop-up when users point to the item icon:

Set the When browsing a category use the pop-up icon to show item details (glide.sc.cat_view_use_popup_for_details) property to Yes.
When set to No, the item details appear when clicking Preview.

When set to Yes, the item details appear as a pop-up when the cursor hovers over the item icon.

Figure 217: Set to No

Figure 218: Set to Yes

Hide the exists in categories display

Service catalog enables you to hide the other categories that a specific item also exists in.

By default, catalog items that are in several categories show Exists in categories information that shows any other categories the items are available in.

To hide this information:

Set the Show the additional categories section when viewing a catalog item (glide.sc.show_additional.cats) property to No.
Manage a service catalog homepage

The homepage for a service catalog provides the primary front end for ordering items within that catalog.

Administrators and catalog administrators can design a homepage in any of the following ways.

- Customizing the catalog homepage.
- Adding, removing, and arranging categories.
- Enabling content types.
- Using catalog properties to provide additional control over behavior and appearance.
- Using renderers to define the appearance of categories.

Note: End users can access the catalog through the customizable user homepage, or with content management pages that use content blocks for categories.

Configure mobile devices

When you configure Service Catalog on a mobile device, you can define the layout and presentation of catalogs. You can then perform actions such as ordering products and services, submit incidents and problems using record producers.

Users can access the service catalog on mobile devices in order to:

- View and order products and services.
- Submit incidents and problems using record producers.

Note: Users cannot access order guides, wizards, or content items from mobile devices.

Administrators and catalog administrators can configure the layout, presentation, and other aspects of the service catalog for mobile devices.

This includes:

- Defining rendering options for mobile categories.
- Defining rendering options for mobile catalog items.

**Accessing the Service Catalog on Mobile Devices**

To access the service catalog, navigate to **Self-Service Catalog**.

![Service catalog homepage mobile](image)

Figure 221: Service catalog homepage mobile

Catalog items are grouped into categories, which may also contain one or more subcategories. You can browse and select an item. To browse for an item within a category, tap the category filter to select the category or subcategory.
Figure 222: Sample service catalog category

To request an item:

1. Select an item.
2. Tap any field with an arrow (>) to add information, such as the requester’s name or location, the need-by date, or item quantity.

3. Tap Add to Cart to add the item to your cart. The order screen appears.
4. Tap Edit to edit your order, if required.
5. To order the item as specified, tap Order, then tap OK when prompted to confirm ordering. A confirmation message appears.
6. Tap the item to see further details.
7. Tap the back arrow to return to the confirmation message.
8. Tap Continue Browsing to return to the service catalog.

After the request is submitted, ServiceNow follows request fulfillment processes to fulfill the ordered item.

Define the mobile layout

You can configure the mobile layout for categories within a service catalog.

Role required: admin

By default, service catalog categories appear on mobile devices in the same order as on desktop devices.

1. Navigate to Service Catalog Mobile Admin Mobile Layout to display a list of service catalogs.
2. Click the lookup icon for the service catalog you want to configure.
The mobile layout details for that catalog displays.

3. Click Edit to select which categories appear on mobile devices, and in which order.

Figure 227: Service Catalog mobile layout catalogs

4. Add, remove, or reorder the selected mobile categories, and then click Save.
Limit description sizes in mobile UI

By default, item descriptions in the smartphone interface are truncated to a maximum of two lines.

To display full descriptions:

1. Navigate to Service Catalog Catalog Policies Properties.
2. Set the Limit descriptions in category and item listings to two rows in the Mobile UI property (glide.sc.mobile.limit.description) to No.

<table>
<thead>
<tr>
<th>If set to Yes, descriptions are limited to two lines</th>
<th>If set to No, the full descriptions are given</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 228: Set to Yes</td>
<td>Figure 229: Set to No</td>
</tr>
</tbody>
</table>

Configure content management system

The Content Management System (CMS) enables users to create a custom interface for the service catalog.
Manage catalog sites

Service catalog enables you to manage catalog sites.

If you are using the ServiceNow content management system as well as the service catalog, the Sites related list allows you to set which catalogs are supported within sites. This enables you to ensure that end users can always access an appropriate catalog. You can also view and edit values for your sites.

In the Sites related list, click Edit to add a site for this catalog.

To edit catalog site details:

1. Click the reference icon beside the site name.

2. Enter values in the fields, as appropriate.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CMS homepage</td>
<td>The homepage for this site.</td>
</tr>
<tr>
<td>CMS search page</td>
<td>The location of the search page for the site.</td>
</tr>
<tr>
<td>CMS ‘Continue Shopping’ page</td>
<td>The location to direct end users to when they click the Continue Shopping button in that CMS site. This field is designed to reference a content page url suffix.</td>
</tr>
</tbody>
</table>
3. Click Update.

Set up catalog portal pages

The Catalog Portal Page (sc_catalog_view_mtom) table links catalogs to CMS portal pages and defines the default catalog to portal page combination used by URLs.

For example, the default portal page for the service catalog is the catalog_default page.

Catalog portal page records appear in the Catalog Portal Pages related list on the Catalog form. The Catalog Portal Page table generates two values in a URL: sysparm_catalog_view and sysparam_catalog. Use the Catalog Portal Page form to enter a custom link, if required.

Resolve missing catalog portal pages

If a catalog record is not associated to a catalog portal page record, ServiceNow attempts to present a view based on a set prefix of: catalog_〈catalog name〉.

For example, if the default service catalog has no catalog portal page record, the system sets sysparm_view to catalog_Service_Catalog. If this happens, when you navigate to Self-Service Service Catalog, you view the new and apparently blank catalog_Service_Catalog portal page, instead of the existing and populated catalog_default portal page.

To correct this, go to the Sites related list on the Catalog form and add a new catalog portal page record manually.

For example, for the default service catalog, add a record with values of:

- Catalog: Service Catalog
- Portal Page: Catalog (catalog_default)
- Default: true

Manage catalog portal pages

Service catalog enables you to create and manage multiple portal pages for a catalog.

A catalog portal page provides a homepage for a specific catalog. You can use portal pages to create different catalog views for different user groups. Each portal page accesses the same catalog content and presents that content in different ways.

Catalog portal page details include the owner, title, and view to use for that page.

Note: The View field on a portal page is the value used when you refer to the homepage in a URL or module. When you upgrade to the Eureka release, this view value for the default service catalog portal page is automatically set to catalog_default. If you previously changed this value, you should manually reapply this change after upgrade.

1. The Catalog Portal Pages related list shows portal pages available for that catalog. Each catalog has a default page, created automatically when the catalog is created.

2. Select an appropriate action:

   - Click New to create a new portal page.
   - Click Edit to select an additional portal page for the catalog.
   - Select a portal page to view and edit details for that page.
Service Catalog request fulfillment

When a user orders a catalog item, ServiceNow creates a request and attaches the catalog item attached to it.

The processing of this request or request fulfillment is driven by a fulfillment process that must be defined.

This process lets administrators automate requesting approvals, assigning requests, and fulfilling requests, using tools similar to those used elsewhere in task administration or workflow.

To define the fulfillment process, administrators need to:
1. Set up fulfillment groups to perform the work.
2. Define the fulfillment processes those groups use to perform the work.

Define a fulfillment process

Each catalog item uses a fulfillment process, to define the request fulfillment process when that item is ordered.

Fulfillment processes are used when ordering standard catalog items, but are not used for some extended types of catalog item, such as content items.

To define a fulfillment process:

- Use either a workflow or an execution plan.

Tip: ServiceNow typically recommends using workflows for your request fulfillment processes.

Request fulfillment workflows

Service Catalog workflows enable administrators to easily define a complex, multi-step process for fulfilling and approving the request.

Service Catalog workflows can be defined using the graphical workflow editor, enabling you to:
- Edit workflows graphically
- Modify activities and conditions
- Define transitions between workflow activities
- Summarize workflow progress through stages
- Validate workflows to identify potential problems
- Publish workflows for other users

ServiceNow typically recommends using workflows for request fulfillment processes.

Service catalog workflow definition

Use the Graphical Workflow Editor to create service catalog workflows that drive catalog request fulfillment.

After creating a workflow, attach it to any catalog item in the Workflow reference field on the item form.

Creating a workflow involves:
- Defining the new workflow fields
- Defining workflow activities
• Publishing the new workflow

Service Catalog workflows

Two service catalog workflows are provided by default.
• Service Catalog Request: a simple workflow that fulfills a simple order
• Service Catalog Item Request: a more complex workflow that fulfills a more complex order

Use these examples to see how the workflow engine can work for the service catalog.

Figure 231: Service Catalog Request
Create a new catalog workflow

You can create service catalog workflows to drive catalog request fulfillment. When you create a catalog workflow, you should define the workflow fields and activities, and publish the workflow.

To create a service catalog workflow to fulfill a laptop request:

1. Navigate to Workflow Workflow Editor
2. Select New.

![Service catalog workflow form]

Figure 233: Service catalog workflow form

3. Fill in the field as appropriate.

<table>
<thead>
<tr>
<th>Field</th>
<th>Input value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Laptop Fulfillment</td>
</tr>
</tbody>
</table>
### Field

<table>
<thead>
<tr>
<th>Input value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Requested Item ( [sc_req_item] )</td>
</tr>
</tbody>
</table>

Please keep the following information in mind:

- Workflows on the Service Catalog Requested Item \( [sc\_req\_item] \) table should fulfill the request of a single catalog item. Each requested item can trigger its own fulfillment workflow, which runs when those specific items are ordered. We recommend you use this table for workflows for requested items.

  **Note:** To enable approval-type workflows to operate smoothly, make sure that the appropriate users have the correct role, and that the role grants access to the necessary tables for users in all the relevant departments and domains.

- Use caution when using before query business rules, as they can also restrict access to the sc\_req\_item record.

- Workflows on the Request \( [sc\_request] \) table always run when a service catalog request is made, regardless of what item was ordered. These workflows usually control the entire request process, which may involve delivering several parts (the request items). So Request table workflows are not usually assigned to a specific item from the maintain item form. If you do use the Request table for service catalog requests, you should add conditions to the workflow to make sure it only runs when the correct item is requested.

### Expected time

Days 7 Hours 00:00:00. Because workflows cannot calculate the end time (not all of the activities within the workflow have defined times), the Expected time on the workflow becomes the Delivery Time on the catalog request.

**Note:** When both Expected time and Schedule are filled in, the catalog delivery time is then calculated based on the combination of both. For example, if you put 2 days as Expected time, it is calculated as 48 hours. If you then add a schedule that define a work day as 8 hours, the delivery time becomes 48 / 8 = 6 days. If your schedule excludes weekends, the calculation will also add 2 days for the weekend, making the delivery time 8 days.

### Schedule

8-5 weekdays.

### Timezone

US/Pacific. The timezone that the schedule applies to.
<table>
<thead>
<tr>
<th>Field</th>
<th>Input value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description</td>
<td>A workflow for the fulfillment of laptop requests.</td>
</tr>
</tbody>
</table>

4. Click Submit.

![Figure 234: Service catalog workflow form Activities](image)

A graphical representation of the new workflow displays with an Activities pane on the right.

After creating a workflow, attach it to any catalog item in the Workflow reference field on the item form.

Associate item with domain-specific workflow

When using service catalog workflows with domain separation, ensure your catalog items use the domain-specific workflow.

If you create a domain-specific version of a workflow, existing catalog items continue to use the original workflow. To configure the catalog item to use the domain-specific workflow, select the new workflow in the Workflow field on the catalog item record.

Publish a catalog workflow

To publish a catalog workflow:

Open the Workflow Actions menu

and select Publish to publish the workflow.

The resulting workflow displays.
Delete a catalog workflow record

Workflow stage fields for service catalog workflows display when a user deletes a record required by the workflow.

If a user deletes a catalog item and that catalog item has active request workflows running, the workflow stage field displays Catalog item removed. Similarly, deleting the associated workflow context causes the stage field to display Workflow context removed.
Add an activity to a catalog workflow

You can add activities to a workflow to perform tasks such as running a script, sending notifications, or requesting approvals. Activities can succeed or fail, which can result in actions performed by other activities.

To define workflow activities:

1. In the Activities pane, expand Approvals and drag the activity Approval - User onto the arrow between Begin and End.
   This activity generates an approval from the manager of the person requesting the laptop.

2. Fill in the form.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Manager’s Approval</td>
</tr>
<tr>
<td>Stage</td>
<td>Waiting for Approval</td>
</tr>
<tr>
<td>User</td>
<td>Click the lock icon ( ) and then click the variable picker icon ( ). Select Requested Requested For Manager</td>
</tr>
</tbody>
</table>

3. Click Submit.

4. Expand Utilities in the Activities pane and drag the activity Set Values to the space below the approval.

5. Drag from the yellow box beside Rejected on the Approval - User activity to the new Set Values activity.

6. Drag again from the yellow box beside Always on the Set Values activity to End.
This activity marks the request as rejected if the manager rejects the request and then ends the workflow.

7. Fill in the form.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Rejected</td>
</tr>
<tr>
<td>Stage</td>
<td>Completed</td>
</tr>
<tr>
<td>Set These Values</td>
<td>Approval and Rejected</td>
</tr>
</tbody>
</table>

![New Activity: Set Values](image)

Figure 236: Service catalog workflow form values

8. Drag the activity Set Values onto the arrow between Approval - User and End, and then fill in the form.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Approved</td>
</tr>
<tr>
<td>Stage</td>
<td>Fulfillment</td>
</tr>
<tr>
<td>Set These Values</td>
<td>Approval and Approved</td>
</tr>
</tbody>
</table>

This activity marks the request as approved if a manager approves it.

9. Drag the activity Create Task onto the arrow between Approval - User and End, and then fill in the form.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Laptop Procurement</td>
</tr>
<tr>
<td>Stage</td>
<td>Fulfillment</td>
</tr>
<tr>
<td>Task Type</td>
<td>Catalog Task (sc_task)</td>
</tr>
<tr>
<td>Priority</td>
<td>3 - Moderate</td>
</tr>
<tr>
<td>Fulfillment group</td>
<td>Procurement</td>
</tr>
<tr>
<td>Short Description</td>
<td>Procure a Laptop</td>
</tr>
</tbody>
</table>
This task tells Procurement to procure a laptop for the user.

10. Drag the activity Notification onto the the arrow between Laptop Procurement and End, and then fill in the form.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Procurement</td>
</tr>
<tr>
<td>Stage</td>
<td>Fulfillment</td>
</tr>
<tr>
<td>To</td>
<td>Click the lock icon (🔒) and then click the variable picker icon (🔀). Select Request Requested For.</td>
</tr>
<tr>
<td>Subject</td>
<td>Your laptop has been procured.</td>
</tr>
</tbody>
</table>
This activity marks the request as approved if a manager approves it.

11. Drag the activity Create Task onto the arrow between Procurement and End, and then fill in the form.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Set Up Laptop</td>
</tr>
<tr>
<td>Stage</td>
<td>Fulfillment</td>
</tr>
<tr>
<td>Task Type</td>
<td>Catalog Task</td>
</tr>
<tr>
<td>Priority</td>
<td>3 - Moderate</td>
</tr>
</tbody>
</table>
This task tells Hardware to configure the laptop and prepare it for use.

12. Drag the activity Create Task onto the arrow between Set Up Laptop and End, and then fill in the form.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Pick Up Laptop</td>
</tr>
<tr>
<td>Stage</td>
<td>Delivery</td>
</tr>
<tr>
<td>Task Type</td>
<td>Catalog Task</td>
</tr>
<tr>
<td>Priority</td>
<td>3 - Moderate</td>
</tr>
<tr>
<td>Assigned to</td>
<td>Leave this field blank. The Advanced script assigns this task to the user who requested the item.</td>
</tr>
<tr>
<td>Short Description</td>
<td>Pick up laptop.</td>
</tr>
<tr>
<td>Advanced</td>
<td>Select the check box and set the Advanced Script value to: task.assigned_to=current.requested_for;</td>
</tr>
</tbody>
</table>

This task informs the requester to come pick up the laptop.

13. Drag the activity Log Message onto the arrow between Pick Up Laptop and End, and then fill in the form.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Delivered</td>
</tr>
<tr>
<td>Stage</td>
<td>Completed</td>
</tr>
<tr>
<td>Message</td>
<td>The laptop delivery workflow is complete.</td>
</tr>
</tbody>
</table>

This leaves a message in the log to record the successful completion of the workflow.

**Execution Plans**

An execution plan describes how a catalog item is procured, configured, and installed.

Execution plans enable you to describe simple, linear processes. Each execution plan contains one or more tasks. For example, an organization might create an execution plan for delivering a corporate standard PC that contains these tasks:

1. Procure the PC from a supplier.
2. Configure the PC according to the requester’s specifications.
3. Deliver the PC to the requester.

An execution plan is not specific to any one catalog item. There could be many different models of PC that a user can order, all using the same execution plan. It is usually not necessary to create a new execution plan for each individual catalog item in a mature service catalog.

**Note:** Execution plans are not as powerful or flexible as workflows, and cannot be designed using a graphical editor. Execution plans are useful in some circumstances, for example, if you need to build your processes programmatically or through imports. ServiceNow recommends using workflows for request fulfillment processes.
Create an execution plan

Administrators and catalog administrators can create and manage execution plans.

To create an execution plan:
1. Navigate to Service Catalog Catalog Policy Execution Plans .
2. Click New.

3. Enter a Name and Short description for the execution plan.
4. Specify delivery information in the Total delivery time and On Calendar fields.
5. Click Submit.

Add catalog item variables to a task

You can add variables of a catalog item to a task to specify information about the requested catalog item.

For example, when a user requests a laptop, the fulfillment group may need to know what screen size and how much memory to order.

Each catalog item can contain one or more variables for gathering information from the user who requests the item. Assuming that the relevant catalog items have been associated to the execution plan, you can associate these variables to the specific created tasks that need the information.

To add catalog item variables to a task:
1. Navigate to Service Catalog Catalog Policies Execution Plans .
2. Open an execution plan.
3. In the Execution Plan Tasks related list, open a task.
Make sure the form shows the Plan view. If not, right-click the header bar and select View Plan.

4. Go to the Available Variables related list and click Edit.
5. Use the slushbucket to select the variables that are appropriate for the task.

Consider all the types of catalog items that might use this execution plan, and select all the variables that might be assigned to them.

6. Click Save to associate these variables to the execution plan task, making them accessible.

**Execution plan tasks**

An execution plan contains one or more execution plan tasks.

Each task represents work that needs to be completed by a specific group as part of the overall request fulfillment process.

Administrators create templates for tasks as part of defining an execution plan. The catalog tasks themselves are then created when the relevant item is requested, based on these task templates.

**Execution plan approval tasks**

Approval tasks are specific types of tasks within execution plans.

If an approval task is rejected, the execution plan can roll back to a previous task.

To set up an approval task including a rollback action:

1. Navigate to Service Catalog Execution Plans.
2. Select an execution plan.
3. From the Execution Plan Tasks related list, select New Approval to create the approval task.
4. Fill in the fields for that approval task.

5. Use the Upon reject field to define the action to take if the task is rejected:
   - Cancel all future Tasks: (default) cancels all future tasks in the execution plan and also cancels the parent request item.
   - Go to a previous Task: displays the Rejection goto field where you can select which task this execution plan should roll back to.
6. Save the task, then scroll down to the Approved By list and select one or more approvers for the tasks.

You can also use an Approval script to select approvers.

7. Select Update to add the task to the execution plan.

This example shows how the process works in practice, using a request to order a Blackberry phone.

First, the request is ordered:

Figure 241: Rollback 1

Next, complete the first two steps, which leads to the approval task.
Reject the request to roll back the execution plan to a previous task, and reset any intermediate tasks to pending:
After a plan has been rolled back, ServiceNow adds to the rolled-back task a note indicating that it was rolled back and why.

Note: Rolling back rolls back all intermediate tasks within the execution plan. Other plans within the same request are not rolled back, however.

Set up a fulfillment group

Fulfillment groups perform the tasks related to fulfilling an order.

This can include approving an order based on characteristics such as content and price, or any direct action required to complete the order, such as loading software or installing hardware. Any existing user group (in User Administration Groups) can be assigned fulfillment tasks.

To create a group specifically for order fulfillment:

1. Navigate to Service Catalog Catalog Policy Fulfillment Groups .
2. Click New.
3. Fill in the Group form as described under creating groups.

These groups have the type catalog and are assigned the catalog and itil roles, but are otherwise normal groups.

Specify delivery information

When managing execution plans, catalog administrators can specify the delivery information to provide an estimated date of delivery based on the execution plan.
Use the Total delivery time field to specify an estimated delivery time for each task in your execution plan. This estimate is calculated based on the combined total of times for the tasks in that execution plan.

By default, time estimates do not use a “working days” calendar system, but are based on simple elapsed time. For example, for a 5-day execution plan, if you submit the request on a Friday, the delivery date is Wednesday of the following week (5 elapsed days later), even if your organization does not work weekends.

Use the On Calendar field to specify a calendar system to apply to the execution plan, to help estimate more accurate delivery times.

If using this calendar system for estimated delivery time, ensure that estimates are expressed in working hours and days. For example, a task which is supposed to take 1 day on a 9-5 calendar is assumed to take 24 working hours, and so actually takes 3 working days.

Note: This calendar system is used to help provide delivery estimates only, and is not linked to any SLAs you might set on execution tasks.

Create execution plan tasks
An execution plan contains one or more task templates.
Each task template defines work that needs to be completed by a specific group.

Execution plans are associated to catalog items; when the relevant catalog item is requested, these task templates are used to generate tasks, to be performed as part of the request fulfillment process for that requested item. Each generated task within that requested item is assigned a catalog task number.

Example

The execution plan for an executive desktop computer catalog item might define the following task templates in the execution plan:
• Obtain managerial approval
• Order hardware
• Install standard corporate applications
• Deliver computer to requester

When this catalog item is ordered, the following request, requested item and tasks are then created:
• Request REQ0002 -- 1 PC
  • Requested Item ITEM0004 -- 1 X executive desktop
    • Catalog Task0001 -- Obtain managerial approval
    • Catalog Task0002 -- Order hardware
    • Catalog Task0003 -- Install standard corporate application
    • Catalog Task0004 -- Deliver computer to requester

Create task templates
Each execution plan contains one or more task templates, which define actions that must be taken to fulfill a request.

After creating the execution plan, you should now define these task templates.
When the relevant catalog item is ordered, request tasks will be generated for that requested item, based on this information.

**Define task templates**

Each execution plan contains one or more task templates that define actions that must be taken to fulfill a request.

To define an execution plan task template:

1. Navigate to *Service Catalog Catalog Policy Execution Plans*.
2. Open an execution plan.
3. In the Execution Plan Tasks related list, click New.
4. Fill in the fields on the Execution Plan Task form (see table).
5. Click Submit.
**ServiceNow Helsinki IT Service Management**

**Figure 244: Cat DP Task1**

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Procure PC Hardware</td>
</tr>
<tr>
<td>Fulfillment group</td>
<td>Procurement</td>
</tr>
<tr>
<td>Assigned to</td>
<td></td>
</tr>
<tr>
<td>SLA</td>
<td></td>
</tr>
<tr>
<td>Delivery plan</td>
<td>PC Delivery Plan</td>
</tr>
<tr>
<td>Order</td>
<td>100</td>
</tr>
<tr>
<td>Delivery time</td>
<td>Days 1, Hours 00 00 00</td>
</tr>
<tr>
<td>Short description</td>
<td>Order from vendor or move from in-stock inventory</td>
</tr>
<tr>
<td>Instructions</td>
<td>Order from preferred vendor - IBM - CDW - Dell OR Move from “In Stock” inventory. Locate CMDB CI that have status of “In Stock” and assign it to the requested item, this action will take it out of the “In Stock” status and assign the CI to the customer.</td>
</tr>
<tr>
<td>Work notes</td>
<td></td>
</tr>
</tbody>
</table>

**Available Variables (18)**

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU Speed</td>
<td></td>
</tr>
</tbody>
</table>
### Table 178: Defining Task Templates

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Name of the task. This becomes the created task’s name.</td>
</tr>
<tr>
<td>Fulfillment group</td>
<td>The group that performs the task. Whenever a user requests a catalog item associated with this execution plan, the task is automatically assigned to the fulfillment group. Leave blank if automatic assignment to a group is not required.</td>
</tr>
<tr>
<td>Assigned to</td>
<td>The individual who performs the task. Leave blank if automatic assignment to a user is not required.</td>
</tr>
<tr>
<td>SLA</td>
<td>The service level agreement that applies to catalog items associated with this execution plan. Note: This field is normally left blank, as the functionality has been superseded by the service level management functionality.</td>
</tr>
<tr>
<td>Delivery plan</td>
<td>The parent execution plan for this task.</td>
</tr>
<tr>
<td>Order</td>
<td>A number representing the task’s sequence in the execution plan. It is good practice to “leave gaps” between order numbers (for example, 100, 200, 300, and so on) so you can insert new tasks without changing the order number of existing tasks. (If the order for several execution plan tasks is the same, each of these tasks starts at the same time.)</td>
</tr>
<tr>
<td>Delivery time</td>
<td>Amount of time the task is expected to take. This value becomes a component of the overall time to complete the execution plan.</td>
</tr>
<tr>
<td>Condition</td>
<td>Condition under which the task is performed (if the condition is not met, the task is skipped).</td>
</tr>
<tr>
<td>Short description</td>
<td>Brief description of the task’s activity. This information populates the created task’s short description field.</td>
</tr>
<tr>
<td>Instructions</td>
<td>Details of the activities to be performed for the task. This information populates the created task’s description field.</td>
</tr>
<tr>
<td>Work notes</td>
<td>A journal field for entering comments about the task template. Note: this information is separate from the created task’s work notes field.</td>
</tr>
</tbody>
</table>

**Apply conditions to tasks**

Administrators and catalog administrators can define conditions under which a particular execution plan task runs, or is skipped, when the relevant item is requested.
For example, an execution plan may contain the following tasks:

1. Order hardware
2. Receive hardware
3. Configure hardware
4. Deliver hardware

However, when an item is requested, if the hardware in question is already on site, it does not need to be ordered and so the first task in the list can be skipped.

---

Note: Skipped task records are still created, but are marked as skipped, and are not processed within the execution plan.

---

Conditional Tasks

To make an execution plan task conditional, defining the conditions under which the task runs.

1. Navigate to Service Catalog > Execution Plans.
2. Open an execution plan, and then open a task within that plan.
3. Use the condition field to select the condition under which the task runs.

If no conditions are set, the task runs every time a user orders an item associated with this execution plan.

Here is an example of conditional task for an IT lab based in Atlanta:
Figure 245: Applying Conditions to Execution Plan Tasks
In this example, the Deliver to IT Labs step does not run if the request itself is in Atlanta; there is no need to deliver something to the IT lab if it is already there.

**Use condition scripts to run tasks**
Administrators can use a condition script in addition to or instead of any condition to determine whether or not a task should run.

---

**Note:** If you are using both a condition (via the condition field) and a condition script, both must be true before the task will run.

---

To use a script, you must configure the Execution Plan Task form to add the “Condition script” field. If the script returns true, the task runs. If the script returns false, the task does not run.

Ensure you add the variable used in the script to the execution plan task.
<table>
<thead>
<tr>
<th>Name</th>
<th>Procure PC Hardware</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fulfillment group</td>
<td>Procurement</td>
</tr>
<tr>
<td>Assigned to</td>
<td></td>
</tr>
<tr>
<td>SLA</td>
<td></td>
</tr>
<tr>
<td>Condition</td>
<td>Add Filter Condition</td>
</tr>
<tr>
<td></td>
<td>Add &quot;OR&quot; Clause</td>
</tr>
<tr>
<td></td>
<td>-- choose field --</td>
</tr>
<tr>
<td></td>
<td>-- oper --</td>
</tr>
<tr>
<td></td>
<td>-- value --</td>
</tr>
<tr>
<td>Delivery plan</td>
<td>PC Delivery Plan</td>
</tr>
<tr>
<td>Order</td>
<td></td>
</tr>
<tr>
<td>Delivery time</td>
<td>Days 1</td>
</tr>
<tr>
<td>Hours</td>
<td>00 00 00</td>
</tr>
</tbody>
</table>

**Short description:** Order from vendor or move from in-stock inventory

**Instructions:**
- Order from preferred vendor
  - IBM
  - CDW
  - Dell
- OR

Move from "In Stock" inventory. Locate CMDB CI that have status of "In Stock" and assign it to the requested item, this action will take it out of the "In Stock" status and assign the CI to the customer.

**Condition script:**

```javascript
1  var rc = true;
2  if (current.request_item.request_for.name == 'Fred Luddy')
3      rc = false;
```
Process skipped tasks

If a task is skipped, the request fulfillment process moves on to the next task.

If the last task in an execution plan is skipped, the process is finished and the appropriate request item is closed as complete. Skipped tasks have their state set to Closed Skipped and display as gray boxes on a requested items list.
<table>
<thead>
<tr>
<th>Requested Items</th>
<th>Number</th>
<th>Item</th>
<th>Stage</th>
<th>Request</th>
<th>Requested for</th>
<th>Opened by</th>
<th>Due date</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>BTL00000016</td>
<td></td>
<td>Google Nexus 7</td>
<td></td>
<td>BTL000000013</td>
<td>System Administrator</td>
<td>System Administrator</td>
<td>2016-02-17</td>
<td>14:54:21</td>
</tr>
<tr>
<td>BTL00000010</td>
<td></td>
<td>VPN RSA Token</td>
<td></td>
<td>BTL00000012</td>
<td>System Administrator</td>
<td>System Administrator</td>
<td>2016-02-17</td>
<td>14:51:49</td>
</tr>
<tr>
<td>BTL00000014</td>
<td></td>
<td>Asus G Series</td>
<td></td>
<td>BTL00000011</td>
<td>Beth Angelin</td>
<td>Beth Angelin</td>
<td>2016-02-17</td>
<td>14:48:36</td>
</tr>
<tr>
<td>BTL00000013</td>
<td></td>
<td>Apple iPhone 5</td>
<td></td>
<td>BTL00000010</td>
<td>System Administrator</td>
<td>System Administrator</td>
<td>2016-02-17</td>
<td>14:45:54</td>
</tr>
<tr>
<td>BTL00000010</td>
<td></td>
<td>Blackberry</td>
<td></td>
<td>BTL00000007</td>
<td>ITIL User</td>
<td>ITIL User</td>
<td>2016-02-21</td>
<td>11:21:44</td>
</tr>
<tr>
<td>BTL00000009</td>
<td></td>
<td>Office Printer</td>
<td></td>
<td>BTL00000006</td>
<td>ITIL User</td>
<td>ITIL User</td>
<td>2016-02-20</td>
<td>11:21:36</td>
</tr>
<tr>
<td>BTL00000002</td>
<td></td>
<td>Blackberry</td>
<td></td>
<td>BTL00000004</td>
<td>Don Goodliffe</td>
<td>Don Goodliffe</td>
<td>2016-02-21</td>
<td>11:19:22</td>
</tr>
<tr>
<td>BTL00000006</td>
<td></td>
<td>Executive Desktop</td>
<td></td>
<td>BTL00000003</td>
<td>Fred Luddy</td>
<td>Fred Luddy</td>
<td>2016-02-22</td>
<td>11:17:02</td>
</tr>
<tr>
<td>BTL00000005</td>
<td></td>
<td>Telephone Extension</td>
<td></td>
<td>BTL00000002</td>
<td>Fred Luddy</td>
<td>Fred Luddy</td>
<td>2016-02-18</td>
<td>11:15:38</td>
</tr>
<tr>
<td>BTL00000004</td>
<td></td>
<td>Sales Laptop</td>
<td></td>
<td>BTL00000001</td>
<td>Fred Luddy</td>
<td>Fred Luddy</td>
<td>2016-02-22</td>
<td>11:15:38</td>
</tr>
<tr>
<td>BTL00000002</td>
<td></td>
<td>Blackberry</td>
<td></td>
<td>BTL00000000</td>
<td>Fred Luddy</td>
<td>Fred Luddy</td>
<td>2016-02-21</td>
<td>11:15:38</td>
</tr>
</tbody>
</table>

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690
Use execution plans

Service catalog enables you to associate execution plans with catalog items.

Once you have created the execution plan record, you can then associate it with catalog items, create task templates, and associate any catalog item variables to tasks if required.

You can also:
- Apply conditions to tasks
- Create approval tasks, enabling you to step back to a previous step if the approver rejects the request.

Associate execution plan with items

After you submit the execution plan record, you select a catalog item to use the execution plan.

This association can be done at a later date, but doing it at this stage enables you to access relevant catalog item variables in the execution plan.

1. Navigate to Service Catalog Catalog Definition Maintain Items.
2. Select a catalog item.
3. In the Execution Plan field, select the new execution plan.
4. Click Update.

Configure checkout

When you configure the two-step checkout, it allows you to specify a recipient, delivery address, and special instructions for an order.

Administrators and users with the catalog_admin role can enable and configure the two-step checkout model.

The service catalog defaults to a one-step checkout model. When a user clicks Proceed to checkout or Order now, items in the shopping cart are ordered and the order summary or status screen appears.

The one-step checkout model runs in the following order:
- Press Checkout
- Order Summary

The service catalog also supports a two-step checkout model. Under this model, when a user clicks Proceed to checkout or Order now, an order confirmation screen appears, allowing the user to edit the order, choose a delivery location, or upload an attachment before submitting the order. The two-step checkout model runs in the following order:
- Press Checkout
- Order Confirmation Screen
- Submit Order
- Order Summary

Enable the two-step checkout process

You can enable the two-step checkout to specify a recipient, delivery address, and special instructions for an order.

To set up a two-step checkout process:
1. Navigate to Service Catalog Catalog Policy Properties.
2. Locate the property Use the two step catalog checkout model (default false).
3. Select the Yes check box to enable the two-step process.
4. Locate the property Show the ‘Back to Catalog’ button on the two step checkout screen.
5. Select the Yes check box to provide a button that navigates back to the catalog from the order confirmation screen (default). Clear the check box to hide the button.
Specify requester location

In the two-step checkout model, end users may specify a recipient, delivery address, and special instructions for an order.
Figure 248: Requested for
Administrators can control how the delivery address is populated. By default this is defined by the client script called set location.

When the two-step checkout process is enabled, the set location script retrieves the address of the user and enters formatted details in the Deliver to field.

Service Catalog for end users

Service Catalog enables you to view and order items from departments within your organization. These catalog items can include goods, services, and information.

Anything that can be ordered individually can be ordered as a catalog item. Anything that only exists as a part of a larger whole cannot be a catalog item. For example, a laptop can be a catalog item, but a high-resolution display for a laptop cannot.

After placing an order, the customer can track its progress. Predefined groups follow a series of tasks to deliver the item, based on a fulfillment process, including any approvals required.

View and navigate a service catalog

The homepage for a service catalog lists the goods and services available to order from that catalog. Catalog items are grouped into categories, which may also contain one or more subcategories. By default, the first ten items in a category appear under the category name on the service catalog homepage.

To access the default service catalog homepage, navigate to Self-Service › Service Catalog.
Figure 249: Service Catalog Homepage

Click a category name to see a list of all subcategories and items in the category.
Request a catalog item

To place a request from a service catalog, navigate to the catalog homepage and select the item to order.
When an item is ordered, the ServiceNow ITSA Suite generates a request to track the order and displays a summary that includes the order status in the Stage column:

![Order Status](image)

Each individual catalog item in a request creates a discrete request item. For example, a request for 2 PCs, 1 chair, and 1 desk would produce four request items on a single request.

Shopping cart screens

The shopping cart screen displays previews of the cart immediately before an order is placed. You can configure the layout for either the one-step or two-step catalog checkout process.

Order status screens

The order status screen is the final summary screen a user sees in the service catalog after placing an order successfully.

Place an order

When a customer orders something from the catalog, a request is generated to keep track of the order.
If a service catalog request is canceled, all associated purchase orders and transfer orders that have not been received are canceled.

Each individual catalog item that is part of a request creates a discrete request item with the request. For example, a request for 2 PCs, 1 Chair, and 1 Desk would produce:

- Request REQ0000001 -- 4 Things
  - Requested item RITM0000001 -- 2 X PC
  - Requested item RITM0000002 -- 1 X Chair
  - Requested item RITM0000003 -- 1 X Desk

Place a bulk request

To place requests in bulk:

1. Create a Service Catalog request.
2. On the checkout page, enter the users for whom to copy the request, up to a maximum of 10, in the Copy this Request for: reference fields.
Figure 253: Create Service Catalog Bulk Request

Order Status

Summary
Your request number is **REQ10002**, which you can use to refer to this request in future interactions with the service desk.

You may also bookmark the following link to get back to **REQ10002**.

Note that clicking on the bookmark link (above) will simply take you back to this screen.

