



# CHAPTER 7

## Administering Provisioning Manager

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This chapter includes the following topics:

- [Viewing Licensing Information, page 7-1](#)
- [Changing Time Zone Settings, page 7-3](#)
- [Changing a User Password, page 7-4](#)
- [Launching Operations Manager, page 7-5](#)
- [Email Notifications, page 7-6](#)
- [Setting Throttling Values for Cisco Unified Communications Managers, page 7-11](#)
- [Managing Log Files, page 7-11](#)
- [Enabling Data Purging, page 7-13](#)
- [Purging Provisioning Manager Data, page 7-15](#)
- [Configuring Provisioning Manager to Use AAA Servers, page 7-15](#)
- [Maintenance Mode, page 7-19](#)
- [Provisioning Manager Database Backup and Restore, page 7-19](#)
- [Changing the IP Address on a Provisioning Manager System, page 7-26](#)
- [Provisioning Manager Processes, page 7-27](#)
- [Scheduling Synchronizations, page 7-28](#)
- [Searching Inventory, page 7-32](#)
- [Viewing System Reports, page 7-41](#)



### Note

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In a distributed installation, the application server expects the database server to be running when it starts. If you restart both systems at the same time, the application server may start before the database server, and all your orders may go into the Initial state. This is a timing issue between the two systems. If this occurs, restart the application server.

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## Viewing Licensing Information

To use Provisioning Manager, you must have the Cisco Unified Provisioning Manager Image license and one or more scale licenses. The image license must be present or the product will remain in the evaluation mode. Scale licenses add to the number of phones you can provision.

To use the Cisco Unified Provisioning Manager Northbound Interface (Provisioning Manager NBI) feature you must have the Provisioning Manager API license.

The License Status Information page (**System Administration > License Information**) displays the following information:

- **Unavailable features**—Any features in Provisioning Manager that you do not have access to, because you have reached the limit for the use of the feature or the feature expiration date has been reached.
- **Valid features**—List of features and their corresponding use limit (Available), current use (Used), and date of expiration (Expiry).

The `ipt_phones_max` feature displays your phone license limit and the number of phone licenses you are currently using. CTI ports do not count toward the number of phones.

The `nb_api` feature displays whether you are licensed to use the Provisioning Manager NBI.

The `ipt_ccm_max` feature checks if the number of Call Processors is over the allowed limit.

The `upp_max` feature checks if the number of Unified Presence Processors is over the allowed limit.

The `ipt_ump_max` feature checks if the number of Unified Message Processors is over the allowed limit.

- **Unlicensed Features**—Any features for which you do not have a license to use.



#### Note

If you have a distributed installation, when the network connection between the two servers is lost and then reestablished or when only the Provisioning Manager database (the PostgreSQL database) server is restarted, you will not be able to log into the Provisioning Manager server, and sometimes a license error appears on the Licensing Status Information page. The error message states that all features are unavailable.

When this occurs, restart the Provisioning Manager services.

## Licensing Process

### New Purchase

New purchases require the purchase of the Provisioning Manager image license and one or more scale licenses to cover the number of phone MAC addresses to be managed. Scale licenses are additive, up to 60,000 per one Provisioning Manager instance. The image license must be present or the product will remain in evaluation mode.

### Provisioning Manager NBI License

The optional Provisioning Manager NBI requires the purchase of a separate license (Provisioning Manager API license). Provisioning Manager checks for the presence of the license before enabling the Provisioning Manager NBI.

The following process applies to new installations (and upgrades), scale licenses, and the Provisioning Manager API license.

1. Obtain a Product Authorization Key (PAK)—The PAK is used to register Provisioning Manager on Cisco.com, and it contains resource limitations. See [Obtaining a PAK, page 7-3](#).

For each incremental license that you purchase, you will receive a PAK, and you must use that PAK to obtain a license file.

2. Obtain a license file—A license file is sent to you after you register the PAK on Cisco.com. See [Obtaining a License File, page 7-3](#).
3. Copy the license file to the server where Provisioning Manager is to be installed. If Provisioning Manager is already installed and you are upgrading your license file, you must register the license file with Provisioning Manager. See [Registering a License File with Provisioning Manager, page 7-3](#).

## Obtaining a PAK

The PAK is located on the software claim certificate. You can obtain the claim certificate through the eDelivery system (for information on eDelivery, see <http://www.cisco.com/web/partners/tools/edelivery.html>).

## Obtaining a License File

Register the PAK and the MAC address of the system where Provisioning Manager is installed with Cisco.com at <http://www.cisco.com/go/license>. You will be asked to log in. You must be a registered user of Cisco.com to log in.



### Note

The MAC address is required because licensing uses node-locking technology. The license file can only be used with the MAC address that you supply. The license file will be emailed to you. After you obtain a license file, register the license with the Provisioning Manager server.

## Registering a License File with Provisioning Manager

- Step 1** Copy the license file to the Provisioning Manager server, in the folder *<Installation Directory>\license*.  
The system validates the license file and updates the license. The updated licensing information appears on the License Status Information page.
- Step 2** If the license does not automatically take effect after a few minutes, select **System Administration > License Information**.
- Step 3** Click **PERFORM AUDIT**. You will see the phones that you are licensed to update.
- Step 4** If you purchased more than one license, repeat [Step 1](#) to install each additional license.

## Changing Time Zone Settings

You can change the time zone settings as well as the location. You can provide Coordinated Universal Time (UTC), also known as Greenwich Mean Time (GMT) updated with leap seconds.

- Step 1** Select the Time Zone icon (🌐) from the top right corner of the Provisioning Manager home page.  
The Time Zone Settings (UTC Offset) page appears.
- Step 2** Enter either of the following to change the time zone settings:
  - New UTC offset.

- New Location (optional).

**Step 3** Click **Apply** to save the time zone settings.

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## Changing a User Password

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**Step 1** Select the User ID from the top right corner of the Provisioning Manager home page.

The Change User Password page appears.

**Step 2** Enter the following information for changing the password:

- Old Password.
- New Password (and confirm).

**Step 3** Click **Change**.

A message appears, stating that the password has been changed.

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## Password Policy

Note the following points when creating a password:

- Passwords cannot be the same as, or reverse of, the username.
- Passwords cannot have a character repeated consecutively more than three times.
- Password cannot be:
  - Cisco or the reverse.
  - Cisc0 (with zero substituted for o).
  - C!sco (with exclamation mark substituted for i).
  - Ci\$co (with dollar sign substituted for s).
  - Any variation of the previous that uses variations in case (uppercase or lowercase).
- Passwords must have lowercase, uppercase, special characters, and digits.
- 8 is the minimum number of characters required (by default, but can be changed).
- 80 is the maximum number of characters allowed (by default, but can be changed).

Provisioning Manager stores the password policy properties in a file named `passwordpolicy.properties` under `<Installation Directory>/sep`. You can modify the properties file to change the password policies as required. You must restart Provisioning Manager whenever you modify the password policy configuration.



### Note

If you change the password complexity policy in the properties file to be more stringent, you must update any rule-based passwords set prior to the policy change so that they meet the new password complexity policy.

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## Launching Operations Manager

If you have purchased Operations Manager and are running it, you can launch it from Provisioning Manager.

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**Step 1** Select **System Administration > Application Suite > Launch Monitoring Home Page**.

The Cisco Unified Communications Management Suite page appears.

**Step 2** Click the **Cisco Unified Operations Manager** link.

The Cisco Unified Operations Manager home page appears.

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## Launching Cisco Unified Operations Manager IP Phone Details

If you have purchased Operations Manager and are running it, you can set up Provisioning Manager to launch the IP Phone Details dialog box from Operations Manager. The IP Phone Details dialog box is launched from a subscriber record.

Before using this feature, you must first configure Provisioning Manager (see [Configuring Provisioning Manager to Open Cisco Unified Operations Manager IP Phone Details](#), page 7-5).

After performing the configuration procedure, a Details button appears on the subscriber record. The Details button launches the IP Phone Details dialog box from Operations Manager (see [Opening the Cisco Unified Operations Manager IP Phone Details Dialog Box](#), page 7-6).

### Configuring Provisioning Manager to Open Cisco Unified Operations Manager IP Phone Details

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**Step 1** On the Provisioning Manager system, go to the `<Installation Directory>\sep` folder.



**Note** If you accepted the default location during installation, the installation directory is `C:\CUPM`.

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**Step 2** Open the `ipt.properties` file.

**Step 3** In the `ipt.properties` file change the following properties:

- `dfc.ipt.operationsmanager.host: <hostname>`—Enter the Operations Manager system hostname or IP address.
- `dfc.ipt.operationsmanager.port: <port>`—Enter the port number that Operations Manager uses.

**Step 4** Save and close the file.

**Step 5** Stop Provisioning Manager. On the Provisioning Manager system, select **Start > All Programs > Cisco Unified Provisioning Manager > Stop Cisco Unified Provisioning Manager**.

**Step 6** Start Provisioning Manager (**Start > All Programs > Cisco Unified Provisioning Manager > Start Cisco Unified Provisioning Manager**).

