Cisco CallManager Extension Mobility

The Cisco CallManager Extension Mobility feature allows users to temporarily access their Cisco IP Phone configuration such as line appearances, services, and speed dials from other Cisco IP Phones.

With Cisco CallManager 4.0 or later, extension mobility functionality extends to most Cisco IP Phone models. You can configure each Cisco IP Phone model to support Cisco CallManager Extension Mobility by using the Device Profile Default window in Cisco CallManager Administration. This allows users who do not have a user device profile for a particular Cisco IP Phone model to use Cisco CallManager Extension Mobility with that phone model.

Note Check the Cisco IP Phone model documentation to verify that Cisco CallManager Extension Mobility is supported.

This chapter provides the following information about Cisco CallManager Extension Mobility:

Introducing Cisco CallManager Extension Mobility

The following sections will help you to understand Cisco CallManager Extension Mobility, so you can configure and troubleshoot the feature:

Understanding Device Profiles

A device profile defines the attributes of a particular device. A device profile includes information such as the phone template, user locale, subscribed services, and speed dials.

The device profile does not get associated with a physical phone. It includes all the properties of a device except those that are explicitly tied to a device, such as MAC address or directory URL.

When a device profile has been loaded onto a device, the device adopts the attributes of that device profile.

User Device Profile

As system administrator, you configure a user device profile for each individual user. Using the Cisco CallManager User Options window, a user can access this profile and make changes, such as adding a service. You can add, modify or delete a user device profile in Cisco CallManager Administration.

When a user logs in to a phone that is configured for Cisco CallManager Extension Mobility and the user has a user device profile that is configured for that phone, the user device profile replaces the existing configuration of the device.

When a user logs out, the logout profile replaces the user device profile.

Autogenerated Device Profile

The autogenerated device profile represents a special device profile that gets generated when you configure a phone for Cisco CallManager Extension Mobility and choose "Use Current Settings" from the Phone Configuration window. The autogenerated device profile then associates with a specific phone to be the logout device profile.

Note Cisco strongly recommends that you configure Cisco CallManager Extension Mobility to use the autogenerated device profile as the logout profile, not the user device profile.

You cannot associate an autogenerated device profile with a user. An autogenerated device profile can be loaded onto a device only when no user is logged in.

When you make changes to a phone and update it, the update may overwrite modifications of the autogenerated device profile.

Default Device Profile

With Cisco CallManager 4.0 or later, you can configure a default device profile for each Cisco IP Phone model that you want to support Cisco CallManager Extension Mobility. The phone takes on the default device profile whenever a user logs in to a phone model for which that user does not have a user device profile.

A default device profile includes device type (phone model), user locale, phone button template, softkey template, and multilevel precedence and preemption (MLPP) information.

You create a default device profile by using the Default Device Profile Configuration window. A phone model can have zero or one device profile default. The maximum number of default device profiles cannot exceed the number of phone models that support Cisco CallManager Extension Mobility.

Overview of Cisco CallManager Extension Mobility

Cisco CallManager Extension Mobility (an XML-based authentication feature) comprises the Cisco Extension Mobility application service and the Cisco Extension Mobility service. The following feature services need to be activated from the Cisco CallManager Serviceability pages for EM to be enabled:

- Cisco Extension Mobility
- Cisco CallManager Cisco IP Phone Services

The Cisco Extension Mobility service runs as an application on the Cisco Tomcat Web Service. Cisco CallManager Extension Mobility works on phones within a single Cisco CallManager cluster only.

You can activate/deactivate these services from **Cisco CallManager Serviceability > Service Activation**. Refer to the *Cisco CallManager Serviceability Administration Guide* for more information.

Note Cisco CallManager Extension Mobility works on phones within a single Cisco CallManager cluster only.

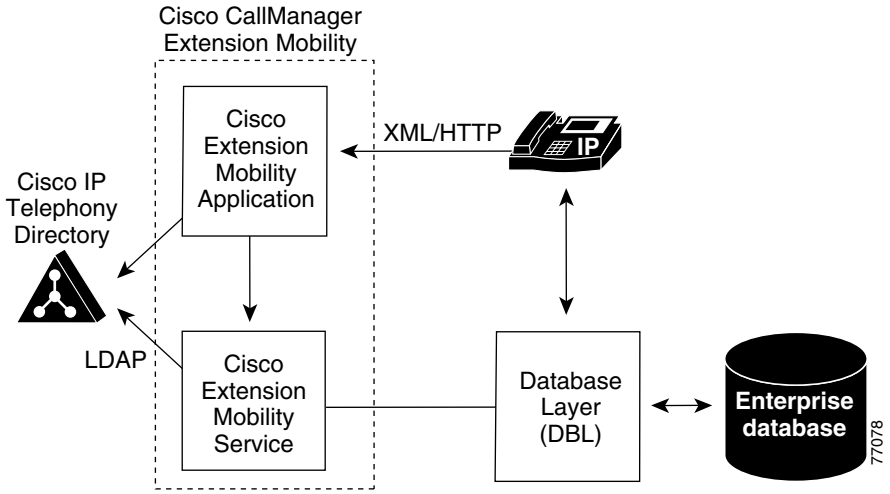
You can use Cisco CallManager Administration to start the Cisco Extension Mobility services (in Cisco CallManager Serviceability Administration), define how the features will work in your system (using the System Parameters window), and define the phone models that will support the feature (using the Device Profile Default window).

As system administrator, you configure a user device profile for each individual user. Using the Cisco CallManager User Options window, a user can access this profile and make changes, such as adding a service like Cisco Extension Mobility.

Users access Cisco CallManager Extension Mobility by pressing the Services button on a Cisco IP Phone and then entering login information in the form of a Cisco CallManager UserID and a Personal Identification Number (PIN). If a user has more than one user device profile, a prompt displays on the phone and asks the user to choose a device profile for use with Cisco CallManager Extension Mobility.

When a user logs in, the Cisco Extension Mobility application receives the XML-over-HTTP request for user authentication and verifies the information against the Cisco CallManager Directory. (See Figure 1-1.)