<table>
<thead>
<tr>
<th>Description</th>
<th>Delivery Date</th>
<th>Stage</th>
<th>Price (ea.)</th>
<th>Qty</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loaner Laptop (T42)</td>
<td>2009-08-05</td>
<td></td>
<td>£0.00</td>
<td>1</td>
<td>£0.00</td>
</tr>
<tr>
<td>IBM Thinkpad X60</td>
<td>2009-08-10</td>
<td></td>
<td>£1,763.36</td>
<td>1</td>
<td>£1,763.36</td>
</tr>
</tbody>
</table>

Total: £1,763.36

Delivery Information

Estimated Delivery Date of Complete Order: **2009-08-10**

Copy this Request for:
- Asset Manager
- ITIL User
- System Administrator

Order Now
3. Click Order Now.

View audit history

To view the audit history of a variable:
1. Navigate to Self-Service > Requested Items.
2. Open a requested item to display the Requested Item form.
3. For the purpose of demonstration, change the value of a service catalog variable inside the item.
4. Right-click the header bar and select History > List.
5. The Record History form contains a related list detailing all changes to the requested item, including all variables.

---

Note:
Audits of variables are prefixed with "VARIABLE: ".

---

Service catalog variable reports

Administrators and catalog administrators can filter lists of items and catalog tasks based on variable usage.

You can:
- Create list reports that use service catalog variables and request items
- Create list reports that use service catalog variables and tasks

Service Catalog item designer

The Service Catalog item designer enables non-administrators to create, maintain, and publish catalog items.

The catalog item designer uses a structured design and publishing process to ensure consistency of usage. The item designer is best suited to manage items that have basic questions, approvals, and tasks.

---

Note: To create and manage more complex items, use the service catalog features for creating items.

---

Process flow

The catalog item designer uses a structured design and publishing process to ensure consistency of usage.
- Administrators or catalog administrators set up the design environment to enable a controlled item design process, and process category requests.
- Catalog managers request categories, then manage their categories.
- Catalog managers and catalog editors create, edit, and publish catalog items within their categories.
Service Catalog roles

The Service Catalog item designer can have roles such as catalog administrator, designer, manager, and editor.

The catalog item designer roles are:

Table 179: Catalog Item Designer Roles

<table>
<thead>
<tr>
<th>Role Title (Name)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administrator (admin)</td>
<td>Can set up the catalog item designer environment and process requests for categories. Can also perform other service catalog management functions.</td>
</tr>
<tr>
<td>Catalog administrator (catalog_admin)</td>
<td>Can view the status of their category requests.</td>
</tr>
<tr>
<td>Catalog Item Designer (catalog_item_designer)</td>
<td>Can view and assign catalog editors to their categories. Can also create, modify, and publish items within their categories.</td>
</tr>
<tr>
<td>Catalog Manager (catalog_manager)</td>
<td>Can view and assign catalog editors to their categories. Can also create, modify, and publish items within their categories.</td>
</tr>
<tr>
<td>Catalog Editor (catalog_editor)</td>
<td>Can create, modify, and publish items within categories they are assigned to.</td>
</tr>
</tbody>
</table>

Catalog item designer administration

Administrators and catalog administrators can control the options available to catalog managers and catalog editors who use the catalog item designer.

These control options include defining question types, approval types, and task assignment types. You can restrict these options to ensure that items are designed consistently and with few variations, or expand them to enable greater design flexibility.

You can also process category creation requests and view or modify definitions of notifications used by the catalog item designer.

Process Flow

The catalog item designer uses the records in three distinct areas for creating, publishing, and requesting items:

1. Creating

   The catalog item designer uses staging records for items that are being created, with staging records for any associated questions, approvals, and tasks. For example, a staging Item (sc_ic_item_staging) record can have associated staging Approval (sc_ic_aprvl_defn_staging) records. These records are staging only, and not available for order within the Service Catalog.

2. Publishing

   A published item is available within the Service Catalog to be requested. When item editors publish an item, the following actions occur:
   - Staging items create or update the equivalent catalog items.
   - Questions are copied into variables on that catalog item.
   - Associated approvals and tasks are copied into equivalent published tables. For example, Approval (sc_ic_aprvl_defn_staging) records are copied to equivalent Approval Definition (sc_ic_aprvl_defn) records for the item.

3. Requesting

   Requested items and associated records are created when a published catalog item is ordered. When a self-service user requests a catalog item:
• A requested item is generated based on the last-published item and the last-published versions of any variables used by that item.
• Associated approvals and tasks are copied from the published records into equivalent requested item tables. For example, Approval Definition (sc_ic_aprvl_defn) records are copied to equivalent Approval Definition (Requested Item) (sc_ic_req_item_aprvl_defn) records.

Process flow

The catalog item designer for administrators uses a structured design and publishing process to ensure consistency of usage.

1. A user requests a category, either requesting to become the manager of that category, or assigning another user as the category manager.
   a. An administrator or catalog administrator processes that request, creating the category with a selected category manager.
   b. [Optional] The category manager assigns catalog editors to a category they manage.

2. Category managers and catalog editors can use the catalog item designer to:
   a. Create new items within a category they are assigned to.
   b. Create questions, approvals, tasks, and sections, for the item.
   c. Publish items to the category after review.

3. Self-service users can use the service catalog to request items in the category, like any service catalog item.

Define question types

Question types define the options available to catalog editors or catalog managers when they define questions for a catalog item.

You can modify question types, expanding or restricting the list of types available, to meet requirements for your organization’s design environment. For example, you can deactivate date-based question types.

Note: This list of available question types is also used when you create a new service in service creator. For example, if you deactivate Multi Line Text, it is deactivated for both the catalog item designer and the service creator.

To create or modify a question type:

1. Navigate to Item Designer Administration Question Types.
2. Click New or open an existing question type.
Figure 254: New Question Type form

3. Fill in the fields, as appropriate.
<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>The question type name.</td>
</tr>
</tbody>
</table>
| Question class| The base variable type to use as the class for this question type. The most common variable types are available, but some complex types, such as macros, are available only when you use the Catalog Item form. The following classes are available:  
  - Checkbox  
  - Date  
  - Date/Time  
  - Label  
  - Multi Line Text  
  - Multiple Choice  
  - Numeric Scale  
  - Reference  

  Note: Reference fields are only available as preconfigured questions. If you set the question class to Reference, the Preconfigured Question check box is automatically selected and made read-only.  

  - Select Box  
  - Single Line Text  
  - Yes / No |
| Order         | The sequence this question type appears in.                                 |
| Active        | A check box to indicate whether the question type is active or not. Clear this check box to deactivate a question type, so that it cannot be used when creating a new question or a new service.  

  Note: Deactivating a question type that is in use does not affect catalog items that are already using that question type. |
Define approval types

Approval types are available to catalog editors or catalog managers when they define approvals for an item.

For example, you can define Facilities Items Approvers, a specific list of approvers for facilities items.

To create a new approval type:

1. Navigate to Item Designer Administration Approval Type Definitions.
2. Click New.
3. Fill in the fields, as appropriate.

Table 181: Approval Type form

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>The name for the approval type.</td>
</tr>
<tr>
<td>Version</td>
<td>(Read-Only) The version of the approval type. The version number gets incremented whenever you save a change to that type.</td>
</tr>
<tr>
<td>State</td>
<td>(Read-Only) The approval type state. It is initially set to Draft. When you publish the approval type, the state changes to Published.</td>
</tr>
<tr>
<td>Description</td>
<td>A brief description of the approval type.</td>
</tr>
<tr>
<td>Type</td>
<td>The method for approving items that use the approval type. Can be User, Group or Script. This selection determines which other fields are available.</td>
</tr>
<tr>
<td>User(s)</td>
<td>The individual users who can approve catalog items that use this approval type. This field is available only if the Type is set to User.</td>
</tr>
</tbody>
</table>
### Field Description

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group(s)</td>
<td>The groups who can approve catalog items that use this approval type. This field is available only if the Type is set to Group.</td>
</tr>
<tr>
<td>Script output</td>
<td>The end result of the script, creating either a set of users or groups. This field is available only if the Type is set to Script.</td>
</tr>
<tr>
<td>Approver script</td>
<td>A script to define that approval type, such as a script to define the requester’s manager. This field is available only if the Type is set to Script.</td>
</tr>
</tbody>
</table>

4. Click Submit.

**Publish approval types**

Publish an approval type after it is defined correctly for catalog editors or catalog managers to use when they create items.

- To publish an approval type, navigate to Item Designer Administration Approval Type Definitions, open an entry, then click Publish.
- To view a list of published approval types, navigate to Item Designer Administration Published Approval Type Definitions.

**Change approval types**

Service catalog enables you to change the details of an approval type.

- To change details for an approval type, navigate to Item Designer Administration Approval Type Definitions, open an entry, then edit the details and save your changes.

  Note: After you save your changes, the version number for that approval type increases by 1.

- To make your changes live, publish the changed approval type.

**Expire approval types**

To remove an approval type from use, you can expire it, making it inactive.

To expire an approval type, navigate to Item Designer Administration Approval Type Definitions, open an entry, then click Expire.

**Define task assignment types**

Task assignment types define the assignment options available to catalog editors and catalog managers when they define tasks for an item.

When a user then requests that item, these assignment options determine which users are assigned to complete these tasks. For example, you can use information the user enters when requesting an item to dynamically assign a task to the requester’s on-call IT support contact.

To create a new assignment type:

1. Navigate to Item Designer Administration Task Assignment Definitions.
2. Click New.
3. Fill in the fields as appropriate.

Table 182: Task Assignment form

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short Description</td>
<td>A brief summary of the task assignment type.</td>
</tr>
<tr>
<td>Description</td>
<td>A longer description of the task assignment type.</td>
</tr>
<tr>
<td>Active</td>
<td>(Read Only) A check box that indicates whether the task assignment type is active or not. To deactivate a task assignment type, expire it.</td>
</tr>
<tr>
<td>Assignment type</td>
<td>The type of assignment. Set to Direct assignment to define users or groups explicitly, or Scripted assignment to calculate assignments dynamically using a script.</td>
</tr>
<tr>
<td>State</td>
<td>The state of the task definition. Set to Draft if the record is being created or modified, or Published if the task assignment type is published.</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>---------------</td>
<td>-------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Group</td>
<td>The group to assign to tasks that use this assignment type. This field is available only if the Assignment type is set to Direct assignment.</td>
</tr>
<tr>
<td>User</td>
<td>The specific user to assign to tasks that use this assignment type. This field is available only if the Assignment type is set to Direct assignment.</td>
</tr>
<tr>
<td>Assignment script</td>
<td>A script to determine who should perform tasks that use this assignment type. This field is available only if the Assignment type is set to Scripted assignment. For example, a script to identify the requester’s on-call support team as the group to assign.</td>
</tr>
</tbody>
</table>

4. Click Submit.

Publish task assignment types
You can publish task assignment types after defining them.

- To change details for a task assignment type, navigate to Item Designer Administration Task Assignment Definitions, open an entry, then edit the details and save your changes.

  Note: After you save your changes, the version number for that task assignment type increases by 1.

- To make your changes live, publish the changed task assignment type.

Change task assignment types
Service catalog enables you to change the details of a task assignment type.

- To change details for a task assignment type, navigate to Item Designer Administration Task Assignment Definitions, open an entry, then edit the details and save your changes.

  Note: After you save your changes, the version number for that task assignment type increases by 1.

- To make your changes live, publish the changed task assignment type.

Expire task assignment types
To remove an assignment type from use, you can expire it, making it inactive.

To expire an assignment type, navigate to Item Designer Administration Task Assignment Definitions, open an entry, then click Expire.

Process category requests
Any self-service user can submit a request to create a catalog category.

Administrators and catalog administrators review category creation requests and approve or reject them. For example, you might reject a request if it duplicates an existing category.

1. Navigate to Item Designer Administration All Category Requests.
2. Open a category request.
3. Perform one of the following actions:
<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>To approve the request:</td>
<td>Click Create Category. The category is created, the nominated category manager receives an email notification, and is granted the catalog manager role for that category. The category manager can then manage the new category.</td>
</tr>
<tr>
<td>To reject the request:</td>
<td>Click Reject. Category request rejections cannot be reversed. To create a new category, the original requester must submit a new request.</td>
</tr>
</tbody>
</table>

**View notifications**

You can list definitions of notifications sent to users who request a category.

Navigate to **Item Designer Administration Notifications**.

---

Figure 258: Notifications

By default, the following three notification definitions are active:

- **Item Designer Category Request Opened** An acknowledgement after a self-service users submits a request for a new category.
- **Item Designer Category Rejected** A message indicating that a request for a new category is rejected.
• Item Designer Category Published A message indicating that a request for a new category is approved, with a link to the new category.

You can modify these definitions as required, using standard email notification functions.

View all items
You can view a list of all catalog items created using the item designer and edit them if required.

To view all items:
1. Navigate to Item Designer Administration All Items to view a list of all catalog items created using the item designer.
2. Click an item name to view and edit details for that item.

Catalog item designer for end users
Category managers, users with the catalog_manager role, can use the catalog item designer to manage their categories, assign editors to those categories, and create, modify, and publish catalog items.

For example, a facilities team leader can manage a Facilities category. Catalog editors can use the catalog item designer to create, modify and publish items within their categories. For example, facilities team members can create, edit, and publish items within the Facilities category.

Note: You can only manage standard catalog items [sc_cat.item] using the catalog item designer, not more complex items such as order guides. In addition, UI policies and client scripts are not supported by the item designer. To implement these more advanced functions, use the service catalog features for creating items.

Process flow
The catalog item designer for end users uses a structured design and publishing process to ensure consistency of usage.

1. A user requests a category, either requesting to become the manager of that category, or assigning another user as the category manager.
   a. An administrator or catalog administrator processes that request, creating the category with a selected category manager.
   b. (Optional) The category manager assigns catalog editors to a category they manage.

2. Category managers and catalog editors can use the catalog item designer to:
   a. Create new items within a category they are assigned to.
   b. Create questions, approvals, tasks, and sections for the item.
   c. Publish items to the category after review.

3. Self-service users can use the service catalog to request items in the category, like any service catalog item.

Request a category
Self-service users can request a new category within a service catalog.

For example, a facilities team leader responsible for managing office furniture could request a new category of Office Furniture Requests, within the Facilities catalog.
To request a category:

1. Navigate to Self-Service Service Catalog.
2. Select the Can We Help You? Item Designer Category Request item.
3. Fill in the request form.
Request a category that you can use to create your own catalog items

Item Designer category requests allow you to request a new category within the catalog. Once created, you will be able to create and publish items that allow users to request products and services.

For each item, you will be able to define:
- the questions the user must complete to submit the request
- approvals that must be completed for the request to progress to fulfillment
- at least 1 task that will be used to fulfill the request

By filling out this request, you or your designate will be the manager of the item designer category. You can also assign editors who will also have permission to create/update items within this category.

Once this request is fulfilled and the category is created, you will be notified via email and sent a link to begin creating your items.

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Choose the catalog your new category will appear in</td>
<td></td>
</tr>
<tr>
<td>Name of your new category (e.g., Database Support)</td>
<td></td>
</tr>
<tr>
<td>Category manager (you, or your designate)</td>
<td>System Administrator</td>
</tr>
<tr>
<td>Category Description</td>
<td>More information</td>
</tr>
<tr>
<td>Comments</td>
<td>More information</td>
</tr>
</tbody>
</table>

[Submit button]
4. Click Submit.
   The catalog request record state is set to Requested, and you are granted the catalog item designer role so you can view the status of the request.

5. Log out from your ServiceNow instance, then log back in again, to ensure you have activated this role in your account.

6. Navigate to Item Designer My Item Categories to view the status of the request.

Manage a category

After an administrator approves a category request, the category is immediately created with the selected category manager.

New categories are created as active, available to display in the selected catalog. Categories with no items are not displayed in the catalog.

- Navigate to Item Designer My Item Categories to view and edit categories you manage. Click the category number to open that category.
To assign editors to a category, select users in the Editors field of the relevant category form, then click Update.

To deactivate a category, click Deactivate. The category is then no longer visible in the service catalog.
• To reactivate a category, reopen the category form and click Activate.
  
  Category managers can also create and manage items in their categories, and publish items to make them available to users.

Create an item

Category managers and catalog editors can create items using the item designer.

1. Navigate to Item Designer Create New.
<table>
<thead>
<tr>
<th>Details</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td></td>
</tr>
<tr>
<td>State</td>
<td>Draft</td>
</tr>
<tr>
<td>Availability</td>
<td>Desktop Only</td>
</tr>
<tr>
<td>Catalogs</td>
<td></td>
</tr>
<tr>
<td>Categories</td>
<td></td>
</tr>
<tr>
<td>Short description</td>
<td></td>
</tr>
<tr>
<td>Desktop image</td>
<td>Click to add...</td>
</tr>
<tr>
<td>Description</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Costs</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>One-off cost</td>
<td>$ 0.00</td>
</tr>
<tr>
<td>Recurring cost</td>
<td>$ 0.00</td>
</tr>
<tr>
<td>Recurring cost frequency</td>
<td>None</td>
</tr>
</tbody>
</table>

Next
2. Fill in the fields as appropriate.

Table 183: Designer view

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>The name of the item.</td>
</tr>
<tr>
<td>State</td>
<td>(Read-Only) The state of the item. Initially the state is set to Draft. When you publish the item, the state changes to Published.</td>
</tr>
</tbody>
</table>

Details section

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Availability</td>
<td>The interface where this item is available. Choose from Desktop and Mobile, Desktop Only, or Mobile only.</td>
</tr>
<tr>
<td>Catalogs</td>
<td>The catalogs the item should be published to.</td>
</tr>
<tr>
<td>Categories</td>
<td>The categories the item should be published to within the selected catalogs.</td>
</tr>
<tr>
<td>Short Description</td>
<td>A brief description of the item.</td>
</tr>
<tr>
<td>Desktop image</td>
<td>An image of the item. This field is available only if Availability is set to either Desktop Only or Desktop and Mobile.</td>
</tr>
<tr>
<td>Mobile image</td>
<td>An image of the item for the smartphone interface. This field is available only if Availability is set to either Mobile Only or Desktop and Mobile.</td>
</tr>
<tr>
<td>Description</td>
<td>A full description of the item. This description appears in the catalog when a user selects the item or clicks the associated More Information link.</td>
</tr>
</tbody>
</table>

Costs section

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>One off cost</td>
<td>The price for the item and the currency for that price.</td>
</tr>
<tr>
<td>Recurring cost</td>
<td>A price that occurs repeatedly at a regular interval. For example, a printer maintenance service could have a $100.00 monthly recurring price.</td>
</tr>
<tr>
<td>Recurring cost frequency</td>
<td>The time frame when the cost recurs. Select a frequency, such as Monthly or Quarterly, if you enter a value in the Recurring cost field.</td>
</tr>
</tbody>
</table>

3. Click Next to save the record.
4. Under Related Links, click the appropriate link to add questions, approvals, sections, or tasks for the item.

**Define an item question**

Item questions appear in the catalog when a user requests the item.

The user answers the questions to provide the information needed to fulfill the request. For example, a request for a new laptop might have a multiple choice question to specify the screen size, allowing the requester to select one of a set of options.
You can organize questions into sections, to provide a logical flow for a multi-question item. If you plan to use sections, consider creating the sections so that you can select the appropriate section when defining the questions.

To add a question:

1. On the Item form, click the Add a Question related link.
Add Question

Use questions to gather the information you need from your customers. You can choose the format you want to receive the answers in. Select a question Type and use Options to see any standard questions already created by your administrator. A simple single column layout will be automatically created, however, you can also design the layout of your questions using Sections and Columns.

Type: Single Line Text
Option: -- Create your own Single

Section: Section 1
Column: Left column

Question:
Order: 1
Default value:
Help text:

Submit

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2. Fill in the fields, as appropriate.

Table 184: Add question

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>The type for the question, defining the format you would like to receive the information in. By default, the options are Checkbox, Date, Date/Time, HTML, Multi Line Text, Multiple Choice, Numeric Scale, Reference, Select Box, Single Line Text, or Yes/No. Each type allows you to create your own option, using the Option field. Administrators and catalog administrators determine the question types available.</td>
</tr>
</tbody>
</table>
| Option      | The standard questions available within the selected question type, as set by the value of the Type field. By default, all question types contain Create your own (type) as an option, allowing you to define your own question of that type. These types may contain additional fields, allowing you to further define the question options. For example, Create your own Numeric Scale allows you to define Scale Min and Scale Max values. Some types also have additional preconfigured options available. By default, the following extra options are available:  
  - Comments: allow the user to enter a short message. Available if the Type is Multi Line Text.  
  - Contact preference: ask the user to select their preferred contact method: email, telephone, or SMS. Available if the Type is Multiple Choice.  
  - Configuration item: allow the user to select a single configuration item from those defined in the system. Available if the Type field is Reference.  
  - Active user: allow the user to choose from a list of active user records. Available if the Type is Reference.  
Administrators and catalog administrators define the options available for each question type. |
| Mandatory   | A check box to indicate whether users are required to provide an answer before they can submit the request. Only available for some question types. |
| Read only   | A check box for indicating whether the question is read only. Only available for some question types. |
| Section     | The section this question appears in. Sections allow you to group questions logically. Choose from the sections that have already been defined for the item. |
3. Click Submit.
   The new question is added to the Questions related list.
4. To edit a question, open it from the related list.

Define an item approval
An approval for an item identifies a user or group that must approve each request for this item.

An approval for an item identifies a user or group that must approve each request for this item. All listed approvers must approve this request for it to be fulfilled; a rejection halts the process immediately. For example, you could define approvers for a facilities item to be the facility management team.

Users can view their open approvals by navigating to Self-Service My Approvals, or by opening the requested item and viewing the approval in the Group approvals related list.

To add an approval to an item:
1. On the Item form, click the Add an Approval related link.
2. Fill in the fields, as appropriate (see table).
3. Click Submit.

The new approval is added to the Approvals related list.
4. To edit an approval, open it from the related list.

Table 185: define an item approval

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active</td>
<td>A check box for indicating whether this approval is active.</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>-------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Order</td>
<td>The sequence in which the approvals are requested. Approvals are only created when any approvals with lower order numbers are completed. For example, if Approval 1 has order 100 and Approval 2 has order 150, Approval 2 is only created when Approval 1 is completed. If multiple approvals have the same order number they are requested at the same time.</td>
</tr>
<tr>
<td>Type</td>
<td>The approval type. Set to User for a specific user, Group for a specific group, or Predefined Approval to select approvers from a predefined list.</td>
</tr>
<tr>
<td>User</td>
<td>A specific user to be the approver. Appears if the approval type is set to User.</td>
</tr>
<tr>
<td>Group</td>
<td>A specific group to be the approver. Appears if the approval type is set to Group. The first group member who responds to the approval request responds for the entire group.</td>
</tr>
<tr>
<td>Predefined</td>
<td>A check box allowing you to select an approval type created by the administrator or catalog administrator. Appears if the approval type is set to Predefined. For example, if you select the default predefined approval of Requester’s Manager, the approval is sent to the manager of the person who requests the item.</td>
</tr>
</tbody>
</table>

Define an item task

Item tasks describe the work required to fulfill a request for an item.

Item tasks are generated as standard catalog tasks when an item is ordered, like the tasks generated by workflows. Tasks are assigned to users or groups as part of the fulfillment process when that item is ordered. For example, an item to request a new laptop could have a task to deliver the laptop to the user.

Users can view their open tasks by navigating to Service Catalog Open Records Tasks, or can open the requested item and view the task in the Catalog Tasks related list.

To add a task to an item:

1. On the Item form, click the Add a Task related link.
Add Task

Tasks will be created after any approvals have been successfully processed. Select who will be assigned the task from the following options:

- User specified
  The group and/or user that the task will be assigned to
- Predefined
  Additional options that have been defined by your administrator

Use the Order field to choose the sequence in which tasks will be created in relation to other tasks. If multiple tasks have the same Order number, they will be created at the same time so that the tasks can be worked in parallel.

- Assignment: User specified
- Active: ✓
- Group
- User
- Order: 100

The Short description and Description fields will be displayed in the task. These should be used to describe the steps required to complete the task.

- Short description
- Description

Submit
2. Fill in the fields, as appropriate (see table).
3. Click Submit.

   The new task is added to the Tasks related list.
4. To edit a task, open it from the related list.

Table 186: Add task

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short Description</td>
<td>A brief description of the task.</td>
</tr>
<tr>
<td>Description</td>
<td>A more detailed description that provides details and instructions for the people performing the task.</td>
</tr>
<tr>
<td>Assignment</td>
<td>The assignment type. Select User specified to select your own assignment options, or Predefined to select from predefined task assignment definitions set by an administrator.</td>
</tr>
<tr>
<td>Group</td>
<td>The group to perform the task. Appears if the assignment is set to User specified.</td>
</tr>
<tr>
<td>User</td>
<td>The user to perform the task. Appears if the assignment is set to User specified. If you select a group first, only users from that group are available in the User selection list.</td>
</tr>
<tr>
<td>Assign to</td>
<td>A predefined assignment option. Appears if Assignment is set to Predefined. Select from the task assignment types created by the administrator or catalog administrator. Assignment types commonly base the task assignment on information provided with the request. For example, if you select Local database team for the requestor, the system assigns the task to someone from the designated team.</td>
</tr>
<tr>
<td>Order</td>
<td>The sequence in which tasks are created. Tasks are only created when any tasks with lower order numbers are completed. For example, if Task 1 has order 100 and Task 2 has order 150, Task 2 is only created when Task 1 is completed. If multiple tasks have the same order number, they are created at the same time, so the tasks can be performed at the same time.</td>
</tr>
</tbody>
</table>

Define an item section

You can add sections to organize the questions into logical groups, each with its own heading, which can streamline the request process.

For example, an item to request a new laptop could have sections for the laptop’s hardware specifications and software requirements. You can add sections to organize the questions into logical groups, each with its own heading, which can streamline the request process. For example, an item to request a new laptop could have sections for the laptop’s hardware specifications and software requirements.
Add the sections before you add the questions to simplify the layout process.

1. On the Item form, click the Add a Section related link.

2. Fill in the fields as appropriate.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Label</td>
<td>The section title that describes the type of questions in the section. For example, you can define sections such as User Details.</td>
</tr>
<tr>
<td>Position</td>
<td>A number indicating the vertical position of the section. Position 1 shows at the top, position 2 is below that, and so on.</td>
</tr>
</tbody>
</table>

3. Click Submit.

The new section is added to the Sections related list.

4. To edit a section, open it from the related list. By default, a single two-column section is created for each item.

Publish an item

When you publish an item, it is available in the catalog for ordering.

When you create an item, it is in a Draft state. You can review the item, make changes, and refine the layout as many times as needed to get the details exactly right.
When the item is ready, a category manager or catalog editor can publish it, making it available as a catalog item in the service catalog.

To publish an item:
1. Navigate to Item Designer Administration All Items.
2. Open the item record.
3. Click Publish.

The item is now a live catalog item, available for ordering.

**Republish an item**
Each time you make changes to an item, you must republish it in order for the changes to reflect in the item catalog.

If you make and save the changes to an item in the Item Designer Administration All Items module, the item state returns to Draft. The live catalog item remains available to order, but does not have the changes you made. This enables you to make changes to the item in a staging area, then apply those changes to the live catalog item after review.

To apply your changes, republish the item:
- Navigate to Item Designer Administration All Items, open the item record, then click Publish.

**Unpublish an item**
When you unpublish an item, it is removed from the service catalog.

Navigate to Item Designer Administration All Items, open the item record, and select Unpublish.

The item is then inactive within the service catalog, but remains available for editing and republishing. This is useful if you do not want customers to order the catalog item while you are making changes.

**Expire an item**
When you expire an item, it is removed from both the service catalog and the item designer.

Navigate to Item Designer Administration All Items, open the item record, and select Expire.

The item is removed from the list of active items, and cannot be edited or republished.

**View a published item**
Service catalog enables you to view the list of published items.

Navigate to Item Designer Published Items to view a list of published catalog items.

It is best not to edit an item record from the Published Items module. This directly accesses that catalog item using standard service catalog functions, not the catalog item designer, losing the benefits of the controlled publishing environment.

For example, if you copy an item, the copied catalog item is not listed in the Published Items module. To access this copy, navigate to Service Catalog Catalog Definition Maintain Items and locate the item named Copy of [item name]. The copied item is an active catalog item. Consider deactivating it by clearing the Active check box until your changes are complete.

**Create a new item version**
If you alter a question associated with an item, then you can republish the item.

The system may need to create a new version of the item and deactivate the previous version to ensure that items currently being requested are not affected by these changes. For example, if you change the default value of a question associated to an item, a new version of that item is automatically created when the changed item is published.
As a result, you may see multiple records with the same item name in the Catalog Item Table \( \text{sc\_cat\_item} \) when viewing all items. The published version of the item is the only active one.

### Installed with catalog item designer

The catalog item designer adds or modifies tables, user roles, script includes, and other components. Demo data is available with the catalog item designer.

### Tables installed with catalog item designer

#### Tables

The catalog item designer adds the following tables.

<table>
<thead>
<tr>
<th>Display Name (Table Name)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Requesting Item Designer Category Request ( \text{sc_ic_category_request} )</td>
<td>Requests made by users for a new category.</td>
</tr>
<tr>
<td>Item ( \text{sc_ic_item_staging} )</td>
<td>Item definitions, used when designing the item.</td>
</tr>
<tr>
<td>Approval ( \text{sc_ic_aprvl_defn_staging} )</td>
<td>Approvals for items.</td>
</tr>
<tr>
<td>Approval Definition ( \text{sc_ic_aprvl_defn} )</td>
<td>Approvals for catalog items.</td>
</tr>
<tr>
<td>Approval Definition (Requested Item) ( \text{sc_ic_req_item_aprvl_defn} )</td>
<td>Approvals for requested items.</td>
</tr>
<tr>
<td>Approval Type ( \text{sc_ic_aprvl_type_defn_staging} )</td>
<td>Approval types for items.</td>
</tr>
<tr>
<td>Approval Type Definition ( \text{sc_ic_aprvl_type_defn} )</td>
<td>Approval types for catalog items and requested items.</td>
</tr>
<tr>
<td>Task Assignment ( \text{sc_ic_task_assign_defn_staging} )</td>
<td>Task assignment types for items.</td>
</tr>
<tr>
<td>Task Assignment Definition ( \text{sc_ic_task_assign_defn} )</td>
<td>Task assignment types for catalog items and requested items.</td>
</tr>
<tr>
<td>Task ( \text{sc_ic_task_defn_staging} )</td>
<td>Tasks for items.</td>
</tr>
<tr>
<td>Task Definition ( \text{sc_ic_task_defn} )</td>
<td>Tasks for catalog items.</td>
</tr>
<tr>
<td>Task Definition (Requested Item) ( \text{sc_ic_req_item_task_defn} )</td>
<td>Tasks for requested items.</td>
</tr>
<tr>
<td>Question ( \text{sc_ic_question} )</td>
<td>Questions for items. Stored as Variables ( \text{sc_item_variables_task} ) records for catalog items and requested items.</td>
</tr>
<tr>
<td>Question Choice ( \text{sc_ic_question_choice} )</td>
<td>Choices if the question is a choice type (select box, multiple choice or checkbox).</td>
</tr>
<tr>
<td>Question Class ( \text{sc_ic_question_class} )</td>
<td>Base variable types to use as the class for a question type.</td>
</tr>
<tr>
<td>Question Type ( \text{sc_ic_question_type} )</td>
<td>Question types for items.</td>
</tr>
<tr>
<td>Question Type Choice ( \text{sc_ic_question_type_choice} )</td>
<td>Choices if the question type is a choice type (select box, multiple choice or checkbox).</td>
</tr>
</tbody>
</table>

#### Table relationships installed with catalog item designer

Some equivalent information is stored as records in different tables in creating, publishing, or requesting areas to provide a controlled environment for item design.
For example, catalog items are stored as Item (sc_ic_item_staging) records in the creating area, as Catalog Item (sc_cat_item) records in the publishing area, and as Requested item (sc_req_item) records in the requesting area.

This table illustrates the relationships for these records.

<table>
<thead>
<tr>
<th>Creating</th>
<th>Publishing</th>
<th>Requesting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task (sc_ic_task_defn_staging)</td>
<td>Task Definition (sc_ic_task_defn)</td>
<td>Task Definition (Requested Item) (sc_ic_req_item_task_defn)</td>
</tr>
<tr>
<td>Item (sc_ic_item_staging)</td>
<td>Catalog item (sc_cat_item)</td>
<td>Requested item (sc_req_item)</td>
</tr>
<tr>
<td>Approval (sc_ic_aprvl_defn_staging)</td>
<td>Approval Definition (sc_ic_aprvl_defn)</td>
<td>Approval Definition (Requested Item) (sc_ic_req_item_aprvl_defn)</td>
</tr>
<tr>
<td>Approval Type (sc_ic_aprvl_type_defn_staging)</td>
<td>Approval Type Definition (sc_ic_aprvl_type_defn)</td>
<td></td>
</tr>
<tr>
<td>Question (sc_ic_question)</td>
<td>Variables (sc_item_variables_task)</td>
<td></td>
</tr>
<tr>
<td>Task Assignment (sc_ic_task_assign_defn_staging)</td>
<td>Task Assignment Definition (sc_ic_task_assign_defn)</td>
<td></td>
</tr>
</tbody>
</table>

User roles installed with catalog item designer

The catalog item designer adds the following user roles.

<table>
<thead>
<tr>
<th>Role</th>
<th>Contains Roles</th>
<th>Description</th>
</tr>
</thead>
</table>
| catalog_editor     | none           | Can create, modify, and publish items within categories to which they are assigned. Can also perform the following for items and categories to which they are assigned:  
• Apply existing user criteria.  
• Attach a variable set.  
• Create a UI policy.  
• Edit a catalog item in a catalog client script. |
| catalog_item_designer | none          | Can view the status of their category requests.                                                                                                                                                                  |
| catalog_manager    | none           | Can request a category, view and assign catalog editors to their categories, and create, modify, and publish items within their categories. Can also perform the following for items and categories to which they are assigned:  
• Apply existing user criteria.  
• Attach a variable set.  
• Create a UI policy.  
• Edit a catalog item in a catalog client script. |
UI policies installed with catalog item designer

The catalog item designer adds the following UI policies.