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### Opening the Cisco Unified Operations Manager IP Phone Details Dialog Box

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- Step 1** Open the subscriber record for the desired subscriber (see [Accessing a Subscriber Record, page 3-2](#)).
- Step 2** Click the Phone that you want to see the details for.
- Step 3** Click the **Details** button.
- The Operations Manager login page appears. (Valid Operations Manager credentials are required to view the IP Phone Details dialog box.)
- Step 4** Log into Operations Manager.
- The IP Phone Details dialog box from Operations Manager appears.
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## Email Notifications

Email Notifications improve manageability of notifications by allowing you to view critical events such as:

- Synchronization failures
- Order failures
- Order approvals

Notifications can be set at two levels:

- System Settings—For system events such as order failures and synchronization failures. See [Configuring System Notifications, page 7-6](#).
- Domain Settings—For workflow events such as order approvals, assignment, shipping, and receiving in the Domain. See [Configuring Domain Notification Template, page 7-7](#) and [Configuring Domain Notification, page 7-8](#).

You can test System and Domain notification configurations to ensure that the SMTP host and other settings are valid. See [Testing Notification Settings, page 7-10](#).

## Configuring System Notifications

Notification settings can be set at system level to manage notifications corresponding to system events such as synchronization failures and order failures.

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- Step 1** Select **System Administration > Notification Management > System Settings**.
- The Notification Configuration - System Settings page appears.
- Step 2** In the Email Settings pane, enter the following SMTP server details:
- Mail Host—SMTP server hostname or IP address (for example, mailer.company.com).
  - Port—SMTP Server port. This field is optional if a default port is used.
  - User Name—Username of the SMTP Server account. Specify only if an authenticated SMTP server is used.
  - Password—Password of the SMTP server account. Specify only if an authenticated SMTP server is used.

- From address—Email address from which Provisioning Manager sends notifications (for example, CUPMNotification@company.com).

**Step 3** Click the **Test Settings** button to ensure that SMTP host and other details are set up correctly. To configure the test notifications settings, see [Testing Notification Settings, page 7-10](#).

**Step 4** In the Email Content URL Parameters pane, enter the following details, which will be used to construct a URL that will appear in the email content:

- Protocol—Protocol to access Provisioning Manager (HTTP or HTTPS).
- Host—Hostname or IP address to access Provisioning Manager.
- Port—Port used to access Provisioning Manager (required only if a port other than 80 is used).



**Note** The fields in the Email Content URL Parameters pane are automatically populated with the relevant details.

**Step 5** In the Notification Events pane, select the necessary events to send notifications.

**Step 6** In the Administration Notification Group pane, set the following details:

- External Email Addresses—Email IDs of users or mailing lists to which to send email notification of the chosen system events. Notifications are sent to administrators if their email addresses are specified in the system. This list is displayed as read-only text in the System Users field.
- Aggregation window—Choose a setting, to determine whether notifications of system events are aggregated or sent out as soon as an event occurs. The value <Not Set> implies no aggregation, and notifications are sent out immediately upon occurrence of an event. Any other value makes the system wait for the time set for aggregation window, after the occurrence of the event. During this time, should other related events occur, an aggregated notification with details of all such events is sent in a single email.



**Note** Events are aggregated based on type. Synchronization failures and order failures are aggregated in separate emails.

**Step 7** Click **Save**.

## Configuring Domain Notification Template

Notification settings for Domain-specific events such as approve order, handle assignment, handle shipping, and handle receiving can be set at the Domain level. A Domain notification template can be used to set up values that will be applied to any new Domains created in the system. Additionally, you can also choose to apply the values from the template to all the existing Domains in the system.

**Step 1** Select **System Administration > Notification Management > Domain Settings**.

The Notification Configuration - Domain Settings page appears.

**Step 2** Modify the Domain template, if required.

In the Email Settings pane, SMTP server details and the From Address values are inherited from the system settings and are displayed in read-only format. These settings cannot be changed in the Domain template; however for specific Domains, these settings can be overridden.

**Step 3** Click the **Test Settings** button to ensure that SMTP host and other details are set up correctly. To configure test notifications settings, see [Testing Notification Settings, page 7-10](#).

**Step 4** In the Notification Events pane, select the necessary events to send notifications.



**Note** The Workflow Pending Activity field contains events such as Order Approvals, Handle Assignment, Handle Shipping, Handle Receiving, and so on.

**Step 5** In the Approval Notification Group pane, do the following:

- External email addresses—Enter the email addresses to send notifications.
- Aggregation window—Choose a setting to determine whether notifications of Domain events are aggregated or sent out as soon as an event occurs. The value <Not Set> implies no aggregation, and notifications are sent out immediately upon occurrence of an event. Any other value makes the system wait for the time set for aggregation window, after the occurrence of the event. During this time, should other related events occur, an aggregated notification with details of all such events is sent in a single email.



**Note** Events are based on workflow event type. Approval notifications and assignment notifications are aggregated in separate emails.

- Escalation Window—Choose a setting to determine whether inaction on workflow events results in an escalation email to the system administrators. The value <Not set> implies no escalations emails will be sent out. Any other value set triggers the system to send out an email to the system administrators after the time specified if no action was taken for the triggering event (for example, order approvals).

**Step 6** Do either of the following:

- Click **Apply to domain template only** to save the settings as defaults for the Domains that will be created in the future.
- Click **Apply to all domains** to apply the notification settings to the existing Domains.

## Configuring Domain Notification

Notification settings for Domain-specific events such as approve order, handle assignment, handle shipping, and handle receiving can be set at the Domain level. The settings on this page are inherited from the Domain configuration template if the Domain was created after the template was set up, or if the **Apply to all domains** option was selected when the template was set up.

**Step 1** Select **System Administration > Notification Management > Domain Settings**.

The Notification Configuration - Domain Settings page appears.

**Step 2** Select the desired Domain from the drop-down list.

The page refreshes and displays the notification settings specific to the selected Domain.



- Step 3** In the Email Settings pane, enter the following SMTP server details:
- Mail Host—SMTP server hostname or IP address (for example mailer.company.com).
  - Port—SMTP Server port. Optional setting if a nondefault port is used.
  - User Name—Username of the SMTP Server account. Specify only if an authenticated SMTP server is used.
  - Password—Password of the SMTP server account. Specify only if an authenticated SMTP server is used.
  - From address—Email address to use as the "from" address in Provisioning Manager notifications (for example, ProvisioningManagerNotification@company.com).

**Step 4** Click the Test Settings button to ensure that SMTP host and other details are set up correctly. To configure test notifications settings, see [Testing Notification Settings, page 7-10](#).

**Step 5** In the Notification Events pane, select events to send notifications.



**Note** The Workflow Pending Activity field contains events such as Order Approvals, Handle Assignment, Handle Shipping, Handle Receiving, and so on.

**Step 6** In the Approval Notification Group pane, for the external email addresses, enter email addresses to send notifications.



**Note** The approval notification group is a group of users with permission to perform order approvals in the Domain. Users configured in the system with this role for the Domain are displayed as System Users. These users are always notified of approval events.

You can configure the aggregation and escalation settings for notifications that are sent to the approval notification group. To configure settings in Aggregation and Escalation window, see [Step 5 in Configuring Domain Notification Template, page 7-7](#).

**Step 7** In the Assignment Notification Group pane, for the external email addresses, enter email addresses to send notifications.



**Note** The assignment notification group is a group of users with permission to perform MAC addresses for phone orders in the Domain. Users configured in the system with this role for the Domain are displayed as System Users. These users are always notified of approval events.

You can configure the aggregation and escalation settings for notifications that are sent to the assignment notification group. To do the settings in Aggregation and Escalation window, see [Step 5 in Configuring Domain Notification Template, page 7-7](#).

**Step 8** In the Shipping Notification Group pane, for the external email addresses, enter email addresses to send notifications.



**Note** The shipping notification group is a group of users with permission to perform shipping activities in the Domain. Users configured in the system with this role for the Domain are displayed as System Users. These users are always notified of shipping events.

You can configure the aggregation and escalation settings for notifications that are sent to the shipping notification group. To configure settings in the Aggregation and Escalation window, see [Step 5 in Configuring Domain Notification Template, page 7-7](#).

- Step 9** In the Receiving Notification Group, for the external email addresses, enter email addresses to send notifications.

**Note**

The receiving notification group represents group of users with permission to perform receiving activities in the Domain. Users configured in the system with this role for the Domain are displayed as System Users. These users are always notified of receiving events.

You can configure the aggregation and escalation settings for notifications that are sent to the receiving notification group. To configure settings in Aggregation and Escalation window, see [Step 5 in Configuring Domain Notification Template, page 7-7](#).

- Step 10** Click **Save** to apply the settings.

## Testing Notification Settings

You can test the notification configurations for the system and Domains to ensure that the SMTP host and other details are set up correctly.

To test your notification settings:

- Step 1** Select either of the following:
- **System Administration > Notification Management > System Settings.**
  - **System Administration > Notification Management > Domain Settings**

The Notification Configuration - System Settings page or Notification Configuration - Domain Settings page appears.

- Step 2** Click the **Test Settings** button.

The Test Email Settings page appears.

- Step 3** Enter an email address in the Send Test Email To field.

- Step 4** Click **Send test email** to send an email using the current settings.

A success message is displayed at the top of the page.

**Note**

If the test fails, an error message is displayed. Make the necessary changes in the settings and run the test again. However, a successful test will not automatically save the settings. Be sure to close the Test Email Settings page and save your settings.

# Setting Throttling Values for Cisco Unified Communications Managers

The throttling setting values in Provisioning Manager must be equal to or less than the values set in Cisco Unified Communications Manager. If you change the throttling settings in Cisco Unified Communications Manager, you must also change the same settings in Provisioning Manager.

The throttling settings in Provisioning Manager are set in the `ipt.properties` file (located at *<Installation Directory>\sep*).