Figure 1-1 Cisco CallManager Extension Mobility



On authentication, if the login profile matches the login device (that is, the user has a user device profile that is configured for a Cisco IP Phone Model 7960 and logs into a Cisco IP Phone Model 7960), Cisco CallManager Extension Mobility behaves the same way as it does with Cisco CallManager 3.3:

- The phone automatically reconfigures with the individual user device profile information.

  If the user has one user device profile, then the system uses this profile. If the user has more than one user device profile, the user can choose the user device profile that will be used from a list.

- The user can access all the services that the user configured on the device profile.

If that same user logs into a Cisco IP Phone model where the user does not have a configured user device profile, the login profile will not match the login device on authentication. In this scenario, the system loads the device profile default for that phone model onto the phone, and Cisco CallManager Extension Mobility works as described here:

- The system copies all device-independent configuration (that is, user hold audio hold audio source, user locale, userid, speeddials, and directory number configuration except for the setting "line setting for this device") from the user device profile to the login device.
- The system uses the device profile default for that phone model for phone template and softkey template configuration and, if the phone can support addon modules, for the addon module.
- If the phone model supports Cisco IP Phone Services and they are configured, the system copies the services from the user device profile.

For example, the following scenarios occur when a user who has a user device profile that is configured for Cisco IP Phone model 7960 logs in to a Cisco IP Phone model 7905, and the device default profile is loaded on the phone.

- The user can access the user's hold audio source, user locale, userid, speeddials and directory number configuration. The user cannot access his phone line setting; the system configured the phone line setting from the device profile default that is configured for the Cisco IP Phone model 7905.
- The user can access the phone template and the softkey template of the Cisco IP Phone model 7905.
- The user cannot access an addon module because Cisco IP Phone model 7905 does not support it.
- The user can access Cisco IP Phone Services if they are configured for the Cisco IP Phone model 7905, but, the parameters from the subscriber services will reflect the device profile default, not the parameters that the user chose on the User Options window.

Users log out of Cisco CallManager Extension Mobility by pressing the Services button and choosing logout. If users do not log out themselves, the system will automatically log them out if you configured the Service Parameters to do so, or the next user of the phone can log out the previous user. After logout, Cisco CallManager sends the logout profile to the phone and restarts the phone.

SIP Support for Extension Mobility

Cisco CallManager Extension Mobility supports the following Cisco SIP IP Phone models:

- 7970G/7971G
- 7961G/41G and 7961GE/41GE (G = Non Gig; GE = Gig)

Additional Information

See the Related Topics, page 1-26.

Login and Logout Behavior

This section describes how login and logout works from the user's perspective. Use this information to respond to questions or problems that users may encounter.

- Cisco recommends that you direct your users to log in to their phones at the beginning of the work day. This practice ensures that the user device profile gets loaded on their phone.
- If users make changes to their profiles on the Cisco CallManager User Options window, the changes will apply until the next time that they log in.
- The system does not apply the change if the user is already logged in.
- If the User Locale that is associated with the login user or profile does not match the locale or device, after a successful login, the phone will perform a restart followed by a reset. This occurs because the phone configuration file is being rebuilt. Addon module mismatches between profile and device may have the same behavior.
- You can establish a time limit, so Cisco CallManager Extension Mobility automatically logs out users after a certain time throughout the cluster. At the Enforce Maximum Login Time, choose **True** to specify a maximum time for logins and then set the maximum login time.

  See the "Setting the Service Parameters" section on page 1-16.
- You can set the service parameter to allow for multiple logins. If you set multiple login not allowed, Cisco CallManager Extension Mobility supports only one login at a time for a user. Subsequent logins on other devices will fail until the user logs out on the first device.
- If Auto Logout is not enabled and if users forget to log out of a phone, as system administrator, you can log them out. Another user also can log them out when the second user tries to log in to that phone.
- If users are logged out of a Cisco IP Phone that has the Cisco CallManager Extension Mobility feature configured for it, depending on the logout profile, they may not be able to check voice-messaging systems from that phone until they log in. If they receive a busy signal after pressing the Messages button or any key on the touchtone key pad, they must log in before using the phone.
- Users can log in to a phone that is off the hook; however, their Cisco IP Phone will not assume their settings until they go on-hook. When they go on-hook after logging in, their phone will display a "Resetting..." message, and then their phone settings will be available from that phone.

- A user's Cisco CallManager Extension Mobility profile does not maintain ring type, contrast settings, and volume settings; users configure these settings directly on the Cisco IP Phone.
- When a Cisco CallManager Extension Mobility user logs out of a device, all Call Back services that are active on the Cisco CallManager Extension Mobility user automatically cancel.

Additional Information

See the Related Topics, page 1-26.

Login Call Flow

This section describes the flow of events for the Cisco CallManager Extension Mobility login from a system perspective. Understanding the call flow will help you troubleshoot problems that you may have with the feature.

1. A user presses the Services button on the Cisco IP Phone and requests to log in. This action invokes a URL for the Cisco Extension Mobility application.
2. The application determines the URL of the service.

   Note Cisco CallManager Extension Mobility looks up the URL in the Cisco CallManager Directory on the first instance only; the system then stores the URL as a static variable.

3. The Cisco Extension Mobility application sends a formatted XML/HTTP query to the Cisco CallManager Extension Mobility service to determine the state of the phone. The service responds in an XML format with "No one logged in."
4. The application prompts the user for UserID and PIN. The user enters the UserID and PIN and presses the Submit softkey.
5. The phone performs a HTTP request, and the application tries to authenticate the UserID and PIN.
6. If the UserID and PIN cannot be authenticated, the phone displays "Authentication Error."

   If the UserID and PIN are authenticated, the application queries the Cisco CallManager Database to get the list of device profiles that are associated with the user.
7. The directory responds with the list of the user's device profile(s). If the list has more than one entry, the phone displays the device profiles from which the user can choose.
8. When the user chooses an entry from this list (or if the list has only one entry), the application generates the XML for the service.
9. The application posts, via HTTP, the generated XML login request to the service URL (The application determined the service URL in step 2).
10. The service responds in a defined XML format to the request with a restart to load the user device profile indicating success or a failure message.
11. The application returns the correct notification to the device. The phone restarts with the user's device profile.