<table>
<thead>
<tr>
<th>UI Policy</th>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allow category entry</td>
<td>Item (sc_ic_item_staging)</td>
<td>Allow category entry only if a catalog is selected.</td>
</tr>
<tr>
<td>Show Mobile Image</td>
<td>Item (sc_ic_item_staging)</td>
<td>Make the mobile image field visible if availability is set to Both Desktop and Mobile or Mobile Only.</td>
</tr>
<tr>
<td>Show Desktop Image</td>
<td>Item (sc_ic_item_staging)</td>
<td>Make the desktop image field visible if availability set to Both Desktop and Mobile or Desktop Only.</td>
</tr>
<tr>
<td>Show Published Item</td>
<td>Item (sc_ic_item_staging)</td>
<td>Show the catalog item if the staged item is published.</td>
</tr>
<tr>
<td>Hide Item field on Item Designer - Approval view</td>
<td>Approval (sc_ic_aprvl_defn_staging)</td>
<td>Hide the catalog item field from the item designer approval view.</td>
</tr>
<tr>
<td>Show &quot;User&quot; field when Type=User</td>
<td>Approval (sc_ic_aprvl_defn_staging)</td>
<td>Make the user field visible and mandatory if a user approval is selected.</td>
</tr>
<tr>
<td>Show &quot;Group&quot; field when Type=Group</td>
<td>Approval (sc_ic_aprvl_defn_staging)</td>
<td>Make the group field visible and mandatory if a group approval is selected.</td>
</tr>
<tr>
<td>Show &quot;Predefined approval&quot; field when Type=predefined_approval</td>
<td>Approval (sc_ic_aprvl_defn_staging)</td>
<td>Make the Predefined approval field visible if a predefined approval is selected and the predefined type is selected.</td>
</tr>
<tr>
<td>Show Predefined approval description when appropriate</td>
<td>Approval (sc_ic_aprvl_defn_staging)</td>
<td>Make the predefined approval description visible and mandatory if a predefined approval is selected.</td>
</tr>
<tr>
<td>Show &quot;User(s)&quot; field when Type=User</td>
<td>Approval Type (sc_ic_aprvl_type_defn_staging)</td>
<td>Make the User(s) field visible and mandatory if a user approval is selected.</td>
</tr>
<tr>
<td>Show &quot;Group(s)&quot; field when Type=Group</td>
<td>Approval Type (sc_ic_aprvl_type_defn_staging)</td>
<td>Make the Group(s) field visible and mandatory if a group approval is selected.</td>
</tr>
<tr>
<td>Show &quot;Script&quot; fields when Type=Script</td>
<td>Approval Type (sc_ic_aprvl_type_defn_staging)</td>
<td>Make the Script output and Approver script fields visible if a script approval is selected.</td>
</tr>
<tr>
<td>Show published information</td>
<td>Approval Type (sc_ic_aprvl_type_defn_staging)</td>
<td>Make the approval definition and approval definition version visible if the published definition is not empty.</td>
</tr>
<tr>
<td>Show assignment type fields</td>
<td>sc_ic_task_assign_defn_staging</td>
<td>Make the Assignment type field visible if it is a direct assignment.</td>
</tr>
<tr>
<td>Show published assignment definition</td>
<td>sc_ic_task_assign_defn_staging</td>
<td>Make the published assignment definition visible if the published definition is not empty.</td>
</tr>
<tr>
<td>UI Policy</td>
<td>Table</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Show custom assignment fields</td>
<td>sc_ic_task_defn_staging</td>
<td>Make the User(s) and Group(s) fields visible if the assignment has a user specified.</td>
</tr>
<tr>
<td>Hide Item field</td>
<td>sc_ic_task_defn_staging</td>
<td>Hide the Item field if the item is not empty.</td>
</tr>
<tr>
<td>Hide meta fields</td>
<td>sc_ic_question</td>
<td>Hide fields used by underlying logic, but not requiring user input.</td>
</tr>
<tr>
<td>Hide Mandatory</td>
<td>sc_ic_question</td>
<td>Hide field if type is checkbox or label.</td>
</tr>
<tr>
<td>Show default value</td>
<td>sc_ic_question</td>
<td>Show default values, depending on the type of variable selected.</td>
</tr>
<tr>
<td>Numeric Scale type fields</td>
<td>sc_ic_question</td>
<td>Show numeric scales: Maximum and Minimum if the preconfigured variable type Number is selected.</td>
</tr>
<tr>
<td>Show Choices related list when appropriate</td>
<td>sc_ic_question</td>
<td>Show the Choices related list if the variable type Multiple Choice or Select Box is selected.</td>
</tr>
<tr>
<td>Hide Read Only</td>
<td>sc_ic_question</td>
<td>Hide the Read only field if the variable type Label, Date or Date/Time is selected.</td>
</tr>
<tr>
<td>Read only question type</td>
<td>sc_ic_question</td>
<td>Hide field if the variable type Read only is selected.</td>
</tr>
<tr>
<td>Hide Item field on Item Designer - Question view</td>
<td>sc_ic_question</td>
<td>Hide Staging item field if the item is selected.</td>
</tr>
<tr>
<td>Force preconfigured Reference type fields</td>
<td>sc_ic_question_type</td>
<td>Set the value of preconfigured field to true and read-only if the variable type reference is selected.</td>
</tr>
<tr>
<td>Show Choices related list when appropriate</td>
<td>sc_ic_question_type</td>
<td>Show Choices related list if the variable type Multiple Choice or Select Box is selected.</td>
</tr>
<tr>
<td>Preconfigured checkbox type fields</td>
<td>sc_ic_question_type</td>
<td>Show reference and reference qualifier fields if the question type is preconfigured reference type.</td>
</tr>
<tr>
<td>Preconfigured Reference fields</td>
<td>sc_ic_question_type</td>
<td>Show question text, read only, help text, and default value fields if the preconfigured question type is selected.</td>
</tr>
<tr>
<td>Preconfigured Questions</td>
<td>sc_ic_question_type</td>
<td>Show numeric scales: Maximum and Minimum if the preconfigured variable type Number is selected.</td>
</tr>
<tr>
<td>Preconfigured Numeric Scale type fields</td>
<td>sc_ic_question_type</td>
<td>Show numeric scales: Maximum and Minimum if the preconfigured variable type Number is selected.</td>
</tr>
<tr>
<td>Show “Predefined Approval” field when Type=predefined_approval</td>
<td>sc_ic_aprvl_defn</td>
<td>Make the Predefined Approval field visible and mandatory if no type is selected.</td>
</tr>
<tr>
<td>Show “Group” field when Type=Group</td>
<td>sc_ic_aprvl_defn</td>
<td>Make the Group field visible and mandatory if no type is selected.</td>
</tr>
</tbody>
</table>
### UI Policy

| Show “User” field when Type=User | sc_ic_aprvl_defn | Make the User field visible and mandatory if the user type is selected. |
| Show “Script” fields when Type=Script | sc_ic_aprvl_type_defn | Make the Script field visible and mandatory if the script type is selected. |
| Show “User(s)” field when Type=User | sc_ic_aprvl_type_defn | Make User(s) field visible and mandatory if the user type is selected. |
| Show “Group(s)” field when Type=Group | sc_ic_aprvl_type_defn | Make Group(s) field visible and mandatory if the group type is selected. |
| Show assignment type fields | sc_ic_task_assign_defn | Make the User(s) and Group(s) fields visible and hide the Script field if the direct assignment variable type is selected. |
| Custom task fields | sc_ic_task_defn | Make the User(s) and Group(s) fields visible and hide the Assignment Definition field if variable type Create my own selected. |

### Script includes installed with catalog item designer

The catalog item designer adds the following script includes.

### Note:  Many of the business rules link to these script includes.

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>sc_ic_Section</td>
<td>Wrapper class for item designer question layout sections.</td>
</tr>
<tr>
<td>sc_ic_Factory</td>
<td>Entry point for all customization of the service catalog item designer script.</td>
</tr>
<tr>
<td>sc_ic_ColumnSecurityManager</td>
<td>Security manager for the sc_ic_column table.</td>
</tr>
<tr>
<td>sc_ic_QuestionSecurityManager</td>
<td>Security manager for the sc_ic_question table.</td>
</tr>
<tr>
<td>sc_ic_CatalogItemRecordProducer</td>
<td>Wrapper class for sc_cat_item_producer for the item creator.</td>
</tr>
<tr>
<td>sc_ic_Base</td>
<td>Base class for all item designer wrapper classes.</td>
</tr>
<tr>
<td>sc_ic_QuestionClass</td>
<td>Wrapper class for the Question class table (sc_ic_question_class).</td>
</tr>
<tr>
<td>sc_ic_TaskDefnStagingSecurityManager</td>
<td>Security manager for the sc_ic_task_defn_staging table.</td>
</tr>
<tr>
<td>sc_ic_SectionSecurityManager</td>
<td>Security manager for the sc_ic_section table.</td>
</tr>
<tr>
<td>sc_ic_CategoryRequest</td>
<td>Wrapper for the category request table.</td>
</tr>
<tr>
<td>sc_ic_ApprovalDefnStagingAJAX</td>
<td>Helper function which can be called from client scripts.</td>
</tr>
<tr>
<td>Name</td>
<td>Description</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>sc_ic_QuestionChoiceSecurityManager</td>
<td>Security manager for the sc_ic_question_choice table.</td>
</tr>
<tr>
<td>sc_ic_ApprovalDefnStagingSecurityManager</td>
<td>Security manager for staged approval definitions.</td>
</tr>
<tr>
<td>sc_ic_TaskAssignDefnStaging</td>
<td>Wrapper class for sc_ic_task_type_definition_staging.</td>
</tr>
<tr>
<td>sc_ic_TaskDefnStaging</td>
<td>Wrapper class for staged task definitions.</td>
</tr>
<tr>
<td>sc_ic_Question</td>
<td>Wrapper class for item designer questions. Subclass to modify and inject using sc_ic_Factory. See sc_ic_Factory for more information.</td>
</tr>
<tr>
<td>sc_ic_SectionAJAX</td>
<td>Service dealing with sections that can be called from client scripts.</td>
</tr>
<tr>
<td>sc_ic_CatalogTask</td>
<td>Wrapper class for sc_task for item designer functionality.</td>
</tr>
<tr>
<td>sc_ic_CatalogItem</td>
<td>Wrapper class for sc_cat_item for the item designer.</td>
</tr>
<tr>
<td>sc_ic_QuestionChoice</td>
<td>Wrapper class for question choices (sc_ic_question_choice).</td>
</tr>
<tr>
<td>sc_ic_CatalogItemVariable</td>
<td>Wrapper class for catalog item variables.</td>
</tr>
<tr>
<td>sc_ic_ApprovalDefnStaging</td>
<td>Wrapper for that approval definition staging table.</td>
</tr>
<tr>
<td>sc_ic_ReqItemApprovalDefn</td>
<td>Wrapper for requested item approval definitions.</td>
</tr>
<tr>
<td>sc_ic_Item</td>
<td>Subclasses, injected using sc_ic_Factory. For more information, see sc_ic_Factory.</td>
</tr>
<tr>
<td>sc_ic_CatalogItemVariableChoice</td>
<td>Wrapper class for variable choices.</td>
</tr>
<tr>
<td>sc_ic_ReqItemTaskDefn</td>
<td>Wrapper for requested item approval definitions.</td>
</tr>
<tr>
<td>sc_ic_ItemStagingSecurityManager</td>
<td>Security manager for the sc_ic_item_staging table.</td>
</tr>
<tr>
<td>sc_ic_BaseTypeDefnStaging</td>
<td>Base class for all type definition staging classes</td>
</tr>
<tr>
<td>sc_ic_Column</td>
<td>Wrapper class for item designer question layout columns.</td>
</tr>
<tr>
<td>sc_ic_ApprovalTypeDefnStaging</td>
<td>Wrapper class for staged approval type definitions.</td>
</tr>
<tr>
<td>sc_ic_CatalogItemRecordProducerService</td>
<td>Wrapper class for sc_cat_item_producer_service for the item designer.</td>
</tr>
<tr>
<td>sc_ic_QuestionAJAX</td>
<td>Service for item designer questions that can be called from the client.</td>
</tr>
<tr>
<td>sc_ic_QuestionType</td>
<td>Wrapper class for item designer question types. Subclass to modify and inject using sc_ic_Factory. See sc_ic_Factory for more information.</td>
</tr>
<tr>
<td>sc_ic_TaskDefnStagingAJAX</td>
<td>Service for staged task definitions that can be called from client scripts.</td>
</tr>
<tr>
<td>sc_ic_RequestedItem</td>
<td>Item creator wrapper class for the sc_req_item table.</td>
</tr>
<tr>
<td>sc_ic_ApprovalTypeDefn</td>
<td>Wrapper class for the approval type definition table.</td>
</tr>
<tr>
<td>sc_ic_TaskAssignDefn</td>
<td>Wrapper class for task assignment definitions.</td>
</tr>
<tr>
<td>sc_ic_TaskDefn</td>
<td>Wrapper class for task definitions.</td>
</tr>
<tr>
<td>sc_ic_SecurityManager</td>
<td>Base security manager class for the item designer tables.</td>
</tr>
</tbody>
</table>
### sc_ic_BaseFactory
Base factory class. All customizations should be made in the sc_ic_Factory class. See sc_ic_Factory for more information on how to mount customizations.

### sc_ic_ApprovalDefn
Wrapper for approval definitions.

### sc_ic_getCategoriesForModule
Class that gets categories.

---

**Client scripts installed with catalog item designer**

The catalog item designer adds the following client scripts.

<table>
<thead>
<tr>
<th>Script</th>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Get next order number</td>
<td>Approval</td>
<td>Populates the order field by adding 100 to the biggest order on an approval definition defined against the item.</td>
</tr>
<tr>
<td>Get Approval Type Description</td>
<td>Approval</td>
<td>Displays or hides the approval type description on change of the predefined field value.</td>
</tr>
<tr>
<td>Reload when an image is deleted true</td>
<td>Item</td>
<td>Reloads the Item designer form when a Desktop or Mobile image is deleted and sets the record back to state Draft if it has been Published.</td>
</tr>
<tr>
<td>Process Dialog action</td>
<td>Item</td>
<td>Prompts to make a decision about keeping the modifications to the item before completing the selected action which will cause an update. Performs the prompt if the state of the item is set to Published and there are unsaved changes to the item record.</td>
</tr>
<tr>
<td>Dialog functions</td>
<td>Item</td>
<td>Defines available dialog functions for actions such as display, process and refresh.</td>
</tr>
<tr>
<td>Force update of Column dropdown</td>
<td>Question</td>
<td>Updates the Section drop-down values on load of the Question dialog box.</td>
</tr>
<tr>
<td>Mandatory checked</td>
<td>Question</td>
<td>Ensures read only is not true if the question is mandatory.</td>
</tr>
<tr>
<td>Read only checked</td>
<td>Question</td>
<td>Ensures mandatory is not true if the question is read only.</td>
</tr>
<tr>
<td>Populate meta fields (&quot;Type&quot; changed)</td>
<td>Question</td>
<td>Populates the meta field values on change of Type on the Add Question form.</td>
</tr>
<tr>
<td>Populate meta fields (&quot;Option&quot; changed)</td>
<td>Question</td>
<td>Populates the meta field values on change of Option on the Add Question form.</td>
</tr>
<tr>
<td>Script</td>
<td>Table</td>
<td>Description</td>
</tr>
<tr>
<td>---------------------------------------------</td>
<td>------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Get Question Type Description</td>
<td>Question {sc_ic_question}</td>
<td>Displays the Question type description on change of the Option field value for the following Types: Multi Line Text, Multiple Choice, Reference.</td>
</tr>
<tr>
<td>Update Order on Section change</td>
<td>Question {sc_ic_question}</td>
<td>Updates the Order value on the question record to the next question order number available for a selected Section on change.</td>
</tr>
<tr>
<td>Hide Question Type Choices related list</td>
<td>Question Type {sc_ic_question_type}</td>
<td>Controls the visibility of Question Type Choice related list for questions of type Select Box and Multiple Choice.</td>
</tr>
<tr>
<td>Adjust position for display</td>
<td>Section {sc_ic_section}</td>
<td>Adjusts the position value on a section record to determine the correct display order.</td>
</tr>
<tr>
<td>Validate and adjust Position</td>
<td>Section {sc_ic_section}</td>
<td>Validates that the position on a section record value is greater than 0 and displays a field message if not.</td>
</tr>
<tr>
<td>Get next position</td>
<td>Section {sc_ic_section}</td>
<td>Populates the position field by adding 1 to the biggest position number on a section defined against the item.</td>
</tr>
<tr>
<td>Get next order number</td>
<td>Task {sc_ic_task_defn_staging}</td>
<td>Populates the order field by adding 100 to the biggest order on an approval definition defined against the item.</td>
</tr>
</tbody>
</table>

Business rules installed with catalog item designer

The catalog item designer adds multiple business rules.

The following business rules perform the action described.

<table>
<thead>
<tr>
<th>Name</th>
<th>Table</th>
<th>When</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Validate Category</td>
<td>Item {sc_ic_item_staging}</td>
<td>BEFORE</td>
<td>Abort action if category is invalid.</td>
</tr>
<tr>
<td>Set Question for non-preconfigured types</td>
<td>Question Type {sc_ic_question_type}</td>
<td>BEFORE</td>
<td>For non-preconfigured question types, set the label using the class name.</td>
</tr>
<tr>
<td>Prevent multiple non-preconfigured</td>
<td>Question Type {sc_ic_question_type}</td>
<td>BEFORE</td>
<td>Abort the insert/update action and display an error message to the user if a non-preconfigured question type already exists.</td>
</tr>
<tr>
<td>Set Name field</td>
<td>Section {sc_ic_section}</td>
<td>BEFORE</td>
<td>Set name field to label field and add additional message detail.</td>
</tr>
<tr>
<td>Set value if nil</td>
<td>Question Choice {sc_ic_question_choice}</td>
<td>BEFORE</td>
<td>Set text field to empty string if value is null.</td>
</tr>
<tr>
<td>Name</td>
<td>Table</td>
<td>When</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>------------------------------------</td>
<td>-----------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Check for duplicate position</td>
<td>Section (sc_ic_section)</td>
<td>BEFORE</td>
<td>Abort the insert/update action and display an error message to the user if a section already exists.</td>
</tr>
<tr>
<td>Check for Questions before deleting</td>
<td>Section (sc_ic_section)</td>
<td>BEFORE</td>
<td>Prevent deletion of columns by aborting the delete action and display an error message to the user if the column contains questions.</td>
</tr>
<tr>
<td>Position must be between 0 or 1</td>
<td>Column (sc_ic_column)</td>
<td>BEFORE</td>
<td>Show message to user.</td>
</tr>
<tr>
<td>Check for Questions before deleting</td>
<td>Column (sc_ic_column)</td>
<td>BEFORE</td>
<td>Show message to user.</td>
</tr>
<tr>
<td>Group/user required for user specified</td>
<td>Task (sc_ic_task_defn_staging)</td>
<td>BEFORE</td>
<td>Show message to user.</td>
</tr>
</tbody>
</table>

The following business rules do not contain independent logic, but simply call methods in script includes, as indicated below. To find out which business rules call which script includes, refer to the default class registrations within the sc_ic_BaseFactory script include.

<table>
<thead>
<tr>
<th>Name</th>
<th>Table</th>
<th>When</th>
</tr>
</thead>
<tbody>
<tr>
<td>sc_ic: Copy Approval Definitions</td>
<td>Requested Item (sc_req_item)</td>
<td>AFTER</td>
</tr>
<tr>
<td>sc_ic: Copy Task Definitions</td>
<td>Requested Item (sc_req_item)</td>
<td>AFTER</td>
</tr>
<tr>
<td>Approval definition changed</td>
<td>Approval (sc_ic_aprvl_defn_staging)</td>
<td>AFTER</td>
</tr>
<tr>
<td>Update detail field</td>
<td>Approval (sc_ic_aprvl_defn_staging)</td>
<td>BEFORE</td>
</tr>
<tr>
<td>Set the item to draft</td>
<td>Approval Type (sc_ic_aprvl_type_defn_staging)</td>
<td>BEFORE</td>
</tr>
<tr>
<td>Check and update manager/editor roles</td>
<td>Item Designer Category Request (sc_ic_category_request)</td>
<td>AFTER</td>
</tr>
<tr>
<td>Copy changes to real Category</td>
<td>Item Designer Category Request (sc_ic_category_request)</td>
<td>AFTER</td>
</tr>
<tr>
<td>Add Item Designer role on insert</td>
<td>Item Designer Category Request (sc_ic_category_request)</td>
<td>AFTER</td>
</tr>
<tr>
<td>Column changed</td>
<td>Column (sc_ic_column)</td>
<td>AFTER</td>
</tr>
<tr>
<td>Set layout changed on delete</td>
<td>Column (sc_ic_column)</td>
<td>AFTER</td>
</tr>
<tr>
<td>Create default Section</td>
<td>Item (sc_ic_item_staging)</td>
<td>AFTER</td>
</tr>
<tr>
<td>Set draft if changed</td>
<td>Item (sc_ic_item_staging)</td>
<td>BEFORE</td>
</tr>
<tr>
<td>Check for Valid Name</td>
<td>Question (sc_ic_question)</td>
<td>BEFORE</td>
</tr>
<tr>
<td>Question definition changed</td>
<td>Question (sc_ic_question)</td>
<td>AFTER</td>
</tr>
<tr>
<td>Question meta changed</td>
<td>Question (sc_ic_question)</td>
<td>AFTER</td>
</tr>
<tr>
<td>Set definition changed on delete</td>
<td>Question (sc_ic_question)</td>
<td>AFTER</td>
</tr>
<tr>
<td>Name</td>
<td>Table</td>
<td>When</td>
</tr>
<tr>
<td>--------------------------------------------------------</td>
<td>----------------------------</td>
<td>------------</td>
</tr>
<tr>
<td>Set Question Type and Base Type</td>
<td>Question (sc_ic_question)</td>
<td>BEFORE</td>
</tr>
<tr>
<td>Set question name</td>
<td>Question (sc_ic_question)</td>
<td>BEFORE</td>
</tr>
<tr>
<td>Question Choice changed</td>
<td>Question Choice (sc_ic_question_choice)</td>
<td>AFTER</td>
</tr>
<tr>
<td>Set Order number</td>
<td>Question Choice (sc_ic_question_choice)</td>
<td>BEFORE</td>
</tr>
<tr>
<td>Set layout changed on delete</td>
<td>Section (sc_ic_section)</td>
<td>AFTER</td>
</tr>
<tr>
<td>Create default Columns</td>
<td>Section (sc_ic_section)</td>
<td>AFTER</td>
</tr>
<tr>
<td>Section changed</td>
<td>Section (sc_ic_section)</td>
<td>AFTER</td>
</tr>
<tr>
<td>Set Draft</td>
<td>Task Assignment (sc_ic_task_assign_defn_staging)</td>
<td>BEFORE</td>
</tr>
<tr>
<td>Set assignment details</td>
<td>Task Assignment (sc_ic_task_assign_defn_staging)</td>
<td>BEFORE</td>
</tr>
<tr>
<td>Set assignment details</td>
<td>Task (sc_ic_task_defn_staging)</td>
<td>BEFORE</td>
</tr>
<tr>
<td>Set task definition changed on item</td>
<td>Task (sc_ic_task_defn_staging)</td>
<td>AFTER</td>
</tr>
</tbody>
</table>

Email notifications installed with catalog item designer

The catalog item designer adds the following email notifications.

<table>
<thead>
<tr>
<th>Name</th>
<th>Table</th>
<th>Condition</th>
<th>Recipients</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item Designer Category Request Opened</td>
<td>Item Designer Category Request (sc_ic_category_request)</td>
<td>state EQUALS requested</td>
<td>manager</td>
</tr>
<tr>
<td>Item Designer Category Rejected</td>
<td>Item Designer Category Request (sc_ic_category_request)</td>
<td>state CHANGES TO rejected</td>
<td>manager</td>
</tr>
<tr>
<td>Item Designer Category Published</td>
<td>Item Designer Category Request (sc_ic_category_request)</td>
<td>state CHANGES TO created</td>
<td>manager, editors</td>
</tr>
</tbody>
</table>

Installed with Service Catalog Management

Several types of components are installed with the Service Catalog Management.
Activating the Service Level Management plugin adds or modifies several tables, user roles, and other components.

Script includes installed with Service Catalog Management

Script includes

Service catalog management adds the following script includes.
Table 188: Script includes for Service Catalog Management

<table>
<thead>
<tr>
<th>Script include</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DemoSCCreatItem</td>
<td>Demonstrates the use of service catalog scoped API.</td>
</tr>
</tbody>
</table>

Service Catalog video tutorial

This video introduces the Service Catalog application.

Service Desk

The ServiceNow platform includes a default homepage and a Service Desk application to provide a basic set of service desk functions.

Both of these can be customized to suit the processes you are involved in and the needs of the organization.
ITIL Homepage

Users by Location

Open Items by Escalation

My Groups Work

<table>
<thead>
<tr>
<th>Number</th>
<th>Short description</th>
</tr>
</thead>
<tbody>
<tr>
<td>INC000002</td>
<td>Unable to get to network file shares</td>
</tr>
<tr>
<td>INC000003</td>
<td>Wireless access is down in my area</td>
</tr>
<tr>
<td>INC000015</td>
<td>I can't launch my VPN client since the last software update</td>
</tr>
<tr>
<td>INC000016</td>
<td>Rain is leaking on main DNS Server</td>
</tr>
<tr>
<td>INC000017</td>
<td>How do I create a sub-folder?</td>
</tr>
<tr>
<td>INC000020</td>
<td>I can't get my weather report</td>
</tr>
<tr>
<td>INC000027</td>
<td>Request for a new service</td>
</tr>
<tr>
<td>INC000029</td>
<td>Trouble getting to Oregon mail server</td>
</tr>
<tr>
<td>INC000049</td>
<td>Can't access SAP software</td>
</tr>
<tr>
<td>INC000047</td>
<td>Issue with email</td>
</tr>
<tr>
<td>INC000049</td>
<td>Network storage unavailable</td>
</tr>
<tr>
<td>INC000050</td>
<td>Can't access Exchange server - is it down?</td>
</tr>
<tr>
<td>INC000051</td>
<td>Manager can't access SAP Controlling application</td>
</tr>
</tbody>
</table>

ITIL Summary Counts

**Critical Tasks**
Tasks that have Critical priority that are still active

21

**Overdue Tasks**
The number of tasks that are overdue

12

**Incidents Opened = 1 Week**
Active incidents that have been opened for longer than a week

28

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The ITIL Homepage provides commonly used reports that give an overview of the processes you are involved in. Access the ITIL Homepage from the homepage icon on the edge (UI15) or favorites tab (UI16).

By default, the ITIL Homepage includes the following reports.

- Users by location: a pie chart displaying users divided by location.
- Open Items by Escalation: tasks with an open state, grouped by escalation.
- My Groups Work: outstanding work for your group.
- My Work: your outstanding work.
- ITIL Summary Counts: tasks that are critical, overdue, and over a week old.

Because these reports link directly to the appropriate records and tables, you can use the work queues and the reports on critical tasks to manage your work directly from the homepage.

Service Desk Call

Service Desk Call allows ITIL users to create a call record and quickly capture basic information from a customer contact, before deciding whether the call is an incident, a problem, a change, or a service catalog request.

Service desk personnel can more quickly process customer calls by retaining and reusing the information captured during the call. Users with the itil role can read, create and edit an existing call, but cannot delete existing calls or edit a call after it is transferred.

At the end of the call, the ITIL user can decide the action to take.

- Transfer the call record to an incident, problem, change, or service catalog request.
- Record the call as another type of contact, such as a wrong number.

Activate Service Desk Call

You can activate the Service Desk Call plugin.

Role required: admin

1. Navigate to System Definition Plugins.
2. Find and click the plugin name.
3. On the System Plugin form, review the plugin details and then click the Activate/Upgrade related link.
   If the plugin depends on other plugins, these plugins are listed along with their activation status.
   If the plugin has optional features that are not functional because other plugins are inactive, those plugins are listed. A warning states that some files will not be installed. If you want the optional features to be installed, cancel this activation, activate the necessary plugins, and then return to activating the plugin.
4. If available, select the Load demo data check box.
   Some plugins include demo data—sample records that are designed to illustrate plugin features for common use cases. Loading demo data is a good policy when you first activate the plugin on a development or test instance.
   You can also load demo data after the plugin is activated by clicking the Load Demo Data Only related link on the System Plugin form.
5. Click Activate.
Installed with Service Desk Call

Several types of components are installed with Service Desk Call.

**Tables installed with Service Desk Call**

Service Desk Call plugin adds the following table.

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Call (new_call)</td>
<td>The base table for service desk call that contains all call information.</td>
</tr>
</tbody>
</table>

**Client scripts installed with Service Desk Call**

Service Desk Call plugin adds the following client script.

<table>
<thead>
<tr>
<th>Client script</th>
<th>Table</th>
<th>Script contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Populate company</td>
<td>Call (new_call)</td>
<td>Code to populate the company field on the form with an appropriate value based on the selected caller.</td>
</tr>
</tbody>
</table>

**Business rules installed with Service Desk Call**

Service Desk Call plugin adds the following business rules.

<table>
<thead>
<tr>
<th>Business rule</th>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CallTypeChanged</td>
<td>Call (new_call)</td>
<td>Creates a new incident, problem, or change record, based on the call type selection.</td>
</tr>
<tr>
<td>CallTypeChanged to Request</td>
<td>Call (new_call)</td>
<td>Redirects to a new service catalog request page based on the call type and request item selection.</td>
</tr>
<tr>
<td>Calculate time spent</td>
<td>Call (new_call)</td>
<td>Calculates the time spent between opening the form and saving it.</td>
</tr>
<tr>
<td>Domain - Set Domain - SD Call</td>
<td>Call (new_call)</td>
<td>Supports domain separation.</td>
</tr>
</tbody>
</table>

Service Desk Call and domain separated systems

Saving a call record may create two records: a service desk call record and a transferred record. For systems using domain separation, these two records may be stored in different domains.

The service desk call record is saved in the ITIL user’s domain. This domain is determined as follows:

- Use the ITIL user’s domain if the ITIL user has a domain.
- Otherwise, use the default domain.

Any transferred record is saved in the caller’s domain. This domain is determined as follows:

- Use the caller’s domain if the caller has a domain.
- Otherwise, use the default domain.
Service Desk Call uses

ITIL users, users with the itil role, can quickly capture basic information within a call record while in contact with the customer.

After the information has been gathered, they can decide how to classify that call record, for example, as an incident.

ITIL users can use service desk call to perform any of the following tasks.

• Create a new call record.
• Transfer a call record to an incident, problem, change, or service request.
• View call record information.

Create a new call

You can create a new call when a user contacts you for assistance with their issue.

Role required: itil

1. Navigate to Service Desk Calls New Call.
2. Complete the form.

<table>
<thead>
<tr>
<th>Table 189: Call form fields</th>
</tr>
</thead>
<tbody>
<tr>
<td>Field</td>
</tr>
<tr>
<td>Number</td>
</tr>
<tr>
<td>Caller</td>
</tr>
<tr>
<td>Company</td>
</tr>
<tr>
<td>Call type</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Opened</td>
</tr>
<tr>
<td>Opened by</td>
</tr>
<tr>
<td>Contact type</td>
</tr>
<tr>
<td>Short description</td>
</tr>
<tr>
<td>Description</td>
</tr>
</tbody>
</table>

3. Click Submit.
If the call type is Incident, Problem, Change, or Request, this transfers the call, creating another record of the appropriate task type. A message provides the task number as a link.

Tasks by same caller or company

When you submit a call, two related lists are associated with the call record: Tasks by Same Caller and Tasks by Same Company. Checking these related lists can be useful to check for duplicate calls.

These list all active incidents, problems, changes and service catalog requests for that caller or company.
The Tasks by Same Caller list shows all active records where the value in the Caller field on the Call form matches the value in:

- The Caller field on the Incident form.
- The Opened by field on the Problem form.
- The Requested by field on the Change Request form.
- The Requested for field on the service catalog Request form.

The Tasks by Same Company list shows all active records where the value in the Company field on the Call form matches the value in:

- The company of the caller on the Incident form.
- The company of the user that opened the problem on the Problem form.
- The company of the user that requested the change on the Change form.
- The company of the user the request was made for on the service catalog Request form.

Call transfer

Details gathered during the customer contact determine the type of record. Saving the call with a call type of Incident, Problem, Change, or Request saves the call record and also creates a new record of the task type selected.

For example, the service desk receives a phone call from a customer reporting email issues with his laptop. When the call is answered, the service desk user opens a call record and enters basic information during the course of the phone call. At the end of the phone call, the service desk user decides it should be logged as an incident, sets the Call type to Incident, and saves the call record. A new incident record with details taken from the original call record is created. The new incident is handled through standard incident management processes.

After a call is transferred, the number of the new record appears in the Transferred to field on the Call form and the Calls list. A link to the new record appears above the Calls list.

Transfer a call to an incident, problem or change

When you select a task call type, you transfer the call to an incident, problem, or change request.

Role required: itil

1. In the Call form, set Call type to Incident, Problem or Change.
2. Click Submit to transfer the call.
   
   A record of the appropriate type is created, with the following information copied from the call.
   
   - Short description
   - Description
   - Company
   - Contact Type
   - Opened By
   - Caller
   - Location (Incident only, populated with the caller’s location)
   - Requested by (Change only, populated with the caller’s name)

Transfer a call to a service catalog request

You can transfer a call to a service catalog request and enter the relevant details for the requested catalog item as part of a single process.
Role required: itil

1. In the Call form, set Call Type to Request.
   A Request item field appears on the form.
2. Select the catalog item to request.
   Content items, record producers and order guides are not supported.
3. Click Submit.
   The order form for that catalog item appears.
4. Select any other options for that catalog item, as required.
5. Order the item.
   The service catalog request is created with the following information.
   • The Caller is copied to the Requested For field in the request.
   • The Description field in the Call form is copied to Special instructions.

The requested item is listed in the Task by Same Caller related list in the call.

View service desk calls

You can view call records from several Service Desk modules.

• Service Desk Calls My Calls lists all calls that you created.
• Service Desk Calls My Open Calls lists all calls you created that have transferred records, such as incidents, that are still open.
• Service Desk Calls All Open Calls lists all calls created in the last month that have transferred records that are still open.

![Figure 262: My calls](image)

The Time Spent column shows the time between creating and saving the call record.
Service Level Management

Service Level Management enables you, as a service level manager, to monitor and manage the quality of services, provide an expectation of service within a known timescale, and identify when service levels are not being met.

Explore
- Service Level Management release notes
- Migrate to service level management
- SLA processing
- SLA calculation
- Scheduled jobs for SLA

Set up
- Configure SLA properties
- Add custom business rules to SLAs

Administer
- Create an SLA definition
- SLA duration and schedules
- SLA repair function

Use
- Task SLA table
- SLA timeline

Develop
- Developer training
- Developer documentation
- Installed with Service Level Management
- Installed with SLA timeline

Troubleshoot and get help
- Service Level Agreements FAQs
- Search the HI Knowledge Base for known error articles
- Contact ServiceNow Support

Define a service contract

A new table of SLA Contracts is provided through the Service Level Management Service Contracts module. These Contracts group together SLAs that relate to a single vendor or customer, as well as the CIs, locations, groups, users, and child contracts that are related to the contract.

The table Service Contract (ast_service) extends the asset table Contract (ast_contract). It stores information about service contracts for asset management purposes. Installing the SLA Contract Add-on Plugin adds relations to this table to make it useful for Service Management purposes. Once the plugin is installed, the Service Contract record possesses related lists for:

- SLAs
- Contract CIs
- Contract Locations
- Contract Groups
- Contract Users
- Child Contracts

Table 190: Service contract table properties

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>A unique number associated with the contract.</td>
</tr>
<tr>
<td>Starts</td>
<td>The date on which the contract takes effect.</td>
</tr>
<tr>
<td>Ends</td>
<td>The date on which the contract expires.</td>
</tr>
<tr>
<td>Location</td>
<td>The primary location of the contract, if applicable. If there are multiple, use the Contract locations related list.</td>
</tr>
<tr>
<td>Active</td>
<td>Whether the contract is currently in use.</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Renewable</td>
<td>Whether the contract has the possibility of being renewed at the end of its term.</td>
</tr>
<tr>
<td>Vendor</td>
<td>The vendor responsible for the contract.</td>
</tr>
<tr>
<td>Vendor account</td>
<td>The account the vendor is responsible to.</td>
</tr>
<tr>
<td>Vendor contract</td>
<td>The name of the contract defining the Service Contract.</td>
</tr>
<tr>
<td>Total cost</td>
<td>The total cost of the contract.</td>
</tr>
<tr>
<td>Payment amount</td>
<td>The amount which has been paid so far.</td>
</tr>
<tr>
<td>Payment schedule</td>
<td>The amount which has been paid so far.</td>
</tr>
<tr>
<td>Short description</td>
<td>A short description of the Service Contract.</td>
</tr>
<tr>
<td>Description</td>
<td>A full description of the Service Contract.</td>
</tr>
</tbody>
</table>

Add contract field to task form

Depending on how the contract is used, the Contract field can be added to any task form by configuring a form. To know how to configure a form, see Configure a form. As the Caller, Assignment Group, Location, and Configuration item fields are populated, the Contract field filters appropriately, helping the support desk to associate the ticket to the correct Contract.

Note: ServiceNow does not recommend adding the same field to different sections of a form unless the field displays read-only data. Having two or more instances of an editable field can cause data loss and prevent the proper functioning of UI and data policies.

Service Level Agreements (SLA)

Service Level Managers are responsible for a set of agreements between a service provider and customer that define the scope, quality and speed of the services being provided. Service level agreements (SLAs) provide the customer with an expectation of service within a known timescale and the ability to monitor when service levels are not being met.

The service level management application includes the following:

SLA definitions

Use the SLA Definition record to define a specific set of criteria that would result in an SLA being generated. You must define some of the following parameters:

- **Table**: SLAs can be defined against any task table
- **Duration**: You can specify the time duration in which the service must be provided to the customer.
- **Schedule**: You can specify the schedule, which indicates valid working and non working days that the service provider follows to deliver the service. The selected schedule will be used to determine when the SLA will breach.
- **Conditions**: You can specify the conditions under which the SLA will start, pause, stop, or reset.
Task SLAs

When an SLA Definition is triggered against a particular task the Task SLA record is generated and contains all the tracking data for the specific SLA on that record. For example if an SLA Definition exists for P1 incidents a Task SLA record will attach to the P1 incident record and capture all the data associated with it. In many cases there will be multiple Task SLA records against a single task since many definitions apply.

Integration with other ServiceNow plugins

The following plugins introduce extra functionality within SLM:

- SLA Contract Add-on
- Service Portfolio Management- SLA Commitments

Create an SLA definition

An SLA definition record defines the timings, conditions, workflows, and other information required to create and progress task SLAs. You can create one or more SLA definitions based on your organization’s requirements.

For example, the default Priority 1 resolution (8 hour) SLA Definition defines the Task SLAs to attach to incidents with a P1 - Critical priority, specifies appropriate conditions for those Task SLAs, and uses the default SLA workflow to create events such as to send a notification, when an incident’s Task SLA reaches 50% of its allotted time.