**Note**

If you accepted the default location during installation, the installation directory is `C:\CUPM`.

The following properties (in the `ipt.properties` file) are used to control the write request sent to Cisco Unified Communications Manager:

- `dfc.ipt.axl.soap.MaxAXLWritesPerMinute: 20`

This property specifies the default number of write requests per minute. Its value is used if there is no version or device specific value specified.

- `dfc.ipt.axl.soap.MaxAXLWritesPerMinute.ccm501: 50`

This property specifies the number of write requests per minute for Cisco Unified Communications Manager version 5.0(1). Its value is used if there is no device specific value specified.

- `dfc.ipt.axl.soap.MaxAXLWritesPerMinute.<IP address>: 20`

This property specifies the number of write requests per minute for a specific Cisco Unified Communications Manager indicated by the IP address.

For example, `dfc.ipt.axl.soap.MaxAXLWritesPerMinute.1.2.3.4: 20` sets the value to 20 for Cisco Unified Communications Manager with the IP address of 1.2.3.4.

## Managing Log Files

Provisioning Manager writes application log files for the Service Enabling Platform (SEP) module (`sep.log`) and the Network Interface and Configuration Engine (NICE) service (`nice.log`). The log files are located in the *<Installation Directory>\sep\logs* folder.

You cannot disable logging. However, you can:

- Collect more data when needed by increasing the logging level
- Return to the default logging level (NORMAL)

Following are the available logging levels:

- DETAIL (provides the most information)
- LOW
- NORMAL
- HIGH
- EMERGENCY

Log files are backed up every hour, or when they reach their maximum log size limit. The default size limit is 20 Mb (see [Changing the Maximum Log File Size, page 7-12](#)). The files are saved in the format `sep.log.<date stamp>-<timestamp>`.

**Note**

Log files are deleted from the Provisioning Manager server when their size exceeds 5000 MB or the number of log files in the logs folder exceeds 500. If you want to change these levels, see [Changing the Log Purging Level, page 7-13](#).

## Changing the Log Level

**Step 1** On the Provisioning Manager system, go to the `<Installation Directory>\sep` folder.

**Note**

If you accepted the default location during installation, the installation directory is `C:\CUPM`.

**Step 2** Open the `dfc.properties` file.

**Step 3** Change the `dfc.log.level` property to the desired level. Following are the available logging levels:

- DETAIL
- LOW
- NORMAL
- HIGH
- EMERGENCY

**Step 4** Save the changes.

**Step 5** Restart the Provisioning Manager services.

Changes will not take effect until Provisioning Manager is restarted.

- a. On the Windows desktop, select **Start > Control Panel > Administrative Tools > Services**. The Services window appears.
- b. Right-click the following services and select **Start**.
  - `cupm JBossService`
  - `cupm NiceService`

## Changing the Maximum Log File Size

**Step 1** On the Provisioning Manager system, go to the `<Installation Directory>\sep` folder.

**Note**

If you accepted the default location during installation, the installation directory is `C:\CUPM`.

**Step 2** Open the `dfc.properties` file.

**Step 3** Change the `dfc.log.maxsize` property to the desired size (default is 20 Mb).

- Step 4** Save the changes.
- Step 5** Restart the Provisioning Manager services. Changes will not take effect until Provisioning Manager is restarted.
- On the Windows desktop, select **Start > Control Panel > Administrative Tools > Services**. The Services window appears.
  - Right-click the following services and select **Start**.
    - cupm JBossService
    - cupm NiceService
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## Changing the Log Purging Level

- Step 1** On the Provisioning Manager system, go to the *<Installation Directory>\sep* folder.



**Note** If you accepted the default location during installation, the installation directory is C:\CUPM.

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- Step 2** Open the *ipt.properties* file, and do one or both of the following:
- To change the maximum file size level, update the *dfc.purgelog.maxused\_mb* property to the desired level.
  - To change the maximum number of log files level, update the *dfc.purgelog.maxlogsaved* property to the desired level.
- Step 3** Save the changes.
- Step 4** Restart the Provisioning Manager services. (Changes will not take effect until Provisioning Manager is restarted.)
- On the Windows desktop, select **Start > Control Panel > Administrative Tools > Services**. The Services window appears.
  - Right-click the following services and select **Start**.
    - cupm JBossService
    - cupm NiceService
- 

## Enabling Data Purging

You can configure Provisioning Manager to purge data at a scheduled interval.

Provisioning Manager retains the following types of data:

- Order**—When an order is placed for any product provisioning (for example: phone, line, voicemail or any bundle), an order data object is created and stored in the system.
- ServiceAction**—Objects that are created when the application is communicating with the device during product provisioning. By default, purging of Service Action data is enabled.

- **Task**—Scheduling of infrastructure configuration updates. Through Infrastructure Configuration you can save configurations locally. The saved configurations can then be bundled in a Task and pushed to the device.
- **Workflow**—After an order is placed for a product, it goes through a workflow (approval, shipping, and receiving) before going to the service activator.
- **Audit Trail**—For every PIN/Password change, PIN/Password reset, PIN/Password change on next login, unlock voice mail of a subscriber in a Unity or Unity Connection device, an audit entry is created.



**Note** Data will be purged when the retention time or retention count criterion is met. For example, if the data is older than the retention time it will be removed. Also, if the data amount exceeds the retention count, it will be removed.

**Step 1** Select **System Administration > Data Maintenance**.

The Data Maintenance Configuration page appears.

**Step 2** Select the check box in the row for the data you want to schedule for purging.

**Step 3** In the Retention Time column, change the number of days for which you want to retain the data (default is seven days except for ServiceAction, which is 30 days).

**Step 4** In the Retention Count column, select the amount of data that you want to retain.



**Note** Retention count is the number of objects that you want Provisioning Manager to keep and not purge. For example, if there are 1000 total orders and the retention count is 100, Provisioning Manager will purge 900 orders and keep the latest 100 orders.

The default settings for the Retention Count are:

- Orders—100
- ServiceAction—Unlimited
- Task—50
- Workflow—50
- Audit Trail—50

**Step 5** (Optional) To export the purged data to a file before it is removed, in the Export Before Purge field select **Yes**, then enter a directory location at which to store the data.



**Note** Only Orders and Workflow data is exported. Service action data cannot be exported.

**Step 6** Select a purge interval (the default is 24 hours).

The Purging Information pane displays the time of the next scheduled purge and the last purge.

**Step 7** Click **Update**.

## Purging Provisioning Manager Data

You can configure Provisioning Manager to purge data at a scheduled interval.

Provisioning Manager retains the following types of data:

- **Order**—When an order is placed for any product provisioning (for example, Phone, Line, Voicemail or any bundle), an order data object is created and stored in the system.
- **Service Action**—Objects that are created when the application is communicating with the device during product provisioning. By default, purging of Service Action data is enabled.
- **Task**—Schedule infrastructure configuration updates. Through Infrastructure Configuration, you can save configurations locally. The saved configurations can then be bundled in a Task and pushed to the device.
- **Workflow**—After an order is placed for a product, it goes through a workflow (approval, shipping, and receiving) before going to the service activator.
- **Audit Trail**—For every PIN/Password change, PIN/Password reset, PIN/Password change on next login, unlock voice mail of a subscriber in a Unity or Unity Connection device, an audit entry is created.

**Note**

Data is purged when the retention time or retention count criterion is met. For example, if the data is older than the retention time, it is removed. Also, if the data amount exceeds the retention count, it is removed.

To purge Provisioning Manager data, select **System Administration > Data Maintenance**. You can provide the data in the Data Maintenance Configuration page.

## Configuring Provisioning Manager to Use AAA Servers

You can configure Provisioning Manager to use AAA servers for authentication when users log into Provisioning Manager. Provisioning Manager does not retrieve authorization or accounting information, and it does not write information to the AAA server.

**Note**

Provisioning Manager allows you to add either Lightweight Directory Access Protocol (LDAP) or Access Control Server (ACS) servers.

AAA servers are enabled on a per Domain basis. After adding a AAA server, you then assign it to a Domain. Then all the users in that Domain will be authenticated against that AAA server. If a AAA server is not associated to a Domain, all the Domain's users are authenticated locally.

**Note**

The administrator account (padmin) is always authenticated locally.

When configuring Provisioning Manager to use Cisco Secure Access Control Server, be aware of the following:

- When you click the Test Connection button, only the connectivity of the IP address is checked.
- The Shared Secret Key is used only for authentication.

- If you entered an incorrect Shared Secret Key, when you try to log into Provisioning Manager, you will get an incorrect secret key error.
- ACS does not support synchronization with Provisioning Manager (see [Synchronizing an LDAP Server with Provisioning Manager, page 5-40](#)).

## Adding a AAA Server

### Before you Begin

If you are adding an ACS server, you must go to the ACS Admin page, and in the Network Configuration tab, add the Provisioning Manager server as a AAA client (with TACACS).

[Table 7-1](#) describes the fields for adding a AAA server.



#### Note

The fields that are displayed in the AAA Server Configuration page depend on the AAA server you select in the Server Type field. Not all fields will appear.

