



# Designing Plan for Delivering Services

---

This chapter contains the following topics:

- [Designing Plan for Delivering Services, page 1](#)

## Designing Plan for Delivering Services

A delivery plan comprises one or more tasks that must be completed to deliver a service to a customer. The **Service Designer > Service > Plan** tab is used to define the delivery plan for a service.

### Before You Begin

- Identify what the tasks (or series of tasks) are
- Identify whether the service requires email notifications
- Identify who the performer, supervisor, and email recipients are

Also, have an understanding of the following concepts

- Using Namespace variables and configuring expressions, as detailed in [Namespaces](#).
- Configuring and using email templates, as detailed in the [Cisco Prime Service Catalog Administration and Operations Guide](#) . For namespace usage in email templates, see [Namespace Usage in an Email Template](#).

- Calculation of due dates. See [Forecasting Due Dates](#).

- 
- Step 1** Configure the Project Manager for the service delivery process.
  - Step 2** Configure individual tasks, including task name, duration, conditions, priority and other parameters.
  - Step 3** Specify the performer and supervisor of the task.
  - Step 4** Specify notification emails related to the task.
  - Step 5** Configure task instructions.
  - Step 6** Create a task checklist.
  - Step 7** Specify the workflow for the tasks, including the sequence for the execution of tasks, whether tasks execute concurrently or consecutively, and potentially grouping tasks that share a common milestone or have common notification requirements.
- 

## Configuring Delivery Tasks

Every delivery plan automatically has one overall task, that allows a designated project manager to monitor the delivery plan's progress. Using the **Tasks** subtab you can specify the tasks and detailed activities for each task of the service delivery plan. You define the tasks by listing them in the appropriate order; subtasks and parent tasks are indicated, much the same way as Project Management software shows projects and deliverables within a project.

- 
- Step 1** Select **Service Designer > Services**.
  - Step 2** Select the service and choose **Plan > Tasks**. If multiple tasks are listed on the Plan tab, click on the task name you want to configure.  
When the task is highlighted in blue/gray, you are ready to begin; each task you want to configure has its own set of subtabs: General, Participants, Email, Task Instructions, and Checklist.
  - Step 3** Define the task details. For more information, see [Table 1: Fields in Task Subtab](#)
  - Step 4** Add tasks. Ideally you should be able to move through the fields described below in order as you create detailed delivery activities. For more information, see [Table 2: Fields in Task Table](#).
  - Step 5** Click **General** sub tab and create detailed plan activities for delivery of a task including: the task name, execution order, duration, priority, and conditions.  
If your company's installation is integrated with third-party software using Service Link, then you also choose the external action here. If you are using Service Item Manager, you can also choose Service Item tasks here.  
For more information, see [Defining Delivery Activities for a Task, on page 5](#).

- Step 6** Click **Participants** sub tab and define the details about the performer of the task, including who completes the task and how the work is supervised.
- Step 7** Click **Email** subtab and define the optional email templates that the system sends when the task starts, completes, is cancelled, is rescheduled, is reassigned, or when an external task fails. For more information, see [Defining Email Notifications for Delivery Tasks](#), on page 31.
- Step 8** Click **Task Instructions** and enter instructions for the task or set links to any task instruction-related URLs. For more information, see [Adding Task Instructions](#), on page 32.
- Step 9** Click **Checklist** sub tab and create a list of reminders or detail the procedural steps for completing a task. These appear in Service Manager as a checklist, detailing steps for completing the work. For more information, see [Creating Checklist For Completing a Task](#), on page 32.

The [Table 1: Fields in Task Subtab](#) table summarizes the fields on the Tasks subtab that pertain to the “Monitor” task, that is, the overall delivery plan. For more information, see [Configuring Bundles of Related Services](#)

**Table 1: Fields in Task Subtab**

Field	Description
Project Manager	Assigns a project manager from a position, a person/queue, or an expression. The project manager is the person, position, or queue that receives the Plan Monitor Task for a service in Service Manager. This task allows to oversee the entire delivery process including making adjustments to staffing, rescheduling and completing tasks, and even cancelling the entire delivery plan, if needed. Clicking on the “...” button on the right pops up a dialog box allowing you to search for and designate a position, a person/queue, or to type in the parameters of your expression. For an expression, click <b>Set Expression</b> to save.
Subject for plan monitoring task	Text describing the subject of the monitoring task for the plan. It is recommended that you place the word “Monitor” in the subject. The plan subject may include namespaces, as documented in <a href="#">Namespaces</a> . Clicking on the “...” button allows you to edit the subject. Click <b>Set Subject</b> to save changes.
Top level tasks execute	Indicates whether top-level tasks in the delivery plan execute concurrently (at the same time) or sequentially (in order, one after the next).

Field	Description
Start and complete plan automatically?	<p>This check box is checked by default. This means that all tasks in the plan are automatically created, and their due dates computed, when the delivery plan begins. If you uncheck the check box, then the Project Manager assigned must take action before the delivery plan goes into effect. When the delivery moment begins only one task is created—the MONITOR task. That task presents a button labeled “Start Plan”. This allows the Project Manager to “staff” the plan (using the Staffing page on the MONITOR task). On that page the Project Manager can reassign any performing position, person, or queue in the delivery plan.</p> <p>When the Project Manager has finished Staffing the plan, they click <b>Start Plan</b>, which initiates the first tasks in the delivery plan. Until that button is clicked, tasks are in “Staffing” status.</p>
Allow future delivery	<p>Check this to allow end users to request a service in advance of when service delivery should begin. Once this option is checked, the end user sees a bar across the top of the ordering page which allows them to choose the date they want the service delivery to begin.</p> <p>End users cannot specify the due date/completion date for a service. If the user selects a future delivery date, Service Catalog holds the order in a waiting state until the date chosen by the user. Beginning on that date, the service delivery process begins, and proceeds as configured.</p>
Notify when plan cancelled	<p>Allows the service designer to configure an email to be sent when the Project Manager cancels delivery of a service.</p>
Working hours per day	<p>Used to convert hours to business days for the Standard Duration.</p> <p>See the <a href="#">Configuring Delivery Tasks, on page 2</a> and <a href="#">Table 3: Configuration Table to Define Delivery Activities for a Task</a> table to set the Standard Duration and Display Units for the service.</p>

## Defining Delivery Tasks

The table below summarizes the fields on the Task table.

**Table 2: Fields in Task Table**

<b>Field</b>	<b>Description/Usage</b>
New	Add a new task to the delivery plan.
Up Down	Change the order of tasks in the task list.
Indent Outdent	Group or ungroup tasks. For example, if you create a task and click <b>Indent</b> , the task becomes a subtask of the task above it. <b>Note</b> Use the UP, Down, Indent, and Outdent fields to configure the workflow so that tasks execute in the appropriate order and are grouped correctly.
Delete	Delete a task (and all subtasks beneath it).

## Defining Delivery Activities for a Task

To define detailed delivery activities for a task or series of tasks:

**Table 3: Configuration Table to Define Delivery Activities for a Task**

Field	Description
Workflow Type	<p>The default is Internal. This is the only option displayed for a site that has no Service Link integrations defined with external systems and no Service Item tasks. Choose <b>Internal</b> if the task is executed within Service Catalog.</p> <p>Choose the appropriate <b>External</b> option if the task is executed in an external application (not within Service Catalog). For external tasks only, an ellipsis (...) button appears next to the Workflow Type after you have saved the task. See the <a href="#">Configuring an External Task</a>, on page 18 for more information.</p> <p>Choose Service Item <b>Task</b> if you are using Service Item Manager module to design service items and track these items. More information on service item tasks is given in the <a href="#">Defining Service Item Task in a Delivery Plan</a>, on page 14 and in <a href="#">Managing the Services and Attributes</a>.</p> <p>Choose Queue Service Request to publish the Service Request data to a rabbitmq message broker server. An external system subscribed to rabbitmq broker and the specific exchange will receive the message and can execute its own work flow.</p> <p>Choose NsApi Task to grant or revoke permissions for a service item or multiple service items that are created using grid dictionaries within the service delivery plan. For more information, see <a href="#">Creating Service Delivery Tasks for Granting and Revoking Permissions for a Service Item</a>, on page 27.</p> <p>Choose Directory Task if the operation is for adding or updating Organization Designer entities (organizational units, people, queues) or Service Link agents.</p> <p>See <a href="#">Defining Delivery Tasks</a>, on page 4 for more information.</p>

Field	Description
Task name	<p>A brief title for the task. This appears as the subject of the task in Service Manager. The delivery task name may include the service name, using the #Name# namespace. Service data (#Service.Data...#) can also be used.</p> <p>Using form data for a task name allows task performers to more easily differentiate tasks in Service Manager. However, it presents challenges in the reporting modules, since the task would no longer be automatically groupable by the task name; report designers would need to use “Custom Groups” to aggregate by such tasks. It may also require administrators to configure Service Manager to allow “contains” searches, which may adversely affect performance. Service designers should think carefully before including form data namespaces as part of a task name.</p>

Field	Description
Create Agent	<p>After you have saved the task, a Create Agent button appears. Click this button to use the Integration Wizard. See the <a href="#">Cisco Prime Service Catalog Adapter Integration Guide</a> for complete details.</p> <p><b>Note</b> The Integration Wizard is available only to those service designers who have been granted a role that allows creation of Service Link agents and transformations. The Integration Wizard automates many of the steps involved in implementing an integration. It is available only for creating integrations between Service Catalog and web services.</p> <p>The Integration Wizard works by retrieving the Web Services Description Language (WSDL) and operation to be invoked by the web service integration. Based on that definition of the integration, the Integration Wizard creates:</p> <ul style="list-style-type: none"> <li>• The Service Link agent that can be used in an external task to perform the integration</li> <li>• A transformation to transform nsXML into the SOAP message required by the web service</li> <li>• Agent parameters for all data required both in the initial web service request and the response</li> <li>• A dictionary containing fields mapped to the agent parameters</li> <li>• An active form component containing the dictionary created to hold agent parameter values</li> </ul>
Subtasks execute	<p>Use the drop-down menu to choose the order in which any “child” tasks of this task execute: one after the other (sequentially) or at the same time (concurrently). Child tasks (subtasks) become active (ongoing) in the delivery plan, and must be completed before their parent task becomes active.</p> <p>If child tasks are executed sequentially, the service duration includes the durations of all such tasks. If tasks are executed concurrently, the service duration includes the maximum duration of any child task.</p>