1. Navigate to Service Level Management SLA SLA Definitions.
2. Click New.
   The SLA Definition form is displayed.
3. Enter the details in the appropriate fields.

Table 191: SLA Definition

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Specify an identifying name for the SLA.</td>
</tr>
<tr>
<td>Type</td>
<td>Select the type of agreement being defined: SLA, OLA or Underpinning contract.</td>
</tr>
<tr>
<td></td>
<td>Note: Type is used for reporting purposes only.</td>
</tr>
<tr>
<td>Table</td>
<td>Select the table whose records will be tracked by this SLA. This is a table that extends the Task table such as Incident (incident).</td>
</tr>
<tr>
<td></td>
<td>Note: Starting with the Helsinki release, you can for Event Management.</td>
</tr>
<tr>
<td>Workflow</td>
<td>Select the workflow that determines what activities occur in response to the SLA. Workflows are typically used to create events that send notifications.</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Enable logging</td>
<td>Select Enable logging check box to activate debug logging just for the specific SLA definition. This includes details of the conditions that have matched or not matched and also the before and after values for the Task SLA and Task records. Note: This field appears when Duration type is not a user specified duration.</td>
</tr>
<tr>
<td>Duration type</td>
<td>Specify the method for calculating the duration of the SLA. This can either be a User specified duration, or a Relative Duration, such as End of next business day.</td>
</tr>
<tr>
<td>Duration</td>
<td>Specify the length of time the SLA runs before it is marked Breached. This field appears when the duration is User specified duration. Note: The number of days specified in this field is converted to 24-hour blocks. If the Schedule field identifies a schedule with eight-hour days, a duration of 1 Day sets the SLA to breach three business days later.</td>
</tr>
<tr>
<td>Relative duration works on</td>
<td>Specify the record against which the relative duration should be calculated. Select to use either Task record or SLA record. This field appears only when the relative duration is specified.</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Schedule source</td>
<td>Specify the schedule to be used when creating new task SLAs. You can specify one of the following options:</td>
</tr>
<tr>
<td></td>
<td>• No schedule: If the No Schedule option is selected, the SLA will calculate based on a 24 x 7 schedule.</td>
</tr>
<tr>
<td></td>
<td>• SLA definition: If the SLA definition option is selected, the Schedule drop-down list appears.</td>
</tr>
<tr>
<td></td>
<td>• Task table field: This option picks its title from the option selected in the Table field earlier on the SLA Definition form. For example, if Incident is selected in the Table field, then this option appears as Incident field. If the Task table field option is selected, the Schedule source field drop-down list appears.</td>
</tr>
<tr>
<td></td>
<td>• Task location source: Select the appropriate field from the task such as an incident or problem that will provide the schedule. For example, Configuration item &gt; Schedule.</td>
</tr>
<tr>
<td>Timezone Source</td>
<td>Specify the timezone source to be used when creating new task SLAs. You can specify one of the following:</td>
</tr>
<tr>
<td></td>
<td>• The caller’s timezone</td>
</tr>
<tr>
<td></td>
<td>• The SLA definition’s timezone: If the The SLA definition’s timezone option is selected, the Timezone drop-down list appears.</td>
</tr>
<tr>
<td></td>
<td>• Timezone: Specify a time zone for the SLA. The timezone can be the system timezone or active standard geographical timezones.</td>
</tr>
<tr>
<td></td>
<td>• The CI location’s timezone</td>
</tr>
<tr>
<td></td>
<td>• The task location’s timezone</td>
</tr>
<tr>
<td></td>
<td>• The callers’ location’s timezone</td>
</tr>
</tbody>
</table>

Tabs
<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start condition</td>
<td>Define the conditions under which the SLA will be attached. From the When to cancel list, you can choose the conditions under which the SLA will be canceled.</td>
</tr>
<tr>
<td></td>
<td>• Start conditions are not met option: If one or more of the specified start conditions change, then the SLA will be canceled. The Start conditions are not met option is selected by default.</td>
</tr>
<tr>
<td></td>
<td>• Cancel conditions are met option: The start condition has to be met only once, thereafter the SLA will only cancel when the cancel condition is met.</td>
</tr>
<tr>
<td></td>
<td>• Never option: The SLA will never be canceled.</td>
</tr>
<tr>
<td></td>
<td>Retroactive start: Select Retroactive start to choose a date and time field from the task that will provide the start time of the task SLA. If you select the Retroactive start check box, the Set start to field and the Retroactive pause time check box appear.</td>
</tr>
<tr>
<td></td>
<td>• Set start to field: Offers the date and time fields available on the task type that this SLA definition applies to. For example if you select Retroactive start on a Priority 1 SLA definition and then choose Created in the Set start to field, then the SLA is attached with the start time being the date and time from the Created field on the Incident.</td>
</tr>
<tr>
<td></td>
<td>• Retroactive pause time check box: Enables the calculation of retroactive pause time on the specific SLA definition. For example if you select Retroactive start on a Priority 1 SLA definition and then select the Retroactive pause time check box, then the SLAs that have retroactive start enabled can recover prior pause time.</td>
</tr>
</tbody>
</table>

Note: The Retroactive pause time check box is available only when the duration is a user-specified duration.
### Configure SLA properties

Configure the SLA engine, logging, and repair properties based on the requirements within your organization.

1. Navigate to Service Level Management Properties.
2. Configure the SLA Engine properties.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pause condition</td>
<td>Define the conditions under which the SLA will suspend increasing elapsed time. From the When to resume list, you can choose the conditions under which the SLA will resume increasing elapsed time.</td>
</tr>
<tr>
<td></td>
<td>• Pause conditions are not met option: If one or more of the specified pause conditions no longer match, then the elapsed time will continue to increase. The Pause conditions are not met option is selected by default.</td>
</tr>
<tr>
<td></td>
<td>• Resume conditions are met option: If one or more of the specified resume conditions match, then the elapsed time will continue to increase.</td>
</tr>
<tr>
<td>Stop condition</td>
<td>Define the conditions under which the SLA completes. If all of these conditions match, then the task SLA will complete regardless of whether it is breached.</td>
</tr>
<tr>
<td>Reset condition</td>
<td>Define the conditions under which the running SLA will be completed and a new SLA will be attached. For a new SLA to be attached the start condition must match.</td>
</tr>
<tr>
<td>Condition type</td>
<td>Select the condition type to determine when an SLA attaches, pauses, completes, or resets.</td>
</tr>
<tr>
<td>Property name</td>
<td>Description</td>
</tr>
<tr>
<td>---------------</td>
<td>-------------</td>
</tr>
</tbody>
</table>
| com.snc.sla.calculation.percentage | Maximum ‘Actual elapsed percentage’ value after which the ‘SLA - update calculations’ scheduled job will stop regularly calculating the SLA’s time values. This is used to prevent ‘long since breached’ records from being unnecessarily updated. Setting to ‘0’ will stop all calculations and leaving this blank will allow all SLAs to be calculated. By default, this is set to 1,000%, so that recalculation stops after the breach is exceeded by a factor of 10.  
  
  - Type: integer  
  - Default value: 1000 |
| com.snc.sla.engine.version | Run the 2011 SLA engine (2010, 2011)  
  
  - Type: choice list  
  - Default value: 2011 |
| com.snc.sla.engine.async | Run the 2011 SLA engine asynchronously after task insert or update operations.  
  
  - Type: true | false  
  - Default value: false |
| com.snc.sla.compatibility.breach | Enable compatibility with 2010 ‘breached’ status of SLAs (default: false)  
  Only enable if you require the old way of showing breached status (in the stage value), for reporting purposes. Using only the ‘breached flag’ is preferred  
  
  - Type: true | false  
  - Default value: false |
| com.snc.sla.default_conditionclass | The name of the Script Include class that will be used to evaluate SLA Conditions for the 2011 SLA engine (use to override with your own extension of the SLAClassConditionBase class)  
  
  - Type: String  
  - Default value: SLAClassConditionBase |
<table>
<thead>
<tr>
<th>Property name</th>
<th>Description</th>
</tr>
</thead>
</table>
| com.snc.sla.workflow.run_for_breached            | An update to a Task can result in an SLA being attached that is already breached – for example when an Incident that has already been open for a while is upgraded to a high priority with a short resolution SLA. By default if there is a workflow specified in the SLA Definition it will not run if the Task SLA is attached and the Planned End Time has already passed. Enable this property if you would like the workflow to run for a Task SLA that is already breached when it is attached to the Task. • Type: true | false  
  • Default value: false  |
| com.snc.sla.calculate_planned_end_time_after_breach | Continue to re-calculate the “Planned End Time” of SLAs after they have breached  • Type: true | false  
  • Default value: true  |
| com.snc.sla.calculation.use_time_left            | Use field business_time_left to calculate breach time instead of business_percentage field. Using business_time_left is more accurate because the business_percentage field is rounded to 2 decimal places. This means that once the business percentage reaches 99.995%, it is recorded as 100%, and the task SLA is marked as breached.  • Type: true | false  
  • Default value: false  |
| glide.sla.calculate_on_display                    | Recalculate Task SLA records when a Task form is displayed. This ensures that the task SLAs calculations are up to date but this may increase form load time.  • Type: true | false  
  • Default value: false  |
| com.snc.sla.always_populate_business_fields      | When this property is set to true, the business fields such as Business elapsed time will be populated with the same values as those in the actual fields when there is no schedule specified on the Task SLA. If the property is false, the business fields will be empty when a Task SLA has no schedule.  • Type: true | false  
  • Default value: true for new instances, false for upgraded instances  |

3. Configure the SLA Logging and Logging Level properties.
Note: The Logging level for... properties set logging levels for relevant script includes. This allows you to activate extra logging targeted at whenever that script include is invoked via a task SLA. For example, if you know of an issue with the TaskSLAWorkflow script include, you can use the com.snc.sla.workflow.log property to enable logging on that script include. These properties are all set to Notice level by default.

Table 193: SLA Logging properties

<table>
<thead>
<tr>
<th>SLA Logging Property</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>com.snc.sla.task_sla_controller.log</td>
<td>Logging level for TaskSLAController</td>
</tr>
<tr>
<td>com.snc.sla.task_sla.log</td>
<td>Logging level for TaskSLA</td>
</tr>
<tr>
<td>com.snc.sla.condition.log</td>
<td>Logging level for SLAConditionBase</td>
</tr>
<tr>
<td>com.snc.sla.workflow.log</td>
<td>Logging level for TaskSLAWorkflow</td>
</tr>
<tr>
<td>com.snc.sla.calculatorng.log</td>
<td>Logging level for SLACalculatorNG</td>
</tr>
<tr>
<td>com.snc.sla.repair.log</td>
<td>Logging level for SLAREpair (SLA repair must be enabled to use this)</td>
</tr>
<tr>
<td>com.snc.sla.log,destination</td>
<td>Logging output destination.</td>
</tr>
</tbody>
</table>

Note: By default, logging levels are set to Notice

Table 194: Logging Levels

<table>
<thead>
<tr>
<th>Level</th>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Emerg</td>
<td>Emergency</td>
<td>Total failure.</td>
</tr>
<tr>
<td>Alert</td>
<td>Alert</td>
<td>System corruption of a database, for example.</td>
</tr>
<tr>
<td>Crit</td>
<td>Critical</td>
<td>Typically used for hardware errors, for example.</td>
</tr>
<tr>
<td>Err</td>
<td>Errors</td>
<td>Errors</td>
</tr>
<tr>
<td>Warning</td>
<td>Warnings</td>
<td>Warnings</td>
</tr>
<tr>
<td>Notice</td>
<td>Notice</td>
<td>Possible action required but not essential.</td>
</tr>
<tr>
<td>Info</td>
<td>Informative</td>
<td>No action required.</td>
</tr>
<tr>
<td>Debug</td>
<td>Debugging</td>
<td>Generally not used except for capturing everything for fault-finding.</td>
</tr>
</tbody>
</table>
Table 195: SLA repair properties

<table>
<thead>
<tr>
<th>Property name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>com.snc.sla.repair.enabled</td>
<td>Enable SLA repair. When enabled the Repair modules and UI Actions will be activated.</td>
</tr>
<tr>
<td></td>
<td>• Type: true / false</td>
</tr>
<tr>
<td></td>
<td>• Default value: true for new instances and false for upgraded instances</td>
</tr>
<tr>
<td>com.snc.sla.repair.use_repair_workflow</td>
<td>When repairing SLAs, use the Repair workflow instead of the one configured on the SLA Definition.</td>
</tr>
<tr>
<td></td>
<td>• Type: true / false</td>
</tr>
<tr>
<td></td>
<td>• Default value: false for new instances, true for upgraded instances</td>
</tr>
<tr>
<td>com.snc.sla.repair.workflow</td>
<td>The name of the Repair workflow.</td>
</tr>
<tr>
<td></td>
<td>• Type: string</td>
</tr>
<tr>
<td></td>
<td>• Default value: Default SLA Repair workflow</td>
</tr>
</tbody>
</table>

4.

SLA process example

As work is done on the relevant task, the SLA may change stage appropriately, depending on the information defined for that SLA in the relevant SLA definition.

For example, if an incident is resolved within the time specified, the SLA stage is typically set to Complete.

Similarly, if the incident does not reach the required condition within the set amount of time, the Task SLA record associated to that Incident marked as Has Breached. For example, by default, if a P1 incident is not resolved within 8 hours, the Task SLA for that incident will have Has Breached set to true.

This example demonstrates how an SLA can be attached to an incident, then progressed to completion.

1. Navigate to Incident Create New.
2. Set both Impact and Urgency to 1. This changes the Priority to 1 - Critical.
3. Save the form.
   The Task SLA Related List should now have a Priority 1 SLA attached to this incident.
Figure 263: Task SLAs related list on Incident form - Priority 1 SLA
Note: The default Priority 1 resolution (8 hour) SLA definition record is used to create and attach this Task SLA.

4. Change the Impact to 2, which changes the Priority to 2 - High, then save the form. The Priority 1 SLA is now marked Cancelled, and a Priority 2 SLA has been attached, because of the conditions on the SLAs.

5. Change the Incident State to Awaiting User Info, then save the form. Awaiting User Info is a pause condition on the Priority 2 SLA, so the SLA is marked Paused.

Note: The pause duration on Task SLA gets updated only after the SLA moves out of pause.

6. Change the Incident State to Active, then save the form. Because the incident is no longer in a Pause condition, it resumes timing.
7. Enter any Close code and Close notes values in the Closure Information section of the incident.
8. Change the Incident State to Resolved, then save the form.
   The SLA is marked Completed.

Add custom business rules to SLAs
You can add custom business rules to your SLAs.
Role required: admin
To add custom business rules to SLAs:
   Select one of the following methods to add custom business rules.
<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
</table>
| Use `setWorkflow(false)` | 1. Prior to updating your task, add a call to `setWorkflow(false)` on the GlideRecord object for the task within the business rule that is updating the task. This prevents the business rules from being processed.  

Note: The `setWorkflow(false)` disables processing of all engines and the update does not appear in the audit history of the task.  

For example, a script that copies the breach time to a custom field on the task:

```javascript
(function(){  
  if (current.planned_end_time.changes())  
  {  
    var taskGr = current.task.getRefRecord();  
    taskGr.u_sla_breach_time = current.planned_end_time;  
    taskGr.setWorkflow(false);  
    taskGr.update();  
  }  
}());
```
<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
</table>
| Create a sys_trigger (Schedule job) to update the task | 1. In your custom business rule, use the Script field to generate a scheduled job to update the task. To ensure that the scheduled job is queued for processing immediately, it must be of type Run once, and have next action time of Now.  

Note: The ScheduleOnce script include includes functions to specify the target record and when to run the scheduled job. This enables you to specify the script to be executed and call another function to create the appropriate record in the sys_trigger table.  

For example, a script to create a scheduled job that copies the breach time from the task SLA to a custom field on the task.  

(function(){  
    if  
    (current.planned_end_time.changes())  
    {  
        var scheduleJob =  
        new ScheduleOnce();  
        scheduleJob.setDocument(t.task.getRefRecord());  
        scheduleJob.script  
        =  
        "current.u_sla_breach_time.setValue('"  
        +  
        current.getValue('planned_end_time')  
        +  
        "');current.update();";  
        scheduleJob.schedule();  
    }  
}()); |

Add custom business rules to SLAs considerations  
Prior to adding custom business rules to the task SLA table, you must consider a few points regarding the processing and calculation of the task SLA based on your organization’s needs.  

Add custom fields to the task SLA table  
You can add custom fields to the task SLA table and write business rules to populate them. This does not impact the SLA engine. However, you must consider performance implications, if any, of these business rules since task SLAs are updated frequently during their lifecycle.  

Points to consider  
- Business rule that directly updates the parent task when an SLA is updated.
Avoid writing a business rule on the task SLA table that updates the parent task directly. Doing so causes recursive processing of the business rules. This is represented in the diagram.

- Business rule that updates the default fields on a task SLA.

Avoid writing a business rule on the task SLA table that updates the default fields. These default fields are managed and updated by the SLA engine, and any updates made to them might result in the following.

- Fields being ignored, overwritten, or both the next time the SLA is calculated.
- Incorrect calculations of other values on the task SLA.

SLA processing

The SLA engine performs two passes to evaluate SLA definitions and their conditions based on a task.

The SLA engine performs the following passes:

1. Checks the SLA definitions that do not have an active SLA record associated to the task. The SLA engine determines if the SLA definition applies to the task and if it needs to create a SLA record. The following condition checks are performed:
   a. If the Start condition is true and the Stop condition is true, do nothing. No SLA record is created, because the Stop condition overrides the Start condition.
   b. If the Start condition is true and the Stop condition is false, a new SLA record is created for this task using the SLA definition. The SLA record is then set to the In Progress stage.

2. Checks all active SLA records associated to the task. The engine determines if the SLA records are changing stage. The condition checks are performed in the following order:
   a. If the Stop condition is true, the SLA changes to Completed and becomes inactive.
   b. If both the Reset and Start conditions are true, the SLA changes to Completed and a new task SLA is created.
   c. If the Start condition is false, the SLA changes to Cancelled and becomes inactive.
   d. If the SLA is active, the Pause condition is true, and the SLA stage is In Progress, the SLA is paused.
   e. If the SLA is active, the Pause condition is false, and the SLA stage is Paused, the SLA changes back to In Progress.
Actual and business elapsed times

Task SLA records contain two sets of timing information: Actual elapsed and Business elapsed. The difference between these two sets of timing is vital when you create and report on SLA definitions.

- Actual elapsed values are calculated on a 24x7 basis.
- Business elapsed values are calculated based on the schedule specified in the task SLA. The schedule is taken from the SLA definition by default.

Note: If no schedule is specified, then the Business elapsed time is the same as the Actual elapsed time. This can be disabled by changing the com.snc.sla.always_populate_business_fields property to false in the SLA Engine. When this property is set to false, the Business fields will be 0 or empty.

By default, the related list for the task SLA record displays the actual elapsed time only. You can configure the list to also display the business elapsed time.

Elapsed times and schedules

Consider a scenario where an SLA has a defined schedule of 9 am to 5 pm on weekdays. With this schedule, the difference between actual and business elapsed times can be significant.

For example, if a task SLA starts at 2 pm on a weekday, its business elapsed time at 9 am on the next weekday is 3 hours while its actual elapsed time is 19 hours.

**SLA Schedule: 9:00 AM - 5:00PM**

![Diagram of actual and business elapsed times](image)

Figure 268: Business elapsed time vs actual elapsed time

In addition, if a schedule defines an 8 hour working day, then 24 hours or one day in business elapsed time equates to 3 days in actual elapsed time.
Example

For example, an incident is opened on Friday, December 12 at 9 pm, outside of the SLA schedule of 8 am to 5 pm on weekdays.

If the current time is the following Monday at 9:30 am, then:

- Business elapsed time is 1 hour and 30 minutes because the SLA business timer stopped at 5 pm on Friday and restarted at 8 am on Monday.
- Actual elapsed time is 60 hours and 30 minutes, representing the real time between the incident being opened and the current time.

Elapsed percentages are also similarly calculated. The actual elapsed percentage is over 750% while the business elapsed percentage is 19% on an 8 hour SLA.

SLA calculation

SLAs are calculated and assessed by a business rule and scheduled jobs that run in the background.

The mechanisms that control SLA Workflow and SLA Automation are independent of each other. You may have a requirement to send out email notifications from the SLA Workflow displaying the current
elapsed percentage of the SLA. However, this does not work because using percentage in a notification only displays the most recently calculated value of the Task SLA. This results in inaccurate values sent out in email when using SLA calculated values in a Task SLA email notification.

One solution is to specify elapsed percentage in SLA notifications by using notifications for each percentage level. For example, an email notification for “75 percent SLA Warning” is created and a special event is used to trigger that notification. The event can be called “sla.warning.75”. Another solution is hard-coding these email notifications to trigger at a specified duration percentage, and configure the workflow linked to that SLA definition to send an email notification after waiting an elapsed percentage.

Run the 2011 SLA engine asynchronously

By default in the 2011 engine, the Run SLAs business rule runs synchronously after a task is changed and evaluates the conditions for transitioning the SLA state.

Role required: sla admin

You can run this calculation asynchronously for performance reasons such as avoiding delays when a user saves a new Task record. There may be a short delay before the up-to-date Task SLA records are available after updating a Task. You may need to refresh the form to see the updated Task SLAs. Use asynchronous process to get the best experience in terms of UI unless you face performance issues.

Note: In the 2010 engine, the asynchronous Process SLAs business rule runs this processing

2. For the Run the 2011 SLA engine asynchronously after task insert or update operations property, select the Yes check box.
3. Click Save.

Recalculate SLA times automatically

By default when a user opens a task, the SLA timing information for that task is not automatically recalculated.

You can enable this information to be automatically recalculated each time the task is opened, to provide current information rather than information from the last scheduled job.

2. For the Recalculate Task SLA records when a task’s form is displayed property, select the Yes check box.

Note: This property is disabled by default because there is a potential performance impact when several users concurrently open tasks.

3. Click Save.

Use exact times in SLA calculations

When business percentages are used for SLA calculations, they are rounded up to two decimal places. As a result, breaches can occur when SLA calculations are rounded up to 100%. You can enable SLA calculations to instead use the business time or actual time left.

For example, a business percentage of 99.951% is rounded up to 100%, which causes a breach.

For more accurate SLA calculations, enable the SLA engine property for using the exact value of the business time left if a schedule is specified or the actual time left if the SLA has no schedule specified.

2. For the Use field "business_time_left" to calculate breach time instead of "business_percentage" field property, select the Yes check box.

3. Click Save.

Scheduled jobs for SLA

SLA has default scheduled jobs to regularly refresh the time calculations on each active task SLA.

- SLA update (breach after 30 days): repeats every 5 days
- SLA update (breach within 1 day): repeats every hour
- SLA update (breach within 1 hour): repeats every 10 minutes
- SLA update (breach within 10 min): repeats every 1 minute
- SLA update (breach within 30 days): repeats every day
- SLA update (already breached): repeats every day

Note: By default, the SLA update (already breached) scheduled job will calculate either for up to one year after it was breached or if 1000% of its allocated time is breached. You can set this maximum actual elapsed percentage value property in the SLA Engine properties.

Scheduled job runs more frequently when the task SLA is closer to being breached.

SLA repair function

SLA Administrators can repair SLA records to ensure SLA timing and duration information is accurate.

Repair of SLAs is useful to determine accurate timing information if your system has SLA records that contain incorrect values. For example, you may need to repair SLA records as a result of:

- poorly defined schedules
- poorly defined conditions on an SLA Definition
- some other system anomaly

The repair function removes the SLA record, then recreates and recalculates it from the start, including recreating the workflow. The repair uses the history from the Task and if appropriate will also create new Task SLAs that did not previously exist. For example, a new Task SLA may be needed if a new SLA Definition has been added since an associated Incident was created or updated.

You can repair single SLAs from the relevant form or multiple SLAs from relevant lists.

Note: SLA repair is not available on SLA definitions, as running a repair operation for an SLA definition could affect large numbers of records on your system, with significant performance impact.

The workflow used when recreating the SLAs is controlled by system properties and can be found by navigating to Service Level Management Properties SLA Repair. Any workflow that is used in the repair process will attempt to follow a repair path when processing the SLA Percentage Timer activities. This can be used to avoid running activities that are not needed for the repair over and over again. See SLA Repair workflow.

You can also configure and manage SLA repair functions.

SLA repair properties and logs

SLA Administrators can set SLA repair properties and view repair logs.
SLA Repair property

The Repair SLA function (com.snc.sla.repair.enabled) is enabled for all new installed instances running the 2011 engine, but is disabled by default for upgraded instances. If disabled, no SLA repair functions are available, including all SLA repair modules, SLA repair logs, and UI actions.

Note: Repair actions will not be available for instances that are not running the 2011 engine.

To enable or disable SLA repair, see Configure SLA properties.

View repair logs

An SLA repair log record is created each time a repair action takes place with details such as who initiated the repair and start and end date and time. The log record contains a number of child SLA Repair Log Entry records related to it. Each repair log entry has a type of either Before repair or After repair that will contain the appropriate values from each Task SLA record that is repaired. If there is only a Before repair entry record for a task SLA, this indicates that it has been deleted. If there is only an After record, the repair function has created a task SLA that did not previously exist.

Navigate to Service Level Management Repair Logs to view repair log information:

- Active Repairs repairs that are still in progress.
- My Repairs repairs you have run.
- All Repairs all repairs.
- Repair Entries SLA Repair Log entries for all repairs that have run.

Repair SLA from a form

You can repair task SLA records from the Task form, or from the task SLA form for an SLA associated to a Task.

You can also repair multiple task SLA records from a list.

1. To repair all SLAs associated to a specific task, open that form and select the Repair SLAs related link.
2. Alternatively, to repair a specific SLA on a specific Incident record, open the Incident record, open the SLA record associated with that incident, then select the Repair button on that SLA form. The SLAs selected are repaired. When the repair process is completed, the user selecting to repair receives a standard notification of the repair results.
Repair SLAs from a list

You can repair multiple SLA records from a list of task or SLA records.

You can also repair SLA records from the relevant Task form, or from the SLA form for the SLA associated with the task.

1. Navigate to a list of SLA records or task records.
2. Check the records to repair against.
3. Select the Repair SLAs for selected list action.
4. Alternatively, to repair SLAs for all records on that list, select the Repair for all filtered definitions related link.

The SLAs selected are repaired. When the repair process is completed, the user selecting to repair receives a standard notification of the repair results.

Note: Closing the progress dialog box does not stop the repair process. You can go to Active repairs or My repairs and click Show progress to view the progress dialog again.

SLA Repair workflow

You can configure workflow usage for SLA repair operations.

Workflow usage

The SLA repair workflow is used if SLA repair functionality is enabled.

When the SLA repair function is in progress and new task SLA records are created, the workflow will follow a repair path through the workflow. The repair path is based on the result of the SLA Percentage Timer activities. While repair is in progress, the result of this activity will be repair, which enables the workflow to follow a different path in order to skip certain actions, such as generating events for notifications. This avoids duplicate notifications from being sent out during the repair process for each SLA that is repaired.

To specify that the SLA repair function should use the SLA’s original workflow for repair operations, go to Service Level Management Properties SLA Repair and remove the selection from the com.snc.sla.repair.use_repair_workflow repair property.

Note: If you choose to use a non-default repair workflow, or a workflow you have changed, you should modify this workflow to ensure it includes appropriate repair conditions on the SLA Percentage Timer activities. When a task SLA is repaired, the repair transitions are followed for any activities that occurred in the past. For example, the Default SLA Repair workflow configures the repair conditions to follow repair transitions.

Workflows for new or upgraded instances

For new instances, the SLA Repair function uses the Default SLA workflow, which incorporates repair activities. For upgrades, the SLA Repair function uses the Default SLA Repair workflow because the Default SLA workflow will not be updated in case it has been customized.
To change the default workflow the SLA repair function uses, go to Service Level Management Properties SLA Repair and set the com.snc.sla.repair.workflow repair property.

SLA timeline

Using the SLA Timeline (com.snc.sla.timeline) you can see the timeline of a task SLA record and follow the record transitions from one stage to another.

The important aspects of the timeline view are:

- From and to dates: The From date and time is first history record of the task when it was created. The To date and time is the most recent update to the task.
- Blue dots: The blue dots signify an update to the incident with the first dot signifying when the incident was created. You can hover over the blue dot to view the details of the updates that were made to the task and the SLA conditions that matched the update as shown in the screenshot below. For example, the screenshot below displays that the task SLA record attached at first when the start conditions matched and is currently paused since the pause conditions matched. It also displays that task SLA is in Awaiting user info state, which is the reason for pause condition match.

- Time of the update: When you hover over the blue dot, the SLA Timeline also displays the time of the update in the time bar at the bottom of the form.
• Time spans: The spans displayed on the timeline have different colors to denote the different stages the task SLA record has progressed through. You can point to the stage spans to view details of every stage including the actual and business elapsed times.

• Retroactive start calculation: The SLA definition is configured to have a retroactive start and the timeline includes this information when the task SLA attaches to the incident.
• SLA schedule: The SLA timeline displays the schedule that the task SLA record follows. For example, in the screenshot below, the schedule for this SLA is 8-5 weekdays and so the actual business time will always be based on the same.

![Task SLA 1 activated. However, it is setup to be retroactive from Created.](image)

SLA Definition: ✔Start ✔Pause ✗Stop ✗Reset
SLA Conditions: ✔Attach ✗Pause ✗Complete ✗Reattach ✗Cancel
Activity due: 2015-09-14 06:02:49
State: Awaiting User Info

• Business elapsed time: The SLA timeline displays the total business elapsed time the task SLA record has accumulated. For example, in the screenshot below, the task SLA has accumulated a total of 8 minutes business elapsed time prior to getting canceled.

![Task SLA 1 (8 Minutes)](image)

Activate SLA timeline

You can activate the SLA timeline plugin (com.snc.sla.timeline) if you have the admin role. This plugin activates related plugins if they are not already active.

Role required: admin

1. Navigate to System Definition Plugins.
2. Find and click the plugin name.
3. On the System Plugin form, review the plugin details and then click the Activate/Upgrade related link.

If the plugin depends on other plugins, these plugins are listed along with their activation status.

If the plugin has optional features that are not functional because other plugins are inactive, those plugins are listed. A warning states that some files will not be installed. If you want the optional features to be installed, cancel this activation, activate the necessary plugins, and then return to activating the plugin.

4. If available, select the Load demo data check box.

Some plugins include demo data—sample records that are designed to illustrate plugin features for common use cases. Loading demo data is a good policy when you first activate the plugin on a development or test instance.

You can also load demo data after the plugin is activated by clicking the Load Demo Data Only related link on the System Plugin form.

5. Click Activate.

Installed with SLA timeline

One type of component is installed with the SLA timeline.

*Script includes installed with SLA timeline*

SLA timeline adds the following script includes.

<table>
<thead>
<tr>
<th>Script include</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SLATimeline</td>
<td>Generates the timeline data for a task SLA record by replaying the task’s history and using the SLATimelineAPI to determine the appropriate stage transitions and timings for the task SLA.</td>
</tr>
<tr>
<td>SLATimelineAPI</td>
<td>Provides a number of functions that simulate how the SLA engine processes a particular task and SLA definition without actually creating any task SLA records.</td>
</tr>
</tbody>
</table>

View SLA timeline

You can view an SLA timeline from a Task SLA record or from an SLA definition.

Role required: admin

To view the SLA timeline:

You can open an SLA definition from the following:

<table>
<thead>
<tr>
<th>Location</th>
<th>Navigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>SLA definition</td>
<td>Navigate to Service Level Management SLA SLA Definitions. Click the Show SLA Timeline link.</td>
</tr>
<tr>
<td>Task SLA record</td>
<td>Open a task SLA record from the task form. Click the Show SLA Timeline link.</td>
</tr>
<tr>
<td>Task form</td>
<td>Right-click on a Task SLA in the related list on a task form such an incident record and select the Show SLA Timeline option.</td>
</tr>
</tbody>
</table>

The SLA timeline for the selected task or incident is displayed. It includes all the task SLA record details and the visual representation of the progress of the task SLA over the lifetime of the task.
SLA timeline tutorial 1

This tutorial provides an example of using the SLA timeline to determine the reasons an SLA attaches, pauses, cancels, or resets.

Consider the following scenario:

You are viewing the details of INC0010003 and the following three task SLA records that are attached to the incident:

1. Task SLA record Priority 3 resolution- Canceled
2. Task SLA record Priority 2 resolution- Complete
3. Task SLA record Priority 2 resolution- Complete

View the SLA timeline to determine the reason for the cancellation of task SLA for Priority 3 resolution and the duplication of task SLAs for Priority 2 resolution.

SLA timeline tutorial: evaluate canceled task SLA record

Task SLAs are canceled when the task no longer meets the start conditions defined in the SLA definition.

Role required: admin

To investigate the reason for the cancellation of the task SLA record for Priority 3 resolution, you can open the SLA timeline.

You can further understand the details represented in the SLA timeline. After you have viewed the details presented in the timeline view, you can determine the cause of the cancellation with the following details:

1. Point to the last blue dot in the timeline to get the details when the task SLA was canceled.
   The information displayed when you point to the last blue dot confirms that the cancel SLA condition matched. It also displays the fields that were changed and their new values.
Note: When you point to the blue dot, the SLA timeline also displays the time of the update in the time bar at the bottom of the form. In this case, the time of the update is November 13, 2015 at 15:32 hours.

2. Note the time period when the task SLA canceled.
The incident notes show that the incident priority was increased during that time, which was noted as November 13, 2015 at 15:32 hours, from priority 3 to priority 2 per the customer’s request.
3. View the start conditions defined for the Priority 3 resolution (1 day) SLA definition, which generated the task SLA record.

The Priority 3 resolution (1 day) SLA definition specifies that the SLA will be canceled if one of the start conditions is not met. In the case of INC0010003, one of the start conditions is not met when the priority was updated to P2, causing the task SLA to cancel.
SLA timeline tutorial: evaluate duplicate task SLA records

Task SLAs are completed in a variety of scenarios. You must look at the start, reset, and complete conditions to determine the reason a task SLA is completed.

Role required: admin

To investigate the reason for the duplication of the second and third task SLA record, the Task SLA record Priority 2 resolution (8 hours), you can open the SLA timeline.

You can further understand the details represented in the SLA timeline. After you have viewed the details presented in the timeline view, you can determine the cause of the duplication with the following details:

1. Point to the last blue dot in the timeline for the SLA to view the status of the two duplicate SLA records.
### Task SLA record

**Task SLA record Priority 2 resolution (Task SLA 1)**

<table>
<thead>
<tr>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complete: Reset SLA condition matched along with the fields that were changed and their new values as shown in the screenshot below.</td>
</tr>
</tbody>
</table>

![Task History Diagram]

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<table>
<thead>
<tr>
<th>Task SLA record</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task SLA record Priority 2 resolution (Task SLA 2)</td>
<td>Complete: Stop SLA conditions matched along with the fields that were changed and their new values as shown in the screenshot below.</td>
</tr>
</tbody>
</table>

Note: When you point to the blue dot, the SLA timeline also displays the time of the update in the time bar at the bottom of the form.

2. Note the time when the task SLA completed and view the incident notes for the same time period.
## Task SLA record

**Priority 2 resolution (Task SLA 1)**

---

## Incident note

The incident notes show that the assignment group was updated during that time from Database to Hardware.
<table>
<thead>
<tr>
<th>Task SLA record</th>
<th>Incident note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task SLA record Priority 2 resolution (Task SLA 2)</td>
<td>The incident notes show that the incident was resolved during that time.</td>
</tr>
</tbody>
</table>

3. View the conditions defined for the Priority 2 resolution (8 hours) SLA definition.
### Task SLA record

**Task SLA record Priority 2 resolution (Task SLA 1)**

The screenshot below displays both the start and reset conditions defined for the Priority 2 resolution (8 hours) SLA definition, which confirms that the SLA will be completed and a new SLA will be attached if all of the conditions are met. In the case of INC0010003, the start conditions still matched, however, the reset conditions also matched at the same time when the assignment group was changed to Hardware. This caused the Task SLA 1 to complete and the new Task SLA 2 to attach.

![Start and reset conditions for Priority 2 resolution SLA](image-url)
### SLA timeline tutorial 2

This tutorial provides an example of using the SLA timeline to determine the reasons an SLA attaches, pauses, and completes.

Consider the following scenario:

You are viewing the details of INC0010005 and the following task SLA record that is attached to the incident:

- Task SLA record ACME P3 resolution - Complete
View the SLA timeline to determine when each Task SLA was paused and therefore understand the amount of elapsed time on each task SLA.

SLA timeline tutorial 2: evaluate paused task SLA record

Task SLAs continue to be executed and completed in a variety of scenarios. You must look at the start, pause, resume, and cancel conditions to determine the reasons a task SLA journeys through these stages.