**Table 7-1** AAA Server Configuration Fields

Field	Description
AAA Server Name	AAA server name.
Server Type	Type of AAA server. Either ACS or LDAP.
LDAP Server Type	Type of LDAP server. <b>Note</b> Provisioning Manager supports only Microsoft AD 2000, 2003, and 2008.
AAA Server IP Address	IP address of the AAA server.
Server Port	Port number for the AAA server.
Backup Server IP Address	IP address of the backup AAA server.
Backup Server Port	Port number for the backup AAA server.
Admin Distinguished Name	The administrative user ID of the LDAP manager that has access rights to the LDAP directory.
Admin Password	The administrative users password (LDAP manager).
LDAP User Search Base	The user search base. Provisioning Manager searches for users under the base, CN=Users, DC=Cisco,DC=com.
Use SSL	You should select this check box if Provisioning Manager should use Secure Socket Layer (SSL) encryption for the transmission channel between Provisioning Manager the AAA server.
ACS Authentication Protocol	Protocol used by the ACS server for authentication.
Enable Data Encryption	Enables data encryption between Provisioning Manager and the ACS server.



- 
- Step 1** Select **System Administration > AAA Servers**.  
The AAA Server Configuration page appears.
- Step 2** Click **AAA Server**.
- Step 3** Enter the required information for the AAA server (for descriptions of the fields, see [Table 7-1](#)).
- Step 4** Click **Save**.
- 

## Enabling SSL Support for a AAA Server



**Note** SSL is supported only for LDAP servers.

To enable SSL for a AAA server, you must import the SSL certificate for the LDAP server into Provisioning Manager. Provisioning Manager provides a command line script to import the SSL certificate.

- 
- Step 1** On the Provisioning Manager system, open a command prompt.
- Step 2** At the command prompt, go to `<Installation Directory>\sep\build\bin`.



**Note** If you accepted the default location during installation, the installation directory is `C:\CUPM`.

- Step 3** At the command prompt, run the following command:  
`ImportSSLCertificate.bat <operation> <alias> [path]`

Following are descriptions for the fields:

- `operation`—The action that the command is performing. You can enter either *import* or *delete*.
- `alias`—The string under which the certificate will be stored in the Provisioning Manager key store.
- `path`—The path where the certificate is stored (for example, `C:\servercert.cer`). This is required only if you are importing a certificate.

- Step 4** Restart Provisioning Manager.
- Step 5** Go to the AAA Server Configuration page and select the Use SSL check box.



**Note** To delete an SSL certificate in Provisioning Manager, run the same script, making sure to enter *delete* for the operation.

---

## Changing AAA Server Information


After a AAA server is added, you can update its information.

- 
- Step 1** Select **System Administration > AAA Servers**.

- The AAA Server Configuration page appears.
- Step 2** Click **View AAA Server**.
- The Choose a AAA Server dialog box appears.
- Step 3** Select the AAA Server that you require.
- Information for the selected server appears.
- Step 4** In the Options pane, click **Update**.
- The Update a AAA Server page appears.
- Step 5** Edit the fields as required. (For explanations of the fields, see [Adding a AAA Server, page 7-16](#).)
- Step 6** Click **Save**.
- 

## Deleting a AAA Server

Before deleting a AAA server, make sure it is not assigned to a Domain.

- Step 1** Put Provisioning Manager in maintenance mode (see [Maintenance Mode, page 7-19](#)).
- Step 2** Select **System Administration > AAA Servers**.
- The AAA Server Configuration page appears.
- Step 3** Click **View AAA Server**.
- The Choose a AAA Server dialog box appears.
- Step 4** Select the AAA Server that you require.
- Information for the selected server appears.
- Step 5** In the Options pane, click **Delete AAA Server**.
- A confirmation dialog box appears, asking you to confirm the deletion.
-  **Note** The system must be in maintenance mode for the Delete command to appear in the Options pane.
- Step 6** Click **OK**.
- The AAA Server deletion begins, with a progress bar displaying the status of the deletion in the Options pane.
- 

## Testing the Connection to a AAA Server

After a AAA server is added to Provisioning Manager, you can test the connection to the server at any time.



- Note** When a AAA server is added, a test of the connection to both the main and the backup AAA server is automatically performed.
-

- 
- Step 1** Select **System Administration > AAA Servers**.  
The AAA Server Configuration page appears.
- Step 2** Click **View AAA Server**.  
The Choose a AAA Server dialog box appears.
- Step 3** Select the AAA Server that you require.  
Information for the selected server appears.
- Step 4** In the Options pane, click **Test Connection**.  
A message appears, stating whether or not the test was successful.
- 

## Maintenance Mode

You can put Provisioning Manager into maintenance mode to perform user-impacting actions that are not available in normal mode, such as deleting Domains, processors, and Service Areas.

- 
- Step 1** Select **System Administration > Maintenance Mode**.  
The Application Mode page appears.
- Step 2** Click **Enter Maintenance Mode**.  
All users except users with administrative rights are logged out. A warning appears on the login page, notifying users that system use is limited to users with administrative privileges. Maintenance options that are not available in normal mode, such as deleting Domains, become available.
- Step 3** Perform any maintenance activities, such as deleting a Domain.
- Step 4** When you have completed maintenance activities, select **System Administration > Maintenance Mode**. The Application Mode page appears.
- Step 5** Click **Enter Normal Mode**.  
The warning on the login page is removed and users can now log in as usual. Maintenance options such as deleting Domains are no longer available.
- 

## Provisioning Manager Database Backup and Restore

There are two backup and restore scenarios; select the set of procedures that matches your scenario:

- Backup and restore on a single machine, with the same installation or a new installation. For this scenario, see [Backing Up the Single-Machine Provisioning Manager Database, page 7-20](#) and [Restoring the Single-Machine Provisioning Manager Database, page 7-21](#).
- Backup and restore for a distributed database scenario, for the same installation, a new installation with the same IP address, or a new installation with a new IP address. For this scenario, see [Backing Up Provisioning Manager for a Distributed Database, page 7-23](#) and [Restoring Provisioning Manager for a Distributed Database, page 7-24](#).

**Note**

When backing up files, you should place the files on a different file server. Also, you should burn the backup data onto a CD.

## Backing Up the Single-Machine Provisioning Manager Database

This procedure requires that you have administrator level access to the Provisioning Manager database (the PostgreSQL database).

**Step 1** On the Provisioning Manager system, stop the following services:

- Apache
  - cupm JBossService
  - cupm NiceService
- a. On the Windows desktop, select **Start > Control Panel > Administrative Tools > Services**.
  - b. Right-click each of the services and click **Stop**.

**Step 2** On the Windows desktop, select **Start > All Programs > PostgreSQL8.2 > Command Prompt**. A command prompt opens in the `<Installation Directory>\pgsql8.2\bin` directory.

**Note**

If you accepted the default location during installation, the installation directory is `C:\CUPM`.

**Step 3** At the command prompt, run the following command and enter the PostgreSQL administrator password when prompted.

```
pg_dumpall -o -U<username> > <directory>\<backup file name>
```

- `<username>`—The username of the PostgreSQL administrator. If you accepted the default, the administrator username is `postgres`.
- `<directory>`—The directory must already exist.
- `<backup file name>`—The filename must not currently exist.

**Note**

Enter the password each time that you are prompted.

This command is used to backup the database by storing the database information in a file.

**Step 4** If you are backing up on the same installation, proceed to the next step. If you are backing up for a new installation, make backup copies as described in this step.

In a backup folder, make copies of the following files and directories:

- `<Installation Directory>\install.log`
- `<Installation Directory>\sep\dfc.properties`
- `<Installation Directory>\sep\dfc.keystore`
- `<Installation Directory>\EnterprisePlatform-4.2.0.GA_CP09\server\cupm\conf\ login-config.xml`
- `<Installation Directory>\EnterprisePlatform-4.2.0.GA_CP09\server\cupm\deploy\dfc-ds.xml`

- Step 5** Start the following services:
- Apache
  - cupm JBossService
  - cupm NiceService
- a. On the Windows desktop, select **Start > Control Panel > Administrative Tools > Services**.
  - b. Right-click each of the services and click **Start**.
- 

## Restoring the Single-Machine Provisioning Manager Database

If you are restoring to a new installation, have the system with the new installation up and running before beginning this procedure.

This procedure requires that you have administrator level access to the Provisioning Manager database (the PostgreSQL database).

### Before You Begin

If you are restoring the database on a new system, you must verify that the following ports are not being used by another application:

- dfc.jboss.port=46008
- dfc.postgres.port=5432
- dfc.nice.rmi.registry.internal.port=46001
- dfc.webport=80

If a port is being used by another application, you must change the port number to a vacant port. These settings are defined in the *<Installation Directory>\sep\dfc.properties* file. (If you accepted the default location during installation, the installation directory is C:\CUPM.)

- Step 1** Stop Provisioning Manager services (for information on which services to stop, see [Step 1 on page 7-20](#)).
- Step 2** On the Windows desktop, select **Start > All Programs > PostgreSQL8.2 > Command Prompt**.  
A command prompt opens, displaying *<Installation Directory>\pgsql8.2\bin*.



**Note** If you accepted the default location during installation, the installation directory is C:\CUPM.

- Step 3** To enter the PostgreSQL prompt, run the following command and enter the PostgreSQL administrator password for the current installation when prompted:

```
psql.exe -U<username> -d postgres
```

Where *<username>* is the username of the PostgreSQL administrator. If you accepted the default, the administrator username is *postgres*.

- Step 4** Before restoring the database, you must drop the database name and role. At the command prompt, run the following commands exactly as shown, one at a time and in the following order:

- **DROP DATABASE cupm;**

Where *cupm* is the database name to be removed.

Expected output: DROP DATABASE

- **DROP ROLE <rolename>;**

Where <rolename> is the username for the SEP database user. If you accepted the default, the username is *cupm*.