Field	Description
Duration	<p>The expected length of time between when the system says the task is active (begins) and when the task is completed, rounded to two decimal places.</p> <p>For example, if installing a software program only takes one hour, you might give the performer a duration of 16 hours to finish the task, as the performer's workload and priorities may vary throughout the course of two workdays.</p> <p>The Duration value is not visible to the customer or performer, but is used to calculate the due date for the task.</p>
Effort	<p>The actual length of time it should take the performer to complete the task, rounded to two decimal places. For example, it might take one hour to install a software program. While Duration is “total elapsed time”, Effort is “time on task”.</p> <p>The Effort value is not displayed to any users or used in due date calculations; it is used instead as an Internal Productivity Target.</p>
Priority	<p>Set the task priority to low, normal, or high. No system behavior is tied to the priority for a task, other than a flag which is visible in Service Manager.</p> <ul style="list-style-type: none"> <li>• If the priority is set to <b>high</b>, the system sets a red exclamation point in the Service Manager view where the task is displayed.</li> <li>• If the priority is set to <b>low</b>, the system sets a blue down-arrow in the Service Manager view where the task is displayed.</li> <li>• If the priority is set to <b>normal</b>, no flag is displayed in Service Manager.</li> </ul>

Field	Description
Condition	

Field	Description
	<p>A conditional statement allows tasks to be initiated or skipped based on the whether the expression used in the condition evaluates to true (include this task) or false (skip the task). The expressions are formulated using the namespaces and operators documented in <a href="#">Namespaces</a>.</p> <p>After you enter an expression, click <b>Validate</b> to make sure that the expression is correct.</p> <p>Validation checks if:</p> <ul style="list-style-type: none"> <li>• Namespace specified is valid for the current scope (the specific level of review/authorization or task), with the exception of dictionary fields (<i>Data.DictionaryName.FieldName</i>). However, it may cause a runtime error: if the specified namespace, for example, <i>Data.EUIT_ACCESS.Access_Type</i>, does not exist.</li> <li>• Correct relational and arithmetic operators are used.</li> </ul> <p>The message “unexpected token” indicates that the namespace used is not valid in this context or, perhaps, that you have forgotten to enclose an alphanumeric literal in quotes.</p> <p>If a condition has been entered, you must decide when that statement will be evaluated. The condition for each task (approval, review, or delivery) can be evaluated either:</p> <ul style="list-style-type: none"> <li>• At the beginning of a phase (Authorization or Delivery moment), or</li> <li>• When the activity becomes active.</li> </ul> <p>Use a condition that always evaluates to false (for example, “1=2”) in a conditional statement to specify a task that will automatically be skipped.</p> <p>The most common use cases for this are:</p> <ul style="list-style-type: none"> <li>• When a service needs to “auto-complete” without having any tasks completed. The skipped task is the only task in the delivery plan. When it is skipped, the requisition is marked as complete.</li> <li>• When an email needs to be sent without having to complete a task or when multiple emails are needed during a given moment in the following</li> </ul>

Field	Description
	<p>ways:</p> <ul style="list-style-type: none"> <li>◦ Create a parent task. On the Email subtab, choose an email to be sent out at completion. (You may also configure a notification to go out when the activity becomes active.) For more information, see <a href="#">Defining Email Notifications for Delivery Tasks</a>, on page 31.</li> <li>◦ Create a child task with the condition 1=2. Set the condition to evaluate when the activity becomes active</li> </ul>
Allow a scheduled start date	<p>To make the task a delayed task, check <b>Allow a scheduled start date</b>. Then, in the Form data for start date field, do one of the following:</p> <ul style="list-style-type: none"> <li>• Enter a date and time in the following format: “YYYY-MM-DD HH:MM” such as “2006-12-23 13:30” (The quotes are required.)</li> <li>• Or, enter the name of the dictionary field you want to use to hold the date and time of the starting-point for the task. Use the following syntax: <ul style="list-style-type: none"> <li>◦ Data.DictionaryName.FieldName for a field from a dictionary in one of the service’s active form components.</li> <li>◦ ParentData.DictionaryName.FieldName for a field from one of the parent service’s dictionaries (in the case of a bundled service).</li> </ul> </li> </ul> <p>For more information about delayed tasks, see <a href="#">System Behavior for Scheduled Start Tasks</a>.</p>
Form data for start date	<p>If you have checked the “Allow a scheduled start date” option, you may enter form data for the start date and click <b>Validate</b>.</p>

Field	Description
Evaluate condition when delivery phase starts	<p>If you have specified a condition, click the option button to indicate when the condition will be evaluated. Choose this if you want the condition to be evaluated when the delivery moment starts for this service. This means that the information required to correctly evaluate the expression must be available before the delivery moment begins. Each authorization or review has its own moment; all delivery tasks are performed within the Service Delivery moment.</p> <p>Authorization tasks are always serial. You could put one conditional on one task saying if field = "x" and a conditional on another saying field &lt;&gt; "x". That way, you know one authorization task will always be executed, and if you choose "when authorization phase starts" only one authorization task will appear in the process view. If you choose "when task becomes active" both tasks would be displayed, but one would be skipped.</p> <p>The <b>"if conditions evaluate to "false", times will be computed as zero"</b> statement means that Service Catalog will evaluate the conditions at the beginning of the phase. If these conditions are false, then the corresponding tasks will not be executed, and the <b>Due Date</b> for the service will be calculated without including the duration of these tasks.</p>
Evaluate condition when task becomes active	<p>If you have specified a condition, click the option button to indicate that the condition must be evaluated only when the delivery process has reached this task in the delivery plan.</p> <p>Service Catalog evaluates the condition at the beginning of each task. If the condition is false, the corresponding task will not be executed. Durations for any task configured with this option will be used to calculate the due date upon submission.</p>

Field	Description
Re-evaluate expressions as plan advances	<p>This feature enables you to dynamically change the performer assignment for a task, as well as the name of the task, based upon form data. This is useful if you have designated that a task name or a performer assignment should be derived from a namespace expression using form data, and when the form data will be changed during the delivery process.</p> <p>Setting this flag specifies that the expression should be evaluated when the task becomes active (not when the entire delivery plan is initiated). If this option is not checked, all information used in expressions in the authorization task must be present during the Ordering moment.</p> <p>The Re-evaluate Expressions feature is useful for designs in which there are multiple sequential authorizations or tasks. It enables the person performing a task to enter information in the service form that is used to recompute the expression used to assign the performer for a subsequent task.</p> <p>This feature allows dynamic assignment of a task to a user (person or queue) and dynamic adjustment of the task title. Once the task becomes active, the expression is evaluated and the task is assigned appropriately.</p> <p><b>Note</b> The re-evaluation of the performer for a task does not affect the due date for the task. Due dates are not recomputed after the delivery moment begins.</p>
Do not allow cancellation of service after task starts	<p>If you select this check box, the customer will no longer be able to cancel the service after this task becomes active.</p> <p>For example, check this if the task will cause the delivery team to incur substantial costs or take an action that is not easily reversible.</p> <p>The “Cancel” option in My Services is deactivated once the delivery team begins this task.</p>
Display Effort subpage on a delivery task	<p>If you check this box, an “Effort” subtab for a delivery task is shown in Service Manager.</p>

## Defining Service Item Task in a Delivery Plan

This section covers the functions of service item tasks. The Service Item Manager module allows designers to designate certain items to be “service items”, history can be tracked within Service Catalog. Typical service

items might be a laptop; desktop; software license; or any corporate asset that can be uniquely identified and whose usage (and ownership) should be tracked. A Service Item Task can be used only when the service includes a Service Item-Based Dictionary (SIBD).

- 
- Step 1** Choose **Service Designer > Plan > Task > General**.
    - a) Choose **Service Item Task** as the Workflow Type and save the plan.
  - Step 2** Click the ellipsis (...) that appears next to the Workflow Type. The Service Item Task Parameter popup window appears.
  - Step 3** Choose the SIBD to use.
  - Step 4** Select **Update Status Only** check box if the operation should modify only the Status attribute value of the service item.
  - Step 5** Choose the operation to be applied from the **Operation** drop-down list
  - Step 6** Click **OK** to save the task definition and dismiss the popup window.
  - Step 7** If the SIBD is a grid dictionary and the grid rows should be processed conditionally based on certain field values, enter the condition expression in **Process Grid Row**, click **Validate**, and then click **OK**. See [Configuring an External Task](#), on page 18 for syntax and example for a condition expression.
- 

## Service Item Subscription Processing Rules

The customer and organizational unit information within the Service Item Subscription table can be set independently from that of the requisition:

- If no subscription information is provided in the create operation, the item is assigned to the customer of the requisition and that person’s Home Organizational Unit.
- If only the Customer ID is specified at the time a service item instance is created, the Organizational Unit ID of the item is set to the home organizational unit of the customer.
- If a value is provided for either the Customer ID or Organizational Unit ID, that value is used to update the service item subscription. If that value is either null or zero, the corresponding subscription field is set to null. The absence of a property in the service item-based dictionary means no change/override on the attribute value.
- Requisition ID and Requisition Entry ID provided in the dictionary are ignored and will not be used to update the subscription record.