Role required: admin

To investigate the reason for the execution of the ACME P3 resolution task SLA record, you can open the SLA timeline.

You can further understand the details represented in the SLA timeline. After you have viewed the details presented in the timeline view, you can determine the reason this task SLA has paused, resumed, and paused again after getting attached with the following details.

1. To investigate the reason why the SLA attached:
   a) Point to the first blue dot in the SLA’s timeline when the first time span starts to view the details when the SLA was attached.
   The information displayed when you point to the first blue dot confirms that the attach SLA condition rule matched. It also displays the fields that were changed and their new values.
Note: When you point to the blue dot, the SLA timeline also displays the time of the update in the time bar at the bottom of the form. In this case, the time of the update is March 1, 2016 at 12:10 hours.

b) Note the time period when the task SLA attached.

The incident notes show that the assignment group changed to ACME support during that time, which was noted as March 1, 2016 at 12:10 hours.

c) View the start conditions defined for the ACME P3 resolution SLA definition, which generated the task SLA record.
The ACME P3 resolution SLA definition specifies that the SLA will attach if the assignment group is ACME support.

2. To investigate the reason why the SLA paused:
   a) Point to the blue dot in the SLA’s timeline when the timeline has paused to view the reasons for the SLA’s pause.

   The information displayed when you point to the relevant blue dot confirms that the pause SLA condition matched. It also displays the fields that were changed and their new values.
b) Note the time period when the task SLA paused.

The incident notes show that the assignment group changed to Service Desk during that time, which was noted as March 1, 2016 at 15:58 hours.

c) View the pause conditions defined for the ACME P3 resolution SLA definition, which generated the task SLA record.

Pause condition

The ACME P3 resolution SLA definition specifies that the SLA will pause if the assignment group is not ACME support.

Note: In this case, ACME P3 resolution task SLA continues to execute despite the start conditions no longer matching because the specified cancel condition did not match for it to cancel.

3. To investigate the reason why the SLA resumed:
   a) Point to the blue dot in the SLA’s timeline when the timeline resumed, from Paused to In Progress state, to view the reasons for the resumption.
The information displayed when you point to the relevant blue dot confirms that the resume SLA condition matched. It also displays the fields that were changed and their new values.

**Note:** When you point to the blue dot, the SLA timeline also displays the time of the update in the time bar at the bottom of the form. In this case, the time of the update is March 2, 2016 at 10:03 hours.

b) Note the time period when the task SLA resumed.

The incident notes show that the assignment group changed to ACME Support during that time, which was noted as March 2, 2016 at 10:03 hours.

c) View the resume conditions defined for the ACME P3 resolution SLA definition, which generated the task SLA record.
The ACME P3 resolution SLA definition specifies that the SLA will resume when the pause condition is no longer met. In this case, the pause condition no longer met being the assignment group is not ACME support.

4. To investigate the reason why the SLA paused again:
   a) Point to the blue dot in the SLA’s timeline when the timeline has paused again, from In Progress state to Paused, to view the reasons for the SLA pausing again.
The information displayed when you point to the relevant blue dot confirms that the pause SLA condition matched. It also displays the fields that were changed and their new values.

Note: When you point to the blue dot, the SLA timeline also displays the time of the update in the time bar at the bottom of the form. In this case, the time of the update is March 2, 2016 at 13:22 hours.

b) Note the time period when the task SLA paused again.

The incident notes show that the incident state changed to Resolved during that time, which was noted as March 2, 2016 at 13:22 hours.

c) View the pause conditions defined for the ACME P3 resolution SLA definition, which generated the task SLA record.

The ACME P3 resolution SLA definition specifies that the SLA will pause when the incident state is Resolved.

SLA notifications

SLA sends notifications at certain events defined in the workflow. By default, SLA notifications are sent on three occasions:

1. SLA is at 50% of the duration specified in the SLA Definition
2. SLA is at 75% of the duration specified in the SLA Definition
3. SLA is breached

Note: SLA notifications are typically only sent to the user the incident is assigned to. However, when the SLA is breached, notifications are sent to the user the incident is assigned to and their manager.

Legacy SLA engines

If you are on an earlier version of the SLA engine, you can upgrade to the 2011 engine to make use of the complete service level management functionality.

The SLA engine has three versions:

<table>
<thead>
<tr>
<th>SLA engine version</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Escalation engine (pre-2010)</td>
<td>Tracks only one SLA per task.</td>
</tr>
<tr>
<td>The 2010 engine (the Service level management plugin)</td>
<td>Supports multiple SLAs per task. Business rules handle the processing of these SLAs while workflows handle notifications. The majority of logic is in a single large business rule called Process SLAs.</td>
</tr>
<tr>
<td>The 2011 engine (also part of the Service level management plugin)</td>
<td>The 2010 SLA engine functionality is concentrated into a number of script includes. Provides retroactive pause calculations and enables the customization of SLA condition processing through the use of condition rules.</td>
</tr>
</tbody>
</table>

Legacy SLA fields

Previously, only a single SLA could be attached to a task via the Escalation engine. The information for the SLA was stored in the task table using the SLA Due, Made SLA, and Escalation fields.

The Task SLA engine now enables multiple SLAs to be attached to a single task, making the earlier task fields redundant. Their equivalents are in the task_sla table for each SLA attached to the task.

- Task SLA, Breach time: This is equivalent to the SLA Due field
- Task SLA, Has breached: This will be true if the SLA has breached, the opposite of Made SLA field.
- There is no equivalent field for Escalation field. Notifications can be sent via the SLA workflow and an increase in priority can trigger additional SLAs to be attached to the task.

Note: The Business Duration field is neither part of the Escalations Engine nor the Task SLA Engine.

The fields on the Task are considered legacy and are not updated by the Task SLA engine. In case these fields are being updated, the legacy Escalation engine may still be running. This can happen if you have upgraded from Express or a previous instances.

To prevent the Escalation engine from running, set the com.snc.sla.run_old_sla_engine property to false. If this property is set to false and the fields are still being updated, check the customizations made to your instance.

Migrate to service level management

Migrate SLA processing from the escalations engine to use the service level management functionality.
The two core differences between the old SLA engine and the new service level management plugin are that tasks can now run multiple SLAs simultaneously, and the escalation concept has been replaced with the more robust Workflow Editor. This allows administrators greater control on what actions, notifications, and events are triggered by tasks, to take into account more mature Service Level processes.

If an instance has been using the original SLA engine and has just activated the Service Level Agreements (SLA) Plugin, the old SLAs will not work. For the old SLAs to work, they must be converted to the new SLA Definition records, which will attach the appropriate Task SLA records to the matching Task records. This is done manually by creating new SLA Definition records that reflect the definition of the old SLA. Old SLAs will continue to function, but any time a task is updated, the appropriate new Task SLAs will attach.

Once new Task SLAs are implemented, they will attach themselves to any new or updated incident, including ones which already have old SLAs attached. If the new Task SLA is set to retroactively start, it will automatically calculate the duration from that point in the past, which means that the duration will still be accurate.

When enabled, the property Compute prior SLA pause time for new, retroactive SLAs (2011 SLA engine only) property calculates the pause time when a retroactive SLA is attached.

For example: if a retroactive SLA attaches to an incident one hour after its creation, and meets the pause conditions for half an hour, then the elapsed time is half an hour rather than the full hour.

Note: This property is only used with audited tables. Tables which are not audited ignore the pause time before the creation of the record.

Move from the 2010 Engine to the 2011 Engine

You can upgrade SLA processing to use the 2011 Engine.

The service level management plugin was enhanced with the ability to script the condition rules for SLA transitions, giving control over how the conditions in an SLA Definition are used. Please review the documentation before enabling the enhancements to understand how the new engine will impact existing customizations.

Note: Activating the 2011 SLA engine will deactivate all business rules on the task_sla table (except for the rule Task SLA Empty Schedule Warning, which is part of the 2011 engine). If you have added any additional business rules or customized the default business rules, these will not be automatically deactivated. So you should review these customizations, and manually deactivate such business rules, before making this change.

The default Process SLAs rule on the task table will also be deactivated, so any customizations to this script must be incorporated into the new SLA engine.

In addition, breach information is removed from the Stage field, and stored in the new Has breached field.

To enable the new functionality:
1. Navigate to Service Level ManagementSLA Properties.
2. Change the following property from 2010 to 2011:
Figure 271: Changing the Property from 2010 to 2011

By default, the 2011 Engine sets the Stage field to In Progress, shaded red to indicate the breached status, and sets the Has Breached field to true. The SLA continues to run until the stop conditions are met.

Organize the migration process

There are several ways to convert the old SLAs to the new Task SLAs.

Perform the following steps to organize the conversion process:

1. Convert the old SLAs to new SLA Definitions, but leave the Active flag unchecked on each one.
2. Back up the old SLAs by exporting the table to XML.
3. Deactivate the old SLAs, setting the Run the old SLA engine (System Policy -> SLA Management) system property (com.snc.sla.run_old_sla_engine) to false. This deactivates the legacy SLA engine preventing both engines from running and conflicting. This property is set to true by default, but will be set to false by the new SLA plugins, effectively deactivating the old SLAs.
4. Activate the new SLA Definitions by checking the Active flags on each one.
5. Navigate to Incident Open and use the List Editor to “touch” each record. As each record is updated, the new Task SLA will attach to each incident. If there are too many open incidents to effectively touch using the List Editor, run a business rule that will update every open incident.

Convert an SLA to an SLA Definition

You must replicate the default SLA record as a new SLA definition.

To convert old SLAs to SLA Definitions:

1. Transfer the Name and Table fields.
2. If desired, check the Retroactively Start checkbox.
   If checked, this will cause the SLA to calculate from the moment the record is created (or from the date and time on the selected task), rather than the moment the SLA is attached. This is especially helpful for Task SLAs that will attach to active incidents that have old SLAs currently running.
3. Transfer the Conditions field to the Start Conditions field. Make sure to add Active is True as well, so that the new Task SLAs don’t attach to closed incidents when they are updated.
5. Set the Duration Type and Duration fields. The old SLAs did not support relative duration, so to define the Task SLA to behave similarly to the old SLA, select User Defined Duration as the Duration Type and put the total length of time of all of the escalations here. For instance, an old SLA that has escalations of 4 hours to Moderate, 2 hours to High, and 2 hours to Overdue, the new Task SLA should have Duration set to Days 0 Hours 08:00:00.
6. Calendars have been replaced by Schedules, so if schedules haven’t been defined yet, they will need to be.
7. Instead of escalations, attach an SLA Workflow.
   There is a default SLA workflow, however, you must create a new workflow to replicate the escalation levels on the old SLA. Escalation Levels are defined hour-by-hour, whereas the SLA Workflow uses a percentage timer.
So for the above example of 4 hours to Moderate, 2 hours to High, and 2 hours to overdue, the workflow will need a 50% timer and then two 25% timers. The new task SLA records do not use the Escalation or Made SLA fields on the task record.

The following example is an old SLA for Priority 1 incidents to be resolved on a Monday-Friday (8-5) Calendar, with escalations to Moderate at 4 hours, to High at 2 hours, and to Overdue at 2 hours:
This is the new Task SLA created from the same information:
This is the workflow which powers the new Task SLA.

Note: This example workflow responds to each escalation by firing off an event. A business rule can be configured to respond to escalation events, or the workflow can be adjusted to match the organization’s process.
Figure 274: New SLA Workflow

Task SLA table

The Task SLA (task_sla) table stores Task SLA records for the SLAs attached to particular tasks. For each task, attached SLAs are accessible in a related list on the Task’s form.
The SLA form for a task shows further details:

<table>
<thead>
<tr>
<th>SLA definition</th>
<th>Type</th>
<th>Stage</th>
<th>Start time</th>
<th>Stop time</th>
<th>Actual elapsed time</th>
<th>Actual elapsed percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Priority 1 resolution (8 hour)</td>
<td>SLA</td>
<td>In progress</td>
<td>2015-03-04 16:55:07</td>
<td>(empty)</td>
<td>90 Days 12 Hours 58 Minutes</td>
<td>27,182.2</td>
</tr>
<tr>
<td>Priority 2 resolution (24 hour)</td>
<td>SLA</td>
<td>Cancelled</td>
<td>2015-03-04 16:55:07</td>
<td>2015-05-03 05:53:41</td>
<td>90 Days 12 Hours 58 Minutes</td>
<td>9,054.07</td>
</tr>
</tbody>
</table>

Figure 275: Task SLA Table
### Task SLA form

![Task SLA form](image)

**Timings**

<table>
<thead>
<tr>
<th>SLA definition</th>
<th>Priority 1 resolution (8 hour)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task</td>
<td>INC20000025</td>
</tr>
<tr>
<td>Updated</td>
<td>2015-06-03 05:53:41</td>
</tr>
</tbody>
</table>

**Actual elapsed time**

- Days: 90
- Hours: 12 56 34

**Actual elapsed percentage**: 27.162%

**Actual time left**

- Days: 0
- Hours: 00 00 00

**Stage**

- In progress

**Schedule**

**Timezone**: US/Pacific-New

**Start time**: 2015-03-04 16:56:07

**Stop time**: 

**Breach time**: 2015-03-04 23:56:07

**Business elapsed time**

- Days: 00
- Hours: 00 00 00

**Business elapsed percentage**: 

**Business time left**

- Days: 00
- Hours: 00 00 00

---

**Figure 276: Task SLA form**
Stage values

The following Stage values are defined:

- In progress
- Cancelled
- Paused
- Completed

Note: The Breached stage value is also available for systems either using the 2010 SLA engine, or running in compatibility mode.

Timing information

The Timings fields on the Task SLA contain the crucial information powered by the SLA Engine:

Table 196: Task SLA Time-Based Fields

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start time</td>
<td>The time the SLA was started.</td>
</tr>
<tr>
<td>Stop time</td>
<td>The time the SLA ended.</td>
</tr>
<tr>
<td>Breach time</td>
<td>The time the SLA will breach, adjusted for business pause duration (for task SLAs with a schedule specified) or pause duration (for task SLAs with no schedule). Note: Breach time is the same as Planned end time.</td>
</tr>
<tr>
<td>Actual Elapsed Time</td>
<td>Time between start time and now (minus pause duration).</td>
</tr>
<tr>
<td>Actual Elapsed Percentage</td>
<td>Percentage of total SLA that has elapsed (minus pause duration).</td>
</tr>
<tr>
<td>Actual Time Left</td>
<td>Time remaining until SLA breach.</td>
</tr>
<tr>
<td>Business Elapsed Time</td>
<td>Time within the specified schedule between start time and now (minus pause duration).</td>
</tr>
<tr>
<td>Business Elapsed Percentage</td>
<td>Percentage of total SLA that has elapsed within the specified schedule (minus pause duration).</td>
</tr>
<tr>
<td>Business Time Left</td>
<td>Time within the schedule remaining until SLA breach.</td>
</tr>
<tr>
<td>Original breach time</td>
<td>The date/time the SLA would breach, as calculated when the SLA is first attached. Note: You may have to configure the form to see this field.</td>
</tr>
</tbody>
</table>

Reactivate an old SLA Engine

You can reactivate an earlier version of the SLA engine.
To reactivate the old escalations SLA engine:

Update the property com.snc.sla.run_old_sla_engine to true.

Installed with Service Level Management

Several types of components are installed with Service Level Management.

Activating the Service Level Management plugin adds or modifies several tables, script includes, and other components.

Tables installed with Service Level Management

Service Level Management adds or modifies the following tables.

Table 197: Tables for Service Level Management

<table>
<thead>
<tr>
<th>Display name (Table name)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SLA Definition (contract_sla)</td>
<td>Provides the conditions, duration, and schedule for an SLA Definition.</td>
</tr>
<tr>
<td>SLA Conditions (sla_condition_class)</td>
<td>Defines how the conditions in the SLA Definition are used to determine the transitions between different stages of each task SLA.</td>
</tr>
<tr>
<td>SLA Repair Log (sla_repair_log)</td>
<td>Used to provide a log of when the SLA Repair function is set to action.</td>
</tr>
<tr>
<td>SLA Repair Log Entry (sla_repair_log_entry)</td>
<td>Extends syslog and stores the before or after values of a task SLA record that has been repaired.</td>
</tr>
<tr>
<td>Task SLA (task_sla)</td>
<td>Associates a task with the SLA Definition that applies to it.</td>
</tr>
</tbody>
</table>

Properties installed with Service Level Management

Service Level Management adds the following system properties.

Table 198: Service Level Agreement properties

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SLA Engine properties</td>
<td>Core SLA properties.</td>
</tr>
<tr>
<td></td>
<td>See Configure SLA properties for details.</td>
</tr>
<tr>
<td>SLA Logging properties</td>
<td>Properties to configure SLA logging</td>
</tr>
<tr>
<td></td>
<td>See Configure SLA properties for details.</td>
</tr>
<tr>
<td>SLA Repair properties</td>
<td>Properties to configure SLA repair functions.</td>
</tr>
<tr>
<td></td>
<td>See Configure SLA properties for details.</td>
</tr>
</tbody>
</table>

UI actions installed with Service Level Management

Service Level Management adds the following UI actions.
<table>
<thead>
<tr>
<th>UI action</th>
<th>Tables</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refresh</td>
<td>Task SLA {task_sla}</td>
<td>Calculates up to date timing information for the task SLA and then reloads the form.</td>
</tr>
<tr>
<td>Show Workflow</td>
<td>Task SLA {task_sla}</td>
<td>Displays the workflow in a pop-up window.</td>
</tr>
<tr>
<td>Show Schedule</td>
<td>SLA Definition {contract_sla}</td>
<td>Displays the schedule in a calendar view in a new window or tab.</td>
</tr>
<tr>
<td>Show SLA Timeline</td>
<td>Task SLA {task_sla}</td>
<td>List context menu</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Displays a timeline visualization of the Task SLA including highlighting periods of pause time and when the SLA breaches.</td>
</tr>
<tr>
<td>Show SLA Timeline</td>
<td>Task SLA {task_sla}</td>
<td>Form action</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Displays a timeline visualization of the Task SLA including highlighting periods of pause time and when the SLA breaches.</td>
</tr>
<tr>
<td>Show SLA Timeline</td>
<td>SLA Definition {contract_sla}</td>
<td>Form action</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Opens the SLA timeline visualization form with no task record selected. The user can then choose which record to show the SLA timeline visualization for.</td>
</tr>
<tr>
<td>Show progress</td>
<td>SLA Repair Log {sla_repair_log}</td>
<td>Opens the progress dialog for an SLA repair that is still in progress.</td>
</tr>
<tr>
<td>Repair all filtered SLAs</td>
<td>Task SLA {task_sla}</td>
<td>Initiates a repair for all the task SLAs in the list.</td>
</tr>
<tr>
<td>Repair SLAs</td>
<td>Task {task}</td>
<td>Form action. Initiates a repair for all the task SLAs related to the task.</td>
</tr>
<tr>
<td>Repair SLAs</td>
<td>Task {task}</td>
<td>Available as a list action. Initiates a repair for the task SLAs that have been selected (checked). This is applicable to UI11 only.</td>
</tr>
<tr>
<td>Repair SLAs</td>
<td>Task {task}</td>
<td>Available as a list action. Initiates a repair for the task SLAs that have been selected (checked). This is applicable to UI16 only.</td>
</tr>
<tr>
<td>Repair</td>
<td>Task SLA {task_sla}</td>
<td>Form action. Initiates a repair for the task SLA record.</td>
</tr>
<tr>
<td>Repair SLAs</td>
<td>Task SLA {task_sla}</td>
<td>Available as a list action. Initiates a repair for the task SLAs that have been selected (checked).</td>
</tr>
</tbody>
</table>
UI policies installed with Service Level Management

Service Level Management adds the following UI policies.

Table 200: Service Level Agreement UI policies

<table>
<thead>
<tr>
<th>UI policy</th>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Show duration field</td>
<td>SLA Definition (contract_sla)</td>
<td>Hide/shows fields when the duration type is not specified.</td>
</tr>
<tr>
<td>Retroactive start</td>
<td>SLA Definition (contract_sla)</td>
<td>Shows set start to field when retroactive start is true.</td>
</tr>
<tr>
<td>Hide execution tracker</td>
<td>SLA Repair Log (sla_repair_log)</td>
<td>Unconditionally hide the execution tracker field.</td>
</tr>
<tr>
<td>Hide Pause time</td>
<td>Task SLA (task_sla)</td>
<td>Unconditionally hide the pause time field.</td>
</tr>
</tbody>
</table>

Script includes installed with Service Level Management

Service Level Management adds the following script includes.

Table 201: Script includes for service level management

<table>
<thead>
<tr>
<th>Script include</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SLAUIActions</td>
<td>Determines whether a UI Action should be displayed or hidden for the SLA application and the tables it supports.</td>
</tr>
<tr>
<td>SLARepair</td>
<td>Provides functions to repair SLAs based on records, filters or sys ids of records from the contract_sla, task_sla or task tables.</td>
</tr>
<tr>
<td>SLARepairLog</td>
<td>Provides methods to record audit information about about the Task SLAs that are repaired by calls to SLARepair.</td>
</tr>
<tr>
<td>SLARepairAJAXProcessor</td>
<td>Exposes an API which allows clients to invoke the Repair SLAs functionality and be notified once the repair has completed.</td>
</tr>
<tr>
<td>RepairTaskSLA</td>
<td>Extensions of TaskSLA to allow for the changes necessary to repair SLAs without changing the normal SLA calculation process.</td>
</tr>
<tr>
<td>RepairTaskSLAController</td>
<td>Extension of TaskSLAController to allow for the changes necessary to repair SLAs without changing the normal SLA calculation process.</td>
</tr>
<tr>
<td>TaskSLA</td>
<td>An abstraction around a task_sla record that allows for transitioning it through its various states.</td>
</tr>
<tr>
<td>SLAWorkflowDuration</td>
<td>Allows current to be configured as task or task_sla when the workflow duration is being calculated.</td>
</tr>
<tr>
<td>SLACalculatorNG</td>
<td>Provides services to help calculate updates to task_sla records.</td>
</tr>
<tr>
<td>SLAMessage</td>
<td>Provides services to generate the messages that get displayed on the task_sla form.</td>
</tr>
<tr>
<td>Script include</td>
<td>Description</td>
</tr>
<tr>
<td>---------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>TaskSLAController</td>
<td>Checks the SLA conditions and update the task_sla records and any related workflows.</td>
</tr>
<tr>
<td>TaskSLAworkflow</td>
<td>Controls the task_sla workflow.</td>
</tr>
<tr>
<td>SLAConditionBase</td>
<td>Base class of methods to test a contract_sla’s conditions, at key points in the TaskSLA state machine.</td>
</tr>
<tr>
<td>TaskSLALogging</td>
<td>A collection of helper methods suitable for use for task_sla logging purposes.</td>
</tr>
<tr>
<td>SLAvalidation</td>
<td>Provides a set of functions which allow the Caller to validate particular characteristics of their SLA records.</td>
</tr>
<tr>
<td>SLAProperties</td>
<td>Provides helper methods to test and set various SLA properties.</td>
</tr>
<tr>
<td>SLACalculator</td>
<td>Provides functions that calculate updated values for task_sla records.</td>
</tr>
<tr>
<td>SLABreachChange</td>
<td>A collection of methods to update SLA state values when the Breached Compatibility system property is changed.</td>
</tr>
<tr>
<td>SLAEngineChange</td>
<td>Provides functions to help update records when the SLA engine switches between version 2010 and version 2011.</td>
</tr>
<tr>
<td>SLATimezone</td>
<td>A collection of helper functions to convert SLA timezone choice values into actual timezone value.</td>
</tr>
<tr>
<td>SLASchedule</td>
<td>A collection of helper functions to convert SLA schedule choice values into actual Schedule record values.</td>
</tr>
<tr>
<td>SLAConditionSimple</td>
<td>A simple variation of SLAConditionBase that interprets conditions and logs when a task_sla is attached, reattached, or canceled.</td>
</tr>
<tr>
<td>SLADefinitionSNC</td>
<td>Default implementation for SLA Definition functions.</td>
</tr>
<tr>
<td>SLADefinition</td>
<td>Contains functions pertaining to SLA Definitions.</td>
</tr>
<tr>
<td>SLADefinitionAJAX</td>
<td>Provides AJAX functions for the SLA Definition contract_sla table.</td>
</tr>
<tr>
<td>RepairTaskSLAWorkflow</td>
<td>Extension of TaskSLAWorkflow to allow for the changes necessary to repair SLAs without changing the normal SLA calculation process.</td>
</tr>
<tr>
<td>SLARepairProperties</td>
<td>A set of actions executed when SLA Repair properties are changed.</td>
</tr>
</tbody>
</table>

Client scripts installed with Service Level Management

Service Level Management adds the following client scripts.
### Table 202: Client scripts for Service Level Management

<table>
<thead>
<tr>
<th>Client script</th>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form message - Example end time</td>
<td>SLA Definition (contract_sla)</td>
<td>Displays an information message providing an example breach time based on the values in the definition.</td>
</tr>
<tr>
<td>Form message - Example end time</td>
<td>SLA Definition (contract_sla)</td>
<td>Displays an information message providing an example breach time based on the values in the definition.</td>
</tr>
<tr>
<td>Form message - Example end time</td>
<td>SLA Definition (contract_sla)</td>
<td>Displays an information message providing an example breach time based on the values in the definition.</td>
</tr>
<tr>
<td>Form message - Example end time</td>
<td>SLA Definition (contract_sla)</td>
<td>Displays an information message providing an example breach time based on the values in the definition.</td>
</tr>
<tr>
<td>Field Message - Pause condition</td>
<td>SLA Definition (contract_sla)</td>
<td>Displays an information message on the Pause condition field when Duration type is not a user specified duration.</td>
</tr>
<tr>
<td>Field Message - Schedule</td>
<td>SLA Definition (contract_sla)</td>
<td>Displays an information message on the schedule field when it is empty.</td>
</tr>
<tr>
<td>Field messages</td>
<td>Task SLA (task_sla)</td>
<td>Displays an information message on the stage field with the pause time when a task SLA is paused.</td>
</tr>
</tbody>
</table>

### Business rules installed with Service Level Management

Service Level Management adds the following business rules.

**Table 203: Business rules for Service Level Management**

<table>
<thead>
<tr>
<th>Business rule name</th>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SLA Definition Empty Schedule Warning</td>
<td>SLA Definition (contract_sla)</td>
<td>Display an error message if no active entries in the definition's schedule or child schedules.</td>
</tr>
<tr>
<td>SLA Workflow Condition Check</td>
<td>SLA Definition (contract_sla)</td>
<td>Display an error message if the definition has a workflow with a condition type or a condition set.</td>
</tr>
<tr>
<td>Pause SLA</td>
<td>Task SLA (task_sla)</td>
<td>Sets the pause time for the task_sla record and deletes all sys_trigger records associated with it.</td>
</tr>
<tr>
<td>Resume SLA</td>
<td>Task SLA (task_sla)</td>
<td>Sets the pause duration and clears out the pause time for the task_sla record.</td>
</tr>
<tr>
<td>Business rule name</td>
<td>Table</td>
<td>Description</td>
</tr>
<tr>
<td>--------------------------------------------------------</td>
<td>---------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Resume Workflow</td>
<td>Task SLA {task_sla}</td>
<td>Broadcasts an event to resume the current workflow.</td>
</tr>
<tr>
<td>Run SLA calculation</td>
<td>Task SLA {task_sla}</td>
<td>Performs a recalculation of the timings for a task SLA record.</td>
</tr>
<tr>
<td>Task SLA Empty Schedule Warning</td>
<td>Task SLA {task_sla}</td>
<td>Display an error message if neither the task_sla record’s schedule or child schedules contain any active entries.</td>
</tr>
<tr>
<td>SLA Engine version changed</td>
<td>System Property {sys_properties}</td>
<td>Update SLA Engine business rules, and SLA triggers, when the SLA Engine version is changed.</td>
</tr>
<tr>
<td>SLA Breach compatibility validate change</td>
<td>System Property {sys_properties}</td>
<td>Ensure that the 2011 SLA Engine breach compatibility property change is valid.</td>
</tr>
<tr>
<td>SLA Repair enabled flag changed</td>
<td>System Property {sys_properties}</td>
<td>When the “Enable SLA Repair” property is changed make the appropriate updates to enable/disable the UI actions and modules associated with SLA Repair.</td>
</tr>
<tr>
<td>SLA Breach compatibility option changed changed</td>
<td>System Property {sys_properties}</td>
<td>Update SLA stage values appropriately, when the 2011 SLA Engine breach compatibility property has been changed.</td>
</tr>
<tr>
<td>SLA Engine version validate change</td>
<td>System Property {sys_properties}</td>
<td>Ensure that the SLA Engine version property change is valid.</td>
</tr>
<tr>
<td>SLA Repair validate workflow name change</td>
<td>System Property {sys_properties}</td>
<td>Ensure that the workflow name specified in the repair workflow property is valid.</td>
</tr>
<tr>
<td>Calc SLAs on Display</td>
<td>Task {task}</td>
<td>Recalculates the task SLA records when a task’s form is displayed and system property “glide.sla.calculate_on_display” is true.</td>
</tr>
<tr>
<td>Process SLAs</td>
<td>Task {task}</td>
<td>Creates new task SLAs and then processes all active SLAs for the task. This applies to the 2010 engine only.</td>
</tr>
<tr>
<td>Run SLAs</td>
<td>Task {task}</td>
<td>Executes the run function of TaskSLAController to create new Task SLAs and then process the existing ones for the Task. This applies to the 2011 engine only.</td>
</tr>
<tr>
<td>SLA Workflow Condition Type</td>
<td>Workflow Version {wf_workflow_version}</td>
<td>If the workflow is for task SLAs, then set the condition type field empty.</td>
</tr>
<tr>
<td>SLA Workflow Condition Check</td>
<td>Workflow Version {wf_workflow_version}</td>
<td>Display an error message if the workflow is for task SLAs and has either a condition type or a condition set.</td>
</tr>
<tr>
<td>Business rule name</td>
<td>Table</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------</td>
<td>------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Cancel trigger</td>
<td>Task SLA (task_sla)</td>
<td>Deletes all the sys_trigger records associated with the task_sla record.</td>
</tr>
<tr>
<td>Pause Workflow</td>
<td>Task SLA (task_sla)</td>
<td>Broadcasts an event to pause the current workflow.</td>
</tr>
<tr>
<td>Set planned end time</td>
<td>Task SLA (task_sla)</td>
<td>Calculates and sets a new planned end time for the task_sla record and inserts a new sys_trigger job that will set the task_sla stage when the breach time is reached.</td>
</tr>
<tr>
<td>Start Workflow</td>
<td>Task SLA (task_sla)</td>
<td>Creates a new workflow that is associated with the task_sla record.</td>
</tr>
<tr>
<td>Stop Workflow</td>
<td>Task SLA (task_sla)</td>
<td>Cancels the current workflow associated with the task_sla record.</td>
</tr>
</tbody>
</table>

**Email notifications installed with Service Level Management**

**Email notifications**

Service level Management uses the following email notifications.

Table 204: Email notifications for Service Level Management

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SLA warning</td>
<td>Used to send a warning message as an SLA approaches the breach time.</td>
</tr>
<tr>
<td>SLA breached</td>
<td>Used to send a warning message when an SLA breaches.</td>
</tr>
<tr>
<td>SLA Repair Complete</td>
<td>Sends an email when an SLA Repair job completes which includes a link to the repair log record.</td>
</tr>
</tbody>
</table>

**Scheduled jobs installed with Service Level Management**

**Scheduled jobs**

Service Level Management adds the following scheduled jobs.

Table 205: Scheduled jobs for Service Level Management

<table>
<thead>
<tr>
<th>Scheduled job</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SLA update (already breached)</td>
<td>Refreshes the timings in task SLA records that have already breached. This is limited to task SLAs where the breach time is within the last 365 days. This job runs once a day.</td>
</tr>
<tr>
<td>Scheduled job</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>SLA update (breach after 30 days)</td>
<td>Refreshes the timings in task SLA records where the breach time is more than 30 days away. This is limited to task SLA records where the breach time is within the next 365 days. This job runs every 5 days.</td>
</tr>
<tr>
<td>SLA update (breach within 1 day)</td>
<td>Refreshes the timings in task SLA records where the breach time is more than 1 hour away and less than 24 hours away. This job runs every hour.</td>
</tr>
<tr>
<td>SLA update (breach within 1 hour)</td>
<td>Refreshes the timings in task SLA records where the breach time is more than 10 minutes away and less than 1 hours away. This job runs every 10 minutes.</td>
</tr>
<tr>
<td>SLA update (breach within 10 min)</td>
<td>Refreshes the timings in task SLA records where the breach time is in the next 10 minutes. This job runs every minute.</td>
</tr>
<tr>
<td>SLA update (breach within 30 days)</td>
<td>Refreshes the timings in task SLA records where the breach time is more than 1 day away and less than 30 days away. This job runs once a day.</td>
</tr>
</tbody>
</table>

Workflows installed with Service Level Management

Workflows

Service Level Management adds the following workflows.

Table 206: Workflows for Service Level Management

<table>
<thead>
<tr>
<th>Workflow</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Default SLA workflow</td>
<td>Sends notifications at various check points of the SLA’s life span to notify the assignee of the duration left before it has breached. This workflow is also configured to work with the SLA Repair functionality to skip notifications being sent on a repair of SLAs.</td>
</tr>
<tr>
<td></td>
<td>Note: This workflow is used by default for new instances.</td>
</tr>
<tr>
<td>Default SLA Repair workflow</td>
<td>This workflow is designed to work with the SLA Repair functions for upgraded instances where the default SLA workflow may have been customized. It is equivalent to the default SLA workflow with the addition of repair conditions on certain activities. The repair conditions will skip notifications being sent for an SLA that is being repaired.</td>
</tr>
<tr>
<td></td>
<td>Note: The SLA repair function uses this workflow by default for upgraded instances because the Default SLA workflow may have been customized.</td>
</tr>
</tbody>
</table>
Workflows for SLA

SLA typically uses workflows to send notifications.

You can create and edit workflows with the Workflow Editor. The default workflow that is available with the Service level management plugin is Default SLA Workflow.

The Default SLA Workflow creates the events that send out notifications. For example, it creates an event to send a notification to the user assigned to a task, such as an incident, when the task SLA reaches 50% of its allotted time.

SLA duration and schedules

Schedules have an impact on the duration specified in an SLA definition.

This impact is reflected in the timings that are taken into consideration while calculating an SLA.

Note: If a schedule is not selected for an SLA, the SLA will run 24X7.

Consider a scenario where you select a duration of one day, which is 24 hours, and a schedule of 9 am to 5 pm, which is 8 hours. The SLA calculation will distribute the 24 hours across three working days of 8 hours each. So a team working on a task associated with this SLA has 3 days to complete the task before the SLA is breached.

SLA duration types

You can select one of two SLA durations types to define the length of time within which a task must be completed before the SLA is breached. If an SLA schedule is defined, the duration works in conjunction with the schedule. When you define an SLA, you can select either a user specified duration or a relative duration.
If a schedule is selected in the SLA definition, the SLA duration will work in conjunction with the SLA schedule. For example, an SLA might have a user-specified duration of 16 hours with the schedule as 8-5 weekdays. If this SLA starts to run for a task on at 8:00 am, then it will breach on at 5:00 pm.

User Specified Duration

Specifies a static duration period, such as 8 hours, often in conjunction with a business schedule. You can specify the length of time an SLA must run before it is marked as breached.

In the Duration type field, select User specified duration and specify the length of time in days, hours, minutes, and seconds the SLA must run before it is marked as breached.

Note: The number of days specified in the Duration field are converted to 24 hour blocks.

Each time you set a duration, an example breach time information message displays at the top of the form. This is meant to help you understand how the breach date is calculated. For example, if the current date is January 1, 2015, time is 10:30 am, and the duration is set to 10 hours and no schedule has been selected, then the following information message displays: An SLA starting now will end breach on 2015-01-01 20:30 (Actual elapsed time: 10 Hours).

Relative duration

Specifies a duration relative to the start time of the task SLA and is defined using a script, such as End of next business day.

You can use relative duration within service level management in the following ways:

• Specify a relative duration
• Relative duration usage scenarios

From the list of available relative durations in the Duration type field, select an option such as Next business day by 4 pm or End of next business day.

When you select a relative duration such as Next business day by 4pm, the Relative duration works on field displays. This enables you to specify the record against which the relative duration should be calculated. You can select to use Task record or SLA record and the one you select will be available as current for the relative duration script.

Note: The example breach date information message is not displayed if a relative duration is selected.

If your task record has a target date and time field, you can create an SLA with a relative duration based on that field.

Note: Pause conditions are not compatible with relative durations.

