CHAPTER 16

Cisco CallManager Attendant Console

Cisco CallManager Attendant Console, a client-server application, allows you to use a graphical user interface containing speed-dial buttons and quick directory access to look up phone numbers, monitor line status, and direct calls. A receptionist or administrative assistant can use the attendant console to handle calls for a department or company, or another employee can use it to manage his own telephone calls.

The attendant console installs on a PC with IP connectivity to the Cisco CallManager system. The attendant console works with a Cisco IP Phone that is registered to a Cisco CallManager system. Multiple attendant consoles can connect to a single Cisco CallManager system. When a server fails, the attendant console automatically connects to another server in the cluster.

The application registers with and receives call-dispatching, login, line state, and directory services from the Cisco CallManager Attendant Console Server service on the Cisco CallManager server.
Cisco CallManager Attendant Console receives calls that are made to a virtual directory number that is called a pilot point and directs calls to a list of destinations in a hunt group. You can configure the order in which members of the hunt group receive calls and whether Cisco CallManager Attendant Console queues calls when all attendants are busy.

This section contains the following topics:

Introducing Cisco CallManager Attendant Console

The following sections provide information about the Cisco CallManager Attendant Console feature:

Understanding Cisco CallManager Attendant Console Users

Before a user can log in to an attendant console to answer and direct calls, you must add the user as an attendant console user and optionally assign a password to the user. You can add or delete attendant console users and modify user IDs and password information in the Cisco CallManager Attendant Console User Configuration window in Cisco CallManager Administration.

Note Be aware that attendant console user IDs and passwords are not the same as directory users and passwords that are entered in the End User Configuration window in Cisco CallManager Administration.

If a user cannot log in to the attendant console, make sure that Cisco CallManager and Cisco CallManager Attendant Console Server services are both running. Verify that the user has been added in the Cisco CallManager Attendant Console User Configuration area of Cisco CallManager Administration and that the correct user name and password are specified in the Login dialog box in the attendant console client application.

In addition to configuring Cisco CallManager Attendant Console users, you must configure one directory user who is named "ac" and associate the attendant phones and the pilot points with the user. If you do not configure this user, the attendant console cannot interact with CTIManager. For information on setting up the ac user in Cisco CallManager Administration, see the "Configuring the ac User" section on page 16-20.

Understanding Pilot Points and Hunt Groups

A pilot point, a virtual directory number that is never busy, alerts the Cisco CallManager Attendant Console to receive and direct calls to hunt group members. A hunt group comprises a list of destinations that determine the call redirection order.

Note Cisco CallManager Attendant Console does not route calls to an instance of a shared line on attendant phone if any other instances of the shared line are in use.

For Cisco CallManager Attendant Console to function properly, make sure that the pilot point number is unique throughout the system (it cannot be a shared line appearance). When configuring the pilot point, you must choose one of the following routing options:

- First Available Hunt Group Member—Cisco CallManager Attendant Console goes through the members in the hunt group in order until it finds the first available destination for routing the call. You can choose this routing option from the Pilot Point Configuration window in Cisco CallManager Administration.
- Longest Idle Hunt Group Member—This feature arranges the members of a hunt group in order from longest to shortest idle time. Cisco CallManager Attendant Console finds the member with the longest idle time and, if available, routes the call. If not, Cisco CallManager Attendant Console

continues to search through the group. This feature evenly distributes the incoming call load among the members of the hunt group. You can choose this routing option from the Pilot Point Configuration window in Cisco CallManager Administration.

If the voice-mail number is the longest idle member of the group, Cisco CallManager Attendant Console routes the call to a voice-messaging system without checking the other members of the group first.

- Circular Hunting—Cisco CallManager Attendant Console maintains a record of the last hunt group member to receive a call. When a new call arrives, Cisco CallManager Attendant Console routes the call to the next hunt group member in the hunt group.
- Broadcast Hunting—When a call arrives at the pilot point, Cisco CallManager Attendant Console answers the call, places the call on hold, adds the call to the queue, and displays the call in the Broadcast Calls window on attendant PCs. While on hold, the caller receives music on hold, if it is configured. Any attendant can answer the call from the Broadcast Calls window.

Note In the Pilot Point Configuration window in Cisco CallManager Administration, you must choose a device pool that is associated with the pilot point for pilot point redundancy to work.

Make sure that you configure the ac user and associate all pilot point numbers with the ac user.

When you update a pilot point, make sure that you reset the pilot point. Call processing continues to occur when you reset it.