The possible combinations for customer and organizational unit assignment and the outcome are summarized as follows:

**Table 4: Customer and Organizational Unit Assignment Combinations**

<b>When service item is created</b>	
Service Item-Based Dictionary Field	Resulting Subscription

<b>When service item is created</b>			
Login Name	OU Name	Customer	OU
None	None	Customer of Requisition	Home OU of Customer
None	Blank, Invalid Value, or Zero	Customer of Requisition	NULL
None	Valid OU	Customer of Requisition	OU provided
Login Name	OU Name	Customer	OU
Blank or Invalid Value	None	NULL	Home OU of Customer
Blank, Invalid Value, or Zero	Blank, Invalid Value, or Zero	NULL	NULL
Blank, Invalid Value, or Zero	Valid OU	NULL	OU provided
Valid Customer	None	Customer provided	Home OU of Customer
Valid Customer	No Value	Customer provided	NULL
Valid Customer	Valid OU	Customer provided	OU provided
<b>When service item is updated</b>			
Service Item-Based Dictionary Field	Resulting Subscription		
None	None	No change	No change
None	Blank, Invalid Value, or Zero	No change	NULL
None	Valid OU Name	No change	OU provided
Blank, Invalid Value, or Zero	None	NULL	No change
Blank, Invalid Value, or Zero	Blank, Invalid Value, or Zero	NULL	NULL
Blank, Invalid Value, or Zero	Valid OU Name	NULL	OU provided

<b>When service item is created</b>			
Valid Customer	None	Customer provided	Home OU of Customer
Valid Customer	Blank, Invalid Value, or Zero	Customer provided	NULL
Valid Customer	Valid OU Name	Customer provided	OU provided

## Service Item Task Operations

Service item task operations instruct Service Catalog to create, update, or delete a service item. The service item task is executed as specified by its sequence in the service's workflow.

- **Creating a Service Item:** All custom operations are "Update" in nature. All the points here apply to them as well i.e when a service item task with an operation type of "Create" is executed, Service Catalog:
  - Creates an entry for the service item in the Service Item tables. The entry includes all attributes of the service item for which data has been supplied via the service form.
  - Creates an entry for the service item in the Service Item Subscription table. This table records all service items and their current status.
  - Records the customer, current request, the date and time the request was submitted, and the date and time the service item was created.
  - Creates an entry for the service item in the Service Item History table. This table records the requisition that created the service item.
- **Updating a Service Item:** When a service item task with an operation type of "Update" is executed, Service Catalog:
  - Updates the existing entry for the service item in the Service Item Knowledge Base tables.
  - Updates the entry for the service item in the Service Item Subscription table to reflect the changed status of the service item.
  - Creates an entry for the service item in the Service Item History table. This table records all operations (and the requisition in which the service item task occurred) that affected the status of a service item.
- **Deleting a Service Item:** Deleting a service item removes all traces of the service item, erases all references to the item from the system, including its history. In some scenarios, it might be better to include an attribute in the service item to mark it as "Inactive" or "Defunct", and to write conditional rules that prohibit provisioning such items.

For more information on service items and service item tasks, see Chapter 9, [Managing the Services and Attributes](#).

## Configuring an External Task

This section covers the workflow type for external service item tasks, i.e., the tasks performed outside the Service Catalog.

### Defining External Tasks in the Workflow

By default, the drop-down list for Workflow Type contains only one entry, “Internal”, indicating that the task will be performed within the Service Manager module. If integration specialists have used the Service Link module to define “agents” that integrate with external systems, the action associated with each agent also appears in the drop-down list.

For example, the workflow type for the “SAP Integration” agent might be displayed as “Send data to SAP”; the workflow type for an agent that integrates with “Remedy” might look like “Send Ticket to Remedy”.



**Tip**

Contact your site administrator to obtain details about the services and tasks integrated with Service Link.

For external tasks only, an ellipsis (...) appears next to the Workflow Type after you have saved the task.

**Figure 1: Ellipsis**

The screenshot shows a form with two main sections. The top section is labeled 'Workflow Type:' and contains a dropdown menu with 'Update Inventory' selected, followed by an ellipsis (...) button and a 'Create Agent' button. The bottom section is labeled 'Task name:' and contains a text input field with 'Update Inventory' entered. On the right side of the form, there is a vertical text label '362054'.

If you have permissions to the Service Link module, you can click the “...” button to access the Agent Parameter Override dialog box. This dialog box includes settings that show how the data to be sent to the external system is mapped to fields on the service form or other data about the requisition. If you have permission to change these settings, the dialog box is editable, otherwise it is read-only. For more information on permissions for Service Link, see the Capabilities for Service Link section of [Cisco Prime Service Catalog Administration and Operations Guide](#).

## External Service Item Task Operations

Once an external service item task becomes active (that is, has a status of Ongoing) in the workflow, Service Link listens for the incoming requests to create, update, or delete service items. The changes made to the service item repository are similar to those of internal service item tasks. The channel ID of the inbound requests allow Service Link to identify the service request to be used for tracking the service item history.

You can perform other task updates that are typical of external tasks—for example, adding comments and sending parameter updates—through the incoming requests as well. When all service item operations are processed successfully, you must be sure to send a “done” action to complete the task so that the next task in the delivery plan can be triggered.

For more information about the Service Item Listener Adapter and the specification of inbound service item messages, see the “Designing Integrations with Service Link Standard Adapters” chapter in the [Cisco Prime Service Catalog Adapter Integration Guide](#) is not recommended because the reconfigure action may disrupt processes that are currently running on the machine. Certain actions are, in fact, prohibited if they were to be performed through the VMware Infrastructure Client. Therefore, service designers need to add a “power off” task BEFORE the “reconfigure” task. This ensures that the subsequent request to reconfigure the virtual

machine may proceed. If the virtual machine is already down upon receipt of the power off task, the power off task fails, but this failure is harmless and does not impede the progress of the reconfigure task.

## Defining Directory Tasks in the Workflow

Directory tasks can be used to create or update people, organizational units, or Service Link agents using form data. If the operation fails, the task is marked as complete and an error message is written to the service form.

Any free form dictionaries that contain the required fields can be used with the directory task. The dictionary should also include a text field named "**ErrorDescription**" for capturing any errors returned from the operation. Consider hiding this field while ordering, and using the value of this field to conditionally trigger manual tasks for error handling.

Directory tasks can also be used with grid dictionaries to process multiple occurrences of the same object type (e.g., create multiple organizational units). The task loops through all rows in the grid dictionary and performs the operation for each of them. If exceptions are encountered for some of the occurrences, the error messages are logged into the ErrorMessage field for those grid rows and do not affect the successfully completed ones.

You can also design condition expressions using operators such that the application evaluates the condition on each row and proceeds with the operation if the condition is satisfied.

**Syntax** for condition expression: Data.<DictionaryName>.<FieldName>

**Example** of a condition expression: (Data.ouDict1.Type = "Service Team" and Data.ouDict1.Description="abc") or (Data.ouDict1.Type = "Business Unit" and Data.ouDict1.Description="xyz")

Although the syntax used here is identical to that for delivery tasks, only dictionary namespaces are supported for the Process Grid Row conditional expressions. Requisition, task or service-specific namespaces are not applicable to this context.

To configure a Directory Task:

- 
- Step 1** Choose **Service Designer > Plan > Task > General**.
  - Step 2** Choose **Directory Task** as the Workflow Type, enter a task name, and save the plan.
  - Step 3** Click the ellipsis (...) that appears next to the Workflow Type.  
The Directory Task Parameter popup window appears.
  - Step 4** Choose the dictionary to use, and the operation to apply.
  - Step 5** Enter a **condition** expression, click **Validate**, and click OK.
- 

The following operations are supported for directory tasks. The required and optional fields for directory operations are listed in [Table 5: Operations Supported for Directory Task](#):

Table 5: Operations Supported for Directory Task

Operation	Dictionary Fields	Remarks
<ul style="list-style-type: none"> <li>• Create a new queue</li> <li>• Update existing queue</li> <li>• Create or Update existing Queue</li> </ul>	<p><b>Input:</b> (* Mandatory for Create operation)</p> <p>Name* – Text(100)</p> <p>Email_Address* – Text(100)</p> <p>Home_Organizational_Unit* – Text(200)</p> <p>Timezone* – Text (50)</p> <p><b>Output:</b></p> <p>Person_ID – Text(50)</p> <p>Organization_ID – Text(50)</p> <p>ErrorDescription – Text(80)</p>	<p>Create a new queue or perform an update if the queue already exists.</p> <p>Organizational units or groups referenced are created automatically if they do not exist in the system.</p> <p>The value for the Timezone field should be in the form of the short name as seen in the Time Zone selections in Organization Designer, for example, "America/Los_Angeles".</p> <p>The values for Person_ID and Organization_ID fields are updated back to the request form when the queue or Home OU are created.</p>
<ul style="list-style-type: none"> <li>• Activate a person</li> <li>• Deactivate a person</li> </ul>	<p><b>Input:</b> Login_ID – Text(50)</p> <p><b>Output:</b> ErrorDescription – Text(80)</p>	<p>Modify the status of a person to "Active" or "Inactive" accordingly</p>
Create New Organizational Unit	<p>The Dictionary fields supported are:            Organization_ID, Name*, Description, Type*, Parent_Name, Parent_Type, Billable, Parent_Description</p> <p>The ID of the created Organization is returned to the form in the Organization_ID field.</p>	<p>If you select this operation in the directory task workflow, you can enable the user to create a new organizational unit as a task during the service workflow. The user does not need access permissions for the Organization Designer Module. While the task is being executed, Parent_name field already exists in the order form where you can add a parent name. Application either creates a new parent if the parent does not exist or associates it with the existing parent. The ID of the created Organization is returned back to the form in the Organization_ID field.</p>