Additional Information

See the Related Topics, page 1-26.

Logout Call Flow

This section describes the flow of events for the Cisco CallManager Extension Mobility logout from a system perspective. Understanding the call flow will help you troubleshoot any problems that you may have with the Cisco CallManager Extension Mobility feature.

1. A user presses the Services button on the Cisco IP Phone and requests to log out. This action invokes a URL for the Cisco Extension Mobility application.
2. The application determines the URL of the service.

Note Cisco CallManager Extension Mobility looks up the URL in the Cisco CallManager Directory on the first instance only; the system then stores the URL as a static variable.

3. The application generates the XML to query the Cisco Extension Mobility service for the current state of the device.
4. The service responds to the application with the current state of device; for example, <userID> is logged in.
5. The application prompts the user to confirm that the user wants to log out.
6. When the user presses the Yes softkey to confirm that the user wants to log out, the application generates XML for the logout operation.
7. The application posts, via HTTP, the generated XML login request to the service URL (The application determined the service URL in Step 2).
8. In the case of a successful operation, the phone will restart and load the appropriate device profile. If a failure occurs, a message gets sent to the phone.
9. The application parses the received XML and creates an XML response message.
10. The XML gets returned as a suitable notification to the device, and the phone restarts to load the original user profile or logout profile.

Additional Information

See the Related Topics, page 1-26.

System Requirements for Cisco CallManager Extension Mobility

This version of Cisco CallManager Extension Mobility requires the following software components to operate:

- Cisco CallManager 4.0 or later

Note Cisco CallManager 3.1 introduced Cisco CallManager Extension Mobility running on the Cisco Customer Response Application (CRA) 2.2 engine. With Cisco CallManager 3.3(2) or later, the Cisco CallManager Extension Mobility application and the Cisco CallManager Extension Mobility service in Cisco CallManager provide the extension mobility functionality. The feature no longer requires the Cisco CRA engine.

Note With Cisco CallManager 3.3(2) and later, Cisco CallManager Extension Mobility installs automatically on the same server with Cisco CallManager. You do not require an additional server. Cisco CallManager Extension Mobility can run on any server in a Cisco CallManager cluster.

- Netscape 4.7 or Internet Explorer 5.5 or later for Cisco CallManager Administration

With Cisco CallManager 4.0 or later, extension mobility functionality extends to most Cisco IP Phones. Check the Cisco IP Phone model documentation to verify that Cisco CallManager Extension Mobility is supported.

Note Cisco IP Phone model 7960 and Cisco IP Phone model 7960G that are running Cisco CallManager Extension Mobility may be equipped with Cisco 7914 Expansion Modules.

Additional Information

See the Related Topics, page 1-26

Interactions and Restrictions

Use the following sections to understand how Cisco CallManager Extension Mobility interacts with other Cisco CallManager services and to understand restrictions that apply to Cisco CallManager Extension Mobility:

Interactions

The following sections describe how Cisco CallManager Extension Mobility interacts with Cisco CallManager applications:

Cisco CallManager Services That are Running on the Same Server

Cisco CallManager Extension Mobility can run on the same Cisco CallManager server with Cisco IP Manager Assistant (IPMA) and CDR Analysis and Reporting (CAR).

Bulk Administration Tool

You can use the Bulk Administration Tool (BAT) to add and delete several user device profiles for Cisco CallManager Extension Mobility at one time. Refer to the *Cisco CallManager Bulk Administration Guide* for more information.

Additional Information

See the Related Topics, page 1-26

Cisco IP Manager Assistant

A manager who uses Cisco CallManager Extension Mobility can simultaneously use Cisco IP Manager Assistant (IPMA). The manager logs into the Cisco IP Phone by using Cisco CallManager Extension Mobility and then chooses the Cisco IPMA service. When the IPMA service starts, the manager can access assistants and all IPMA features (such as call filtering and Do Not Disturb). For more information about Cisco IPMA, see the Cisco IP Manager Assistant With Proxy Line Support chapter.

Cisco CallManager Attendant Console

If a user logs in to or logs out of the Cisco IP Phone by using Cisco CallManager Extension Mobility while logged in to Cisco CallManager Attendant Console, the Cisco IP Phone resets and the call-control status of the attendant console goes down. Cisco CallManager Attendant Console displays a message that indicates that the attendant needs to log out and log back in if the directory numbers of the phone have changed. The user must log out of the Cisco CallManager Attendant Console. When logging back into the Cisco CallManager Attendant Console, the attendant must specify the current directory number of the phone in the Directory Number of Your Phone field of the Settings dialog box.

For more information on entering a directory number in the Cisco CallManager Attendant Console, refer to the "Configuring Cisco CallManager Attendant Console Settings" section.

Call Display Restrictions

When you enable Call Display Restrictions with Cisco CallManager Extension Mobility, Cisco CallManager Extension Mobility functions as usual: when a user is logged in to the device, the presentation or restriction of the call information depends on the user device profile that is associated with that user. When the user logs out, the presentation or restriction of the call information depends on the configuration that is defined for that phone type in the Phone Configuration window.

To use Call Display restrictions with Cisco CallManager Extension Mobility, you enable the Ignore Presentation Indicators in both the User Device Profile Configuration window (see the "Creating the Device Profile for a User" section on page 1-20) and the Phone Configuration window (see the "Subscribing Cisco IP Phones to Cisco CallManager Extension Mobility" on page 24).

For more information about the Call Display Restrictions features, refer to the Call Display Restrictions chapter.