Relative duration usage scenarios

You can use relative durations such as Next business day by 4pm for incident tasks to determine resolution time for an incident that is logged prior to 10 am the current day. The script for this default relative duration will not only set the SLA breach time to 4 pm the following day, but also adds 1 more day to this if the current time is after 10 am.
Relative duration usage scenarios

Specifies a duration relative to the start time of the task SLA and is defined using a script, such as End of next business day.

Schedules within SLA

Schedules within SLA enable you to define the time periods during which the SLAs accumulate business time.

Schedules are typically based on the working hours of the resource or departments to whom a task is allocated. When you define an SLA, you can select a schedule during which the SLA will accumulate business time. You can specify the schedule that each SLA must use in the SLA definition form.

Schedules in SLA definitions

You can specify the schedule to be used when creating new task SLAs in the Schedule source field. You can specify one of the following options:

- No schedule: If the No Schedule option is selected, the SLA will calculate based on a 24 x 7 schedule.
- SLA definition: If the SLA definition option is selected, the Schedule drop-down list appears.
  - Schedule: Specify the hours during which the SLA timer runs. These set of schedules are defined in the core configuration. For example, you can select a schedule of 8-5 weekdays or 8-5 weekdays excluding holidays.
  - Task table field: This option picks its title from the option selected in the Table field earlier on the SLA Definition form. For example, if Incident is selected in the Table field, then this option appears as Incident field. If the Task table field option is selected, the Schedule source field drop-down list appears.
    - Schedule source field: Select the appropriate field from the task such as an incident or problem that will provide the schedule. For example, Configuration item > Schedule.

Timezones in SLAs

You can use timezone to specify the geographical timezone the schedule calculation will be based on.

Specify the timezone source to be used when creating new task SLAs. You can specify one of the following:

- The caller’s timezone: If the The caller’s timezone is selected and the caller has not selected a timezone, then the system timezone will be used.
- The SLA definition’s timezone: If the The SLA definition’s timezone option is selected, the Timezone drop-down list appears.
  - Timezone: Specify a time zone for the SLA. The timezone can be the system timezone or active standard geographical timezones.
- The CI location’s timezone
- The task location’s timezone
- The callers’ location’s timezone
SLA conditions

SLA conditions determine when a task SLA record is attached, paused, resumed, reset, canceled, and completed.

On the SLA definition, you specify up to six conditions that are evaluated each time a task record is created or updated. For example, for an SLA to attach to a task, the start conditions must match and stop conditions must not match.

SLA conditions work in the following ways:

- SLA conditions
- SLA condition evaluation

SLA conditions

You can set up to six SLA conditions: start, cancel, pause, resume, stop, reset.

**Start condition**

Enables you to define the conditions under which the SLA will be attached.

You can choose the conditions from the When to cancel list under which the SLA will be canceled.

- **Start conditions are not met option**: If one or more of the specified start conditions change, then the SLA will be canceled. The Start conditions are not met option is selected by default.
- **Cancel conditions are met option**: The start condition has to be met only once, thereafter the SLA will only cancel when the cancel condition is met.
- **Never option**: The SLA will never be canceled.
- **Select Retroactive start to choose a date and time field from the task that will provide the start time of the task SLA. If you select the Retroactive start check box, the Set start to field appears offering the date and time fields available on the task type that this SLA definition applies to. For example if you select Retroactive start on a Priority 1 SLA definition and then choose Created in the Set start to field, then the SLA is attached with the start time being the date and time from the Created field on the Incident.

**Cancel condition**

Enables you to define the conditions under which the SLA will cancel. You can specify the cancel conditions at the same time when you specify the start conditions.
Pause condition
Enables you to define the conditions under which the SLA will suspend increasing elapsed time.
You can choose the conditions from the When to resume list under which the SLA will resume increasing elapsed time.

• Pause conditions are not met option: If one or more of the specified pause conditions no longer match, then the elapsed time will continue to increase. The Pause conditions are not met option is selected by default.
• Resume conditions are met option: If one or more of the specified resume conditions match, then the elapsed time will continue to increase.

Resume condition
Enables you to define the conditions under which the SLA will resume increasing elapsed time. You can specify the resume conditions at the same time when you specify the pause conditions.

Stop condition
Enables you to define the conditions under which the SLA completes. If all of the specified stop conditions match, then the task SLA will complete regardless of whether it is breached.

Reset condition
Enables you to define the conditions under which the running SLA will be completed and a new SLA will be attached. For a new SLA to be attached, the start condition must match.

SLA condition evaluation
Every task in the system is evaluated in the following order:
• Process new SLAs-- Determine if a new SLA record must be attached to a task
• Process existing SLA records attached to a task.

SLA conditions are evaluated in the following ways:
• Attach if start condition matches and both the stop and cancel conditions don’t match.
• Complete if the stop condition matches.
• Pause if the pause condition matches.
• Resume if the pause condition doesn’t match or resume condition matches.
• Reattach if both the reset and the start conditions match.
• Cancel if the start condition doesn’t match or cancel conditions matches.

Consider this evaluation order when you create conditions. For example, if your Start condition is a subset of your Stop condition, the Stop condition will always match when the Start condition matches and the SLA will never attach. This includes processing any new SLAs that were just created.

Similarly, if your Pause condition is a subset of your Start condition, the SLA will attach but will permanently be in Paused state. As soon as the Pause condition does not match, the equivalent Start condition will also not match and that task SLA record will be canceled.
In addition, if you create a SLA definition with a Start condition and a Pause condition that are mutually exclusive, your SLA will never pause but will always be canceled first. For example, for an SLA definition where the Start condition is State is one of "New, Active" and the Pause condition is State is "On Hold", when the Task is updated to state On Hold, the start condition will no longer match and the task SLA will be canceled.

SLA condition rules

SLA condition rules control how the different conditions you define in an SLA definition are combined to determine whether an SLA should attach, pause, complete, reattach, or cancel.

The way that the conditions in an SLA definition are interpreted, to control transitions in state, can be varied using SLA Condition Rules. SLA Condition Rules are defined globally, and can be overridden for specific SLA definitions.

SLAConditionBase is the default set of SLA condition rules.

Navigate to Service Level Management Administration SLA Condition Rules to see a list of SLA condition records.

SLAConditionBase script

The SLAConditionBase script include implements the default SLA transitions.

The SLAConditionBase script include implements the default SLA condition processing.

To view the script, navigate to Service Level Management Administration SLA Condition Rules, then click on the SLAConditionBase entry to view details. The record in the Class name field is the script include that defines the condition processing.

Note: We recommend you do not modify this script, but use it as an example for creating your own script includes.

The following diagram shows how the transitions work:
**SLACconditionSimple script**

The SLACconditionSimple script includes provides an example modification of default SLA condition processing.

The SLACconditionSimple script includes is one of the default supplied SLA condition rules. This shows an example of how you can modify and extend condition processing, by overriding the SLACconditionBase methods, with a 'simple' variation that interprets each condition to match a particular transition. For example, for an SLA to attach only the start condition is checked. This affects attach, reattach, and cancel.

To edit this script, navigate to Service Level Management Administration SLA Condition Rules, then click on the SLACconditionSimple entry to view or modify details. Click Class name field to open the script include that defines the condition processing.

The following diagram shows how the transitions work:
Extend SLA condition rules
You can create custom SLA condition class and condition rule records.

Custom SLA condition class and condition rule records enable you to modify the logic around one or more of the transitions involved in task SLA processing. The custom records can then be applied globally to the processing of all task SLA records or on a per SLA definition basis.

Create a custom SLA condition rule
You can create custom SLA condition rules to determine whether an SLA should attach, pause, complete, reattach, or cancel.

To create a custom SLA condition rule:
1. Define an SLA Condition Class.
2. Create an SLA Condition Rule.

Define an SLA Condition Class
SLA condition classes contain script to define processing for an SLA condition rule.
To define an SLA Condition Class:

Navigate to System DefinitionScript Includes and click New.

Within the script in the SLA Condition Class, provide methods to modify one or more of the default SLA transitions (attach, pause, complete, reattach, cancel), defining the conditions for SLA processing. For example, the attach method defines when an SLA is created and attached to a task. The methods need to test a condition, referencing the condition fields on the SLA Definition form.

Note:

For example, including the following method in an SLA Condition Class attaches the SLA if its condition matches the SLA’s start_condition field:

```
attach: function() {
    return (this._conditionMatches(this.sla.start_condition));
},
```

The following is an example which shows the format of a script include that would extend the SLAConditionBase class and provide methods for each of the SLA transitions:

```
var SLAConditionLocal = Class.create();

SLAConditionLocal.prototype =
Object.extendsObject(SLAConditionBase, {
    attach: function() {
        // insert script here
    },

    pause: function() {
        // insert script here
    },

    complete: function() {
        // insert script here
    },

    reattach: function() {
        // insert script here
    },

    cancel: function() {
        // insert script here
    }
});
```

Create an SLA condition rule

Create an SLA condition rule after the SLA condition class is defined.

1. Navigate to Service Level ManagementSLA Condition Rules and click New.
2. Name the SLA Condition Rule.
3. Select the Script Include defined above in the Class Name reference field.

Invoke an SLA condition rule globally
You can globally change the default set of SLA condition rules.

By default, the SLAConditionBase is used for the SLA condition rules. This can be changed by doing the following:
1. Navigate to Service Level ManagementSLA Properties.
2. Change the value of the com.snc.sla.default_conditionclass to the new condition rule name:

   The name of the Script Include class that will be used to evaluate SLA Conditions for the 2011 SLA engine (use to override with your own extension of the SLAConditionBase class)

   SLAConditionBase

---

Note: This is the default condition rule, if no condition rule is specified on an SLA definition.

Invoke SLA condition rules on a specific SLA definition
You can change the SLA condition rules for a specific SLA definition.
In cases where a particular SLA requires that specific SLA condition rules should be used, you can specify the condition rule to be used within the relevant SLA definition form,

1. Navigate to Service Level Management SLA SLA Definitions.
2. Open an SLA definition record.
3. Configure the form to add the Condition type field to the form.
4. Specify the appropriate SLA condition rule in the Condition type field.

Note: If no condition rule is defined, the global default condition rule is used.

### SLA transitions

SLA records pass through a series of transitions during processing.

The following transitions exist for an SLA:

- Attach: when an SLA is created and bound to a task.
- Pause: when an SLA should temporarily stop tracking time.
- Resume: when an SLA should resume tracking elapsed time.
- Complete: when an SLA is marked complete.
- Reattach: when an SLA is marked completed and a new copy is reapplied.
- Cancel: when an SLA is cancelled.

SLA conditions determine what action is performed on a task SLA record.

<table>
<thead>
<tr>
<th>SLA condition</th>
<th>Resultant action on task SLA record</th>
</tr>
</thead>
<tbody>
<tr>
<td>If Start condition matches and both Stop and Cancel conditions don’t match</td>
<td>Attach</td>
</tr>
<tr>
<td>If Start condition matches, and When to Cancel is set to Start conditions are not met</td>
<td>Cancel if one or more of the specified start conditions no longer match.</td>
</tr>
<tr>
<td>If Start condition matches, and When to Cancel is set to Cancel conditions are met</td>
<td>Cancel when cancel conditions match.</td>
</tr>
<tr>
<td>Pause condition matches</td>
<td>Pause</td>
</tr>
<tr>
<td>If Pause condition matches, and When to Resume is set to Pause conditions are not met</td>
<td>Resume if one or more of the specified paused conditions no longer match.</td>
</tr>
<tr>
<td>If Pause condition matches, and When to Resume is set to Resume conditions are met</td>
<td>Resume if one or more of the specified resume conditions match.</td>
</tr>
<tr>
<td>Start and Reset</td>
<td>Reattach</td>
</tr>
<tr>
<td>Stop</td>
<td>Complete</td>
</tr>
<tr>
<td>Cancel</td>
<td>Cancel</td>
</tr>
</tbody>
</table>
Figure 281: SLA condition methods when the default cancel and resume conditions are selected
Each of these conditions is defined as a method within a Script Include, referenced by an SLA Conditions Rule record.

Use SLA retroactive start

You can use retroactive start to retain the timing information for an SLA when a task record changes.

When a task record changes, typically a new SLA may be attached, with a new set of timing information. This is useful if you are re-assigning an incident to another group and want to attach a new SLA record with new timing information.

However, you may want to retain the task’s time information in specific situations. For example, an incident is raised with a priority of 3 - Moderate and the priority changes to 1 - Critical after 3 hours. A priority 1 SLA is attached to the incident at that time. You can use retroactive start to ensure this
SLA timing is adjusted retroactively to count from when the incident was first created, rather than from when the incident’s priority changed. This reflects the actual time the user contacted you.

Note: When retroactive start is enabled, it may result in task SLAs being breached as soon they attach, which will trigger multiple notifications. To prevent the workflow from being processed for these breached SLAs, set the com.snc.sla.workflow.run_for_breached property to false.

1. Navigate to Service Level Management SLA SLA Definitions.
2. Open the relevant SLA definition record.
3. In the Start condition section, select the Retroactive start check box.
4. From the Set start to, select the event from which the SLA starts.
   This option determines the start time used for every task SLA record created from this SLA definition.
   For example, you can select Opened to start the SLA from when the task form was initially opened to create the record, which accurately reflects the time the end user contacts the service desk. Alternatively, you can select Created to start the SLA from when the task form was initially saved.
5. Click Update.

Use SLA retroactive pause
To prevent immediate breaches and notifications when retroactive start is enabled for SLA definitions, enable the retroactive pause property to apply pause times to the new SLA.
You can use retroactive pause to retain the task’s time information in specific situations.
1. Navigate to Service Level Management SLA SLA Definitions.
2. Open the relevant SLA definition record.
3. In the Start condition section, select the Retroactive start check box.
4. From the Set start to, select the event from which the SLA starts.
   This option determines the start time used for every task SLA record created from this SLA definition.
   For example, you can select Opened to start the SLA from when the task form was initially opened to create the record, which accurately reflects the time the end user contacts the service desk. Alternatively, you can select Created to start the SLA from when the task form was initially saved.
5. Select the Retroactive pause check box.
   Enabling this property ensures that the new task SLA record gets any pause time that would have been accumulated during the period between the retroactive start time and now. This pause time increases the breach time with the appropriate amount.
6. Click Save.

Service Portfolio Management
Service Portfolio Management addresses three core business needs.

- The plugin can be used to document the various business services offered using a standardized, structured format. This list of offerings can be offered to the user base in a consumer-friendly catalog.
- Once services are defined, the system will start automatically tracking performance against defined availability commitments. If outages are reported, the platform handles availability tracking.
- Once service offerings are documented and performance is being tracked, the information can be relayed in realtime performance gauges available to end users. These gauges can be displayed on
customized homepages, or users can view their My Subscriptions home page and see the status of any service offerings to which they are subscribed.

Installed with Service Portfolio Management

Service Portfolio Management installs the following components.

Table 207: Service Portfolio Management components

<table>
<thead>
<tr>
<th>Component</th>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Rule</td>
<td>Recalculate Availability</td>
<td>Performs availability calculations when an outage is created or modified.</td>
</tr>
<tr>
<td>Script Include</td>
<td>AvailabilitySummarizer</td>
<td>Summarizes daily availability for Service Offerings that have availability commitments.</td>
</tr>
<tr>
<td>Scheduled Job</td>
<td>Calculate Availability</td>
<td>Runs every night to calculate the availability of Service Offerings that have availability commitments.</td>
</tr>
<tr>
<td>Module</td>
<td>Business Service Entries</td>
<td>Located in the Service Catalog application, this module enables an administrator to define which Business Services appear in the Business Service Catalog that end users see.</td>
</tr>
<tr>
<td>Homepage gauge</td>
<td>My Service Subscriptions</td>
<td>This gauge displays all service offerings to which the user is subscribed.</td>
</tr>
</tbody>
</table>

Table 208: Service Portfolio Management tables

<table>
<thead>
<tr>
<th>Display Name (Table Name)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service Offering (service_offering)</td>
<td>Extends the cmdb_ci_service table. The Subscribes to Service Related List that is available in the User form uses this table.</td>
</tr>
<tr>
<td>Service Commitments (service_offering_commitment)</td>
<td>Stores records from the Service Commitments Related List in the Service Offerings form.</td>
</tr>
<tr>
<td>Service Scope (service_scope)</td>
<td>Stores user-defined limits to the service levels of a Business Service.</td>
</tr>
</tbody>
</table>

Set up Service Portfolio Management

Set up Service Portfolio Management to define business services, document them, track performance against defined availability commitments, and relay the performance information in real-time to your end users.

To set up and use Service Portfolio Management:

1. Define the service offerings and commitments
Create Service Offering records that define different levels of service for an existing Business Service. For example, you might offer two levels of Desktop Support in your organization, a Standard offering for upgrades and virus protection, and an Executive offering that also includes some type of availability guarantee. Create a complete set of Service offerings, defined by Service commitments which define the specifics of the offering.

2. Define the scope of the service offerings
Scope in Service Portfolio Management refers to the detailed service parameters that define the limits of a Business Service. Specific additional services related to the Business Service can be defined as In Scope or Out of Scope. For instructions on creating and applying scope definitions to Business Services, see Business service scope.

3. Configure the price of the service offering
Each Service Offering must have a pricing model and a price unit. These values are set on the parent Business Service and are inherited by the offerings, which then must establish the actual price per unit that is charged for the service. For details, see Service pricing.

4. Configure the business service catalog for the end user
All the data created in the previous steps is displayed on the Service Catalog page for a Business Service. The layout of this page is not configurable, but an administrator can control how the Business Service is categorized and who can view the Business Service in the Catalog. For details see Business service catalog.

5. Subscribe to the service offering by users
Subscribe your users to a Service Offering. Subscribed users can then add availability data as gauges to their home page for each Service Subscription they have. Each gauge contains links that enable the user to open the Service Offering record, display an availability report, or create an outage. See Service subscriptions for information on subscribing to Service Offerings.

Business service catalog

A module installed with the Service Portfolio Management plugin enables an administrator to control what services an end user is allowed to see in the Service Catalog and how those services are categorized.

Note: Functionality described here requires the Service Portfolio Management plugin.

The Business Service Catalog retrieves the information it displays from the following records:

- Business Service Scope
- Price model
- Service Offerings
- Service Commitments

Configure business service entries

To list the business services that you provide, include them in the Service Catalog and make them active for your customers to see. Use categories to organize your business services and limit access to it with user roles.

Role required: catalog_admin or admin

1. Navigate to Service Catalog Catalog Policies Business Service Entries
2. Click New.
3. Select a Business Service that you want to make it available in the Service Catalog.
4. Enter a Name for the catalog item.
5. Click the lock icon to open the Catalogs field and add Service Catalog.
6. Select a Category under which this business service is listed.
7. Verify that the Active check box is selected.
8. Add a Short description and Description.
9. Attach a graphic to display at the top of the Service Catalog page for this business service.
10. Click the Preview Item link to view the layout of the Service Catalog page.
   The details of the functionality you have configured for the business service opens in a read-only pop-up window.
Directors and above use this business service to request support for their laptop.

<table>
<thead>
<tr>
<th>Service Scope</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>In Scope</td>
<td>Out of Scope</td>
</tr>
<tr>
<td>Configure network access</td>
<td>Replace power cord</td>
</tr>
<tr>
<td>Configure wireless card</td>
<td></td>
</tr>
<tr>
<td>Install software</td>
<td></td>
</tr>
<tr>
<td>Troubleshoot applications</td>
<td></td>
</tr>
</tbody>
</table>

Price model: per

Service Offerings

<table>
<thead>
<tr>
<th>Executive Laptop Support</th>
<th>Operational</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>San Diego</td>
</tr>
<tr>
<td>Manager</td>
<td>David Loo</td>
</tr>
<tr>
<td>Tech Contact</td>
<td></td>
</tr>
<tr>
<td>Billed Monthly</td>
<td>$0.00 per</td>
</tr>
<tr>
<td>Commitments</td>
<td></td>
</tr>
<tr>
<td>✔ Service Pack Upgrades</td>
<td>Response time</td>
</tr>
<tr>
<td>✔ Virus Protection updates</td>
<td></td>
</tr>
</tbody>
</table>
11. Close the preview pane, right-click the header, and click Save. Modifying the line items that appear in each service offering, such as Location and Billed Monthly, requires knowledge of scripting and *Jelly tags*. The service offering line items can be modified by navigating to *System UI* → *UI Macros* and selecting the UI macro named servicecatalog_delivery. For more information, see *UI Macros*.

Make the business service visible in the business service catalog

After you configure the service catalog entry for your business service, configure the service catalog to display the service.

1. Navigate to *Business Services Business Service Catalog*.
2. If the category in which your Business Service appears is not in the Service Catalog, click the plus sign for *Add Content* in the upper right corner.
3. In the list of Sections, select the desired category and position it on the page by clicking *Add here*. 
4. Close the selection list, and then click the Business Service you just added to check the contents of the Service Catalog page.

Business service scope

Scope is an arbitrary detail that is used to define the limits of a business service.

Note: Functionality described here requires the Service Portfolio Management plugin.

Scope items can be of any type or granularity and are used to define what the Business Service can provide (In Scope) and what it cannot provide (Out of Scope). Scope allows an administrator to grant or deny specific services that define a more detailed view of a Business Service. For example, Nightly Backups might be In Scope for the Desktop Support Business Service, but Disaster Recovery is Out of Scope.

The In Scope and Out of Scope definitions appear in the Business Service Catalog page that end users see when they access the Service Catalog.

Applying Scope to a Business Service

To view the entire list of scope entries in your system, add service_scope_list.do to the end of your instance address and press Enter.

1. Navigate to Business Services > Business Services.
2. Select a Business Service for which you want to define scope.

Only a parent Business Services can have scope.

3. Click New in either list to create a new In Scope or Out of Scope definition or click Edit to add an existing scope definition.

These can be anything that is pertinent to the Business Service and helps define the limits of the service that is being offered.

4. Give the scope item a descriptive name and a definition.
5. Click Submit.

The new scope definition appears in the list in which it was created.

![Figure 284: Applying Scope to a Business Service](image-url)
6. Create another scope definition or select one from the existing list.

Service offerings

A service offering derives from a business service, refining the parent business service to a specific business need.

Service offerings are the starting point for configuring Service Portfolio Management.

A Service Offering consists of a set of Service Commitments which uniquely define the service offering’s level of service in terms of availability, scope and pricing. For example, an organization may offer two levels of Desktop Support in your organization: a Standard offering of upgrades and virus protection and an Executive offering with the standard commitments plus some type of availability guarantee, such as 98% availability from 8-5 on weekdays.

To create a service offering:

1. Navigate to Business Services Service Offerings and click New.
2. Give the offering a unique and descriptive name.
3. Make sure to include the Parent service from the list of available Business Services.
4. Set the Price and select a currency.
   The Price model and the Price unit fields are read-only. These values can only be set in the Service Portfolio view of the parent Business Service.
5. In versions at Dublin and later, select a Vendor and a Contract for this service offering.
   This information is used when creating vendor credit records.
6. Complete the form, right-click in the header bar and select Save from the pop-up menu.
   The related lists for the offering appear.
7. Configure Service Commitments and Subscribe by User using the procedures in this page.

Note:
Modifying the line items (such as Location, Manager, Tech Contact, and Billed Monthly) that appear in each service offering requires knowledge of scripting and Jelly. The service offering line items can be modified by navigating to System UI UI Macros and selecting the UI macro named servicecatalog_delivery.

Availability report

When a service commitment contains an availability guarantee, the service offering form displays an availability commitment report that is generated on the fly.

This report tracks the actual availability of the offering. For a 7 day chart, no reporting data is available until 5 days after the service offering is created. For 30 day charts, 23 days of data is required before a report can be generated, and for a 12 month chart, the database must contain at least 10 months of data.

Click the links under the different availability commitments to see the charts for those time periods. The completed Service Offering form with an active availability report looks like this:
Outages

Service commitments for availability can be adjusted with commitments for maintenance to accommodate planned outages.

Service Portfolio Management tracks and reports on outages for all Service Offerings that include availability commitments. Outages are recorded manually and tracked in reports in Service Offering records and in the Service Subscription gauges added to users’ home pages. There are three types of outages:

• Outage: Unplanned outages such as those caused by hardware or network issues. This is the only type of Outage considered when calculating availability of a service.
• Planned outage: Necessary outages caused by planned maintenance or upgrades.
• Degradation: Indicates a problem affecting a service that does not result in a disruption of that service.

To create an outage record:

1. Open a blank outage record using one of the following methods:
   • Navigate to Business Services Outages.
   • Right-click in the header bar of a Service Subscription gauge in a home page with a status of Available and select Create Outage record from the pop-up menu.

2. In the Outage record, select the service offering from the list in the Configuration item field.
3. Select an outage Type.
4. Enter the text in the Message field that appears in the Service Offering gauge.
5. When added to the Homepage, this gauge is called My Services.
6. Define the length of the outage.
7. Select the Begin and End dates and times with the calendar, or enter the Duration as a function of days and hours.
8. Add a description of the outage in the Short Description field or leave it blank.
   If you leave this field blank, the system adds a description automatically when you save the outage record, using the format <configuration item name> Outage. If vendor ticketing is activated, the system uses the short description to identify this outage in the Related outage field of the Vendor Credit form.
9. Click Submit.

The outage is used to evaluate the availability of the offering and appears in the reports generated for this offering.
Service commitments

Service commitments are specific services that define the unique availability guarantees, scope, and pricing for a service offering.

As a set, service commitments define the level of a business service.

A service offering derives from a business service, tailoring the parent business service to a specific business need. A service offering consists of a set of service commitments which uniquely define the service offerings.

1. Navigate to Business Services Service Offerings.
2. Open a Service Offering record.
3. In the Service Commitments related list, click New.
4. Give the commitment a descriptive name.
5. You can specify any kind of service.
6. Select the Type of commitment from the list.
   - Availability and Maintenance Window: Used in system processing. If you select Maintenance Window, the Schedule field is required.
   - Response Time, Delivery and Other: Display additional information in the Business Service Catalog. This information details the type of Service Commitment the user may expect from a given Service Offering. These Service Commitment types do not provide additional functionality or a homepage gauge.
• Recovery time objective: Guarantee of how long it will take to recover the system from the recovery point. Set the recovery time in the Time Amount field that appears when you select this commitment type. This field is available with vendor ticketing.
• Recovery point objective: Guarantee of how often backups are performed. Set the backup interval in the Time amount field that appears when you select this commitment type. This field is available with vendor ticketing.
• SLA: Allows commitments to be defined by a Service Level Agreement (SLA) that tracks whether a vendor provides a level of service for a defined percentage of the time. The SLA results are calculated automatically and can be viewed on the My Services - SLAs homepage or in the Service Offering SLA Results table (Business Services Service Offering SLAs SLA Results).

6. Select a Vendor and a Contract for this service commitment.
   This information is used in when creating vendor credit records.

7. Enter the information needed to calculate credit owed by this vendor for any contract breaches.
   These fields are available with vendor ticketing
   • Breach penalty amount: Amount assessed per unit of time for a breach.
   • Per: Unit of time used to calculate the total credit owed for a breach.
   • Breach penalty time: Amount of free time provided by the vendor per breach.

8. Complete the form and click Submit.
   You are returned to the Service Offering form, and the new commitment appears in the Service Commitment Related List.
9. Click New to add another service commitment or click Edit to add an existing commitment to this offering.

To view all the commitments in the system, navigate to Business Services Commitments. You can add, edit, or delete commitments in this module.

Subscribe by user

A service offering subscription for a user enables that user to add subscribed availability data as gauges to the home page.

These Service Subscriptions display the actual availability of an offering and indicate any outages, planned or otherwise. Links on the gauges allow the user to open a service offering record, open an outage record, or view an availability report. To add users to the subscribers list, click Edit in the Subscribed by user related list.
Service pricing

Each service offering in service portfolio management must have a price model and a price unit that is defined on the parent business service.

The actual price per unit is then set in the service offering record, which specifies the service commitments for the level of service delivered.

Set the service offering price

Every service offering that has the parent business service inherits the pricing structure. The actual price per unit is established in the service offering record using this price model and unit.

Every service offering that has this parent business service inherits the pricing structure. The actual price per unit is established in the service offering record using this price model and unit.

To set the service offering price, navigate to Business Services Service Offerings and select an offering for which you have defined a pricing structure. Enter the Price for each service unit and update the record.

Set price models and units

Set the pricing structure for a service offering in the service portfolio view of the parent business service.

The service offering inherits the pricing model and unit description from its parent.

1. Navigate to Business Services (the Service Portfolio view), and then select the parent Business Service to a Service Offering you have created.
2. Select a Price model. The choices are Per Unit and Fixed. If you select Per Unit, the Price unit field appears.
3. Type the name of a unit to use for pricing, such as service, server, person, etc.
4. (optional) Type a description in the Unit description field of the service that is delivered for a price unit.
5. Click Update.
Figure 289: Service Portfolio Pricing
Service subscriptions

Service portfolio management enables administrators to subscribe to service offerings by user.

Note: Functionality described here requires the Service Portfolio Management plugin.

Service Portfolio Management allows administrators to subscribe to Service Offerings by user. These users can then add each Service Subscription to their ServiceNow home page as gauges to display selected availability data. Each gauge has links that enable a user with a subscription to open the Service Offering record, display an availability report, or view an outage record.

Service subscription widget

Widgets display outage data, availability commitments, and availability performance over the last 7 days, 30 days, and 12 months.

Role required: You must have a role to add and edit homepages and dashboards.

You can add widgets to your dashboard that display availability data for the Service Offerings to which you are subscribed.

Widgets can be added for individual offerings or for all the offerings to which you are subscribed.

1. Click Add content in the upper left corner of the home page.
2. Select Service Offerings in the content list on the left to display all the choices.
3. Select individual offerings or select My Service Subscriptions to add all the gauges to which you are subscribed.
4. Select the location for the gauges and close the Add content dialog box.

• View selected availability reports: Click the availability percentage value (actual) to view a report for any of the three evaluation periods.

```
<table>
<thead>
<tr>
<th>Bond Trading London</th>
</tr>
</thead>
<tbody>
<tr>
<td>Available</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>99% Availability</td>
</tr>
<tr>
<td>24x7</td>
</tr>
<tr>
<td>Last 7 days</td>
</tr>
<tr>
<td>Last 30 days</td>
</tr>
<tr>
<td>Last 12 months</td>
</tr>
<tr>
<td>99.97% Availability</td>
</tr>
<tr>
<td>London Hours</td>
</tr>
<tr>
<td>97.07608%</td>
</tr>
<tr>
<td>97.85882%</td>
</tr>
<tr>
<td>95.88242%</td>
</tr>
</tbody>
</table>
```

Figure 290: Service portfolio edit gauge 2

• Edit the outage record: Click the icon in the header bar of a gauge indicating an outage to open the record for that outage.
Subscribe to a service offering

Your users can subscribe to a service offering and they can add the subscribed availability data as gauges to their ServiceNow home page.

To subscribe to a service offering:

1. In a Service Offering record, click Edit in the Subscribe by User Related List.
2. In the slushbucket that appears, move the subscribed users to the Subscribed by User List.
3. Save your changes.

These users can now add a gauge for this Service Offering to their ServiceNow home pages.

Service 360

Service 360 is an extension of Service Portfolio Management.

It enhances a user’s Service Portfolio by rendering a powerful, consolidated visualization—a single view shows business service performance across a customer’s entire organization for business processes such as Operation, Risk, Investment, and Finance.
As a reporting tool, Service 360 leverages Performance Analytics to provide an executive-centric approach to Service Portfolio Management by identifying which business services require focus and attention. Service 360 helps executives find answers to the following questions.

- Are my services operational?
- Are my services cost effective?
- Are my services governed & secure?

The tool answers these questions through two reporting layers.

1. A dynamic treemap that is a D3 rendering of all business services across an entire organization based on a score from a specific Category and an Indicator from the Category.

2. A dashboard, which is a scorecard, that leverages Performance Analytics to render reports from key performance indicators to provide a true 360-degree view into a single Business Service.

Performance Analytics provides critical information about historic service performance (the past), shows real-time data about the process (the present), and forecasts service performance (the future) for customers. Using Service 360 and Performance Analytics together enhances the quality of an organization’s Service Portfolio by allowing executives and business service owners to quickly move from strategic to tactical by drilling down to specific records—all with just a few clicks.

Note: Service 360 is dependent on Performance Analytics for its reporting tools and capabilities. As such, Performance Analytics must be activated to use this product. See for questions regarding terminology, process, and functionality.

Key concepts

The following table defines key Service 360 concepts.

Note: Service 360 relies heavily on Performance Analytics for its reporting tools and capabilities. See Performance Analytics for a full list of concepts and terminology.

Note: IE7 is no longer supported by Performance Analytics Dashboards.

<table>
<thead>
<tr>
<th>Table 209: Service 360 key concepts</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Concept</strong></td>
</tr>
<tr>
<td>Business Service</td>
</tr>
<tr>
<td>Treemap</td>
</tr>
<tr>
<td>Dashboard</td>
</tr>
</tbody>
</table>
### Concept

<table>
<thead>
<tr>
<th>Concept</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tile</td>
<td>Displays a score for a specific record on the treemap when a category and indicator are selected. In the case of Service 360, each tile corresponds to a single Business Service. If click-through is enabled, a tile can be “clicked on” or selected to view additional information about the entity represented in the tile. Click-through is enabled for Service 360 out-of-box.</td>
</tr>
<tr>
<td>Category</td>
<td>A group of indicators on the treemap related to a specific, strategic business area. The out-of-box categories are Risk, Operation, Investment, and Finance.</td>
</tr>
<tr>
<td>Indicator</td>
<td>A type of performance measurement used by businesses to measure current conditions, and to forecast business trends. Indicators are commonly used to evaluate success. Success may be defined as making progress toward strategic goals, or as the repeated achievement of some level of operational goals (for example, zero breached service level agreements, or zero projects over budget).</td>
</tr>
<tr>
<td>Widget</td>
<td>A visual presentation of the indicator on a dashboard. Widgets can display the indicator as a chart, speedometer, dial, scorecard, or column based on various breakdowns like time series, scores, and location.</td>
</tr>
</tbody>
</table>

### Application dependencies

Service 360 depends on other applications within ServiceNow to collect the data displayed in reports. Service 360 depends on the following plugins.

Note: Service 360 can work without all of the following plugins being activated. Data is collected and displayed if your organization is actively utilizing the various tools, like Risk Management and Financial Management, activated by the plugins. However, if one of the listed plugins is not activated, or is activated but not utilized, there is no data collected to display in the corresponding widgets, dashboard, and treemap. These components display with the message “No Records to Display,” or “No data available.”

### Table 210: Plugin dependencies

<table>
<thead>
<tr>
<th>Plugin Name</th>
<th>Plugin ID</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plugin Name</td>
<td>Plugin ID</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>-----------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Service Portfolio Management</td>
<td>com.snc.service_portfolio</td>
<td>Allows an organization to document the business services it proves using a standardized, structured format. Performance against availability commitments is calculated and can be displayed in a homepage.</td>
</tr>
<tr>
<td>Service Portfolio Management—SLA Commitments</td>
<td>com.snc.service_portfolio.sla</td>
<td>Adds SLA commitments to support Service Portfolio Management.</td>
</tr>
<tr>
<td>Incident Management</td>
<td>com.snc.incident</td>
<td>The base incident management plugin used to manage IT related incidents.</td>
</tr>
<tr>
<td>Problem Management</td>
<td>com.snc.problem</td>
<td>The base problem management plugin used to manage IT related problems.</td>
</tr>
<tr>
<td>Change Management</td>
<td>com.snc.change_request</td>
<td>The base change management plugin used to manage IT related change requests.</td>
</tr>
</tbody>
</table>

To reap the benefits of Service 360, Performance Analytics – Premium plugin will have to be installed as well. This plugin will allow the user to automate recurring information needs with scorecards and dashboards and by taking configurable snapshots of any data at regular intervals. To activate both Service 360 and Performance Analytics – Premium, contact your ServiceNow account manager.

There are additional applications (Risk Management, Project Portfolio Management, and Financial Management) that require additional licenses to activate the plugins. Once activated, the following plugins populate the Service 360 treemap and dashboard with additional categories, indicators, and widgets.

Table 211: Plugins that require additional licenses

<table>
<thead>
<tr>
<th>Plugin Name</th>
<th>Plugin ID</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>GRC: Risk</td>
<td>com.sn_risk</td>
<td>Allows organizations to identify, assess, and respond to risk throughout the enterprise.</td>
</tr>
<tr>
<td>Financial Management</td>
<td>com.snc.finance_management</td>
<td>Enables Financial Analysts to assemble spending data, build cost models, and generate reports to show how funds are being used.</td>
</tr>
<tr>
<td>Project Portfolio Suite</td>
<td>com.snc.project_portfolio_suite</td>
<td>Activates an integrated set of applications for project portfolio management and IT software development.</td>
</tr>
</tbody>
</table>

**Default configuration**

To be useful as a reporting tool, Service 360 comes with fully configured indicators (both in Performance Analytics and Service 360), widgets, categories, dashboards, and treemaps, by default. Each indicator has its own treemap.
Default categories and indicators

The following categories and indicators are provided by default.