Expected output: DROP ROLE

- **ALTER ROLE <username> WITH PASSWORD '<password>;'**

Where <username> is the username of the PostgreSQL administrator user, and <password> is the password set for the PostgreSQL administrator with backed-up data. If you accepted the default administrator username, the username is *postgres*.

Expected output: ALTER ROLE

**Step 5** Enter \q to quit the PostgreSQL prompt.

**Step 6** From the command line, run the following command; when prompted, enter the password that was set in the previous step for the PostgreSQL user:

```
psql.exe -U<username> -d postgres < <directory>\<file name to be restored from>
```

Where <username> is the username of the PostgreSQL administrator. If you accepted the default, the administrator username is *postgres*.

This command restores the database.

**Step 7** If you are restoring to the same installation, proceed to the next step. If you are restoring to a new installation, copy back the following backed-up files:

- <Installation Directory>\install.log
- <Installation Directory>\sep\dfc.properties
- <Installation Directory>\sep\dfc.keystore
- <Installation Directory>\EnterprisePlatform-4.2.0.GA\_CP09\server\cupm\conf\ login-config.xml
- <Installation Directory>\EnterprisePlatform-4.2.0.GA\_CP09\server\cupm\deploy\dfc-ds.xml

**Step 8** Start the following services:

- Apache
  - cupm JBossService
  - cupm NiceService
- a. On the Windows desktop, select **Start > Control Panel > Administrative Tools > Services**.
  - b. Right-click each of the services and click **Start**.
-

## Backing Up Provisioning Manager for a Distributed Database

This procedure requires that you have administrator level access to the Provisioning Manager database (the PostgreSQL database).

- Step 1** On the system where Provisioning Manager is running, stop the following services:
- Apache
  - cupm JBossService
  - cupm NiceService
- a. On the Windows desktop where Provisioning Manager is running, select **Start > Control Panel > Administrative Tools > Services**.
  - b. Right-click each of the services and click **Stop**.

- Step 2** On the Windows desktop where the Provisioning Manager database is running, select **Start > All Programs > PostgreSQL8.2 > Command Prompt**. A command prompt opens in the *<Installation Directory>\pgsql8.2\bin* directory.



**Note** If you accepted the default location during installation, the installation directory is C:\CUPM.

- Step 3** At the command prompt, run the following command and enter the PostgreSQL administrator password when prompted.

```
pg_dumpall -o -U<username> > <directory>\<backup file name>
```

Where:

- *<username>*—The username of the PostgreSQL administrator. If you accepted the default, the administrator username is *postgres*.
- *<directory>*—The directory must already exist.
- *<backup file name>*—The file name must not currently exist.



**Note** Enter the password each time that you are prompted.

This command is used to backup the database by storing the database information in a file.

- Step 4** If you are backing up on the same installation, proceed to the next step. If you are backing up for a new installation, either with the same or a new IP address, on the machine where Provisioning Manager is running, make copies of the following files and directories in a backup folder:
- *<Installation Directory>\install.log*
  - *<Installation Directory>\sep\dfc.properties*
  - *<Installation Directory>\sep\dfc.keystore*
  - *<Installation Directory>\EnterprisePlatform-4.2.0.GA\_CP09\server\cupm\conf\ login-config.xml*
  - *<Installation Directory>\EnterprisePlatform-4.2.0.GA\_CP09\server\cupm\deploy\dfc-ds.xml*
- Step 5** Start the following services:
- Apache
  - cupm JBossService

- cupm NiceService
- a. On the Windows desktop, select **Start > Control Panel > Administrative Tools > Services**.
- b. Right-click each of the services and click **Start**.

### Restoring Provisioning Manager for a Distributed Database

If you are restoring to a new installation, either with the same or a new IP address, have the system with the new installation up and running before beginning this procedure.

This procedure requires that you have administrator level access to the Provisioning Manager database (the PostgreSQL database).



#### Note

If you are restoring the database on a new system, you must verify that the following ports are not being used by another application:

- dfc.jboss.port=46008
- dfc.postgres.port=5432
- dfc.nice.rmi.registry.internal.port=46001
- dfc.webport=80

If a port is being used by another application, you must change the port number to a vacant port. These settings are defined in the `<Installation Directory>\sep\dfc.properties` file. (If you accepted the default location during installation, the installation directory is `C:\CUPM`.)

Also, you will need to change the system name in one of the following settings:

- dfc.postgres.host=<system name> (If the database is on one system.)
- dfc.postgres.hostlist=<system names> (If the database is on multiple systems.)

**Step 1** On the system where Provisioning Manager is running, stop the Provisioning Manager services (for information on which services to stop, see [Step 1 on page 7-23](#)).

**Step 2** On the Windows desktop where the Provisioning Manager database is running, select **Start > All Programs > PostgreSQL8.2 > Command Prompt**.

A command prompt opens, displaying `<Installation Directory>\pgsql8.2\bin`.



**Note** If you accepted the default location during installation, the installation directory is `C:\CUPM`.

**Step 3** To enter the PostgreSQL prompt, run the following command and enter the PostgreSQL administrator password for the current installation when prompted:

```
psql.exe -U<username>
```

Where `<username>` is the username of the PostgreSQL administrator. If you accepted the default, the administrator username is `postgres`.

**Step 4** Before restoring the database, you must drop the database name and role. At the command prompt, run the following commands exactly as shown, one at a time and in the following order:

- **DROP DATABASE cupm;**

Where `cupm` is the database name to be removed.



Expected output: DROP DATABASE

- `DROP ROLE <rolename>;`

where *<rolename>* is the username for the SEP database user. If you accepted the default, the username is *cupm*.

Expected output: DROP ROLE

- `ALTER ROLE <username> WITH PASSWORD '<password>;'`

where *<username>* is the username of the PostgreSQL administrator, and *<password>* is the password set for the PostgreSQL administrator with backed-up data. If you accepted the default administrator username, the username is *postgres*.

Expected output: ALTER ROLE

**Step 5** Enter \q to quit the PostgreSQL prompt.

**Step 6** From the command line, run the following command; when prompted, enter the password that was set in the previous step for the PostgreSQL user:

```
psql.exe -U<username> -d postgres < <directory>\<file name to be restored from>
```

where *<username>* is the username of the PostgreSQL administrator. If you accepted the default, the administrator username is *postgres*.

This command restores the database.

**Step 7** If you are restoring to the same installation, proceed to [Step 9](#). If you are restoring to a new installation, either with the same or a new IP address, copy back the following backed up files on the machine where Provisioning Manager is running:

- *<Installation Directory>\install.log*
- *<Installation Directory>\sep\dfc.properties*
- *<Installation Directory>\sep\dfc.keystore*
- *<Installation Directory>\EnterprisePlatform-4.2.0.GA\_CP09\server\cupm\conf\ login-config.xml*
- *<Installation Directory>\EnterprisePlatform-4.2.0.GA\_CP09\server\cupm\deploy\dfc-ds.xml*

**Step 8** If you are restoring to the same IP address, proceed to [Step 9](#). If you are restoring to a new installation with a new IP address, complete this step.

a. On the system where Provisioning Manager is running, in the file *<Installation Directory>\sep\dfc.properties*, update the following property with the new IP address:

```
dfc.postgres.host=<New DB Server IP Address>
```

b. On the system where Provisioning Manager is running, in the file *<Installation Directory>\EnterprisePlatform-4.2.0.GA\_CP09\server\cupm\deploy\dfc-ds.xml* update the following property with the new IP address:

```
<connection-url>jdbc:postgresql://<New DB Server IP Address>5432/cupm/</connection-url>
```

c. On the Windows desktop of the machine where the database is running, go to **Start > Programs > PostgreSQL 8.2 > pgAdmin III**.

d. Double-click *cupmPostgreSQL* and log in using the PostgreSQL administrator password.

e. Select **Database > cupm**.

f. Click the SQL menu item at the top of the query window, and in the top right pane, enter the following command:

```
delete from nicesyseng where host='<Old NICE Server IP Address>'
```

- g. Click the **Execute Query** button at the top of the query window.
- h. In the Output Pane at the bottom of the screen, confirm that the result message says the query was returned successfully.
- i. Exit the query window.
- j. Exit the pgAdminIII window.
- k. Restart PostgreSQL on the machine where the database is running.
  - On the Windows desktop, select **Start > Control Panel > Administrative Tools > Services**.
  - Right-click the service cupmPostgreSQL and click **Restart**.

**Step 9** On the system where Provisioning Manager is running, start the following services:

- Apache
  - cupm JBossService
  - cupm NiceService
- a. On the Windows desktop, select **Start > Control Panel > Administrative Tools > Service**.
  - b. Right-click each of the services and click **Start**.

## Changing the IP Address on a Provisioning Manager System

If you are changing the IP address on a single machine setup, after changing the IP address on the system you must stop and restart Provisioning Manager (**Start > Programs > Cisco Unified Provisioning Manager > Stop Cisco Unified Provisioning Manager**).

If you are changing the IP address on a distributed setup, you can change either system's IP address. See either [Changing the IP Address on the Provisioning Manager Server \(for a Distributed Setup\)](#), page 7-26 or [Changing the IP Address on the Provisioning Manager Database Server \(for a Distributed Setup\)](#), page 7-27.

## Changing the IP Address on the Provisioning Manager Server (for a Distributed Setup)

This procedure is required only for a distributed setup. Perform this procedure after changing the IP address of the Provisioning Manager server.