Restrictions

The following restrictions apply to Cisco CallManager Extension Mobility:

- Cisco CallManager Extension Mobility works on phones within a single Cisco CallManager cluster only.
- Cisco CallManager Extension Mobility supports a maximum of 4500 login and logout operations per hour. Remember that these operations are sequential, not concurrent.
- The characters that display when a user logs in depend on the current locale of the phone. For example, if the phone is currently in the English locale (based on the Logout profile of the phone), the user can only enter English characters in the UserID.
- If the User Locale that is associated with the login user or profile is not the same as the locale or device, after a successful login, the phone will perform a restart followed by a reset. This occurs because the phone configuration file is being rebuilt. Addon module mismatches between profile and device may have the same behavior.
- Cisco CallManager Extension Mobility requires a physical Cisco IP Phone for login. Users of office phones that are configured with Cisco CallManager Extension Mobility cannot log in to their phones remotely.
- When a Cisco CallManager Extension Mobility user logs out of a device, all Call Back services that are active on the Cisco CallManager Extension Mobility user automatically cancel.
- You must make entries in the user ID field (the ID that you enter on the phone during Extension Mobility login) in lower-case characters.
- When a migration from Cisco CallManager Release 4.x to Cisco CallManager Release 5.0 is done, the phones will not display the last login user IDs until users log in for the first time after the migration. When the service parameter “Remember Last Login” gets set to **True**, Cisco Extension Mobility displays the previous login user ID whenever the user logs in to the phone. This gets done based on a file on the hard disk. For the migration from Release 4.x to Release 5.0, this file does not get migrated to the database; therefore, the user ID of the previous login user will not display.
- If Cisco Extension Mobility gets stopped or restarted, the system does not auto log out users who are already logged after the expiration of logout interval. For those phones, auto-logout happens only once in a day. You can manually log out these users from either the phones or from Cisco CallManager Administration.

Installing Cisco CallManager Extension Mobility for the First Time

When you install Cisco CallManager 4.0 or later, make sure that you also install the Cisco IP Telephony Locale Installer on every server in the cluster. Installing the locale installer ensures that you have the latest translated text available for user windows and phone displays. For more information, refer to the Cisco IP Telephony Locale Installer documentation.

Now perform the procedures in the “Configuring Cisco CallManager Extension Mobility” section on page 1-11.

Additional Information

See the Related Topics, page 1-26

Configuring Cisco CallManager Extension Mobility

Review the Configuration Guidelines before you configure the feature. If you are unsure how device profiles work, refer to the "Understanding Device Profiles" section on page 1-2. Then, perform the configuration procedures in the sequence that shows the"Configuration Checklist for Cisco CallManager Extension Mobility" section on page 1-13:

Configuration Guidelines

To avoid problems with deploying Cisco CallManager Extension Mobility, be sure to follow these configuration guidelines:

- Configure a Device Profile Default for each Cisco IP Phone Model in a cluster that you want to support Cisco CallManager Extension Mobility.
- If you want to enable all phones within a Cisco CallManager cluster for Cisco CallManager Extension Mobility, do not allow the users to control these phones.
  - In this scenario, when users go to their Cisco CallManager User Options window to change their services, they must choose "Device Profiles" from the "Select a device to configure" drop-down list box. They cannot control an individual phone nor modify the settings for an individual phone.
  - As administrator, you can change the services for a phone by using Cisco CallManager Administration. After making the changes, if you update on the main window (not the popup menu), you must reset the phone for the changes to take effect. This action ensures that the new snapshot gets stored as the logout profile.

Note If the Enterprise Parameter "Synchronization between Auto Device Profile and Phone Configuration" is set to True, the auto device profile automatically updates, and you do not need to update on the main window.

- If a particular user controls a device, for example, the user's office phone, do not allow anyone else to log in to that device.

Caution The Cisco CallManager Extension Mobility feature does not operate properly if you allow users to access another user's assigned phone.

Additional Information

See the Related Topics, page 1-26.

Configuration Example 1

In a typical Cisco CallManager Extension Mobility scenario:

- All employees represent users of Cisco CallManager Extension Mobility.
- All users have a user device profile.
- Users do not control individual phones, and they cannot modify settings for an individual phone.
- Before a user can use a phone, the user needs to log in.
- Users can access common devices, such as lobby phones, conference room phones, and cubicle phones that are meant to be shared.
- When users go to their Cisco CallManager User Options window to change services or speed dials, they can choose only their device profiles from the “Select a device to configure” drop-down menu. This method ensures that changes that users make to their services will follow them to any Cisco IP Phone after they log in.

Configuration Example 2

In another typical Cisco CallManager Extension Mobility scenario

- Each user has an assigned phone.
- Each user has a device profile that follows the user to every device to which the user logs in.
- Each user can access common devices, such as lobby phones, conference room phones, and cubicle phones that are configured to be shared.
- In this scenario, no one can use anyone else’s assigned phone.

Additional Information

See the Related Topics, page 1-26.

Configuration Checklist for Cisco CallManager Extension Mobility

Perform the procedures in the order shown in Table 1-1 to configure Cisco CallManager Extension Mobility.

Summary steps in Table 1-1 point out the major tasks required to configure Cisco CallManager Extension Mobility in Cisco CallManager Administration. For a complete set of instructions, be sure to follow the procedure that is listed in the Related Procedures and Topics.

Table 1-1 Configuration Checklist for Cisco CallManager Extension Mobility

	Configuration Steps	Related Procedures and Topics
Step 1	Using Cisco CallManager Serviceability Administration, Service Activation, activate the following Cisco Extension Mobility services: • Cisco CallManager Extension Mobility • Cisco CallManager Cisco IP Phone Services **Note** To disable the extension mobility service on any node, you must first deactivate the service in Service Activation. **Note** When a change in activation or deactivation of the Cisco Extension Mobility service occurs, on any node, the database tables get updated with information that is required to build the service URLs. The database tables also get updated when the extension mobility service parameters get modified. The EMApp service handles the change notification.	*Cisco CallManager Serviceability Administration Guide*

Table 1-1 Configuration Checklist for Cisco CallManager Extension Mobility (continued)