Operation	Dictionary Fields	Remarks
<ul style="list-style-type: none"> <li>• Create a new person</li> <li>• Update existing Person</li> <li>• Create new person / Update existing person</li> </ul>		<p>Organizational units or groups referenced are created automatically if they do not already exist.</p> <p>The values for the Person_ID and Organization_ID fields are returned to the service form when the person or Home OU are created during the operation.</p> <p>The value for the Timezone field should be in the form of the short name as seen in the Time Zone selections in Organization Designer; for example, "America/Los_Angeles".</p> <p>The input type for the Organizations, Groups and Roles fields should be set to "select (multiple)" in the Active Form Component used.</p> <p>In an Update operation, the Login_ID field is used to look up the person record. Person attributes absent from the dictionary are excluded from the update.</p> <p>If an user's account is locked due to retry policy violation the IsLocked field is enabled automatically. To unlock the user account, disable the IsLocked field and then reset user password.</p> <p>Enter the LoggedIn_UserPwd only if you are creating a user or changing a user password.</p>

Operation	Dictionary Fields	Remarks
	<p><b>Input:</b> (* Mandatory for Create operation)</p> <p>First_Name* – Text(50)</p> <p>Last_Name* – Text(50)</p> <p>Login_ID* – Text(50)</p> <p>Password* – Text(50)</p> <p>Email_Address* – Text(100)</p> <p>Home_Organizational_Unit* – Text(200)</p> <p>Timezone* – Text(50)</p> <p>Is_Locked</p> <p>LoggedIn_UserPwd</p> <p>Organizations – Text(4000)</p> <p>Groups – Text(4000)</p> <p>Roles –</p> <p>Personal_Identification – Text(512)</p> <p>Title – Text(100)</p> <p>Social_Security_Number – Text(100)</p> <p>Notes – Text(4000)</p> <p>Company_Code – Text(200)</p> <p>Division – Text(200)</p> <p>Business_Unit – Text(200)</p> <p>Department_Number – Text(200)</p> <p>Cost_Center – Text(200)</p> <p>Management_Level – Text(200)</p> <p>Region – Text(200)</p> <p>Supervisor_ID – Text(200)</p> <p>Employee_Type – Text(200)</p> <p>Location_Code – Text(200)</p> <p>Company_Street_1 – Text(100)</p> <p>Company_Street_2 – Text(100)</p>	

Operation	Dictionary Fields	Remarks
	Company_City – Text(100)	
	Level – Text(100) Cubicle – Text(100) Personal_Street_1 – Text(100) Personal_Street_2 – Text(100) Personal_City – Text(100) Personal_State – Text(100) <b>Output:</b> Person_ID – Text(50) Organization_ID – Text(50) ErrorDescription – Text(80) Personal_Postal_Code – Text(100) Personal_Country –Text(100)	External User Authentication (EUA) allows to override default authentication mechanism within Prime Service Catalog and authenticate a user against an external source.  If EUA is not enabled or if you are using a backdoor url the authentication for password change in user profile, the LoggedIn_UserPwd fields must contain the database password of the logged in user trying to change the password. If EUA is enabled you must use the LDAP password in the LoggedIn_UserPwd field.  An error is returned if: <ul style="list-style-type: none"> <li>• If a person with the same login name already exists while you create a person or</li> <li>• If the person does not exist while you update a person</li> <li>• If the password does not conform to the password policies.</li> </ul>
Update Organizational Unit	Name* Type* Description Status Billable ErrorDescription If you need to modify the type of OU, then add a field named "Change_Type".	<b>Note</b> Type field identifies the Organizational Unit that will be acted on. Also all Organizational Unit related operations can define the Organization_ID that will return the ID of the Organizational Unit.
Rename Organizational Unit	Name* New_Name* Type* ErrorDescription	

Operation	Dictionary Fields	Remarks
Activate/Deactivate organizational unit	Name* Activate* Type* ErrorDescription	The Activate field should be set to "true" or "yes" for updating the organizational unit status to "Active", or to "false" or "no" for updating the status to "Inactive".
Update existing agent properties	Name*	This feature enables you to order a service with a directory task operation that updates inbound and outbound agent properties.  <b>Note</b> Ensure that names of agent properties match with names in the free form dictionary. However the character "." has to be replaced with "_" because the application does not accept "." character while creating a active form dictionary. During the update process, the application ignores incorrect entries in the dictionary. For example if the agent property is FileOutboundAdapter.FileLocation the dictionary field name should be FileOutboundAdapter_FileLocation
Create account / update account	Ensure that the dictionary you associate with the directory task workflow for this operation has the following fields: Name* AccountType* Description BillingRateGroup OrganizationalUnit ErrorDescription	1) The maximum length for Name is 100 characters. 2) AccountType value should be "Project Account" or "Tenant Account". 3) The maximum length for Description is 500 characters. 4) The Organizational Unit field takes the input of a multi-select box and the values are assumed to be of type "Business Unit". For tenant accounts, only one organizational unit may be specified. 5) Functional positions and custom attributes cannot be specified at this time.

Operation	Dictionary Fields	Remarks
Create agreement	Name* AccountType* Account* AgreementTemplate* Description ErrorDescription	

## Configuring AMQP Tasks for Publishing Service Request to an External System

Prime Service Catalog allows you to publish the service request to another application or system using Advanced Message Queuing Protocol (AMQP). AMQP provides standards on how messages should be structured and transmitted between platforms or systems.

Prime Service Catalog using RabbitMQ, an open source software, implements AMQP and perform message routing between the systems. An example of the systems consuming the service request can be the Cisco Process Orchestrator, which picks up the request and executes a fulfillment workflow.



### Note

To prevent Poodle security attack, Prime Service Catalog in 11.0 and later, supports connection to RabbitMQ only via TLS 1.2 protocol, hence consumers are also required to use TLS1.2 to connect and consume the messages. Therefore, to connect and consume these messages from RabbitMQ server, use only TLS1.2 .

A task type called Queue Service Request is available under the workflow type, which is used to publish the service request to another application or system.

Queue Service Request consists of a pre-task, main task, and a post-task that are executed in order. The Service Designer provides the option to enable or disable a pre task and post task that will be executed before and after the main AMQP task. A main task alone can be executed without having a pre and post task. For more information on AMQP, see [Cisco Prime Service Catalog Integration Guide](#).

- 
- Step 1** Choose **Service Designer > Plan > Task > General**.
- Step 2** Choose **Queue Service Request** as the **Workflow Type**.
- Step 3** Enter the **Task Name**.
- Step 4** **Save** the plan.
- Step 5** Click the ellipsis (...) that appears next to the Workflow Type.
- Step 6** In the Queue Service Request Parameter popup, do the following:
- For the Primary Task, enter the exchange name in the **Topic** field and select a **Payload Type** from the drop-down list.
  - (Optional) Select the **Execute Pre Task** and **Execute Post Task** check boxes, if you want the Pre Task and Post Task to be executed. Clear these check boxes to skip these tasks.
  - (Optional) Select the **Auto Complete** check box for a task to auto complete a task. When a task is complete the next task will begin automatically.

- d) (Optional) Select the transformation from the **Transformation Outbound** drop-down list to change the format of the outgoing messages.
- e) (Optional) Select the transformation from the **Transformation Inbound** drop-down list to process the format of the incoming messages.
- f) Select the **Connection Identifier** from the drop-down list. This option lists the AMQP connections added in the Integrations > New Integrations > Generic AMQP. Based on this option, the message format is populated.
- g) (Optional) Select the **Public Key** from the drop-down list.
- h) (Optional) Select the **Message Format** from the drop-down list for this task. This selection overrides the default message format configured for all the messages in the Integrations > New Integrations > Generic AMQP. The message format describes format in which the outbound message has to be sent or has to process the inbound message. Transformation type is changed based on the message format selected. For example, for XML transformation type is XSL and for JSON it can be either JOLT or FTL. FTL is supported only for outbound transformation.
- i) Click **Save** to save the task definition. This option will create tasks topic and queue on the Rabbit MQ server only when a service is ordered.

Click **Create** to create tasks topic and queue on the Rabbit MQ server at the service definition time.

- Note**
- The AMQP Public Key created in the **Administration > Settings > Public/Private Keys** will be available for selection for every new AMQP task that is created.
  - If the RabbitMQ Cluster is down, the AMQP task will not be completed and the message will not be published to the server. When the RabbitMQ Cluster or one of the nodes in the cluster will be active, then the message will be republished automatically to the server, and the task will be marked as completed.
  - The message transformations are created in the Service Link module, **Manage Integrations > Transformations** are available for selection in the Transformation Outbound and Transformation Inbound fields. For more information, see section Managing Transformations in the [Cisco prime Service Catalog 12.0 integration guide](#).

---

## Configuring AMQP Tasks for Publishing Request to Cisco Process Orchestrator

- Step 1** When a service is ordered in Prime Service Catalog, it generates nsXML or JSON output and publish this output to the AMQP Server.
- Step 2** AMQP server secures this nsXML message with Public key. For more information on this, see [Encrypting AMQP Tasks](#).
- Step 3** Cisco Process Orchestrator reads this message from AMQP server using the private key. This nsXML is passed into Cisco Process Orchestrator northbound web services, which starts a process at Cisco Process Orchestrator.
- Step 4** Cisco Process Orchestrator makes web service calls or connects to Cisco Prime Service Catalog through an adapter to send the acknowledgment of the message received from Cisco Prime Service Catalog.

- Note** Cisco Process Orchestrator generates either Modulus and Exponent or Public Key along with Private Key.
-

## Encrypting AMQP Tasks

The Service Catalog supports encrypting every AMQP task with a public key selection. The AMQP Public Key is used to encrypt the data in a secure string format.