Table 212: Out-of-box categories and indicators in Service 360

<table>
<thead>
<tr>
<th>Category</th>
<th>Indicator</th>
<th>Dependency</th>
<th>Data Source</th>
<th>Time Frequency</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation</td>
<td>Percent of Service Availability</td>
<td>Service Portfolio Management</td>
<td>service_availability</td>
<td>Historical</td>
<td>A measure of the actual availability of a particular service based on the duration of the uptime and downtime for a particular service's offerings, commitments, and planned outages. The score displayed in the treemap is the most current percent of service availability.</td>
</tr>
<tr>
<td>Operation</td>
<td>Percent of SLA TasksAchieved</td>
<td>Service Portfolio Management – SLA Commitments</td>
<td>service_sla_result</td>
<td>Historical</td>
<td>The percent of Service Level Agreement (SLA) tasks that are not violated, so that it is possible to measure the successful response to service commitments. The percent displayed in treemap is the most current.</td>
</tr>
<tr>
<td>Category</td>
<td>Indicator</td>
<td>Dependency</td>
<td>Data Source</td>
<td>Time Frequency</td>
<td>Description</td>
</tr>
<tr>
<td>---------------</td>
<td>-----------------------------------------------</td>
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<td>----------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Operation</td>
<td>Number of SLA Tasks Breached</td>
<td>Service Portfolio Management - SLA Commitments</td>
<td>service_sla_result</td>
<td>Real time</td>
<td>The number of Service Level Agreement (SLA) tasks that were not responded to at the guaranteed service commitment. The number displayed in the treemap, is the number of breached SLA tasks that are still active and unresolved.</td>
</tr>
</tbody>
</table>
| Operation     | Net Promoter Score (NPS)                      | Assessments                       | asmt_metric_result | Historical     | NPS is a measure of user satisfaction, which uses a 0-10 scale to divide the service consumers into three categories:  
  • promoters (9-10)  
  • passives (7-8)  
  • detractors (0-6)  
NPS can be as low as -100 or as high as +100; anything above 0 is positive, but a score above +50 is excellent. Any score below 0 needs serious improvement. The score displayed in the treemap is from the most recent assessment, usually at the end of the previous quarter. |
<table>
<thead>
<tr>
<th>Category</th>
<th>Indicator</th>
<th>Dependency</th>
<th>Data Source</th>
<th>Time Frequency</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation</td>
<td>Number of Open Incidents</td>
<td>Incident Management</td>
<td>incident</td>
<td>Real time</td>
<td>Displays the number of open incidents on any given day to measure the workload of the Service Desk related to a single business service. The score is an indicator of issues with a particular service. The score displayed in the treemap is the most current score.</td>
</tr>
<tr>
<td>Category</td>
<td>Indicator</td>
<td>Dependency</td>
<td>Data Source</td>
<td>Time Frequency</td>
<td>Description</td>
</tr>
<tr>
<td>------------</td>
<td>----------------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
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<td>----------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| Operation  | Number of Open Problems                | • Problem Management
          • Performance Analytics – Content Pack – Problem Management               | problem     | Real time       | Display of the number of open problems on a given day to measure the workload of the Service Desk. The score is also an indicator of issues with a particular service. The score displayed in the treemap is the most current score. Note: By default, business services with smaller number of open changes is shown in a larger tile in the Service 360 treemap. To display the reverse (larger number shown in larger tile), go to Performance Analytics and set its Number of open changes indicator’s direction to Minimize. |

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<table>
<thead>
<tr>
<th>Category</th>
<th>Indicator</th>
<th>Dependency</th>
<th>Data Source</th>
<th>Time Frequency</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operation</td>
<td>Number of Open Changes</td>
<td>• Change Management</td>
<td>change_request</td>
<td>Real time</td>
<td>Display of the number of open change requests to measure the workload of the Service Desk. The score displayed in the treemap is the most current score.</td>
</tr>
<tr>
<td>Risk</td>
<td>Inherent Score</td>
<td>GRC: Risk</td>
<td>sn_grc_profile</td>
<td>Historical</td>
<td>The inherent score of a risk is the known risk a particular entity, in this case a business service, poses to the organization. This score is based on the likelihood the risk would occur, and the significance of the risk if it did occur. The score displayed in the treemap is the most current score.</td>
</tr>
<tr>
<td>Risk</td>
<td>Residual Score</td>
<td>GRC: Risk</td>
<td>sn_grc_profile</td>
<td>Historical</td>
<td>The residual score of a risk is the lowest risk score a particular entity, in this case a business service, can achieve by employing controls and governance over the risk. The score is based on the likelihood the risk would occur, and the significance of the risk if it did occur after the risk is mitigated. The score displayed in the treemap is the most current score.</td>
</tr>
<tr>
<td>Category</td>
<td>Indicator</td>
<td>Dependency</td>
<td>Data Source</td>
<td>Time Frequency</td>
<td>Description</td>
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<td>--------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Risk</td>
<td>Calculated Score</td>
<td>GRC: Risk</td>
<td>sn_grc_profile</td>
<td>Historical</td>
<td>The calculated score of a risk is the actual score for the amount of risk a particular entity, in this case a business service, poses to the organization. This score cannot be higher than the inherent score, and it cannot be lower than the residual score. The score displayed in the treemap is the most current score.</td>
</tr>
<tr>
<td>Investment</td>
<td>Number of Upcoming Projects</td>
<td>Project Portfolio Suite</td>
<td>pm_portfolio_project</td>
<td>Real time</td>
<td>The number of projects with a start date occurring after the current day. Once the start date occurs, the project is no longer counted. The number displayed in the treemap is the most current count.</td>
</tr>
<tr>
<td>Investment</td>
<td>Number of Active Projects Over Budget</td>
<td>Project Portfolio Suite</td>
<td>pm_portfolio_project</td>
<td>Real time</td>
<td>A project is over budget if its actual cost-to-date is greater than its budgeted cost, which only applies to active projects. The score displayed in the treemap is the most current.</td>
</tr>
<tr>
<td>Category</td>
<td>Indicator</td>
<td>Dependency</td>
<td>Data Source</td>
<td>Time Frequency</td>
<td>Description</td>
</tr>
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</tr>
<tr>
<td>Investment</td>
<td>Total Budgeted Cost of Active Projects</td>
<td>Project Portfolio Suite</td>
<td>pm_portfolio_project</td>
<td>Real time</td>
<td>This cost is a sum of the budget for each active project that has a state set as work in progress. Used for project management planning only, not for any other calculations, or in Cost Management. The cost displayed in the treemap is the most current sum.</td>
</tr>
<tr>
<td>Investment</td>
<td>Total Estimated Cost of Active Projects</td>
<td>Project Portfolio Suite</td>
<td>pm_portfolio_project</td>
<td>Real time</td>
<td>A rolled-up cost calculated from the sums of the estimated cost for all tasks in a project, if any exist. This cost per project is then summed again to display the total estimated cost in the treemap for all active projects relating to a specific business service. The cost displayed in the treemap is the most current.</td>
</tr>
<tr>
<td>Category</td>
<td>Indicator</td>
<td>Dependency</td>
<td>Data Source</td>
<td>Time Frequency</td>
<td>Description</td>
</tr>
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<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Investment</td>
<td>Total Actual Cost of Active Projects</td>
<td>Project Portfolio</td>
<td>pm_portfolio_project</td>
<td>Real time</td>
<td>A rolled-up cost calculated from the sums of the estimated costs for all tasks in a project, if any exist. This cost per project is then summed again to display they total actual cost in the treemap for all active projects relating to a specific business service. The cost displayed in the treemap is the most current.</td>
</tr>
<tr>
<td>Category</td>
<td>Indicator</td>
<td>Dependency</td>
<td>Data Source</td>
<td>Time Frequency</td>
<td>Description</td>
</tr>
<tr>
<td>------------</td>
<td>-----------------</td>
<td>---------------------</td>
<td>------------------------------</td>
<td>----------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Finance</td>
<td>Cost Allocation</td>
<td>Financial Management</td>
<td>• itfm_cost_allocation</td>
<td>Historical</td>
<td>The cost allocated to a particular business service to keep it running and ensure its service offerings and commitments are met. It is the cost allocated per quarter using a default cost model.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• _aggregate</td>
<td></td>
<td>Note: This is a custom indicator taken directly from ITFM. Selecting a tile that corresponds to business service redirects you to the business service overview in the ITFM application, and not the Service 360 dashboard.</td>
</tr>
</tbody>
</table>

**Note:** Real time indicates that by drilling into a specific indicator, real time records are available to view real time data. The data displayed in the widgets and on the treemap are from the previous time frequency (for example, yesterday, last week, or last month).
Default tabs and widgets in Performance Analytics

Since click-through is enabled for Service 360, if any one of the tiles on the treemap is selected, the user is able to drill-in to a Performance Analytics dashboard that contains numerous tabs with more specific widgets as well as additional indicators to achieve a true 360 degree view into the specific business service.

The following additional indicators are displayed in the widgets on the dashboard.

Table 213: Additional out-of-box tabs and widgets in Performance Analytics

<table>
<thead>
<tr>
<th>Tab</th>
<th>Widget</th>
<th>Dependency</th>
<th>Data Source</th>
<th>Data Availability</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overview</td>
<td>Business Service Overview</td>
<td>N/A, custom widget</td>
<td>Business service Record</td>
<td>Real time</td>
<td>Displays key information pertaining to a specific Business Service. For example the Business Service Owner, the owner’s contact information, the business service’s business criticality, and operational status, all obtained from the Business Service record.</td>
</tr>
<tr>
<td>Availability</td>
<td>Average service availability trend</td>
<td>Service Portfolio Management</td>
<td>service_availability</td>
<td>Historical</td>
<td>Displays a 90-day trend of the percent of service availability instead of a single score.</td>
</tr>
<tr>
<td>Tab</td>
<td>Widget</td>
<td>Dependency</td>
<td>Data Source</td>
<td>Data Availability</td>
<td>Description</td>
</tr>
<tr>
<td>-------------</td>
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<td>--------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Availability</td>
<td>Service availability by service offering</td>
<td>Service Portfolio Management</td>
<td>service_availability</td>
<td>Historical</td>
<td>A list of the service offerings for a particular business service to compare the availability of each service offering relative to another. Report of the percent availability per offering of the past four days, the trend of the availability over the past four days, and the percent change between the previous two day's scores.</td>
</tr>
<tr>
<td>Availability</td>
<td>Service availability by service commitment</td>
<td>Service Portfolio Management</td>
<td>service_availability</td>
<td>Historical</td>
<td>A list of service commitments for a particular business service to compare the availability of each service commitment relative to another. Report of the percent availability per commitment of the past four days, the trend of the availability over the past four days, and the percent change between the previous two day's scores.</td>
</tr>
<tr>
<td>Tab</td>
<td>Widget</td>
<td>Dependency</td>
<td>Data Source</td>
<td>Data Availability</td>
<td>Description</td>
</tr>
<tr>
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<td>-------------------</td>
<td>-------------</td>
</tr>
<tr>
<td>NPS</td>
<td>NPS score by assessment metric</td>
<td>Assessments</td>
<td>asmt_metric_result</td>
<td>Historical</td>
<td>There are numerous assessment metrics, which are the particular questions asked in a survey. This widget breaks down the scores by metric so it is easy to locate which areas of service are causing detractors, and thus those are the specific areas that need to be improved. NPS assessments are usually sent out quarterly, so this widget displays information from the previous quarter's assessment.</td>
</tr>
<tr>
<td>NPS</td>
<td>NPS responses by quarter</td>
<td>Assessments</td>
<td>asmt_metric_result</td>
<td>Real time</td>
<td>Breaks down the scores for all respondents per quarter into passive, promoter, or detractor so that a user can quickly see if the number of detractors is increasing or decreasing over the past 4 quarters.</td>
</tr>
<tr>
<td>Tab</td>
<td>Widget</td>
<td>Dependency</td>
<td>Data Source</td>
<td>Data Availability</td>
<td>Description</td>
</tr>
<tr>
<td>--------</td>
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<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>NPS</td>
<td>Number of NPS respondents</td>
<td>Assessments</td>
<td>asmt_metric_result</td>
<td>Real time</td>
<td>A number that represents the number of people that responded to the NPS survey for a particular quarter. There is also a trend-line to see if the number is increasing or decreasing over time, as well as the percent of responses, to know what percent of the total surveys sent out were returned.</td>
</tr>
<tr>
<td>SLA</td>
<td>Achieved SLA task trend</td>
<td>Service Portfolio Management – SLA Commitments</td>
<td>service_sla_result</td>
<td>Real time</td>
<td>Displays a 7-day trend of the percent of SLA tasks achieved as well as the number of completed SLA tasks.</td>
</tr>
<tr>
<td>Risk</td>
<td>Risk trend by type</td>
<td>GRC: Risk</td>
<td>sn_grc_profile</td>
<td>Historical</td>
<td>Can display a 7-day, 1-month, 3-month, 6-month, year-to-date, 1-year, or all-scores trend comparing inherent, residual, and calculated risk scores over the selected time.</td>
</tr>
<tr>
<td>Investment</td>
<td>Cost comparison of active projects</td>
<td>Project Portfolio Suite</td>
<td>pm_portfolio_project</td>
<td>Real time</td>
<td>Compares the budgeted, estimated, and actual costs for active projects side-by-side instead of as individual scores.</td>
</tr>
<tr>
<td>Tab</td>
<td>Widget</td>
<td>Dependency</td>
<td>Data Source</td>
<td>Data Availability</td>
<td>Description</td>
</tr>
<tr>
<td>------------------</td>
<td>---------------------------------------------</td>
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<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Investment</td>
<td>Completion percentage by project</td>
<td>Project Portfolio</td>
<td>pm_portfolio_project</td>
<td>Real time</td>
<td>A list of all active projects and their respective completion percent as corresponding tasks are created, worked-on, and completed in the Project Management application.</td>
</tr>
<tr>
<td>Workload</td>
<td>Workload trend by type</td>
<td>• Incident Management</td>
<td>• incident</td>
<td>Real time</td>
<td>Can display a 7-day, 1-month, 3-month, 6-month, year-to-date, 1-year, or all-scores trend, comparing the number of open incidents, problems, and changes over the selected time.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Problem Management</td>
<td>• problem</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Change Management</td>
<td>• change_request</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Performance Analytics</td>
<td>– Content Pack – Problem</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>&amp; Change Management</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Default breakdowns in Performance Analytics

Incident Management, Problem Management, and Change Management are provided out-of-box, and are associated with the Workload indicators in Service 360. The workload indicators are supported by Performance Analytics—Content Packs for Incident Management, Change Management and Problem Management, which are premium plugins. If these content packs are activated prior to Service 360, and the indicators associated with workload are modified, activating Service 360 overrides the changes so that the indicators will work as they were originally intended. If the content packs are activated prior to Service 360, and the indicators associated with workload are deleted, activating Service 360 will not re-install the indicators, so there will be no indicators for workload.

By selecting any of these widgets on the dashboard, you are able to drill-in further to view a detailed scorecard for the indicator. A scorecard is an additional graphical visualization of the scores of an indicator. The basic look and feel of a scorecard cannot be changed, but they can be enhanced by adding targets, thresholds, trend lines, and useful comments for significant changes. In a scorecard, the scores of an indicator can be analyzed further by viewing the scores by breakdowns, aggregates, time series, and drilling down to the records on which the scores are based.

The following breakdowns are created to enhance Service 360.
Table 214: Additional out-of-box tabs and widgets in Performance Analytics

<table>
<thead>
<tr>
<th>Breakdown</th>
<th>Data Source</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Service</td>
<td>cmdb_ci_service</td>
<td>Breaks down indicator information, such as risk scores or active project information, by the business service it is associated with.</td>
</tr>
<tr>
<td>Service Offering</td>
<td>service_offering</td>
<td>Breaks down the business service by associated service offerings.</td>
</tr>
<tr>
<td>Service Commitment</td>
<td>service_commitment</td>
<td>Breaks down the business service offerings by associated service commitments.</td>
</tr>
<tr>
<td>Assigned To</td>
<td>sys_user</td>
<td>Breaks down the business services by different types of users.</td>
</tr>
<tr>
<td>NPS Metric</td>
<td>asmt_metric</td>
<td>Breaks down the NPS indicator by assessment metric on the NPS assessment.</td>
</tr>
<tr>
<td>NPS Response</td>
<td>sys_choice</td>
<td>Breaks down the NPS indicator by the type of response to the assessment i.e. was the respondent a promoter, passive, or detractor.</td>
</tr>
<tr>
<td>Service Projects</td>
<td>pm_project</td>
<td>Breaks down all projects in the Project Portfolio Suite to only gather data corresponding to business services.</td>
</tr>
<tr>
<td>Project Manager</td>
<td>sys_user</td>
<td>Breaks down the project indicator by users who are designated as a Project Manager.</td>
</tr>
<tr>
<td>Project Phase</td>
<td>sys_choice</td>
<td>Breaks down the project indicator by the phase or state by which the projects are designated.</td>
</tr>
<tr>
<td>Project Portfolio</td>
<td>pm_portfolio</td>
<td>Breaks down the projects by the portfolio to which they belong.</td>
</tr>
<tr>
<td>Project Priority</td>
<td>sys_choice</td>
<td>Breaks down the projects by the priorities of the associated tasks in the project.</td>
</tr>
</tbody>
</table>

Default jobs in Performance Analytics

Some of the indicators have weekly or monthly activity frequency, and thus do not have scores that change daily. Real-time data is still enabled for these indicators, however, the score may remain the same until the end of the frequency.

Jobs collect data for the provided indicators and breakdowns. These jobs are run on a set schedule, or can be executed at will by the pa_admin or pa_data_collector. All jobs collect data from the previous period. For example, if the time interval is set to collect data daily, then a daily job collector collects data from the previous day.

The following Performance Analytics jobs are provided out-of-box.
Table 215: Out-of-box jobs in Performance Analytics

<table>
<thead>
<tr>
<th>Job Name</th>
<th>Run Frequency</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PA Service360) Daily Collection for Operation</td>
<td>Daily</td>
<td>Collects data for all operation indicators, except those for workload, on a daily basis.</td>
</tr>
<tr>
<td>(PA Service 360) Daily Collection for Workload</td>
<td>Daily</td>
<td>Collects data for all workload indicators on a daily basis.</td>
</tr>
<tr>
<td>(PA Service 360) Monthly Collection for NPS</td>
<td>Monthly</td>
<td>Collects data for all NPS indicators on a monthly basis. NPS assessments may only be sent out once a quarter, so even though this runs once a month, the scores may be the same over multiple months.</td>
</tr>
<tr>
<td>(PA Service 360) Weekly Collection for Investment</td>
<td>Weekly</td>
<td>Collects data for all investment indicators on a weekly basis.</td>
</tr>
</tbody>
</table>
| (PA Service 360) Weekly Collection for Risk   | Weekly        | Collects data for all risk indicators on a weekly basis. Service 360 comes with sample risk historical PA scores for display purposes. Prior to pulling live risk data, delete these sample historical scores from Performance Analytics' scoresheet. You will lose Risk history PA data if you at any point after using Service 360 for Risk decide to:  
  • Delete Performance Analytics scores collected for past time periods.  
  • Run the job using relative start data of past periods, which would over-write history data with current data, producing straight lines on trend. |

Configure Service 360

Service 360 uses Performance Analytics for reporting purposes and to provide answers to the questions of executives. As such, Performance Analytics must be activated to use this product.

To configure Service 360, create categories and indicators, then link Service 360 to Performance Analytics.

Create categories

You can create new categories in addition to the default ones.

To create new categories:

1. Navigate to Business Services Administration Categories.
2. Select New.
3. Complete the form using the following table.
<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name*</td>
<td>Name of the new Category.</td>
</tr>
<tr>
<td>Treemap*</td>
<td>Designate the treemap on which the category appears. Unless you have created additional treemaps, this is typically Service 360.</td>
</tr>
<tr>
<td>Order</td>
<td>The order that the category appears in the list and dropdown once created. 100 is the top of the list and drop-downs, 200 is second, and so on in increments of 100.</td>
</tr>
<tr>
<td>Color</td>
<td>Select the color that the treemap displays when this category is selected.</td>
</tr>
<tr>
<td>Active*</td>
<td>If this check box is unselected, the category is not an option in the drop-down menu on the treemap.</td>
</tr>
<tr>
<td>Description*</td>
<td>Information about the category that may be useful to identify and/or describe it to a user.</td>
</tr>
<tr>
<td>Visible by all roles</td>
<td>If this check box is unselected, you are able to restrict who is able to view this category by user roles.</td>
</tr>
</tbody>
</table>

Note: * indicates a mandatory field.

4. Select Submit.

Additional Indicators
You can create new indicators in addition to the default ones.

The steps to create indicators depend on the data source of the information you wish to display in the treemap.

Create indicators for performance analytics
Performance analytics is the primary method of establishing indicators for Service 360.

If the reporting tools from performance analytics are selected as the data source, it cannot be added to the Service 360 treemap until it is set up in Performance Analytics.

It is critical that the indicator is setup properly in Performance Analytics prior to being added to the treemap.

1. Use the following basic steps to create the desired indicator.
   a) Navigate to Performance Analytics Data Collector Indicator Sources. Create and define an Indicator Source, which forms the basis for the data that is collected. Indicator Sources can be reused for multiple indicators.
   b) Navigate to Performance Analytics Indicators Breakdowns to define a Breakdown. Breakdowns are sometimes referred to as dimensions because they divide data up by making cross-sections in different ways.
   c) Navigate to Performance Analytics Indicators Automated Indicators to create Automated Indicators, which are the most commonly used.
   d) Navigate to Performance Analytics Data Collector Jobs. Create a job collector and/or schedule the Data Collection that collects the data to display on scorecards and dashboards.

Note: It is also possible to create Formula Indicators or Manual Indicators by navigating to the appropriate module.
e) Navigate to **Performance Analytics Widgets** to create and define a new widget that determines how an indicator is visually displayed.

f) Once the widget is created, navigate to **Performance Analytics Dashboards Service 360** and add the widget to the appropriate tab on the dashboard.

2. Customize how you report on data kept in your ServiceNow instance.
3. Once the indicators are setup in Performance Analytics, navigate to **Business Services Administration Indicators**.
4. Click New.
5. Complete the form using the following table.

**Important:** Ensure that the Data Source field is set to Performance Analytics so that the previous configured indicator can be added to the treemap.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name*</td>
<td>Name of the new indicator.</td>
</tr>
<tr>
<td>Category*</td>
<td>Select the category with which you want this indicator to be grouped. For example, the out-of-box indicators for availability are grouped under the category Operation, while indicators for inherent and residual risk scores are grouped under the Risk category.</td>
</tr>
<tr>
<td>Direction*</td>
<td>Options are Minimize or Maximize. Choose the direction that is considered a positive change for the indicator. If the goal of the indicator is to Minimize the score, then large value scores will have larger tiles. The reverse is true for Maximize. For example, the goal of Risk is to minimize the risk, so the direction is set to minimize so that higher risk scores appear more prominently in larger tiles.</td>
</tr>
<tr>
<td>Result Limit*</td>
<td>Defines the maximum number of results allowed. The upper limit is 100.</td>
</tr>
<tr>
<td>Result Precision*</td>
<td>Select the number of decimal digits to display in the scores for the indicators.</td>
</tr>
<tr>
<td>Automatic Refresh Interval</td>
<td>Used to identify the refresh frequency for the treemap.</td>
</tr>
<tr>
<td>Active</td>
<td>If this check box is not selected, the indicator does not display in the treemap.</td>
</tr>
<tr>
<td>Order</td>
<td>The order that an indicator appears in the drop-down menu and list for a particular category. The order must correspond to the order value of the category to which you want the indicator to belong. For example, if the category order is 100, then the indicator order would start at 100 and increase to 101, 102, and so on, incrementally.</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>-----------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Data Source</td>
<td>Defines the location from which this indicator receives data. The following options are available.</td>
</tr>
<tr>
<td></td>
<td>• Performance Analytics, which populates the treemap with the scores from indicators created in Performance Analytics. Indicators must be created in Performance Analytics prior to being created as an indicator in Service 360.</td>
</tr>
<tr>
<td></td>
<td>• Custom Script, which allows you to write a script that collects data from another application to display in the treemap. Custom scripts only display on the treemap, and are not shown on the Service 360 dashboard.</td>
</tr>
<tr>
<td></td>
<td>• Query Condition, which allows you to select a table to run filters on to obtain data to display in the treemap. Results from the query conditions only display in the treemap, and are not shown on the Service 360 dashboard.</td>
</tr>
<tr>
<td>PA indicator*</td>
<td>Select the indicator from Performance Analytics that is to be displayed on the treemap.</td>
</tr>
<tr>
<td></td>
<td>Note: This field only appears if Data Source is set to Performance Analytics.</td>
</tr>
<tr>
<td>Default Breakdown*</td>
<td>Select the default breakdown that determines how the indicator is displayed. In the case of Service 360, the default breakdown is Business Service so that the indicator displays the scores for each business service in the system respectively, if the data is available.</td>
</tr>
<tr>
<td></td>
<td>Note: This field only appears if Data Source is set to Performance Analytics.</td>
</tr>
<tr>
<td>Custom Script*</td>
<td>HTML editor that allows you to create and customize the script.</td>
</tr>
<tr>
<td></td>
<td>Note: This field only appears if Data Source is set to Custom Script.</td>
</tr>
<tr>
<td>Query Table*</td>
<td>Source table to be queried.</td>
</tr>
<tr>
<td></td>
<td>Note: This field only appears if Data Source is set to Query Condition.</td>
</tr>
<tr>
<td>Aggregate Type*</td>
<td>The function to apply when calculating the score for a query on the query table. Possible values are Count, Sum, Average, Minimum, or Maximum.</td>
</tr>
<tr>
<td></td>
<td>Note: This field only appears if Data Source is set to Query Condition.</td>
</tr>
<tr>
<td>Aggregate Field</td>
<td>The field on the Query Table on which the Aggregate Type is run.</td>
</tr>
<tr>
<td></td>
<td>Note: This field only appears if Data Source is set to Query Condition.</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------------------</td>
<td>------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Group by*</td>
<td>Select the field to sort the queried data.</td>
</tr>
<tr>
<td></td>
<td>Note: This field only appears if Data Source is set to Query Condition.</td>
</tr>
<tr>
<td>Query Conditions</td>
<td>As needed, set filter conditions to enhance the query.</td>
</tr>
<tr>
<td></td>
<td>Note: This field only appears if Data Source is set to Query Condition.</td>
</tr>
<tr>
<td>Click Through URL Navigation Type</td>
<td>This feature enables the treemap to drill-in to another display when a tile on the treemap is selected. For Service 360, when a tile is selected you are re-directed to the Service 360 dashboard in Performance Analytics. There are three options: New Window, Current Window, or Modal Dialog.</td>
</tr>
<tr>
<td>Click Through URL Script</td>
<td>Edit the sample script using the HTML editor to customize the URL that you are re-directed to when a tile on the treemap is selected.</td>
</tr>
</tbody>
</table>

Note: * indicates a mandatory field.

6. Click Submit.

Create indicators for custom scripts
Custom scripts are one of the data sources used to collect data for the treemap.
1. Navigate to Business Services Administration Indicator.
2. Click New.
3. Complete the form using the following table.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name*</td>
<td>Name of the new indicator.</td>
</tr>
<tr>
<td>Category*</td>
<td>Select the category with which you want this indicator to be grouped. For example, the out-of-box indicators for availability are grouped under the category Operation, while indicators for inherent and residual risk scores are grouped under the Risk category.</td>
</tr>
<tr>
<td>Direction*</td>
<td>Options are Minimize or Maximize. Choose the direction that is considered a positive change for the indicator. If the goal of the indicator is to Minimize the score, then large value scores will have larger tiles. The reverse is true for Maximize. For example, the goal of Risk is to minimize the risk, so the direction is set to minimize so that higher risk scores appear more prominently in larger tiles.</td>
</tr>
<tr>
<td>Result Limit*</td>
<td>Defines the maximum number of results allowed. The upper limit is 100.</td>
</tr>
</tbody>
</table>

Note: This field only appears if Data Source is set to Custom Script or Query Condition.
<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Result Precision*</td>
<td>Select the number of decimal digits to display in the scores for the indicators.</td>
</tr>
<tr>
<td>Note: This only appears if Data Source is set to Custom Script or Query Condition.</td>
<td></td>
</tr>
<tr>
<td>Automatic Refresh Interval</td>
<td>Used to identify the refresh frequency for the treemap.</td>
</tr>
<tr>
<td>Active</td>
<td>If this check box is not selected, the indicator does not display in the treemap.</td>
</tr>
<tr>
<td>Order</td>
<td>The order that an indicator appears in the drop-down menu and list for a particular category. The order must correspond to the order value of the category to which you want the indicator to belong. For example, if the category order is 100, then the indicator order would start at 100 and increase to 101, 102, and so on, incrementally.</td>
</tr>
<tr>
<td>Data Source</td>
<td>Defines the location from which this indicator receives data. The following options are available.</td>
</tr>
<tr>
<td>• Performance Analytics, which populates the treemap with the scores from indicators created in Performance Analytics. Indicators must be created in Performance Analytics prior to being created as an indicator in Service 360.</td>
<td></td>
</tr>
<tr>
<td>• Custom Script, which allows you to write a script that collects data from another application to display in the treemap. Custom scripts only display on the treemap, and are not shown on the Service 360 dashboard.</td>
<td></td>
</tr>
<tr>
<td>• Query Condition, which allows you to select a table to run filters on to obtain data to display in the treemap. Results from the query conditions only display in the treemap, and are not shown on the Service 360 dashboard.</td>
<td></td>
</tr>
<tr>
<td>PA indicator*</td>
<td>Select the indicator from Performance Analytics that is to be displayed on the treemap.</td>
</tr>
<tr>
<td>Note: This field only appears if Data Source is set to Performance Analytics.</td>
<td></td>
</tr>
<tr>
<td>Default Breakdown*</td>
<td>Select the default breakdown that determines how the indicator is displayed. In the case of Service 360, the default breakdown is Business Service so that the indicator displays the scores for each business service in the system respectively, if the data is available.</td>
</tr>
<tr>
<td>Note: This field only appears if Data Source is set to Performance Analytics.</td>
<td></td>
</tr>
<tr>
<td>Custom Script*</td>
<td>HTML editor that allows you to create and customize the script.</td>
</tr>
<tr>
<td>Note: This field only appears if Data Source is set to Custom Script.</td>
<td></td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Query Table*</td>
<td>Source table to be queried.&lt;br&gt;Note: This field only appears if Data Source is set to Query Condition.</td>
</tr>
<tr>
<td>Aggregate Type*</td>
<td>The function to apply when calculating the score for a query on the query table. Possible values are Count, Sum, Average, Minimum, or Maximum.&lt;br&gt;Note: This field only appears if Data Source is set to Query Condition.</td>
</tr>
<tr>
<td>Aggregate Field</td>
<td>The field on the Query Table on which the Aggregate Type is run.&lt;br&gt;Note: This field only appears if Data Source is set to Query Condition.</td>
</tr>
<tr>
<td>Group by*</td>
<td>Select the field to sort the queried data.&lt;br&gt;Note: This field only appears if Data Source is set to Query Condition.</td>
</tr>
<tr>
<td>Query Conditions</td>
<td>As needed, set filter conditions to enhance the query.&lt;br&gt;Note: This field only appears if Data Source is set to Query Condition.</td>
</tr>
<tr>
<td>Click Through URL Navigation Type</td>
<td>This feature enables the treemap to drill-in to another display when a tile on the treemap is selected. For Service 360, when a tile is selected you are re-directed to the Service 360 dashboard in Performance Analytics. There are three options: New Window, Current Window, or Modal Dialog.</td>
</tr>
<tr>
<td>Click Through URL Script</td>
<td>Edit the sample script using the HTML editor to customize the URL that you are re-directed to when a tile on the treemap is selected.</td>
</tr>
</tbody>
</table>

Important: Ensure that the Data Source field is set to Custom Script. Additional fields display at the top of the form. Beneath the Data Source field, a sample script appears. Use the HTML editor to customize the script as needed. The result of running the script must be an array in order for the information to display in the treemap.

4. Click Submit.

Create indicators for query conditions
Query conditions are one of the data sources used to collect data for the treemap.
1. Navigate to Business Services Administration Indicator.
2. Click New.
3. Complete the form using the following table.

<table>
<thead>
<tr>
<th>Field</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name*</td>
<td>Name of the new indicator.</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Category*</td>
<td>Select the category with which you want this indicator to be grouped. For example, the out-of-box indicators for availability are grouped under the category Operation, while indicators for inherent and residual risk scores are grouped under the Risk category.</td>
</tr>
<tr>
<td>Direction*</td>
<td>Options are Minimize or Maximize. Choose the direction that is considered a positive change for the indicator. If the goal of the indicator is to Minimize the score, then large value scores will have larger tiles. The reverse is true for Maximize. For example, the goal of Risk is to minimize the risk, so the direction is set to minimize so that higher risk scores appear more prominently in larger tiles.</td>
</tr>
<tr>
<td>Note:</td>
<td>This field only appears if Data Source is set to Custom Script or Query Condition.</td>
</tr>
<tr>
<td>Result Limit*</td>
<td>Defines the maximum number of results allowed. The upper limit is 100.</td>
</tr>
<tr>
<td>Result Precision*</td>
<td>Select the number of decimal digits to display in the scores for the indicators.</td>
</tr>
<tr>
<td>Note:</td>
<td>This only appears if Data Source is set to Custom Script or Query Condition.</td>
</tr>
<tr>
<td>Automatic Refresh Interval</td>
<td>Used to identify the refresh frequency for the treemap.</td>
</tr>
<tr>
<td>Active</td>
<td>If this check box is not selected, the indicator does not display in the treemap.</td>
</tr>
<tr>
<td>Order</td>
<td>The order that an indicator appears in the drop-down menu and list for a particular category. The order must correspond to the order value of the category to which you want the indicator to belong. For example, if the category order is 100, then the indicator order would start at 100 and increase to 101, 102, and so on, incrementally.</td>
</tr>
<tr>
<td>Data Source</td>
<td>Defines the location from which this indicator receives data. The following options are available.</td>
</tr>
<tr>
<td></td>
<td>• Performance Analytics, which populates the treemap with the scores from indicators created in Performance Analytics. Indicators must be created in Performance Analytics prior to being created as an indicator in Service 360.</td>
</tr>
<tr>
<td></td>
<td>• Custom Script, which allows you to write a script that collects data from another application to display in the treemap. Custom scripts only display on the treemap, and are not shown on the Service 360 dashboard.</td>
</tr>
<tr>
<td></td>
<td>• Query Condition, which allows you to select a table to run filters on to obtain data to display in the treemap. Results from the query conditions only display in the treemap, and are not shown on the Service 360 dashboard.</td>
</tr>
<tr>
<td>Field</td>
<td>Description</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>PA indicator*</td>
<td>Select the indicator from Performance Analytics that is to be displayed on the treemap.</td>
</tr>
<tr>
<td></td>
<td>Note: This field only appears if Data Source is set to Performance Analytics.</td>
</tr>
<tr>
<td>Default Breakdown*</td>
<td>Select the default breakdown that determines how the indicator is displayed. In the case of Service 360, the default breakdown is Business Service so that the indicator displays the scores for each business service in the system respectively, if the data is available.</td>
</tr>
<tr>
<td></td>
<td>Note: This field only appears if Data Source is set to Performance Analytics.</td>
</tr>
<tr>
<td>Custom Script*</td>
<td>HTML editor that allows you to create and customize the script.</td>
</tr>
<tr>
<td></td>
<td>Note: This field only appears if Data Source is set to Custom Script.</td>
</tr>
<tr>
<td>Query Table*</td>
<td>Source table to be queried.</td>
</tr>
<tr>
<td></td>
<td>Note: This field only appears if Data Source is set to Query Condition.</td>
</tr>
<tr>
<td>Aggregate Type*</td>
<td>The function to apply when calculating the score for a query on the query table. Possible values are Count, Sum, Average, Minimum, or Maximum.</td>
</tr>
<tr>
<td></td>
<td>Note: This field only appears if Data Source is set to Query Condition.</td>
</tr>
<tr>
<td>Aggregate Field</td>
<td>The field on the Query Table on which the Aggregate Type is run.</td>
</tr>
<tr>
<td></td>
<td>Note: This field only appears if Data Source is set to Query Condition.</td>
</tr>
<tr>
<td>Group by*</td>
<td>Select the field to sort the queried data.</td>
</tr>
<tr>
<td></td>
<td>Note: This field only appears if Data Source is set to Query Condition.</td>
</tr>
<tr>
<td>Query Conditions</td>
<td>As needed, set filter conditions to enhance the query.</td>
</tr>
<tr>
<td></td>
<td>Note: This field only appears if Data Source is set to Query Condition.</td>
</tr>
<tr>
<td>Click Through URL Navigation Type</td>
<td>This feature enables the treemap to drill-in to another display when a tile on the treemap is selected. For Service 360, when a tile is selected you are re-directed to the Service 360 dashboard in Performance Analytics. There are three options: New Window, Current Window, or Modal Dialog.</td>
</tr>
</tbody>
</table>
**Field** | **Description**
--- | ---
Click Through URL Script | Edit the sample script using the HTML editor to customize the URL that you are re-directed to when a tile on the treemap is selected.