	Configuration Steps	Related Procedures and Topics
Step 2	Create the Cisco CallManager Extension Mobility Service. Summary steps include • Choose **Device > Device Settings > Phone Services**. • Enter the service name (such as, Extension Mobility Service or EM). • Enter the following URL: http://<IP Address of Extension Mobility server>:8080/emapp/EMAppServlet?device=#DEVICENAME# **Note** If you should enter the URL incorrectly and subscribe the wrong service to the phones, you can correct the URL, save it and press **Update Subscriptions,** or correct the URL and resubscribe each phone to which the wrong service was subscribed. • Click **Save**.	Adding the Cisco CallManager Extension Mobility Service, page 1-15.
Step 3	Configure administration parameters.	Setting the Service Parameters, page 1-16
Step 4	Create a device profile default for each phone model that you want to support Cisco Extension Mobility.	Creating a Device Profile Default for Each Cisco IP Phone Model, page 1-18
Step 5	Create the device user profile for a user. Summary steps include • Choose **Device > Device Settings >Device Profile** and click **Add New**. • Enter the Device Type. • Enter the Device Profile Name; choose the phone button template and click **Save**. • Enter the directory numbers (DNs) and required information and click **Save**. Repeat for all DNs.	Creating the Device Profile for a User, page 1-20
Step 6	Associate a user device profile to a user. Summary steps include • Choose **User Management > End User** and click **Add New**; enter user information. • In Available Profiles, choose the service that you created in Step 2 and click the down arrow; this places the service that you chose in the Controlled Profiles box. • Click **Save**.	Associating a User Device Profile to a User, page 1-23

Table 1-1 Configuration Checklist for Cisco CallManager Extension Mobility (continued)

	Configuration Steps	Related Procedures and Topics
Step 7	Configure and subscribe Cisco IP Phone and user device profile to Cisco Extension Mobility. Summary steps include • Subscribe the phone and the user device profile to Cisco Extension Mobility. • Choose **Device > Phone** and click **Add New**. • On the Phone Configuration window, in Extension Information, check **Enable Extension Mobility**. • In Logout Profile, choose **Use Current Device Settings** and click **Save**.	Cisco IP Phone Configuration, *Cisco CallManager Administration Guide* Subscribing Cisco IP Phones to Cisco CallManager Extension Mobility, page 1-24

Adding the Cisco CallManager Extension Mobility Service

Add the Cisco CallManager Extension Mobility service as a new Cisco IP Phone Service. Configure a name, description, and the URL for the Cisco CallManager Extension Mobility service.

To add the Cisco CallManager Extension Mobility service, perform the following steps:

Procedure

Step 1 From Cisco CallManager Administration, choose **Device > Device Settings > Phone Services**.

Step 2 Click **Add New**.

Step 3 At the Service Name field, enter a name for the service.

The user receives this name on the phone when the user presses the Services button. Use a meaningful name; for example, Extension Mobility or EM.

Step 4 Enter the Service URL field as it displays in the following example:

http://<IP Address>:8080/emapp/EMAppServlet?device=#DEVICENAME#

where IP Address of Extension Mobility server specifies the IP Address of the Cisco CallManager where Cisco CallManager Extension Mobility Application is activated and running.

For example:

http://123.45.67.89:8080/emapp/EMAppServlet?device=#DEVICENAME#

Tip To provide redundancy for the Cisco IP Phone Service, create a Cisco IP Phone Service that uses the host name rather than the IP address. The phone functionality for softkeys and filtering, as well as the phone service, will fail over automatically in the case of a failover.

Step 5 Click **Save.**

Additional Information

See the Related Topics, page 1-26.

Setting the Service Parameters

Set the Service Parameters to define how the Cisco CallManager Extension Mobility service will work across a Cisco CallManager cluster. You can use these settings to

- Enable and define a maximum login time.
- Define the multi-login behavior; that is, whether you allow the user to log in to more than one device at a time.
- Enable "remember last user logged in."
- Clear call logs (placed, received, and missed calls) during manual Cisco CallManager Extension Mobility login and logout. Use the "Clearing call logs" service parameter to clear call logs of a previous user. This ensures privacy and prevents users of the same phone from seeing another user's calls.

Note In Cisco CallManager 4.0 or later, you no longer enable the trace directory and debug tracing for Cisco CallManager Extension Mobility in the Service Parameters window. Instead, you use Cisco CallManager Serviceability administration. Refer to the *Cisco CallManager Serviceability Administration Guide* for details about trace.

Tip Be sure that you have activated the Cisco CallManager Extension Mobility services before you perform this procedure. The service parameters will not be visible if you have not activated the services. Refer to the *Cisco CallManager Serviceability Administration Guide* for information about using the Cisco CallManager Serviceability tool, Service Activation.

To set the Service Parameters for Cisco CallManager Extension Mobility, perform the following steps:

Procedure

Step 1 From Cisco CallManager Administration, choose **System > Service Parameters**.

The Service Parameter Configuration window displays.

Step 2 From the Server drop-down menu**,** choose the server that is running the Cisco CallManager Extension Mobility service.

Step 3 From the Service drop-down menu, choose **Cisco Extension Mobility**.

A new Service Parameter Configuration window displays.

Step 4 At the Enforce Maximum Login Time field, choose **True** to specify a clusterwide maximum time for logins. After this time, the system automatically logs out the device.

Choosing False means that no clusterwide maximum time for logins exists.

The default value specifies False.

Tip To set an automatic logout, you must choose **True** in Step 4 and also specify a system maximum login time in Step 5. Cisco CallManager then uses the automatic logout service for all logins.

Step 5 If you specified True at the Maximum Login Time field in Step 4 of this procedure, specify the maximum login time in Hours:Minutes from 0:01 to 168:00 (1 minute to one week).

The default value specifies 8:00 (8 hours).

Step 6 At the Maximum Concurrent Requests field, specify the maximum number of login or logout operations that can occur simultaneously. This number prevents the Cisco CallManager Extension Mobility service from consuming excessive system resources.

Step 7 At the Multi Login Behavior field, choose one of the following responses:

- `Multiple Logins Allowed`: A user can log in to more than one device at a time.
- `Multiple Logins Not Allowed`: The second and subsequent login attempts after a user successfully logs in once will fail.
- `Auto Logout`: After a user logs in to a second device, the Cisco CallManager automatically logs the user out of the first device.

The default value specifies Multiple Logins Not Allowed.

Step 8 At the Alphanumeric Userid field, choose **True** to allow the UserID to contain alphanumeric characters. Choosing False allows the UserID to contain only numeric characters.

The default value specifies True.

Note The Alphanumeric Userid parameter applies systemwide. You can have a mix of alphanumeric and numeric userids. The system supports only userids that can be entered by using the alphanumeric keypad. The case-sensitive userid field requires the characters to be lower case.