In the dictionary field, when the 'is-secure' attribute is set to true, the value of those dictionary fields will be converted to secure string using the public key. The format of the secure string is based on the **AMQP Secure String Format** that you select.

### Procedure

- 
- Step 1** Choose **Administration > Settings**.
  - Step 2** Select **Public/Private Keys** option from the right hand side tab.
  - Step 3** Click **Add**.
  - Step 4** Enter the **Name** of the public key, the encrypted data in the **Modulus** field and the **Exponent** value. Based on the values specified for Name, Modulus and Exponent, the system generates a GUID that cannot be modified/edited. This GUID is used for adding external layer of security for password and token.
  - Step 5** Click **Save** and **Close** to exit.
  - Step 6** Select a **AMQP Public Key** from the list for a particular AMQP task in Service Designer
  - Step 7** Select a **AMQP Secure String Format** drop-down list. This will encrypt the secure string to the selected format.
  - Step 8** Click **Update** to save the changes.
- 

## Creating Service Delivery Tasks for Granting and Revoking Permissions for a Service Item

You can create a service delivery task to grant or revoke permissions for a service item or multiple service items that are created using grid dictionaries within the service delivery plan. This was possible only via REST call earlier.

The dictionary attributes for grant/revoke permissions must be as follows:

- recipientName
- recipientType
- recipient
- object
- objectName
- scope
- permission
- instanceName
- domain
- ErrorDescription

For more information about granting or revoking permissions for possible field values using APIs, see “Grant and Revoke Permissions API Table” in the [Cisco Prime Service Catalog Adapter Integration Guide](#) .

To create a **NsAPI** task to grant SIM permissions:

- 
- Step 1** Choose **Service Designer** > **Plan** > **Task** > **General**.
  - Step 2** Choose **NsAPI** as the **Workflow Type**, enter a task name, and save the plan.
  - Step 3** Click the ellipsis (...) that appears next to the **Workflow Type**.
  - Step 4** Choose the dictionary to use and the **NsAPI Task Type** to apply.
  - Step 5** Click **OK**.
- 

## Creating a Scheduled Start For a Delivery Task

By default, a delivery plan becomes active (and the clock starts ticking on whether the service performers are completing tasks on time) as soon as all authorizations for the service request are completed, or, if there are no authorizations, as soon as the service request is submitted. Sometimes, this is not the desired behavior. For example, you may enter a request on behalf of a new employee scheduled to start work in a few weeks; or a development team may request a new server for a project scheduled to ramp up in the future. For such cases, Service Catalog allows you to create a Scheduled Start task, which does not become ongoing (active) until the specified start date is reached.

You can specify that a scheduled start task is executed on:

- A date and time specified on the service form by the customer or by someone performing an approval or review.
- A fixed date and time that you specify in the service’s design, on the **Plan** tab in Service Designer

To create a scheduled start task by using a field on the service form:

- 
- Step 1** In the service definition, go to the **Form** tab for active form components used in the service, and identify the dictionary field that will hold the data (for example, `NewHire.StartDate`). The field’s data type can be either **Date** or **Date and Time**.
  - Step 2** If required, go to the Active Form Component that contains the dictionary field identified in the previous step. Click the **Access Control** and **Display Properties** tabs, and set the appropriate dictionary permissions and the **HTML** representation for the field to be used.
  - Step 3** Click the **Plan** tab for the service, and then identify or create the task that you want to delay.
  - Step 4** On the **General** subtab for the task, check **Allow a scheduled start date**.
  - Step 5** In the “Form data for start date” field, enter the name of the dictionary field you want to use to hold the date and time of the starting-point for the task. This is the same field you identified in Step 1. Use the following syntax:
    - `Data.DictionaryName.FieldName` for a field from a dictionary in one of the service’s form components.
    - `ParentData.DictionaryName.FieldName` for a field from one of the parent service’s dictionaries (in the case of a bundled service).

---

### System Behavior for Scheduled Start Tasks

The system maintains both a Scheduled Start Date and an Actual Start Date for each delivery-plan task. You can see these dates on a task form in Service Manager.

The system does not automatically start a scheduled start task after the preceding task is completed. The scheduled start task has a *Scheduled* status until the specified starting-point is reached. At that point, the system changes the task status to *Ongoing*, and the task is then available for processing by the assigned performer. The “Scheduled Start” and “Started on” fields are the same for a scheduled start task.

If the starting-point for a scheduled start task is defined from form data, and you use a Date field to define this point, the system sets the time to the working hours of the task’s performer. For example, if the task is to be performed by the HR Group queue and that queue’s working hours are from 8:00 to 16:00, the system sets the time to 8:00 on the date entered by the user.

The system schedules all delivery-plan tasks after the Service Delivery phase of the workflow process begins. (The Service Delivery phase begins after the Authorization phase completes.)

The system does not evaluate the starting-point specified for a scheduled start task until it is scheduling all the delivery-plan tasks at the start of the Service Delivery phase. You may want to take advantage of this when designing services, as it means that the starting-point may also be specified by the performer of an authorization or review step (as opposed to the customer who orders the service).

As a service designer, you cannot control what the customer enters as the starting-point for the scheduled start task. For example, the customer might enter a future date that ends up occurring before preceding tasks in the service are completed. If the start date specified by the customer for a scheduled start task is earlier than the earliest possible starting date (with respect to the rest of the plan), the system ignores the specified start date and treats the task as if it were not a delayed task. This is logged in the System History with a comment indicating that the start date is ignored.

- Also if the start date specified is not a mandatory field on the service form and the customer/approver does not specify a start date, Service Catalog treats the task as if it were not a delayed task.

## Defining Task Participants

- 
- |               |   |
|---------------|---|
| <b>Step 1</b> | Choose <b>Service Designer &gt; Services &gt; Plan &gt; Tasks &gt; Participants</b> .   |
| <b>Step 2</b> | Specify who completes the task and, optionally, how the work is supervised. For more information, see <a href="#">Table 6: Fields to Define Task Participants</a> . |
| <b>Step 3</b> | Click <b>Save</b> to save your changes on this tab.   |
-

**Table 6: Fields to Define Task Participants**

Field	Description
Role	<p>Task Performer Role: The task performer is the person, queue, or position to whom the task is assigned.</p> <p>Task Supervisor Role: The task supervisor provides a measure of control over task performance. When combined with the Administration setting “Allow Task Supervisor to cancel task”, it allows the designated person, queue, or functional position to cancel (skip) the task</p>
Name	<p>Name of the Performer Role, meaning the entity who will perform the task. This name appears in the “By” column in the task list in the Plan tab.</p> <p><b>Or/And</b></p> <p>Name of the person in the supervisor role, meaning the supervisor of the person who will perform the task/deliver the service.</p>
Assign	<p>Choose how the performer/supervisor of the task is assigned:</p> <ul style="list-style-type: none"> <li>• <b>From a position:</b> The person currently filling a functional position defined in Organization Designer.</li> <li>• <b>A person/queue :</b> People or queues as defined in Organization Designer.</li> <li>• <b>From an expression :</b> A conditional expression shown in the “ Assign to” field.</li> <li>• <b>None.</b></li> </ul>

Field	Description
Assign to	<p><b>Assigning Roles Based on an Expression</b></p> <p>As with authorizations, the service team or person assigned to tasks in the delivery plan may depend on data on each requisition, such as a customer’s location. Expressions can be used to intelligently route tasks, rather than creating different forms or workflows for each possible scenario.</p> <p>Performer, Supervisor, and Project Manager roles can all be dynamically assigned.</p> <ul style="list-style-type: none"> <li>• If you choose “From a position” or “A person/queue”, click the “...” button to bring up a select dialog box to choose who the task is assigned to. Click <b>Add</b> or <b>OK</b> to save your selection.</li> <li>• If you choose “From an expression”, click the “...” button to bring up the Edit Expression dialog box to enter the expression to be evaluated for assigning the task. Click <b>Set Expression</b> to save your selection.</li> </ul>

## Defining Email Notifications for Delivery Tasks

Several events are associated with each task. By associating an email with each event, you can notify the service’s customer, task performer, or other groups or individuals of the current status of the request.

Choose Service Designer > Services > Plan > Tasks > Email subtab to specify which notifications should be sent in response to which event. The notification must be defined using the Notifications component of the Administration module. Although Service Catalog is shipped with some default email templates, most sites prefer to design custom notifications.

For each task in the delivery plan (and for each authorization or review), the designer can choose the number of tiers in the escalation structure to be used by that task.

For example, you might configure three escalation tiers:

- Tier 1: 1 hour after the task becomes late
- Tier 2: 8 hours after Tier 1
- Tier 3: 16 hours after Tier 2

The Maximum Tier setting determines how many of the escalation tiers are to be used by that particular task, starting with the first tier.

- As much as there are in escalations = all tiers
- Specified As = the number of tiers to use for this task; any number less than or equal to the number of tiers defined.

In this case, for example, if the maximum tier is Specified As 2, notifications would be sent 1 hour and 9 hours after the task becomes late; the third tier escalation would not be applied.

## Adding Task Instructions

Choose **Service Designer > Services > Plan > Tasks > Task Instructions** subtab, to give instructions for the task or set the link to any task instruction-related URLs.

**Table 7: Fields in Task Instruction Subtab**

Field	Description
URL	Enter the full URL beginning with "http://" you wish to link.
URL Description	Enter a brief description to explain what the user will see when they link to the URL, or to include HTML in the checklist item.  For example: <code>&lt;a href="URL"&gt;Click Here&lt;/a&gt;</code> for more information on how to complete your task.
Task Instructions	Use this text field to enter task instructions, if desired.

The HTML editor can be used to introduce HTML into the URL Description and Task Instructions fields.