- Step 1** On the Windows desktop of the machine where Provisioning Manager is running, select **Start > Programs > Cisco Unified Provisioning Manager > Stop Cisco Unified Provisioning Manager**.
- Step 2** On the Windows desktop of the machine where the database is running, select **Start > Programs > PostgreSQL 8.2 > Stop Service**.
- Step 3** On the system where the Provisioning Manager Database is running, in the file *<Installation Directory>\pgsql8.2\data\pg\_hba.conf*, update the following line with the new IP address:
 

```
host all all <Provisioning Manager_IP_ADDR>/32 md5
```
- Step 4** On the Windows desktop of the machine where the database is running, select **Start > Programs > PostgreSQL 8.2 > Start Service**.

- Step 5** On the Windows desktop of the machine where Provisioning Manager is running, select **Start > Programs > Cisco Unified Provisioning Manager > Start Cisco Unified Provisioning Manager**.

## Changing the IP Address on the Provisioning Manager Database Server (for a Distributed Setup)

This procedure is required only for a distributed setup. Perform this procedure after changing the IP address of the Provisioning Manager database server.

- Step 1** On the Windows desktop of the machine where Provisioning Manager is running, select **Start > Programs > Cisco Unified Provisioning Manager > Stop Cisco Unified Provisioning Manager**.
- Step 2** On the Windows desktop of the machine where the database is running, select **Start > Programs > PostgreSQL 8.2 > Stop Service**.
- Step 3** On the system where Provisioning Manager is running, update the following files:
- `<Installation Directory>\sep\dfc.properties`—Update the following line with the new IP address:  
`dfc.postgres.host=<DB_SERVER_ADDR>`
  - `<Installation Directory>\EnterprisePlatform-4.2.0.GA_CP09\server\cupm\deploy\dfc-ds.xml`—Update the following line with the new IP address:  
`<connection-url>jdbc:postgresql://<DB_SERVER_ADDR>:5432/cupm</connection-url>`
- Step 4** On the Windows desktop of the machine where the database is running, select **Start > Programs > PostgreSQL 8.2 > Start Service**.
- Step 5** On the Windows desktop of the machine where Provisioning Manager is running, select **Start > Programs > Cisco Unified Provisioning Manager > Start Cisco Unified Provisioning Manager**.

## Provisioning Manager Processes

You can use the Windows Task Manager to find the process identifier (located in the PID column) for any processes running on Windows.

In a Windows command prompt, you can run the `netstat -aon` command to display all the TCP/UDP ports open and the process identifier. From this output, you can determine which processes are listening on a particular port or are keeping it open. For more information on using the `netstat` command and Task Manager, see the Windows 2003 documentation.

Table 7-2 provides a complete list of Provisioning Manager processes.

**Table 7-2** Provisioning Manager Processes

Name	Windows Service Name	Description	Dependency
Apache.exe	Apache2	Apache Web Server.	None.
JBossService.exe	cupm JBossService	JBoss Application Server.	PostgreSQL Database Server.

Table 7-2 Provisioning Manager Processes (continued)

Name	Windows Service Name	Description	Dependency
NICEService.exe	cupm NICEService	CUPM NICE Engine.	PostgreSQL Database Server.
postgres.exe and pg_ctl.exe	cupmPostgreSQL	PostgreSQL Database Server.	None.

## Scheduling Synchronizations

Provisioning Manager provides a command line script utility that can be used to schedule periodic processor and Domain synchronizations. The synchronization script has enables you to regularly schedule a subset of the synchronization operations at different periodic intervals and across multiple time zones.

For more details, see [Executing Synchronizations, page 7-30](#).



### Note

Scheduling multiple overlapping executions of the script lowers system performance.

You can schedule synchronizations for the following:

- Call Processors (see [Synchronizing Call Processors, page 5-14](#))
- Unified Message Processors (see [Synchronizing Unified Message Processors, page 5-22](#))
- Unified Presence Processors (see [Synchronizing Unified Presence Processors, page 5-26](#))
- Domains (see [Synchronizing Domains, page 5-33](#))

You can also use the Scheduled Tasks functionality that comes with your Windows system.



### Note

When scheduling synchronization, you should use the same Windows user account that was used when Provisioning Manager was installed. If you want to schedule synchronization from a different Windows user account, the following environment variables must be set:

- DEV\_DIR
- EOSS\_BASE
- JBOSS\_HOME
- JAVA\_HOME
- DFC\_PROPERTIES

The values for these properties can be copied from the user account that was used when Provisioning Manager was installed.

- 
- Step 1** On the Windows desktop, select **Start > Programs > Accessories > System Tools > Scheduled Tasks**.  
The Scheduled Tasks window opens.
- Step 2** Double-click **Add Scheduled Task**.  
The Scheduled Task wizard appears.
- Step 3** Click **Next**.

- Step 4** On the next page, click **Browse**.
- Step 5** Browse to the file C:\CUPM\sep\build\bin\sync.bat (this is the correct location if you accepted the default location during installation).
- Step 6** Select how often you want the synchronization to run.
- Step 7** Click **Next**.
- Step 8** Select the time and day when you want the synchronization task to start.
- Step 9** Click **Next**.




---

**Note** You should run synchronizations during off-peak network usage periods.

---

- Step 10** Enter the password (and confirm) for the system's administrator user.
- Step 11** Click **Next**.
- Step 12** Click **Finish**.
- The new scheduled task appears in the Scheduled Tasks window.
- Step 13** Right-click the new scheduled task and select **Properties**.
- Step 14** In the Run field, at the end of the string (after *sync.bat*), enter either a granular synchronization control file (see [Granular Synchronization, page 7-30](#)), or one or more of the following commands:




---

**Note** You can also use these commands in a command prompt to start a synchronization. Run the commands at the following location: *<Installation Directory>\sep\build\bin\sync.bat*.

---

- **callprocessor**—Runs infrastructure and subscriber synchronizations for all Call Processors in the system. This command cannot be used in conjunction with a granular synchronization control file.
- **messageprocessor**—Runs infrastructure and subscriber synchronizations for all Unified Message Processors in the system. This command cannot be used in conjunction with a granular synchronization control file.
- **presenceprocessor**—Runs infrastructure and subscriber synchronizations for all Unified Presence Processors in the system. This command cannot be used in conjunction with a granular synchronization control file.
- **domain**—Runs synchronizations for all the Domains in the system. The order of Domain synchronizations depends on the value set on the syncPrecedence property for the corresponding Domain instances. This command cannot be used in conjunction with a granular synchronization control file.
- **all**—Runs infrastructure and subscriber synchronizations for all Call Processors, Unified Message Processors, and Unified Presence Processors. The order of synchronizations is callprocessor, messageprocessor, and Domain. This command cannot be used in conjunction with a granular synchronization control file.
- **test**—The synchronization operations are not executed but are logged. This can be used for testing or debugging the synchronization script execution.
- **abortonfail**—Specifies that the script will abort if a device or Domain synchronization failure is encountered. If this is not specified, the synchronization script will continue on success or failure.
- **forcedomainsync**—Specifies that the Domain synchronization should be performed even if one of the devices in the Domain may have had a failed synchronization. If this parameter is not specified, then the Domain synchronization will not proceed if there are device synchronization errors.




---

**Note** To display usage information for the script, you can enter the *help* command.

---

**Step 15** Click **OK**.

---

## Executing Synchronizations

Infrastructure and subscriber synchronizations are executed on all processor types. The processor types are synchronized in the following order:

1. Call Processors
2. Unified Message Processors
3. Unified Presence Processors
4. Domain Synchronizations (only if synchronization failures have occurred)

**Note**


---

The synchronization script generates log messages related to its execution. The log files are located in the *<Installation Directory>\sep\logs* folder (if you accepted the default location during installation, the installation directory is C:\CUPM). The log filename contains a time stamp and the prefix *sync-script* (for example, *sync-script-20100920-153847.log*).

---

## Granular Synchronization

Granular synchronization enables you to control the synchronization operations by specifying the target processors, Domains, synchronization types (infrastructure/subscriber), and order of synchronization operations to be executed by the script.

You can use the *sync.bat* tool to specify granular synchronization:

```
sync.bat [-g <filename>] [<options>]
```

where:

- *<filename>*—Properties file you have created.
- *<options>*—(Optional field) The following can be given as options:
  - *test*—Allows script to run without invoking methods, but list the processors and Domains that will be synchronized.
  - *abortonfail*—Instructs the script to quit after a synchronization failure.
  - *help*—displays the usage information.

To print the usage information, you can enter C:\CUPM\sep\build\bin\sync.bat

The synchronization operations are defined in a control file that serves as an input to the tool. Provisioning Manager provides sample control files. The sample files are located in the *<Installation Directory>\sep\ipt\config\sample\syncTool* folder (if you accepted the default location during installation, the installation directory is C:\CUPM).

You can generate a control file and each line in the control file corresponds to a synchronization operation to be executed. The entries in the file must be specified according to a predefined format. The order of entries in the file dictates the order of the synchronization operations to be executed. The script processes line by line and executes the synchronization operation. If the line entry has incorrect syntax or formatting, or has invalid data, it is skipped, and an error message is logged.

The line entries must be specified using the following format, with the synchronization types as infrastructure, subscriber, or both:

- `cp.all:<sync type>`—Executes the synchronization operation as specified by `<sync type>` on all the Call Processors configured in Provisioning Manager.

Example: `cp.all: infra`

- `cp.<processor name>:<sync type>`—Executes the synchronization type on the Call Processor configured in Provisioning Manager whose name matches what is specified by `<processor name>`.