Step 9 At the Remember last user logged in field, choose the default value, **False**.

In a typical hoteling scenario, where users can come into any office and use any phone on a temporary basis, you should set this parameter to False.

A True setting specifies that the extension mobility application remembers the user ID of the last user that logged in to the phone. Use this setting in situations where individuals use their own phone on a regular basis, and no one else uses that phone.

For example, Cisco CallManager Extension Mobility could be used to enable the types of calls that are allowed from a phone. Individuals who are not logged in and who are using their office phone can make only internal or emergency calls. But after logging in using Cisco CallManager Extension Mobility, the user can make local, long-distance, and international calls. In this scenario, only this user regularly logs in to the phone. It makes sense to set the Cisco CallManager Extension Mobility to remember the last user ID that logged in, and you would set the field to **True**. When the field is set to True, then all future logins will cause the user ID of the last successful logged in user to automatically be filled in and remembered by Cisco CallManager Extension Mobility.

Step 10 At the Clear the call log field, choose **True** to specify that the call logs are cleared during the Cisco CallManager Extension Mobility manual login/logout process.

While a user is using the Cisco CallManager Extension Mobility service on an IP phone, all calls (placed, received, or missed) appear in a call log and can be retrieved and seen on the IP phone display. To ensure user privacy by preventing other users of the same phone from seeing the call logs of the previous user, set the Clear the call log service parameter to **True**. This ensures that the call logs are cleared when a successful login/logout occurs.

Note Call logs get cleared only during manual Cisco CallManager Extension Mobility login/logout. If a Cisco CallManager Extension Mobility logout occurs due to an automatic logout or any occurrence other than a manual logout, the call logs do not get cleared.

Step 11 Click **Save**.

Tip From the Service Parameters window, you can choose another server, or you can choose to view a list of the service parameters for all servers in the cluster by choosing Parameters for All Servers from the Related Links drop-down list box and clicking **Go**; the Parameters for All Servers window displays where you can check whether any service parameters in the cluster are out of synch, or you can view just those service parameters in the cluster that have been modified.

Additional Information

See the Related Topics, page 1-26.

Creating a Device Profile Default for Each Cisco IP Phone Model

With Cisco CallManager 4.0 or later, you configure a clusterwide device profile default for each model of Cisco IP Phone that you want to support Cisco CallManager Extension Mobility. The phone takes on the device profile default whenever a user logs in to a phone model for which the user has no user device profile.

For more information on how Device Profile Defaults work, see the "Overview of Cisco CallManager Extension Mobility" section on page 1-3.

To add a device profile default for a phone model, perform the following procedure.

Procedure

Step 1 From Cisco CallManager Administration, choose **Device > Device Settings > Default Device Profile.**

The Default Device Profile Configuration window displays.

Step 2 From the Device Type drop-down list box, choose the device (such as a Cisco IP Phone) for which a profile gets created.

Step 3 Click **Next**.

Step 4 If applicable, from the Select the device protocol drop-down list box, choose a protocol.

Step 5 Click **Next**.

Step 6 From the User Hold Audio Source field, choose from the drop-down list box to specify the audio source that plays when a user initiates a hold action.

If you do not choose an audio source, Cisco CallManager uses the audio source that is defined in the device pool or, if the device pool does not specify an audio source ID, the system default.

Tip You define audio sources in the Music On Hold Audio Source Configuration window. For access, choose **Service > Music On Hold**.

Step 7 At the User Locale drop-down list box, choose the locale that is associated with the phone user interface.

The user locale identifies a set of detailed information, including language and font, to support users. Cisco CallManager makes this field available only for phone models that support localization.

Note If no user locale is specified, Cisco CallManager uses the user locale that is associated with the device pool.

Note If the users require information to display (on the phone) in any language other than English, verify that the locale installer is installed **before** configuring user locale. Refer to the Cisco IP Telephony Locale Installer documentation.

Step 8 At the Phone Button Template field, choose the appropriate phone button template. The phone button template determines the configuration of the softkeys on Cisco IP Phones. Leave this field blank if the device pool contains the assigned softkey template.

Step 9 From the Privacy drop-down list box, choose **On** for each phone that wants Privacy. For more configuration information, refer to the "Barge and Privacy" section on page 8-1.

Step 10 To configure call display restrictions and ignore any presentation restriction that is received for internal calls, check the "Ignore Presentation Indicators (internal calls only)" check box.

Note Use this configuration in combination with the calling ling ID presentation and connected line ID presentation configuration at the translation pattern-level. Together, these settings allow you to configure call display restrictions to selectively present or block calling and/or connected line display information for each call. For more information about call display restrictions, refer to the Call Display Restrictions chapter in the *Cisco CallManager Features and Services Guide*.

Step 11 If the phone model supports Cisco IP Phone Expansion Module 7914, Cisco CallManager displays the expansion module field.

a. At the Module 1 drop-down list box choose one or zero 7914 14-button expansion module.

b. At the Module 2 drop-down list box, choose one or zero 7914 14-button expansion module.

Step 12 To configure Multilevel Precedence and Preemption (MLPP) information, perform the following tasks:

Note Refer to the "Multilevel Precedence and Preemption" section on page 13-1 for more information.

a. At the MLPP Domain, enter a hexadecimal value for the MLPP domain that is associated with this device profile. Ensure the value is blank or a value between 0 and FFFFFF.

b. If available, the MLPP Indication setting specifies whether a device will use the capability when it places the MLPP precedence call.

   From the drop-down list box, choose a setting to assign to devices that use this device profile default from the following options:

   - **Default**—This device inherits its MLPP indication setting from its device pool.
   - **Off**—This device does not send indication of an MLPP precedence call.
   - **On**—This device does send indication of an MLPP precedence call.

Note Do not configure a device profile default with the following combination of settings: MLPP Indication is set to *Off* while MLPP Preemption is set to *Forceful*.

c. If available, the MLPP Preemption setting specifies whether a device that is capable of preempting calls in progress will use the capability when it places an MLPP precedence call.