## Creating Checklist For Completing a Task

You can create a list of reminders or detail the specific procedural steps for completing a task using checklists. These appear in Service Manager as a checklist, detailing procedural steps for completing the work. Checklists do not affect due dates and are not reportable.

- 
- Step 1** Choose **Service Designer > Services > Plan > Tasks > Checklists**.
  - Step 2** Click **Add New** to add new items to the list by entering the checklist item in the Item Properties box to the right.
  - Step 3** Use the [Table 8: Fields in Checklist tab](#) table to further configure checklists.
-

**Table 8: Fields in Checklist tab**

Field	Description
Items	The items in this list comprise the checklist the performer sees in Service Manager.  Use the <b>Up</b> or <b>Down</b> Arrows to rearrange the item order. Items at the top should be performed first.
Name	Enter the name for the checklist item.
Make checklist items mandatory for task completion	Check this option to make all the items mandatory for completion of the task. This means the person performing the task will not be able to close out the work for the task until they have checked all of the items in the checklist in Service Manager.

## Configuring Escalation Email for Delayed Tasks

You can use the **Plan > Escalations** subtab to specify the email notifications sent to performers, supervisors, and customers when an activity is late.

To define escalation tiers:

- 
- Step 1** Choose **Service Designer > Plan > Escalations**.
  - Step 2** Click **Add**.
  - Step 3** Select **After (hours)** checkbox to define the number of hours after the activity is triggered the application is required to send an escalation email.
  - Step 4** Enter the email address of the recipients
  - Step 5** Choose the activity from the drop down list.
  - Step 6** Perform the above steps to configure escalations for sequential activities
- 

## Designing Service Delivery Workflows

Service Catalog offers two approaches to design the workflow of tasks that comprise the delivery plan:

- Use the Task area at the middle of **Plan** tab to enter tasks, in conjunction with the buttons available (Indent, Outdent, Up, Down) to configure the workflow so that tasks execute in the appropriate order and are grouped correctly.
- Use the Graphical Workflow Designer, available from the **Graphical Designer** tab, to draw the workflow by dragging and dropping tasks, connectors, and subtask groupings onto the drawing area.

The diagram to specifies the tasks and subtasks and their relationship. It comprises the delivery plan, the sequence in which they are executed, and whether execution is sequential or concurrent.

A workflow can be configured using either tool, and, in fact, service designers can switch back and forth between Graphical Designer and the dialog boxes provided on the Task tab. The Graphical Designer provides the workflow for the tasks, and its property sheet allows users to enter most general information about the task as well as the performer's role. Other individual task details, such as emails associated with task fulfillment, checklists, and task participants must be supplied by using the subtabs of the Plan tab.



Task
<b>Service Delivery</b>
Create CAPEX Request
Received CAPEX Approval
Order lightweight laptop
Confirm Received from Supplier
Install Additional Hardware and Software
QA Check on lightweight laptop
Create Laptop SI Details
Update Laptop SI Details
Package lightweight for Transport and Hand off to driver
Confirm receipt of lightweight laptop

362052

362053

## About Graphical Workflow Designer

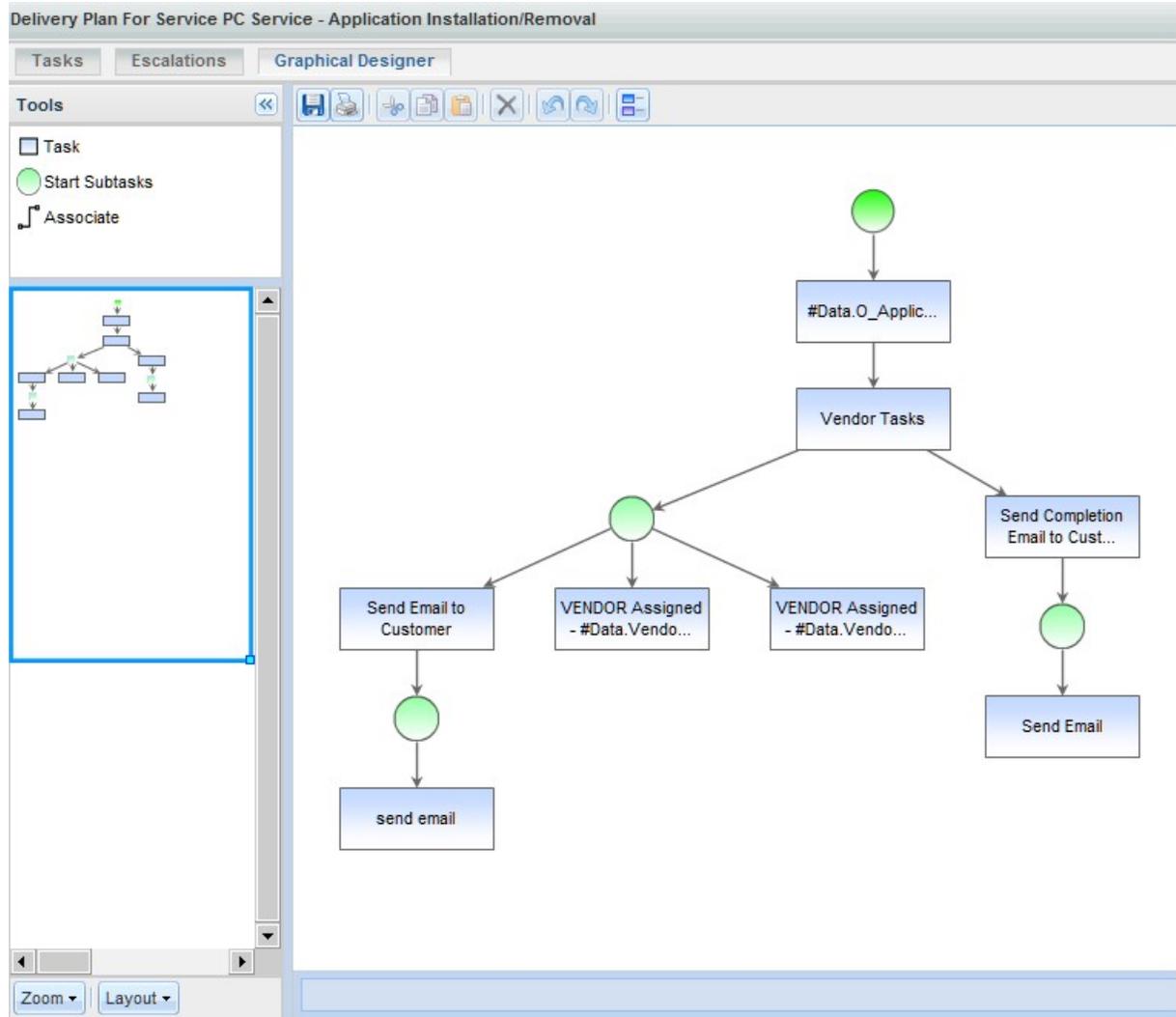
The Graphical Workflow Designer allows service designers to drag and drop tasks, name them, and connect them. The Graphical Designer also provides the ability to define parent/child relationships among tasks. An accompanying Task Properties sheet allows specification of additional details about the task definition and execution.

The Graphical Designer provides a visually oriented alternative to designing the service's delivery plan by using the dialog boxes provided in the General tab for the delivery plan. Designers can define tasks and specify the workflow between them using either method, and freely switch back and forth between the Graphical Designer and the dialog boxes.

The Graphical Designer provides a simplified view of the delivery plan. To configure the more advanced details of a plan (such as those available on the Participants, email, Task Instructions, and Checklist sub tabs), switch to the Plan tab. For more information see, [Configuring Delivery Tasks, on page 2](#).

The Graphical Designer pane has the following sections:

**Figure 2: Graphical Designer Pane**



1	Tools Pane	4	Outline Pane
2	Toolbar	5	View Tools
3	Work Area		

- **Tools Pane**, at the top left, contains building blocks of the workflow designer. These building blocks can be dragged and dropped into the work area and connected to create a complete workflow.
- **Toolbar** contains the buttons for saving the delivery plan; printing the plan; and manipulating the contents of the work area.

**Note**

Legend lists the color coding used to represent objects included in a workflow diagram

- **Work Area** holds the workflow diagram. When the Designer is invoked for a new delivery plan, the work area is blank except for the bright green circle, which denotes the start of the plan.
- **Outline Pane**, in the middle of the left side of the page, gives a high-level overview of the diagram.
- **View Tools: Zoom/Layout** buttons, at the bottom left, allow the designer to magnify or reduce the size of the workflow diagram or to alter the diagram's orientation.:

## About Tools Pane

The Tools Pane includes tools for adding the basic types of objects that comprise a workflow to the diagram.

**Table 9: Tools Pane**

Option	Explanation
 Task	A workflow consists of a series of tasks, arranged in sequence. Use the Task tool to add a task to the workflow.
 Start Subtasks	Tasks can be grouped as child tasks to a parent task.
 Associate	Use the Associate tool to specify the sequence of tasks and to associate parent with child tasks.

In addition to the options in the Tools Pane, context-sensitive task cursors are available to help manipulate the content of the diagram. As you move the mouse over tasks previously placed on the diagram, the cursor changes shape, to indicate which actions are available.:

**Table 10: Cursor**

Cursor	Explanation
	Once an object has been selected, the select-cursor appears. Any objects marked with the select cursor are subject to the next Copy, Move, or Delete command.
	The connect cursor allows you to associate the highlighted task with another task. With the connect cursor displayed, drag the mouse to the task to be connected to the current task. When you release the mouse, a task sequence (association) is established.

## Creating a Delivery Plan using Graphical Designer

To create a delivery plan using the Graphical Designer, edit the service in Service Designer, click the **Plan** tab, then click the **Graphical Workflow** subtab. The work area appears empty except for the “Start Workflow” icon.