Example: `cp.CCM-713-CiscoUnifiedCM: sub`

- `mp.all:<sync type>`—Executes the synchronization operation as specified by `<sync type>` on all the Unified Message Processors configured in Provisioning Manager.

Example: `mp.all: infra`

- `mp.<processor name>:<sync type>`—Executes the synchronization type on the Unified Message Processors configured in Provisioning Manager whose name matches what is specified by `<processor name>`.

Example: `mp. UC-80-CiscoUnityConnection: sub`

- `pp.all:<sync type>`—Executes the synchronization operation as specified by `<sync type>` on all the Unified Presence Processors configured in Provisioning Manager.

Example: `pp.all: infra`

- `pp.<processor name>:<sync type>`—Executes the synchronization type on the Unified Presence Processor configured in Provisioning Manager, whose name matches what is specified by `<processor name>`.

Example: `pp.CUPS-CiscoUnifiedPresence: sub`

- `domain.all:`—Executes synchronization on all the Domains configured in Provisioning Manager.

- `domain.<Domain ID>`:—Executes a synchronization on the Domain configured in Provisioning Manager whose ID matches what is specified by `<Domain ID >`.

To illustrate the usage of the synchronization configuration parameters, consider a control file with the following entries:

```
cp.Test-CUCM: sub
mp.Test-UC: sub
pp.Test-UP: sub
domain.all:
```

When the script is executed with the above entries, the subscriber synchronization executes as follows:

1. Call Processor with ID "Test-CUCM.
2. Unified Message Processor with ID "Test-UC.
3. Unified Presence Processor with ID "Test-UP.
4. All Domains in the system.

The properties file(s) can be created in the same directory as the sync script:

*<Installation Directory>\sep\build\bin.*

If you wish to have a schedule synchronization for Devices and Domains in Europe and Devices and Domains in North America, create two properties files.

1. Create a file containing Devices and Domain for Europe as **EUSync.txt**.
2. Configure a scheduled synchronization using **sync.bat ?g EUSync.txt**.
3. For North America, create a file as **NASync.txt**.
4. Configure a scheduled synchronization using **sync.bat ?g NASync.txt**.

## Searching Inventory

If you are assigned the Administration authorization role you can browse the Provisioning Manager network and service inventory. You can view different types of network or service-related data in a tree-based selector.

The following objects appear in the selector:

- Global Resources—List infrastructure data stored in Provisioning Manager. Some examples are, Route Partition, Call Search Space, Call Pickup Group.
- Product Catalog—Do not use the information listed. If you want to see a list of products, refer to the external version of the product catalog which is included in the Provisioning Manager NBI SDK. The schema of this data is located in the SDK sub-directory `productcatalog\schema`. The product definitions are located in the SDK sub-directory `productcatalog\metadata`. There is one XML file for each product, defining all required and optional attributes
- Subscribers—List all subscribers and their locations in Provisioning Manager.
- Domain-specific directory numbers, phones, rules and Services Areas.

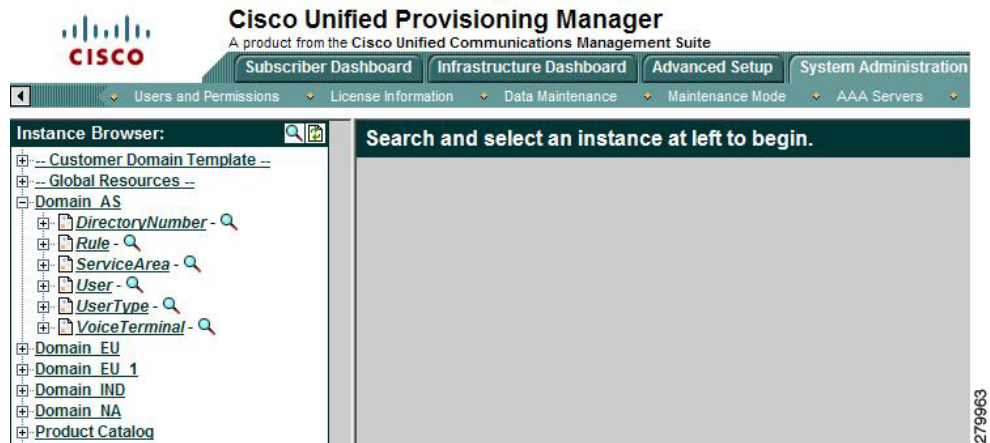
This section provides information for browsing and searching Provisioning Manager inventory, using the Instance Browser and search functionality of the Inventory Manager.

- [Using Inventory Search, page 7-33](#)
- [Creating Search Reports, page 7-40](#)

[Figure 7-1](#) shows an example of the Inventory Search page.



Figure 7-1 Inventory Search



**Step 1** Select **System Administration > Inventory**.

A new page appears.

**Step 2** Do one of the following:

- If you want to browse Provisioning Manager's inventory, click **Browse**. The Instance Browser appears. For information on the Instance Browser, see [Using Inventory Search, page 7-33](#).
- If you want to perform a search of Provisioning Manager's inventory, click **Search**. The Search Reports page appears. On this page you can do the following:
  - Perform a search using a sample report.
  - Create a new Search report to perform a search.

## Using Inventory Search

You can search for inventory objects using basic or advanced searches. You use basic searches to find instances of an object based on its properties. Advanced searches are used to specify more detailed search criteria. You can include multiple constraints, such as customers, properties, associations, and namespaces, to limit the search results. You can also specify what properties you want the search to return. You can save advanced searches as reports, and organize them into categories. Reports can be created only by Administrators.

The following sections describe how to run basic and advanced searches:

- [Performing Basic Searches, page 7-33](#)
- [Performing Advanced Searches, page 7-34](#)
- [Return Values, page 7-38](#)

### Performing Basic Searches

Using the Instance Browser, you can run a basic search for instances of a particular object. In a basic search, the search parameters are based on the properties of the class.

The first step to searching for an instance is specifying the class that it is based on. You can specify search criteria and how the results are displayed by:

- Specifying a keyword or partial keyword. You can use asterisks (\*) as wild cards.
- Specifying whether the results are displayed according to the class name or label property.
- Restricting the search to a particular Domain.
- Including and/or excluding abstract, association, and interface classes.

After you have located the class that the instance is based on, you can narrow your search by specifying search criteria based on the class properties. The number of searchable properties varies from class to class.

---

**Step 1** Select **System Administration > Inventory**.

A new page appears.

**Step 2** Click **Browse**.

The Instance Browser appears.

**Step 3** Click the Search icon (🔍).

The Class Search dialog box appears.

**Step 4** Either enter a class or choose a class from the list.

The Instance Search screen appears.

**Step 5** Complete the fields if you have search parameters you want to specify.

**Step 6** Click Search.

The results appear in the Found matches section.

---

## Performing Advanced Searches

You can perform advanced searches to find inventory instances within a specified object class. An advanced search can be saved for future use.

---

**Step 1** Select **System Administration > Inventory**.

A new page appears.

**Step 2** Do one of the following:

- Click Browse, select a class using a basic search, then click Advanced.
- Click Search, click the New icon (📄), and then select a class.

**Step 3** Add any applicable constraints. You can constrain searches using properties, associations, namespaces, or customers.

**Step 4** Create a list of properties to return in the search from a list of available properties.

The search results include only those instances that contain the selected properties.

**Step 5** Specify associated properties to return in the search, if applicable, by building the path to the properties.

The search results will include only those instances with the selected properties.

**Step 6** Specify associated objects to return in the search, if applicable, by building the path to the objects.

The search results will include only those instances with the selected objects.

**Step 7** Specify whether to include or exclude Namespaces and Object Classes in the search results.

**Step 8** Run the search.

The search results are displayed.

---

The following sections contain detailed instructions for selecting constraints and returning objects and properties:

- [Constraints, page 7-35](#)
- [Defining Property Constraints, page 7-35](#)
- [Defining Association Constraints, page 7-36](#)
- [Defining Namespace Constraints, page 7-38](#)
- [Associated Properties to Return, page 7-38](#)
- [Associated Objects to Return, page 7-39](#)

## Constraints

Use the Add Constraint section to define the constraints for the search.

The following constraints are available for advanced searches:

- **Properties**—To restrict the results to objects that meet specified property criteria. You can set the properties constraint to be case sensitive or case insensitive. You can specify that either all or part of the value must be matched to return results.
- **Associations**—To restrict the results to objects that are (or are not) associated with other objects using a specified association path. Association paths allow the relation between the source object and the queried objects to span multiple association classes.
- **Namespaces**—To restrict the results to objects contained (or not contained) in specified namespaces.
- **Customers**—To restrict the results to objects that are associated with specific customers.

## Defining Property Constraints

You can define searches to select only the objects that meet specified property constraints. For example, you can define a constraint in which only instances that have a specific model number are included in the search results. In this case, the property constraint acts as a filter when searching for a specific object property.

When defining property constraints, the following conditions are available:

- **Equals**—To specify a value that is equivalent in value to the selected property.
- **Contains**—To specify a value that is contained within the value of the selected property.
- **Not equal to**—To specify a value that is not equivalent in value to the selected property.
- **Does not contain**—To specify a value that is not contained within the value of the selected property.
- **In range**—To specify a value that has a Date property that is within the specified range. This operator can only be used when Date properties have been specified for an object, and where reportable=true is set in the class definition properties.

After you select the operator, you can either specify a value, or leave the field blank. If you specify a value, it becomes the default value, although users who execute the search can change the value if required. Leaving the field blank allows a user who is executing the search at a later time to specify a value for that property constraint.