   From the drop-down list box, choose a setting to assign to devices that use this device profile default from the following options:

   - **Default**—This device inherits its MLPP preemption setting from its device pool.
   - **Disabled**—This device does not preempt calls in progress when it places an MLPP precedence call.
   - **Forceful**—This device preempts calls in progress when it places an MLPP precedence call.

Note Do not configure a device profile default with the following combination of settings: MLPP Indication is set to *Off* while MLPP Preemption is set to *Forceful*.

Step 13 Click **Save**.

Additional Information

See the Related Topics, page 1-26.

Creating the Device Profile for a User

The User Device Profile contains attributes such as name, description, phone template, addon modules, directory numbers, subscribed services, and speed-dial information.

Note Before proceeding, you must ensure that a device profile name and phone button template(s) are configured.

To add a default device profile for a new user of Cisco CallManager Extension Mobility, perform the following procedure.

Note If you configure BLF speed-dial buttons in the Device Profile Configuration window, a device that supports Cisco CallManager Extension Mobility can display the real-time status of the BLF speed-dial buttons after you log in to the device; that is, if the Presence Group that is applied to the device profile allows you to view the status of the presence entity. Refer to the Presence section of the *Cisco CallManager Features and Services Guide* for more details.

Procedure

Step 1 From Cisco CallManager Administration, choose **Device > Device Settings > Device Profile.**

The Find and List Device Profiles window displays.

Step 2 Click **Add New**.

The Device Profile Configuration window displays.

From the Device Type drop-down list box, choose the device type and click **Next**.

If applicable, from the Select the device protocol field, choose a protocol.

Click **Next**.

Step 3 At the User Device Profile Name field, enter a name of your choice for the device profile. You can make this text anything that describes this particular user device profile, such as "Extension Mobility."

Step 4 At the User Locale drop-down list box, choose the locale that is associated with the phone user interface.

The user locale identifies a set of detailed information, including language and font, to support users. Cisco CallManager makes this field available only for phone models that support localization.

Note If no user locale is specified, Cisco CallManager uses the user locale that is associated with the device pool.

Note If the users require information to display (on the phone) in any language other than English, verify that the locale installer is installed before configuring user locale. Refer to the Cisco IP Telephony Locale Installer documentation.

Step 5 At the Phone Button Template field, choose the appropriate phone button template. The phone button template determines the configuration of the softkeys on Cisco IP Phones. Leave this field blank if the device pool contains the assigned softkey template.

Step 6 From the Softkey Template drop-down list box, choose a softkey template.

Step 7 From the Privacy drop-down list box, choose **On** for each phone that wants Privacy. For more configuration information, refer to the "Barge and Privacy" section on page 8-1.

Step 8 To enable the Call Display Restrictions feature, check the Ignore Presentation Indicators check box.

Note To enable the Call Display Restrictions feature, check the Ignore Presentation Indicators check box here on the User Device Profile window and also on the Phone Configuration window (see the "Subscribing Cisco IP Phones to Cisco CallManager Extension Mobility" section on page 1-24).

Step 9 If the phone model supports Cisco IP Phone 7914 Expansion Modules, Cisco CallManager displays expansion module field. At the Module 1 drop-down list box and at the Module 2 drop-down list box, choose one or zero 7914 14-button expansion module.

Note You may view a phone button list at any time by choosing the View button list link next to the phone button template fields. A separate window pops up and displays the phone buttons for that particular expansion module.

Step 10 To configure Multilevel Precedence and Preemption (MLPP) information, perform the following tasks:

Note Refer to the "Multilevel Precedence and Preemption" section on page 13-1 for more information.

a. At the MLPP Domain, enter a hexadecimal value for the MLPP domain that is associated with this device profile. Ensure the value is blank or a value between 0 and FFFFFF.

b. If available, the MLPP Indication setting specifies whether a device will use the capability when it places the MLPP precedence call.

From the drop-down list box, choose a setting to assign to devices that use this device profile default from the following options:

- **Default**—This device inherits its MLPP indication setting from its device pool.
- **Off**—This device does not send indication of an MLPP precedence call.
- **On**—This device does send indication of an MLPP precedence call.

Note Do not configure a device profile default with the following combination of settings: MLPP Indication is set to *Off* while MLPP Preemption is set to *Forceful*.

c. If available, the MLPP Preemption setting specifies whether a device that is capable of preempting calls in progress will use the capability when it places an MLPP precedence call.

From the drop-down list box, choose a setting to assign to devices that use this device profile default from the following options:

- **Default**—This device inherits its MLPP preemption setting from its device pool.
- **Disabled**—This device does not preempt calls in progress when it places an MLPP precedence call.
- **Forceful**—This device preempts calls in progress when it places an MLPP precedence call.

Note Do not configure a device profile default with the following combination of settings: MLPP Indication is set to *Off* while MLPP Preemption is set to *Forceful*.

Step 11 From the Login User Id drop-down list box, choose a user ID.

Click **Save**.

The page refreshes.

Step 12 From the Association Information section, click the Add a new DN link.

Step 13 At the Directory Number field, enter the directory number and click **Save**.

Refer to "Directory Number Configuration Settings" in the *Cisco CallManager Administration Guide* for field descriptions.

Step 14 The following prompt displays: Changes to Line or Directory Number settings require restart.

Click **Reset** and follow the prompts.

Additional Information

See the Related Topics, page 1-26.

Associating a User Device Profile to a User

You associate a User Device Profile to a user in the same way that you associate a physical device. For more details, refer to the "Adding a New User" in the *Cisco CallManager Administration Guide*.

Tip You can use the Bulk Administration Tool (BAT) to add and delete several user device profiles for Cisco CallManager Extension Mobility at one time. Refer to the *Cisco CallManager Bulk Administration Guide* for more information.

To associate a user device profile to a user for Cisco CallManager Extension Mobility, follow these steps:

Procedure

Step 1 From Cisco CallManager Administration, choose **User Management> End User**.

Step 2 Click **Add New**.

Step 3 Enter the appropriate settings as described in "End User Configuration Settings" in the *Cisco CallManager Administration Guide*.

Step 4 To save your changes and add the user, click **Save**.

Note To choose an existing end user, click **Find** and then choose the end user to whom you want to associate a user device profile. Refer to "Finding an End User" in the *Cisco CallManager Administration Guide*.