*Figure 3: Start Workflow*

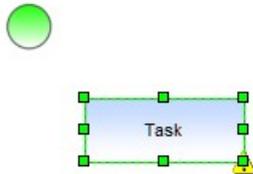


---

**Step 1** Define a task

- a) The first step would typically be to place a task on the workflow. Click the **Task** tool (from the Tools panel) and drag it onto the work area. A task appears. Double-click the task to display the Task Properties dialog box at the bottom of the work area.

**Figure 4: Task Properties – Yellow Alert Icon**



**Task Properties**

Workflow Type:

Task name:

Performer Role Name:

Duration:  hours

Priority:

Effort:  hours

Condition:

Form data for start date:

Allow a scheduled start date

Evaluate condition when delivery phase starts (if condition evaluates to "false", times will be computed as zero)

Evaluate condition when task becomes active (delivery schedule will always include this task's duration)

Re-evaluate expressions (participant assignment expressions and task title expression) as plan advances

Do not allow cancellation of service after task starts

Display Effort sub-page on a delivery task

The Task Properties window includes all data shown in the General subtab for the task as well as the Performer Role Name, which is especially useful in design sessions. Detailed explanations for the fields here are given in the [Defining Service Item Task in a Delivery Plan](#), on page 14.

- b) Start defining the workflow for the task here, but will need to use the Plan tab subtabs for each task, to complete the task definition.

Critical aspects of defining the task are to assign a Task Name and choosing the Workflow Type. You can create a new "Internal" task (a task to be performed wholly within Service Manager); designate that a previously defined Service task (external task specified via a Service Link agent); or configure a Service Item Task (task to create, update, or delete a service item specified via Service Item Manager) to be included in the workflow.

- c) As soon as you move from the Task Properties dialog box back to the diagram, the task name is displayed and the Task icon in the diagram may change, to reflect the workflow type. You may return to the Task Properties dialog box at any time by double-clicking the task.

## Step 2

Specify workflow

- a) The yellow alert icon warns you that the diagram in its current state is not valid (Figure 4: Task Properties – Yellow Alert Icon). You can hover over the alert icon to get a description of the problem, but in Figure 4: Task Properties – Yellow Alert Icon it is pretty obvious—the task needs to be associated with the “Start Workflow” icon, and assigned to its appropriate sequence within the workflow.
- b) To place the task within the workflow, click the **Associate** tool. Then click the initial item in the workflow (in this case, the “Start Workflow” icon) and drag the mouse to the subsequent item (in this case, the first and only task on the diagram). When you release the mouse, an arrow is added to the diagram, showing the flow from “Start Workflow” to the first task in the workflow.

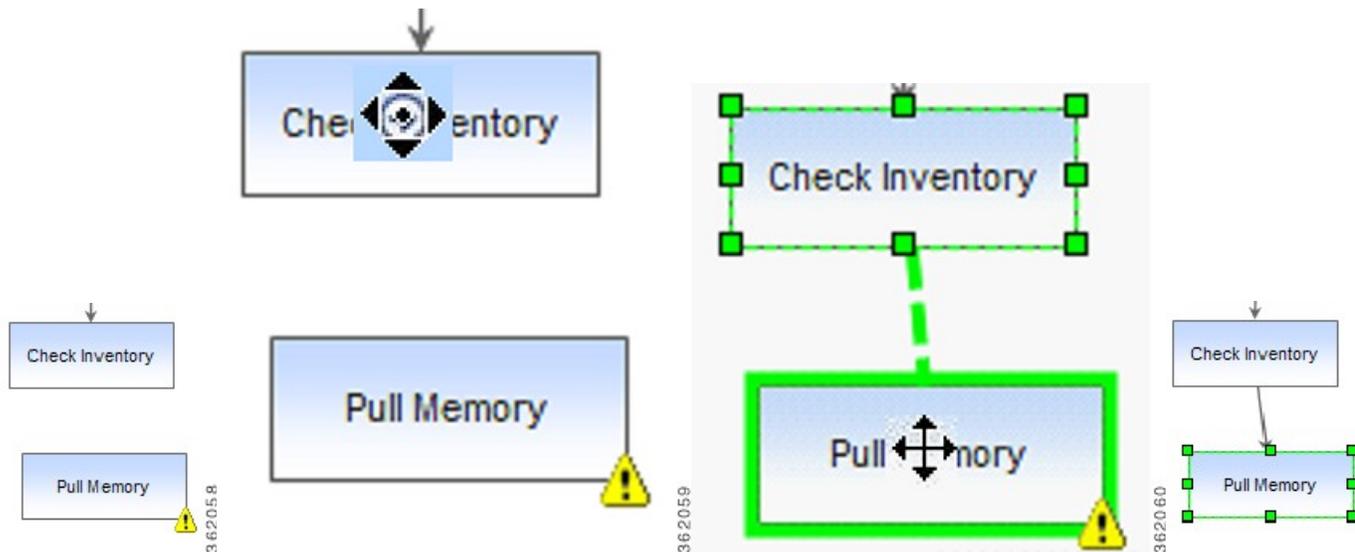
**Figure 5: Start Workflow**



- c) A more convenient method for connecting tasks is to use the Connect Cursor:
- ◦ Add another task to the diagram and, if desired, give it a name, for example, “Pull Memory”. This task is next in the workflow, after “Check Inventory”.
    - To associate the tasks in this sequence, move the cursor to the middle of the first task (Check Inventory) until the connect cursor appears.
    - Drag the mouse to the second task. A thick dotted line appears between the tasks and the target task is highlighted in a thick solid line. The select cursor appears in the second task.

- Release the mouse. An association is drawn and the diagram is valid.

**Figure 6: Flow Diagram**



### Step 3 Create Parent Tasks and Subtasks

Tasks may be grouped for several reasons. For example:

Some of the tasks are conditional, and you want to send an email notification when the first or last task in the series completes, regardless of which specific task is executed.

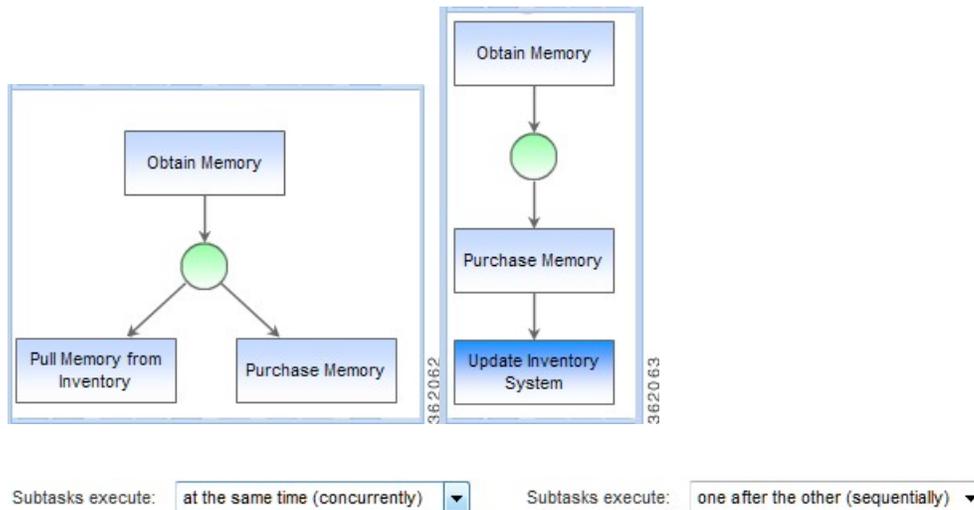
A task should be performed concurrently with a second task. In computing the Service Level Agreement (SLA) for the service, you do not want to count both tasks, just the one that would take the longest.

To account for these and other scenarios, Service Catalog supports grouping tasks. A parent task may have one or more children or subtasks. The subtasks may execute either consecutively or concurrently.

- Drag the Start Subtasks icon onto the work area in the appropriate sequence.
- Drag task icons onto the work area underneath the Start Subtask icon. Define the tasks as appropriate.
- To indicate that the tasks execute concurrently, move the cursor to the center of the Start Subtasks icon, until the connect cursor (with the cursor handles) appears, then drag the mouse to each subtask. Each are connected to the Start Subtasks, as shown in the left diagram, below.

- d) To indicate that the tasks execute consecutively, use the connect cursor to connect the Start Subtasks icon to the first task. Then connect the first subtask to the next. The resultant diagram will look like the example on the right, below.

**Figure 7: Task Diagram**



**Step 4**

Save a Workflow

You can only save valid workflows. If any alert icons appear on the diagram, it indicates the workflow is not valid. You can hover the mouse over the alert icons to get a detailed description of the problem; it will usually be that the elements of the diagram are not properly connected to each other. Once the error has been corrected, click **Save** again to save the workflow.

Whether you use the Graphical Designer or the Plan tab dialog boxes, Service Catalog saves the workflow exactly the same way. This approach is good, in that you can use whichever tool is most convenient for you. But Service Catalog does not save the diagram itself—it reconstructs it from the delivery plan previously saved, and then adds to that delivery plan as you continue to work on the diagram. You can customize the appearance of the workflow for printing, for example, by moving tasks or increasing the size of a task icon, to show a longer description. However, any such changes are removed when the diagram is saved, and the workflow reverts to its default layout (horizontal or vertical).

**Step 5**

Print the Diagram

Click the **Print** option from the toolbar to print the diagram. The printer-friendly version will reflect the current view of the diagram, including its scale and orientation. If required, the diagram can span multiple pages. Use the standard browser **File > Print** command to print the diagram.

It is possible to make manual changes to the diagram, for example, to change the size of an individual task icon. If such changes have been made, they are reflected in the printer-friendly version. However, all such changes are temporary, and are not saved when the workflow is saved.