To define property constraints:

- 
- Step 1** In the Advanced Instance Search screen, select a property from the Add Constraint list.
- Step 2** Click **Add**. The available conditions appear in a list.
- Step 3** From the available conditions list, select the appropriate operator and click **Add**.  
The Property list appears in the Add Constraint section.
- Step 4** Select the appropriate property.  
The Value field appears in the Add Constraint section.
- Step 5** In the Value field, do one of the following:
- Specify a default value for the constraint.
  - Leave the field blank so that users can specify their own constraints.
- Step 6** If you want the search to be case-insensitive, enable **Ignore Case**.
- Step 7** Click **Add**.  
The constraint appears in the Selected Constraints section.
- Step 8** Repeats Steps 1 through 7 to add additional constraints.
- Step 9** If you have defined multiple constraints, specify the *and* or *or* operands as required in the Operand column.
- 

## Defining Association Constraints

You can define searches to select objects that are, or are not, associated with other objects. For example, you can define a search for Lines that are associated with Voice Terminals of a certain type, excluding Voice Terminals of another type. Additionally, you can sort within a range; for example, you can search for all Phones with two to six Lines.

When defining association constraints, the following conditions are available:

- Associated with—Used to specify the object instance and association path associating the search class with another object instance.
- Not associated with—Used to specify the object instance to *not* associate with for the search class.
- Associated with range—Used to specify the range of object instances to associate with the search class. If you select this condition, you must complete the appropriate association, condition, and quantity information.

After the operator is selected, you must select an object instance for the constraint. Each operator has a different procedure for selecting object instances to associate with.

To define constraints using the *associated with* operator:

- 
- Step 1** From the Add Constraint list, select **Associations**.
- Step 2** Click **Add**.

The available conditions appear in a list.

**Step 3** From the available conditions list, select **Associated with**.

**Step 4** Click **Add**.

The constraint is added to the Add Constraint section.

**Step 5** In the Add Constraint section, in the Instance field, click the Search icon (🔍).

The Instance and Association Path dialog box appears.

**Step 6** In the To Class list, select the class that the object instance is associated with, and click **Apply**.

**Step 7** In the By Association list, select the appropriate association, and then click **Apply**.

The Participating As list appears.

**Step 8** Select the appropriate role for the class, and then click **Apply**.

**Step 9** To specify another class in the To Class field, repeat Steps 6 through 8.

**Step 10** To restrict the constraint to a specific object instance, click the Search icon (🔍) and search for that instance.

By default, the constraint is not restricted to a particular instance.

**Step 11** Click **Add** to save your selections.

The selected path is displayed.

**Step 12** To add the constraint as defined, click **Add**.

The Selected Constraints section displays the Instance and Association Path information.

**Step 13** If you have defined multiple constraints, select the *and* or *or* operands as required in the Operand column.

---

To define constraints using the *associated with range* operator:

---

**Step 1** From the Add Constraint list, select **Associations**.

**Step 2** Click **Add**.

The available conditions appear in a list.

**Step 3** From the available conditions list, select the **Associated with range** condition, then click **Add**.

The constraint is added to the Add Constraint section.

**Step 4** From the Association list, select the association class that you want to search with.

**Step 5** From the Condition list, select the condition to satisfy in the search.

**Step 6** In the Quantity field, enter the number of instances the condition must meet, then click **Add**.

The constraint is displayed in the Selected Constraints section.

**Step 7** Repeat Steps 1 through 6 to add additional constraints.

**Step 8** If you have defined multiple constraints, select the *and* or *or* operands as required in the Operand column.

---

## Defining Namespace Constraints

Use namespace constraints to restrict the search to or exclude specific namespaces.

- 
- Step 1** From the Add Constraint list, select a namespace, then click **Add**.  
Namespace appears in the Add Constraint section.
- Step 2** Do one of the following:
- To specify a namespace to search in, select **Equals**.
  - To exclude a namespace from the search, select **Not Equal To**.
- Step 3** The Value list appears, displaying the available namespaces.
- Step 4** From the Value list, select the namespace, then click **Add**.  
The constraint appears in the Selected Constraints section.
- Step 5** Repeats Steps 1 through 4 to add additional constraints.
- Step 6** If you have defined multiple constraints, select the *and* or *or* operands as required in the Operand column.
- 

## Return Values

By default, the namespace, object class, and object values for each instance are displayed in the results of an advanced search. In addition to the default values, you can select other values for the advanced search to display.

### Properties to Return

The Properties to Return section lists the available properties of the object class being searched, and those properties that you want the search to return. Using the Properties to Return section, you can expand the search to display a list of property values.

- 
- Step 1** In the Properties to Return section, from the Available list, select a property, then click **Add**.  
These properties are displayed in the Selected list.
- Step 2** After adding all the desired properties, click **Apply**.
- 

### Associated Properties to Return

The Associated Properties to Return section identifies the associated object class properties that you want the search to return. Using the Associated Properties to Return section, you can extend the search to include a list of associated object property values.

- 
- Step 1** In the Associated Properties section, click **Add**.  
The Associated Property Path screen appears.
- Step 2** In the To Class list, select the object class.
- Step 3** Click **Apply**.

The By Association list appears.

**Step 4** Select the appropriate association. Click **Apply**.

The Participating as list appears.

**Step 5** Select the appropriate role for the class. Click **Apply**.

The Select Property of lists appear.

**Step 6** Do one of the following:

- From the To Class list, select the object class. Click **Apply**. Repeat Steps 2 and 3 after you have added the classes that you require.
- From the Select Property of list, select the properties of the class that you chose in Step 2. Click **Apply**.

The Associated Property Path screen appears with the selected path displayed.

**Step 7** Click **Add**. The new associated property is displayed in the search screen.



**Tip**

---

To remove a property, select the Remove check box, then click the **Remove** button.

---

### Associated Objects to Return

The Associated Objects to Return section identifies the associated object classes that you want the search to return. Using the Associated Objects to Return section, you can extend the search to include a list of associated objects of a specific class.

---

**Step 1** Click **Add** in the Associated Objects section.

The Associated Object Class Path window appears.

**Step 2** In the To Class list, select the object class, then click **Apply**.

The By Association list appears.

**Step 3** Select the appropriate association, then click **Apply**.

The Participating as list appears.

**Step 4** Select the appropriate role for the class, then click **Apply**.

The To Class list appears.

**Step 5** Do one of the following:

- If you need to continue the path, repeat Steps 2 through 4.
- If you are done, click **Add**.

The new associated property is displayed in the search screen.



**Tip**

---


To remove a property, select the Remove check box, then click the Remove button.

---

## Creating Search Reports

You can save advanced searches (see [Performing Advanced Searches, page 7-34](#)) for future use. These are called Search Reports. Also, Provisioning Manager provides you with sample search reports that you can use, or you can create your own. The sample search reports are not editable.

You can save an advanced search at any time.

- 
- Step 1** Select **System Administration > Inventory > Search**.  
The Search Reports page appears.
- Step 2** Click the New icon ()  
The Class Search dialog box appears.
- Step 3** Either enter a class in the search field or click one of the displayed classes.  
The Instance Search page appears.
- Step 4** Enter the desired search criteria. For instructions on using the Instance Search page, see [Performing Advanced Searches, page 7-34](#).
- Step 5** Click **Save**.  
The Save Search page appears.
- Step 6** Enter a name for the report and choose a category for it.
- Step 7** Click **Save**.  
You are returned to the Advanced Search page, where you can initiate the search.
- 


## Running Search Reports

Once you have saved a search as a Search report, you can run it. Before running a Search report, you can choose to have the search results displayed in the current browser window or in a new window.


- 
- Step 1** Select **System Administration > Inventory > Search**.  
The Search Reports page appears.
- Step 2** Click the report that you want to run (either one of the sample search reports, or a search report that you created).  
The Inventory Search page appears, displaying the constraints that have been defined.
- Step 3** Change the constraint values if required.
- Step 4** To display the search results in a separate browser window, select **Open results in a new window**.
- Step 5** Do one of the following:
- To execute the search and display the search results, click **Search**.
  - To execute the search and write the search results to an Excel spreadsheet, click **Excel**.
- The search results are displayed as specified.
-



## Editing Search Reports

- 
- Step 1** Select **System Administration > Inventory > Search**.  
The Search Reports page appears.
- Step 2** Click the Edit icon () next to the Search report that you want to edit.  
The Instance Search for the report appears.
- Step 3** Make the appropriate changes.  
For instructions on using the Instance Search page, see [Performing Advanced Searches, page 7-34](#).
- 

## Deleting Search Reports

- 
- Step 1** Select **System Administration > Inventory > Search**.  
The Search Reports page appears.
- Step 2** Click the Edit icon () next to the Search report that you want to delete.  
The Instance Search for the report appears.
- Step 3** In the Search Options section, click **Delete**.
- Step 4** In the confirmation box, click **OK**.
- 

## Viewing System Reports

Provisioning Manager contains a set of preconfigured reports. Following are the available reports:

- Service Area Report
- Resource Configuration Report
- Service Configuration Report
- Directory Number Inventory Report
- Audit Trail Report
- Phone Inventory Report

- 
- Step 1** Select **System Administration > Reports**.
- Step 2** Click one of the following available reports:
- Service Area Report
  - Resource Configuration Report
  - Service Configuration Report
  - Directory Number Inventory Report
  - Audit Trail Report

- Phone Inventory Report

A report is displayed.

---