Additional Information

See the Related Topics, page 1-26.

Subscribing Cisco IP Phones to Cisco CallManager Extension Mobility

Prerequisite

You must configure the Cisco IP Phones in Cisco CallManager before you subscribe the phones to Cisco CallManager Extension Mobility. To configure the phones, refer to the "Cisco IP Phone Configuration" section in the Cisco CallManager Administration Guide.

For a review of device profiles, refer to the "Understanding Device Profiles" section on page 1-2.

To subscribe to the Cisco CallManager Extension Mobility service, perform the following procedure.

Procedure

Step 1 From Cisco CallManager Administration, choose **Device > Phone**.

Step 2 Click **Add New**.

Note You can also search and update a configured phone as described in "Finding a Phone" in the *Cisco CallManager Administration Guide*.

The Add a New Phone window displays.

Step 3 From the Phone Type drop-down list box, choose the phone type to which you want to subscribe extension mobility and click **Next**.

Step 4 From the Select the device protocol drop-down list box, choose the protocol of the phone and click **Next**.

Step 5 In Extension Information, check the Enable Extension Mobility check box.

Note For descriptions of all fields, refer to "Phone Configuration Settings" in the *Cisco CallManager Administration Guide*.

Step 6 From the Log Out Profile drop-down list box, choose the type of profile that you want the phone to use for extension mobility.

To choose a specific configured profile, follow the steps in Step 7; otherwise, proceed to Step 11.

Step 7 From the Log Out Profile drop-down list box, choose Select a User Device Profile.

Note You can either choose Select a User Device Profile, or Use Current Device Settings. If you choose Use Current Device Settings, then an automated device profile will be used when logout executes.

The User Device Profile Configuration window displays.

Step 8 From the User Device Profile Name drop-down list box, choose a user device profile.

Step 9 Click **Close and go Back**.

This action specifies the device profile that the device uses when no one is logged in to the device that is using Cisco CallManager Extension Mobility. When a logout executes, the Autogenerated Device Profile (the default device profile) replaces the current configuration (the User Device Profile).

Note Cisco strongly recommends that you use the Autogenerated Device Profile and not assign a user device profile as the default device profile.

The remaining fields show the current device information regarding the login status of the device: Log in UserID, Log In Time, Log Out Time.

Step 10 On the Cisco CallManager Phone Configuration window, to enable the Call Party Restrictions feature, check the Ignore Presentation Indicators check box.

Note To enable the Call Display Restrictions feature, check the Ignore Presentation Indicators check box here on the Phone Configuration window and also on the User Device Profile window (see the "Creating the Device Profile for a User" section on page 1-20). For information about this feature, refer to the Call Display Restrictions chapter.

Step 11 Click **Save**.

You must now subscribe the extension mobility IP phone service to both the device profile that you created in the "Creating a Device Profile Default for Each Cisco IP Phone Model" section on page 1-18 and the IP phone target device.

Step 12 To subscribe extension mobility to the IP phone, go to the Related Links drop-down list box in the upper, right corner of the window and choose Subscribe/Unsubscribe Services; then, click **Go**.

A separate Subscribed Cisco IP Phone window displays.

Step 13 From the Select a Service drop-down list box, choose the service to which you want this IP phone to subscribe.

Step 14 Click **Next**.

Step 15 Click **Subscribe**.

Step 16 The new service(s) displays under Subscribed Services.

Step 17 Click **Save**.

Step 18 Repeat the procedure for each service to which you want this IP phone to subscribe.

Step 19 To unsubscribe a service, click **Unsubscribe** and **Save**.

Note To subscribe/unsubscribe services to a device profile, see the "Creating a Device Profile Default for Each Cisco IP Phone Model" section on page 1-18

You have now configured Cisco CallManager Extension Mobility.

Additional Information

See the Related Topics, page 1-26.

Providing Information to Cisco CallManager Extension Mobility Users

After you have configured the system for Cisco CallManager Extension Mobility, provide your phone users with the following information:

- Notification of feature availability and the phone models that support Cisco CallManager Extension Mobility. Include the name that you have given the Cisco CallManager Extension Mobility feature (for example, extension mobility). In addition, notification of changes with respect to activation and deactivation of extension mobility service on any node in the Cisco CallManager cluster.
- User password, UserID, and PIN
- URL for the Cisco CallManager User Options window for the user to change user password and PIN

Note Be aware that user passwords and PINs can only contain characters that the IP phones support: the digits 0 - 9 and their corresponding letters; the asterisk (*); and the octothorpe or pound sign (#).

- Their phone model user guide that contains a Cisco CallManager Extension Mobility overview and instructions on logging in, logging out, and troubleshooting the feature.
- The *Customizing Your Cisco IP Phone on the Web* document that contains information on using their Cisco IP Options window.
- Description of the feature login and logout behavior that you defined in the "Setting the Service Parameters" section on page 1-16.

Additional Information

See the Related Topics, page 1-26.

Related Topics

- Introducing Cisco CallManager Extension Mobility, page 1-1
- Overview of Cisco CallManager Extension Mobility, page 1-3
- Login and Logout Behavior, page 1-5
- Login and Logout Behavior, page 1-5
- Logout Call Flow, page 1-7
- Login Call Flow, page 1-6
- System Requirements for Cisco CallManager Extension Mobility, page 1-7
- Interactions and Restrictions, page 1-8
- Installing Cisco CallManager Extension Mobility for the First Time, page 1-10
- Configuring Cisco CallManager Extension Mobility, page 1-11
- Configuration Example 1, page 1-12

- Configuration Example 2, page 1-12
- Configuration Checklist for Cisco CallManager Extension Mobility, page 1-13
- Adding the Cisco CallManager Extension Mobility Service, page 1-15
- Setting the Service Parameters, page 1-16
- Subscribing Cisco IP Phones to Cisco CallManager Extension Mobility, page 1-24
- Providing Information to Cisco CallManager Extension Mobility Users, page 1-26

Device Profiles

- Understanding Device Profiles, page 1-2
- Associating a User Device Profile to a User, page 1-23
- Creating the Device Profile for a User, page 1-20