Important: Ensure that the Data Source field is set to Query Condition. Additional fields display at the top of the form and beneath the Data Source field. Complete the query as appropriate.

4. Click Submit.

---

**Link Service 360 to performance analytics**

Linking Performance Analytics to Service 360 is a crucial step to enable the ‘Click-Through’ feature for Service 360.

Without ‘Click-through’ enabled, when a tile is selected on the Treemap for the new indicator, you are re-directed to the Service 360 dashboard.

1. Navigate to Performance Analytics Dashboard Service 360 and copy the URL specific to the dashboard you wish to display.
2. Navigate to Business Services Administration Indicators and select the indicator you wish to link to the Service 360 dashboard.
3. On the Click through tab, select New Window in the Click Through URL Navigation Type field.
4. In the Click Through URL Script field, use the HTML editor to edit the sample script and paste the copied URL into the script where appropriate.
5. Click Update.
   The click through can be enabled to re-direct to other pages so long as it has a valid URL.

---

**Installed components for Service 360**

Service 360 installs numerous plugins, tables, and user roles.

Just like Performance Analytics - Premium, Service 360 is a premium plugin. To turn on both plugins, contact a ServiceNow representative to get the following components installed:

- Plugins
- User Roles

Additional components can be optionally installed if you wish to obtain additional licenses for Risk Management, Project Portfolio Management, and Financial Management. Contact a ServiceNow representative for more information.

---

**Plugins**

The following plugins are installed with Service 360.

---

**Note:** All additional plugins, tables, and other installed components associated with the following plugins are also installed when the Service 360 plugin is activated.
Table 216: Installed plugins

<table>
<thead>
<tr>
<th>Plugin Name</th>
<th>Plugin ID</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service 360</td>
<td>com.snc.service_360</td>
<td>Installs Service 360 functionality, as well as all of the plugins listed in this table, except Performance Analytics - Premium. Contact a ServiceNow representative to get Service 360 plugin installed.</td>
</tr>
<tr>
<td>Tree map</td>
<td>com.snc.treemap</td>
<td>Enables support for treemap view on any application.</td>
</tr>
<tr>
<td>Performance Analytics – Premium</td>
<td>com.snc.pa.premium</td>
<td>Performance Analytics allows the user to automate recurring information needs with scorecards and dashboards and by taking configurable snapshots of any data at regular intervals. Contact a ServiceNow representative to get this plugin activated.</td>
</tr>
<tr>
<td>Service Portfolio Management</td>
<td>com.snc.service_portfolio</td>
<td>Service Portfolio Management allows an organization to document the business services it proves using a standardized, structured format. Performance against availability commitments is calculated and can be displayed in a homepage.</td>
</tr>
<tr>
<td>Service Portfolio Management—SLA Commitments</td>
<td>com.snc.service_portfolio.sla</td>
<td>Adds SLA commitments to support Service Portfolio Management.</td>
</tr>
</tbody>
</table>

Tables

Service 360 collects information and data from existing tables installed with the plugins listed above. Therefore, no additional tables are installed with the Service 360 plugin.

User roles

Roles specific to Service 360 are those for Service Portfolio Management.
Table 217: Installed user roles

<table>
<thead>
<tr>
<th>Role</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>360_user</td>
<td>The basic user role. User is allowed to view all treemaps, dashboards, categories, and indicators except those which require additional roles. This user cannot make any changes to the existing forms. Assigning this roles also assigns the pa_viewer role so that this user can view the Service 360 dashboard.</td>
</tr>
<tr>
<td>portfolio_admin</td>
<td>In addition to all existing abilities for managing the Service Portfolio, related commitments, and availability, the Portfolio Admin is now able to view all treemaps, categories, and indicators, as well as, create additional categories and indicators and edit existing records.</td>
</tr>
</tbody>
</table>

If the optional Risk Management, Project Portfolio Management, and Financial Management plugins are installed, a user needs the following additional security roles assigned for these applications in order to view the reports in Service 360.

Table 218: Additional security roles

<table>
<thead>
<tr>
<th>Role</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>sn_risk.user</td>
<td>Grants user access to view Risk Management information. A 360 user with this role is able to view the Risk category, and related indicators. Having this role does not allow you to edit the records related to Risk in Service 360.</td>
</tr>
<tr>
<td>project_user</td>
<td>User of the project management application. A 360_user with this role is able to view the Investment category, and related indicators. Having this role does not allow you to edit the records related to Investment in Service 360.</td>
</tr>
<tr>
<td>financial_analyst</td>
<td>This role gives rights to the financial management application, and grants the ability to use the Workbench. A 360 user with this role is able to view the Finance category, and related indicators. Having this role does not allow you to edit the records related to Finance in Service 360.</td>
</tr>
<tr>
<td>financial_mgmt_admin</td>
<td>Grants admin rights to the financial management modules. A 360 user with this role is able to view the Finance category, and related indicators. Having this role does not allow you to edit the records related to Finance in Service 360.</td>
</tr>
<tr>
<td>financial_mgmt_user</td>
<td>Grants user rights to the financial management modules. A 360 user with this role is able to view the Finance category, and related indicators. Having this role does not allow you to edit the records related to Finance in Service 360.</td>
</tr>
</tbody>
</table>

To set up dashboards and indicators in Performance Analytics, the user needs one of the following roles.
Table 219: Roles required to set up Performance Analytics dashboards and indicators

<table>
<thead>
<tr>
<th>Role</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>pa_admin</td>
<td>An administrator can create new indicators, formulas, thresholds, and targets. An administrator can also add breakdowns, apply aggregates, create and edit dashboards, and change system configuration files, such as colors and layout. This role also includes the pa_data_collector role which would enable the admin to define and edit data collection jobs and job events, view job logs, and define and edit indicator sources, breakdown sources, bucket groups, and scripts.</td>
</tr>
<tr>
<td>pa_power_user</td>
<td>A power user has the same abilities as the administrator, except they are not able to change system configuration files and alter the data collection jobs.</td>
</tr>
</tbody>
</table>

Script Includes

Script includes specific to Service 360 are:

Table 220: Script includes specific to Service 360

<table>
<thead>
<tr>
<th>Script Includes</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EstimateOverBudgetProjectFilter</td>
<td>Script filter for projects estimated over budget.</td>
</tr>
<tr>
<td>ServiceProjectsBehindScheduleFilter</td>
<td>Script filter for projects behind schedule.</td>
</tr>
<tr>
<td>Service360ClickThroughUtils</td>
<td>Script to generate the click through URL for Service 360.</td>
</tr>
</tbody>
</table>

My Services SLAs homepage

The My Services - SLAs homepage displays SLA result information.

The My Services - SLAs homepage displays SLA result information for the service offerings (with SLA service commitments) to which a user is subscribed. For each service offering, a gauge displays SLA service commitment results for the last 7 days, last 30 days, and last 12 months.

For any cell in a gauge:

- To view the number of tasks that met the SLA versus the total number of tasks, point to the green check (indicates commitment is met) or red X (indicates commitment is not met).
- To open a report on the commitment, click the cell.
SLA commitments

The Service Portfolio Management - SLA Commitments plugin adds functionality to Service Portfolio Management.

In Service Portfolio Management, Service Offerings define different levels of service for an existing business service and Service Commitments define the services that are included with the service offering. For example, an organization may offer two levels of desktop support: a Standard offering provides commitments of upgrades and virus protection, and an Executive offering provides the standard commitments plus an availability guarantee of 98% from 8-5 on weekdays. Service Level Agreements (SLAs) allow the service desk to track whether they provide a level of service in a defined amount of time.

Service Portfolio Management - SLA Commitments allow commitments to be defined by an SLA, so that staff can track how efficiently the service desk meets commitments for a service offering.

Note: Service Offering SLAs run against records that have an associated Service Offering CI, and do not create standard task SLA (task_sla) records.

Activate the SLA commitments plugin

Before activating this plugin, consider the installed components, dependencies, and impact.

- Installed Components: modules, a homepage, fields, tables, business rules, script includes, and a scheduled job.
- Dependencies (installed automatically with the plugin): Service Portfolio Management Plugin, Service Level Agreements (SLA) Plugin (active by default in the current version).
- Impact:
  - The plugin modifies the Process SLAs business rule to process Service Offering SLAs. Customers who have modified this business rule must contact customer support prior to installation or the plugin does not work and SLA results are not evaluated.
• A new type of service commitment (SLA) is added to Service Portfolio Management.

1. **Navigate to System Definition Plugins**.
2. **Find and click the plugin name**.
3. **On the System Plugin form, review the plugin details and then click the Activate/Upgrade related link**.

   If the plugin depends on other plugins, these plugins are listed along with their activation status.

   If the plugin has optional features that are not functional because other plugins are inactive, those plugins are listed. A warning states that some files will not be installed. If you want the optional features to be installed, cancel this activation, activate the necessary plugins, and then return to activating the plugin.

4. **If available, select the Load demo data check box**.

   Some plugins include demo data—sample records that are designed to illustrate plugin features for common use cases. Loading demo data is a good policy when you first activate the plugin on a development or test instance.

   You can also load demo data after the plugin is activated by clicking the Load Demo Data Only related link on the System Plugin form.

5. **Click Activate**.

### SLA commitments new tables

The following tables are added.

<table>
<thead>
<tr>
<th>Display Name (table name)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service Offering SLA (service_offering_sla)</td>
<td>Stores SLA definitions that apply only to service offerings. Extends contract_sla.</td>
</tr>
<tr>
<td>Service Offering SLA Results (service_sla_result)</td>
<td>Stores the SLA result calculations (daily, weekly, monthly, annual) for each service offering and each service commitment of type SLA.</td>
</tr>
</tbody>
</table>

### SLA commitments new fields

The following tables are modified.

<table>
<thead>
<tr>
<th>Display Name (table name)</th>
<th>Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service Commitments (service_commitment)</td>
<td>Add fields to support SLA as a new type of service commitment.</td>
</tr>
<tr>
<td>Task SLA (task_sla)</td>
<td>Add field to support SLA calculations.</td>
</tr>
<tr>
<td>SLAs (contract_sla)</td>
<td>Add field to support new service offering SLA table.</td>
</tr>
</tbody>
</table>
Table 223: Business rules

<table>
<thead>
<tr>
<th>Business Rule</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calculate SLA Result History</td>
<td>when a new SLA service commitment is added to a service offering, calculates SLA result records for the previous year so that the My Services - SLAs homepage displays relevant information.</td>
</tr>
<tr>
<td>Process SLAs (modified)</td>
<td>runs after every task is inserted or modified and evaluates the Start, Pause, and End conditions for the SLA. This rule is modified to process Service Offering SLAs along with standard SLA definitions. Customers who have modified this business rule cannot install the updated version automatically.</td>
</tr>
</tbody>
</table>

SLA commitments script includes

The following script includes are added.

Table 224: Script includes

<table>
<thead>
<tr>
<th>Script Include</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SLAResultSummarizer</td>
<td>calculates daily, weekly, monthly, and annual SLA results records used by SLA homepage widgets. Called by the Calculate SLA Results scheduled job.</td>
</tr>
<tr>
<td>SLAResultCalculator</td>
<td>used by the SLAResultSummarizer script include.</td>
</tr>
<tr>
<td>SLAResultRecord</td>
<td>used by the SLAResultSummarizer script include.</td>
</tr>
</tbody>
</table>

SLA commitments scheduled job

The Calculate SLA Results scheduled job is added that calls the SLAResultSummarizer script include. It runs nightly and calculates the daily SLA results for the previous day. It also calculates the weekly, monthly, or annual results after the last day of a week, month, or year. These records are used by SLA widgets.

Define commitments on a service offering with an SLA

Define a service offering that consists of a set of service commitments, which are specific services. Service commitments uniquely define the level of service in terms of availability, scope, and pricing. You can define your service commitments with an SLA that allows the service desk to track whether they provide a level of service in a defined amount of time.

To define a commitment on a service offering with an SLA, complete the following procedures:

1. Define an SLA that applies to service offerings.
2. Add the SLA to a service commitment.
3. Add the SLA service commitment to the service offering.

Define SLAs that apply to service offerings

Define an SLA which is a record that specifies the time within which a service must be provided and you can apply this to a service offering.

To define an SLA that applies to service offerings:

1. Navigate to Business Services Service Offering SLAs SLAs.
2. Click New.
3. Enter the SLA definition details.
4. Click Submit.

Add SLAs as service commitments

Service commitments define the services that are included with the service offering. Hence, adding Service Level Agreements (SLAs) as service commitments enable the service desk to track whether they provide a level of service within the stipulated time.

To add an SLA as a service commitment:
1. Navigate to Business Services Commitments.
2. Click New.
3. In the Name field, enter a name for the SLA service commitment.
4. In the Type field, select SLA.
5. In the SLA field, enter an SLA definition. Any SLA definition may be referenced; however, Service Offering SLAs provide the advantage that they are evaluated only when the Configuration Item on the relevant task is a service offering.

6. In the SLA percentage, enter the percentage (as a decimal) of tasks that must meet the SLA Definition for the SLA to be considered met.

For example, an SLA Service Commitment may require Priority 1 incidents to be resolved within 1 hour (defined in the SLA field) 90% of the time (defined in the SLA percentage field).

7. Click Submit.

Add SLA service commitments to service offerings

Service offerings define different levels of service for a business service. Therefore, adding SLA service commitments define the services that are included in the service offering at different levels of service.

To add an SLA service commitment to a service offering:

1. Navigate to Business Services Service Offerings.
2. Open the service offering to which you are adding the SLA service commitment.
3. In the Service Commitments related list, click Edit....
4. Using the slushbucket, select the SLA service commitment to add and click Save.

You can run a slushbucket filter of SLA is not empty to view all available SLA service commitments.
Index

Special Characters

(feature name)
activate 236

A
active requests
assign agents to 489
actual elapsed time 765
add
change state 258
custom business rules 761
add assignments
create from request 182
add item 440
add new change state 253, 258
add related records
new record 482
add state change condition 270
Add Variable set 535
Administration
service catalog 589, 614
agent assignment 489
agent auto assignment 490
agent automatic assignment 490
application
contract management 146
application dependencies 845
approval
types
changing 707
defining 705
expiring 707
publishing 707
asset
mapping 42
Asset an CI management
set asset states and substates 38
Asset and CI management
adding depreciation to asset 31
allocate pre-allocated assets 34
consume consumable assets 45
create assets 27
create consumable assets 44
create fixed assets 36
create license assets 38
create pre-allocated assets 32
delete assets 46
depreciation with fixed assets 37
life cycle of consumables 43
split pre-allocated assets 34
view consumable assets 43
asset classes
create 24
Asset Management
asset 39
Asset and CI management 25
asset classes 23
asset classes, create 24
Asset Management Overview module 6, 6
calculate software licenses 102
counters 114, 115, 115, 116, 117, 120, 120, 123, 125, 126
create a custom license type 106
create license calculation script 107
determine where software is installed 81
IBM PVU Process Pack 128
installed with 8
installed with Model Management 16
Installed with Oracle process pack 142
installed with Software Asset Management template 73
license calculation types 103
license calculations 102
manage software licenses 90, 94, 95
managing software models 96, 99
mapping 39
obtaining asset information 21
Oracle mapping 144
Oracle process pack 141, 141
Oracle software counter 141, 144
Oracle software license 143
Oracle software models 141
process 20
software asset management template 86
software discovery models 109, 110, 110, 111
software license reconciliation 114, 115, 115, 116, 117, 120, 120, 123, 125, 126
sync 39
Asset Management Overview module
use 6
asset state
set 38
asset substate
set 38
Asset-CI mapping
map asset state 41, 42
map CI install status 41
map fields 41
map hardware status 42
assets
delete 46
assign agents
to active requests 489
assignment rule
for change requests 242
incidents 371
attachment contents 380
auto assignment
based on agent ratings 490
based on agent schedules 492
based on location 490
based on schedules 492

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ServiceNow, the ServiceNow logo, Now, and other ServiceNow marks are trademarks and/or registered trademarks of ServiceNow, Inc., in the United States and/or other countries. Other company names, product names, and logos may be trademarks of the respective companies with which they are associated.
Based on skills 491
Based on time zone 492
Used with priority assignment 493
Using multiple selection criteria 493
Automated conflict detection 300
Automatic assignment 490

B
Blackout schedule 275
Bulk CI changes
Proposed change 301
Bulk CI changes
Installed components
Business rules 237
Client scripts 237
Tables 237
Bulk requests
Enabling 623
Using 698
Business elapsed time 765
Business rules 367
Business service catalog
Business service entries, configuring 826
Business service entries, making visible 830
Business service map 378

C
Cancel conflict detection 300
Canceled task 776
Catalog
Item
Designer 701
Catalog
Homepage
Managing 627, 628, 638, 640, 653, 659
Catalog item
Copy 520
Diagnostic 539
Catalog item designer
Administering 701
Roles 701
Catalog Item Designer
Create an item 717
Create new item version 729
Define an item approval 723
Define an item question 719
Define an item section 727
Define an item task 725
Expired item 729
Installed components
Tables 730
Manage a category 715
Process flow 702
Publish an item 728
Republish an item 729
Request a category 712
Unpublish an item 729
View published item 729
Catalog items
Add 521, 521
Adding ordered item links 541, 612
Additional catalogs 521
Additional categories 521
Configure cart layout 597
Defining 518
Editing from the service catalog 520
Exists in categories display
Hiding 652
Restrict behavior by item type 615
Service catalog 518
Set recurring price 617
Setting preview number 638
Catalog variables
Service catalog 563, 566
Using 563, 566
Categories
Create 862
Categorizing incidents 368, 369
Category
Requests processing 709
Change 216
Change properties 238
Change management
Change types 216
Change Management
Affected CIs 285
Associate multiple CIs 285
Change risk assessment 277, 278, 298
Disable multiple CI association 287
Extend multiple CI association 287
Impacted CIs 285
ITIL 216
Manage CI changes 283, 284
Risk assessment 297
Upgrade instructions 218
Change request
Assignment rules 242
Close 288
Create 288
Progress 288
Review 288
Change request on hold 303
Change risk calculator
Advanced conditions, using 282
Condition filter, using 282
Module 281
Script, using 283
Change state
New 258
Change state example 258
Change State Model 247
Change state tutorial 258
Change type
New 243
change types
  change management 216
changing
  approval
    types 707
  task assignment
    types 709
clone
  request 499
clone request 499
close
  request 495
Close Incidents
  customizing
    behavior 482
closed and completed
  request 495
collaborate
  on requests 495
com.snc.incident_management 365
Configuration
  attach
    378
  incident 378
configure
  SLA properties 754
  standard change catalog 272
configure Service 360 862
configure SLA properties 754
configure state model 270
configure state transition 270
configure UI action
  create a record on another table 481
conflict detection
  activate 224
  installed components
    properties 225
    tables 227
consumable assets
  consume 45
  create 44
  view 43
consumables
  life cycle of 43
contact administration
  responsibilities, incident alerts 324
content items
  adding 537
  service catalog 537
contract 748
contract management
  add a configuration item 158
  add a user 157
  add an asset 157
  add document 158
  add terms and conditions 163
  adjust contract 158
  approval history 163
  approve contract 162
  build terms and conditions 164
  cancel contract 161
  components 148
  condition check definitions 171
  contract life cycle 152
  contract notification 162
  create a contract 153
  create terms and conditions 163
  define condition check 171
  extend contract 160
  installed components
    business rules 150
    client scripts 149
    roles 149
    script includes 149
    tables 148
    user roles 149
  reject contract 162
  renew contract 159
  send for approval 162
  software maintenance contract 156
  terms and conditions 163
Contract Management
  use contract management 152
Contract Management Overview Module 147
contract rate cards 165, 167
contracts
  monitor 169
  reports 170
conversion process
  organize 795
convert SLA
  task SLA 795
copy
  catalog item 520
core plugin 365
create
  standard change proposal 273
create change
  from incident 380
create incident 349
Create Incident Alerts
  create an alert directly 326
  create an alert from an incident 329
  view related lists 329
create knowledge
  access an external knowledge article 462
  communicate a workaround 464
  modify the UI action 466
  post knowledge 465
  post news 465
  use the knowledge check box 465
Create On-Call Schedules
  enable on call notifications 432
create problem
  from incident 382
create rules
  item variable assignment 534
create variable set 573
custom business rules
  add 761
custom shopping cart
  create 623
customizing
   behavior
       Close Incidents 482

D
define assignment rule
   problems 482
define contract 748
define service contract 748
defining
   approval
       types 705
   question
       types 702
   task assignment
       types 707
Delivery forms 610, 610, 611, 613, 613
dependency views
   incident management 379
designer
   catalog
       item 701
Devices
   mobile 653
duplicate task 779
duration
   SLA 811

E
Elapsed time 765
Email
   inbound 483
       problems 483
   email notification 397
emergency
   change 216
entitle a license
   configuration item 91
       user 92
Escalation 793
Escalation engine 793
ESS user
   incident management 399
execution plan
   tasks 677
execution plan approval tasks 677
Execution Plan Tasks 681, 682
execution plans
   using 691
expense allocations 308
expense line
   create manually 309
   delete 311
   expense allocation rule 311
   expense allocation rules 308
installed components
   business rules 307
   client scripts 306
   script includes 306
Incident Alert
  contact 320
incident alert management
  example 343
  roles 343
Incident Alert Management
  activate 313
  create incident alerts 326, 326, 329, 329
  features 313
  installed with 313
  process incident alerts 331, 332, 332, 334, 335, 337
  use contacts with incident alerts 320, 320, 321, 322, 323
incident alerts
  subscribe to 344
incident management
  dependency views 379
Incident Management
  categorizing incidents 368
  create a record producer 354
  create a record producer with a template 359
  diagnosing incidents 374
  identifying incidents 349
  incident closure 393
  incident escalation 374
  incident investigation and diagnosis 377
  incident resolution and recovery 384
  prioritizing incidents 373
  service improvements 400
incident management plugin 365, 366, 366
incident management state model 363
incident management states 363
incident model 366
incident notification 397
incident promotion
  change 375
  problem 375
  UI action 376
incident resolution information
  tracking 385
incident resolution workflow
  caller’s location, populating 392
  incident auto-close function, change 389
  incident notification template, update 389
  VIPs, flagging 390
incident script include 366
incident SNX 370
incident state 363
incident state model 366
incident template
  create 350
  use from form 351
  use in script 354
incident ticketing integrations
  bi-directional 403
  implementations 401
  uni-directional 401
incidents
  assign to group 370, 371
  categories 368, 369
resolved
  automatically closing 397
indicators
  create
  custom scripts, for 866
  Performance Analytics, for 863
  query conditions, for 868
installed components 871
installed with
  Email notifications 234
  events 234
Installed with Catalog Item Designer 730, 730, 731, 732, 734, 736, 737, 739
IT service management 6
  items
  viewing 712
ITL change management 216
ITSM 6
ITSM Guided Setup
  access ITSM Guided Setup 409
  category view page 411
  configuration view page 416
  ITSM Guided Setup homepage 410
  ITSM Guided Setup UI 410
  ITSM Guided Setup user interface 410
  locked task 418
  task view page 414
  unlock a task 418
K
KB Field 380
Key concepts 844
L
legacy SLA field 793
license assets
  create 38
license calculations
  calculate software licenses 102
  create custom license type 106
  create script 107
  license calculation types 103
link cart
  catalog item 623
Link Service 360 to Performance Analytics 871
Locations module 145
log incident 349
M
Made SLA 793
maintenance schedule 275
maintenance schedule management 276
manage change 216
Manage CI Changes
  affected CI’s 283, 284
  change requests 284
  dependency views 284
impacted services 283
Manage Software Licenses
   create an entitlement 90
downgrade a license 94
merge software licenses 95
Managing Assets
   retire assets 46
manul conflict detection 298
map 379
Mass Update CI 235, 288
model categories
   create 213
   create asset manually 215
delete 216
   edit 215
   view 213
model management
   business rules 16
   client scripts 18
   installed with 16
   properties 18
   script includes 19
   tables 19
   UI policies 20
   user roles 20
models
   application 203
   bundle
      add model components 201
   bundled 200
   consumables 200
   creating new 197, 203, 203, 203
delete 204
   fields 197
   hardware
      compatible models 199
      substitute models 199
   publish to catalog 204
   skills 204
   software 203
modify
   schedule entry 440
move from 2010 engine to 2011 engine 794
move to SLA plugin
   old engine 793
multiple incidents
   close from a list 394
   closing 393
   create business rule 395
   create UI action 395
   form view 396
   using a UI action 396

N
new
   change type 243
new call wizard
   using 360
new change state
   add 253
new change type 243
new manufacturer
   create 144
new model 366
new SLA condition rule
   define 818
new state change condition
   add 270
new vendor
   create 144
   normal
   change 216
notification
   filter 344
   subscribe to 346
Notification
   SLA 792
notification message content 345
notifications
   viewing 711
Notify with Incident Alert Management
   adding 340
   Conference call 339
   conference call information 341
   launching 339
   participants 340
   responses to conference call invitations
      viewing 342
   sending 338
   SMS Notifications 338
   using 338
   viewing 341
O
old model 366
old SLA engine
   reactivate 802
old to new state model 366
on-call calendar 438
on-call schedule 427
On-Call schedule
   adjust an existing shift 433
   change the rota or span for a group 435
   create on-call schedule 428
   management 432
   substitute a shift 433
on-call scheduling
   additional workflows for notify 451
   create on call schedules 432
   email workflow 447
   escalation chain 448
   escalation settings 432
   escalation triggers 445
   escalations 447
   example escalation 445
   installed components
      business rules 424
      client scripts 424
      email notifications 425
      events 425

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properties 421
scheduled jobs 426
script includes 422
tables 420
user roles 422
installed with 420
trigger rule 446
trigger rules 452
upgrade 451, 451, 452
use notify 450
On-Call Scheduling
access roster for a rota 431
create on call schedules 428
escalations 444
reminder lead time 444
resend reminders 444
rota escalation 431
rota reminder 431
rotate through rosters 452
upgrade 451, 452
wizard 451
on-call: assign by acknowledgement workflow 450
Order guide 535
Organization Management
create new manufacturer 144
create new vendor 144
Locations module 145
out-of-box configuration 846
overview 843
P
plugin 365
pre-allocated asset
allocate 34
split 34
pre-allocated assets
create 32
price model
set 840
price unit
set 840
Problem
requesting a change 473
problem management
associate a task to an outage 480, 480
create knowledge 459
create knowledge from a problem 464
create knowledge from an incident 462
create knowledge manually 460
create outage from task 481
creating knowledge 462, 464, 465, 465, 465, 466
gather problem data 453, 453, 453, 453, 454, 457
make an attachment visible 462
task outage 480
workflow 467
problem record producer 475
problem template
create 474
problem templates 474
Process Incident Alerts
close an alert 334
resolve an alert 332
run incident report 337
run post incident review 332
view dashboard 335
processing
requests
category 709
processing within SLA 764
procurement
activate 175
consumable asset 194
create 187
create an asset 191
create purchase order 185
edit a catalog task 184
purchase order
cancel 190
reorder 190
purchase order line item
cancel 190
reorder 190
purchase order management 183
purchase order status 188
purchase orders
expected delivery date 189
receive assets 192, 192
receiving slip 193
receiving slip line 194
reserve asset 191
roles 172
service catalog
cancel request 183
track request 183
view a catalog task 184
workflows 173
Procurement 175
procurement overview module
use 175
product catalog
activate items 212
create item 208
create vendor catalog items 205
deactivate item 212
installed components
business components 196
customer scripts 196
roles 196
script includes 196
tables 195
items 208
link to hardware catalog 206
link to software catalog 207
publish to hardware catalog 207
publish to software catalog 207
synchronize information 205
vendor catalog 204
view vendors 208
Product Catalog 195
publishing
approval
types 707

task assignment
types 709

purchase order
create from a request 181

question
types
defining 702

rate card
expense generation 169

record producer
create problem 475
create with template 478

Record Producer 524, 524, 527, 529, 529

related incidents
checking 377

related list
icon 377, 377

request
clone 499
close 495
closed and completed 495
request form 484
task windows 498
request creation 483
request fulfillment
manage 664
workflows 664
request items
add assignment 179
purchase order 179
source 179
transfer order 179

Request Management 483
request states
service management 487
request task management 495
request task states
service management 497
request tasks
create 496
request templates
task templates 498
requests
approving 489
category
processing 709
collaborate 495
create with forwarded inbound email actions 487
create with inbound email actions 486, 486, 487
from catalog 484

retroactive pause
SLA 824

risk assessment
changes 297
define 278
rota active 440

S
schedule
SLA 811
schedule entry
modify 440
schedule management 276
schedule security 427
schedule time off 440
scheduled jobs
SLA 768
Scope
business 832
service 832
script include 366
scripts includes 367

Service 360
application dependencies 845
configure Service 360 862
create categories 862
create indicators
custom script 866
Performance Analytics, for 863
query conditions, for 868
installed components 871
key concepts 844
link to Performance Analytics 871
out-of-box configuration 846
overview 843

service catalog
adding to 537
catalog items 518
catalog variables 566
content items 537
defining 518
hiding prices 622
navigating 694
requesting item 696
searching 647
set up 508
variables
auditable 572, 700
viewing 694

Service catalog
Catalog Items 517

Categories 513, 514, 517, 583, 636, 646, 650, 651, 661
Extension 524, 623, 642

Items 582
Requests 697
script 546

Scripting 524, 623, 642

Variable pricing 616, 616, 616, 616, 617, 622
Variable reports 700
Service Catalog
access controls 580, 581, 583, 584, 584, 584, 585, 585, 588, 589, 589, 590
administration 589
concepts 501
desktop order status configure 602
hiding prices 620, 622
item widgets
configure 599
mobile order status configure 604
Multiple 508, 508, 509, 509, 511, 512, 521, 642, 662, 663
one-step shopping cart configure 605
order guide widgets configure 598
roles 500
setup 507
two-step shopping cart configure 606
two-step shopping cart mobile configure 604
UI policy
creating 542
using 694
Variables
Type specifications 564
Workflows 664, 666, 669, 671
Service Catalog Data Lookup
catalog data lookup definition record 568
catalog data lookup definitions fields 570
create custom catalog data lookups 571
create custom data lookup table 571
data lookup table 571
data lookup value 571
roles 568
setter variable definition fields 570
troubleshooting 572
Service Catalog item designer 700
Service Catalog Management
catalog item designer 702, 712, 712, 715, 717, 719, 723, 725, 727, 728, 729, 729, 729, 729
enabling 611, 631, 691, 691, 692
execution plan 676, 676, 680, 681, 691
installed components
script includes 739
multiple service catalog 512, 513, 663
service catalog data lookup 568, 568, 568, 568, 570, 570, 571, 571, 571, 572
service catalog order guides 530, 530, 530, 531, 533, 533, 535, 535, 536, 536, 536, 537
two-step checkout 611, 631, 691, 691, 692
upgrading 512, 513, 663
Service Catalog Order Guides
cascade 535, 536, 536
create rules 533, 534
create variables 535
enforcement 536
example 531
mandatory field 536
new employee hire 531
order guide 530, 531, 535
order guides 537
order process 533
ordered items 536
variable set 536
variables 535, 536, 536
video tutorial 530
Service Catalog properties 501
Service Catalog Renderers 640, 640, 645
Service catalog variables 587
Service Catalog Workflows 665, 669, 670
service contract 748
service desk 740
service desk call
create call 744
domains 743
installed components
business rules 743
client scripts 743
tables 743
tasks by same company 745
tasks by same user 745
transfer call 746
transfer call to request 746
transfer call to task 746
view calls 747
Service Desk Call 742
service level agreement, See SLA
Service Level Agreements
UI actions 803
Service Level Management
installed components
business rules 807
Business rules 803
client scripts 806
Client scripts 803
e-mail notifications 809
Email notifications 803
properties 803, 803
scheduled jobs 809
Scheduled jobs 803
script includes 805
Script includes 803
tables 803, 803
UI actions 803
UI policies 803, 805
workflows 810
Workflows 803
service management
request states 487
request task states 497
service offering price
set 840
Service Offerings 834, 834, 836, 837, 839
Service Portfolio Management
gauge 842
installed with 825
service offering 843
service subscriptions 842, 842, 843

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Service Portfolio Management setup 825
service pricing 840
setup
Service Portfolio Management 825
show related incidents
business service map, using 378
icon, using 377
related list, using 377
show SLA timeline 775
Show SLA Timeline 772
SLA
 calculation 766
duration 811
Notification 792
repair 768, 768, 771
repair from a form 769
repair from a list 771
retroactive pause 824
retroactive start 823
schedule 811
scheduled job 768
scheduled jobs 768
SLA calculations 767
SLA commitments
activate plugin 875
add 878, 879
define 877, 877
homepage 874
new business rules 876
new fields 876
new tables 876
scheduled job 877
script includes 877
SLA condition class
define 818
SLA condition rule
create 819
customize 818
extend 818
invoke globally 820
invoke on a specific SLA 820
SLA condition rules 816, 818
SLA Definition
create 750
SLA Due 793
SLA engine 764
SLA processing 764
SLA properties
configure 754
SLA record 776, 779
SLA timeline
activate 774
installed components 775
view 775
SLA Timeline
installed components
script includes 775
SLA timeline tutorial 776, 776, 779
SLA transitions 821
SLA workflow
SLA 811
workflow 811
SLAConditionBase 816
SLAConditionSimple 817
SNCRoleUtil function 370, 371
software
find on network 82
installed 81
scan installations 85
Software Asset Management Template
activate 81
installed with 73
overview module 71
Overview module 71
setup process 80
using 71
software contracts
creating 140
viewing 140
software discovery models
automatic matching to an existing model 110
create new models 111
edit 110
Software License Compliance Checker
using 113
Software licenses
add new 86
create and manage subscription license 88
create software user license entitlement 91
downgrade a license 93
entitle license to configuration item 91
entitle license to user 92
entitlements 89
upgrading 93
view list of unallocated software licenses 94
Software Licenses
creating enterprise licenses 88
upgrade and downgrade 92
standard
change 216
standard change catalog
configure 272
standard change proposal
create 273
state 363
state model
activation 221
emergency change 250
installed components
properties 222
state model 223, 223, 224
tables 224
normal change 248
State Model
activate 220
installed components 222
stockrooms
create 66
create stock rules 69
create types 68
delete 67, 67
stock rules 69
types 67
view assets 22, 65

T

table
Task SLA 799
Task
  conditions 684
  script 687
  skipped 689
task assignment
types
  changing 709
  defining 707
  expiring 709
  publishing 709
Task SLA
table 799
task templates
  request templates 498
task windows
  request 498
Time
time zones 813
timeline 775
Timeline 772
transfer order
  create from request 182
transfer orders
  create 48
  create transfer order line 49
delete 56
delete transfer order line 56
line asset tracking 55, 55, 55
return items 56
transfer assets 47
transfer process 50, 54
tutorial 258
types
  approval
    changing 707
    defining 705
    expiring 707
    publishing 707
  question
    defining 702
  task assignment
    changing 709
    defining 707
    expiring 709
    publishing 709

U

unallocated software licenses
  view 94
use a template
  from a module 353

Use Contacts with Incident Alerts
  add a contact manually 323
  contact definition 321
  contract responsibilities 320
  default override 322

Use Counters for Software License Reconciliation
  schedule 115
  set up quick counters 120
  software counter 116, 117
  software counters 115, 115
  view software counter detail 125
  view software counter results 120
  view software counter summary 123
  view usage counter result 126
use problem template
  module 474
Use Time Zones
  service level agreements 813
time zone 813
use UI action
  create record 481

V

Variable attributes
  service catalog 566
variable types 548
variables
  passing between tasks 568
  service catalog 547, 560
vendor catalog
  create a catalog item 205
  link to hardware catalog 206
  link to software catalog 207
  publish to hardware catalog 207
  publish to software catalog 207
  synchronize information 205
  view vendors 208
view 436
view group schedule 436
viewing
  items 712
  notifications 711

W

Workflows
  Service catalog 664, 666, 669, 671