## Graphical Designer vs. Plan Tab

There are certain things the Graphical Designer does more efficiently than using the dialog boxes in the Plan tab. For example, it is much easier to change the sequence of tasks, simply by reconnecting one task to another, in the Designer than it is by moving rows of data up and down.

The Graphical Designer includes an option to print the diagram. You will need to compare that printed version to the service preview available in Catalog Deployer, which includes the detailed workflow in textual format, to see which better suits your needs. Perhaps a user presentation will call for the printed diagram, while developer documentation is better served with the Catalog Deployer preview.

To specify the general task properties, designers can use either the Plan tab or the Graphical Designer. Most of the same properties appear on both the Task Properties sheet in the Graphical Designer and the General subtab for the task. However, the General subtab dialog boxes have the following advantages:

- Although you can enter a conditional expression and form data for scheduled start date in both places, only the General subtab dialog boxes include the option to Validate the expression or namespace entered. Validating at design time is generally preferable to seeing the error for the first time when you test the form.
- The way you connect the subtasks to the Start Subtask icon determines whether the parent task is defined so that “subtasks execute sequentially” or “subtasks execute concurrently”. It may be easier to simply change the “Top Level Tasks Execute” attribute of the parent task definition in the General subtab than having to reconnect all the subtasks in the diagram.

You will always use the Plan tab dialog boxes to complete the definition of the delivery plan, to specify the participants, task instructions, email notifications, and checklists for tasks as required.

Tasks are typically not assigned to a particular person, but rather to a queue or functional position. In this way, multiple people are available to work on the task, and it will not be delayed if one person is unavailable.

## Configuring Authorizations

The Authorizations tab is used to configure authorization, review, and escalation tasks for the service and to specify the order in which these occur. You can also customize the escalation tiers, recipients, and email messages for late authorization/review tasks for a service.

For each service you can choose from three options:

- **Use service group authorization structure only:** The service inherits the authorization structure defined for the service group (specified in **Administration > Authorizations**); no additional configuration is expected. See the Site Administration chapter of the [Cisco Prime Service Catalog Administration and Operations Guide](#) for more information.
- **Use service-level authorization structure only (will not use service group-level):** Any authorizations defined for the service group are ignored. Only authorizations configured for the service are applied.
- **Use both service group-level and service -level authorization structures:** Accepts the authorization structure defined for the service group, and allows you to supplement it with a customized scheme for each service.

This section covers the following:

- [Authorization Types](#), on page 45

- [Using the Site Authorization Scheme, on page 48](#)
- [Configuring Authorizations for use with Service Link, on page 48](#)

## Authorization Types

The Authorizations and Reviews subtabs are where you determine who should authorize or review the service. You can set up unique roles and define the order in which these roles review and approve request.

- **Authorizations** give the approver the opportunity to determine if the person requesting the service is eligible to receive it. If an authorization is rejected, the process stops and the service is not delivered. If multiple authorizations are defined, they are performed sequentially in the order in which they are specified—one authorization cannot be started until the previous is approved.
- **Reviews** are for information only. A reviewer cannot reject a service or cancel the delivery process, only indicate that he/she has reviewed the service. If multiple reviews are specified, they are performed concurrently. However, the delivery process will not proceed until all reviews have been completed.



---

**Note**

Based on the authorization type you choose, either the Authorizations – Sequential Process or Reviews – Concurrent Process subtab appears.

---

- The Up and Down Arrow buttons to the right of each role allow you to move the role up or down in the approval process.

### Configuring authorization, reviews, escalations tasks

- 
- Step 1** Choose **Service Designer > Services > Authorization**.
- Step 2** Choose an **Authorization Structure and Authorization Type**.
- Step 3** Choose **Review-Concurrent Process** to define the review process. Select the check box to the left of the Name field to the authorization role. To add a review or escalation, choose appropriate review- Concurrent Process or escalation-Concurrent process appropriately and click **Add**.  
To Update a review or escalation, choose a previously defined authorization/review role by checking the check box to the left of the Name field.
- Step 4** Add or update the details using [Table 11: Fields in Reviews Table](#).
- Step 5** Click **Save** or **Update** as appropriate.
-

**Table 11: Fields in Reviews Table**

Field	Definition
Name	<p>Name given to the authorization role.</p> <p>This role name does not appear anywhere else in the application.</p>
Subject	<p>The title for the authorization/review task that this role performs. The entry here appears in the My Authorizations portlet that authorizers and reviewers see in My Services.</p>
Duration	<p>The published amount of time (in hours) to perform the review or authorization. This field exists for the purpose of letting you add some time to the amount of time that the authorization really takes.</p> <p>For example, you estimate that an authorization in the service group that you are configuring takes 0.5 hours. However, you want to add some time to the “official” estimate displayed in My Services. Therefore, you enter 1.0 hours in this field, and 0.5 hours in the Effort field.</p>
Effort	<p>The actual amount of time expected to be expended on this authorization.</p>
Assign	<p>Options to assign the default reviewer/approver from:</p> <ul style="list-style-type: none"> <li>• From a position – A person in a functional position.</li> <li>• A person/queue – A specific person or queue.</li> <li>• From an expression – A conditional expression shown in the Assign to field.</li> </ul>
Assign to	<p>Specific person, queue, title of functional position, or conditional expression, depending on what you chose in the “Assign” field.</p> <p>Use the “...” button to choose the specific person or functional position, or enter an expression directly into this field.</p>

Field	Definition
Workflow Type	<p>The default setting for the Workflow Type drop-down is “internal,” which means that the task is performed manually by a user. To set the task so that it is performed as an external task in a third party system, use the drop-down list to choose the appropriate action from this list (see the <a href="#">Configuring Authorizations for use with Service Link</a>, on page 48.)</p>
Escalation Tiers (option button)	<p>Choice for tiers on the Escalations subtab (see the <a href="#">Configuring Escalation Email for Delayed Tasks</a>, on page 33):</p> <ul style="list-style-type: none"> <li>• Use all</li> </ul> <p>Indicates that all escalations set up on the Escalations subtab are to be used.</p> <ul style="list-style-type: none"> <li>• Use only (where a number (X) is entered from 0 to 99)</li> </ul> <p>Indicates that X tiers of escalations set up on the Escalations subtab are to be used.</p> <p>For example, if you have set up the Escalations tab with three tiers of escalations and choose the first option, all three tiers are implemented if the activity is later. If you choose the second option, specifying the number 1, only the first tier of three is implemented if the activity is late.</p>
Condition	<p>Enter any expressions containing conditions that need to be met to fulfill the review.</p> <p>For example, if you enter the following: ActualCost&lt;=1000, then anything that has an actual cost of less than or equal to \$1000 is automatically approved by the chosen authorization role. See <a href="#">Syntax for Conditional Statements</a> for more details on creating conditional expressions.</p> <p>Click <b>Validate</b> to make sure that your expression is correct. Service Designer indicates if the syntax of the expression is correct or has errors. Note that this is a syntactical check only; the validate function does not check to see if the data you have referenced is actually in the system database.</p>
Evaluate condition when authorization phase starts (radio button)	<p>The condition set up in the Condition field becomes active as soon as the review phase starts.</p>

Field	Definition
Evaluate condition when task becomes active (radio button)	The condition set up in the Condition field becomes active after the review phase completes and the activity phase begins.
Re-evaluate expressions as authorizations/reviews proceed (check box)	Configure the system to re-evaluate expressions for the assignment of participants and title of task following each authorization/review task. This is useful if the participant or task title expressions change after initiating the task.
Notify when authorization/review starts	The email template that is automatically sent out when the review process begins; or chooses “none”.
Notify when authorization/review completes	The email template that is automatically sent out when review is completed; or chooses “none”.
Notify when activity is cancelled	The email template that is automatically sent out when the requester cancels the activity; or chooses “none”.
Notify when activity is rejected (authorization only)	The email template that is automatically sent out when the authorizer rejects the activity; or chooses “none”.
Notify when task is rescheduled	The email template that is automatically sent out when the task is rescheduled; or chooses “none”.
Notify when task is reassigned	The email template that is automatically sent out when a task is reassigned.
Notify when external tasks fail	The email template that is automatically sent out when external tasks fail.

## Using the Site Authorization Scheme

You can use the site authorization scheme as set up in the Authorizations tab of the Administration module. This is the default setting, and often is the easiest to implement. See the Site Administration chapter of the [Cisco Prime Service Catalog Administration and Operations Guide](#) for more information.

If you see the message “not currently enabled via the Administration module,” then the particular service authorization/review is not enabled for your site. This can be changed in the Administration module.

## Configuring Authorizations for use with Service Link

If your business process requires authorizations to be processed through a system other than this product, you can use Service Link to have an authorization task performed by that external system. The settings required to define an external task and how it should be handled appear on the Authorization tab—in the Details screen of a role.

- 1 The default setting for the Workflow Type drop-down menu is “internal,” which means that the task is performed manually by a user. To set the task so that it is performed as an external task in a third party system, use the drop-down list to choose the appropriate action from this list.
- 2 If for any reason the third party application does not successfully complete the authorization task, you might want to notify an administrator that a problem occurred in the Service Link integration for this task. In the “Notify when external tasks fail” menu, you can choose a template that will send such a notification. For information about email notifications, see [Defining Email Notifications for Delivery Tasks](#), on page 31.
- 3 If you have appropriate permissions to the Service Link module, you will see an ellipsis (...) button to the right of the Workflow Type drop-down menu. When you click this button, the Task Data Mapping dialog box appears.

This dialog box includes settings that show how the data to be sent to the external system is mapped to data on the service order form, or elsewhere in the system. If you have permission to change these settings, the dialog box is editable. Otherwise, it is read-only.

Now you are ready to set up escalation emails. See the [Configuring Escalation Email for Delayed Tasks](#), on page 33 for details.