When a call comes into a pilot point, Cisco CallManager Attendant Console uses the hunt group list and the selected call routing method for that pilot point to determine the call destination. During hunt group configuration, you must specify one of the following options for each hunt group member:

- Directory number (device member)

  If a directory number is specified, Cisco CallManager Attendant Console only checks whether the line is available (not busy) before routing the call.

- Attendant console user plus a line number (user member)

  When you specify a user and line number, the user can log in to and receive calls on any Cisco IP Phone in the cluster that the attendant console controls.

  If a user and line number are specified, Cisco CallManager Attendant Console confirms the following details before routing the call:

  - That the user is logged in to the attendant console
  - That the user is online
  - That the line is available

  The attendant can only answer calls on the line number that you specify if that line number is configured on the phone that the attendant used to log in to the attendant console.

Caution To handle overflow conditions, configure your hunt groups, so Cisco CallManager Attendant Console route calls to one or more attendant consoles or voice-messaging numbers. To ensure that the voice-messaging number can handle more than one call at a time, check the Always Route Member check box in the Hunt Group Configuration window.

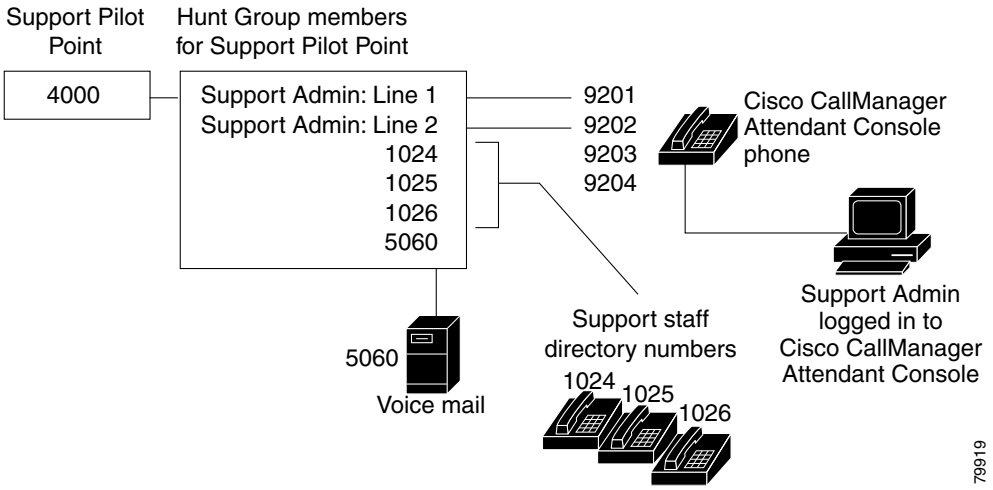
You can also handle overflow conditions by enabling call queuing. For more information about call queuing, see "Understanding Call Queuing" section on page 16-9.

Example 1 Pilot Points and Hunt Groups Working Together

Assume a pilot point named Support exists at directory number 4000. The hunt group for the Support pilot point contains the following members:

- Support Admin, Line 1 and Support Admin, Line 2 (Support Admin represents the attendant console login for the administrative assistant for Support.)
- Three directory numbers for support staff; that is, 1024, 1025, and 1026, listed in the hunt group in that order
- A voice-messaging number, 5060, which is the final member of the hunt group

Figure 16-1 Pilot Point and Hunt Group Example



As shown in Figure 16-1, the following example describes a simple call-routing scenario where the user chose First Available Hunt Member during the configuration of the pilot point:

1. The Cisco Cisco CallManager Attendant Console receives a call and directs it to the Support Pilot Point, directory number 4000.
2. Because 4000 is a pilot point and First Available Hunt Group Member is chosen as the call-routing option, the Cisco CallManager Attendant Console that is associated with the pilot point checks the members of the hunt group in order, beginning with Support Admin, Line 1. Cisco CallManager Attendant Console determines that the Support Admin user is not online, directory number 1024 is busy, directory number 1025 is busy, and directory number 1026 is available.
3. Cisco CallManager Attendant Console routes the call to the first available directory number, which is 1026. Because 1026 is available, the Cisco CallManager Attendant Console never checks the 5060 number.

Understanding Linked Hunt Groups

Linking hunt groups together allows the Cisco CallManager Attendant Console to search through more than one hunt group when calls are routed. When configured properly, pilot points create a link between hunt groups. Cisco CallManager Attendant Console searches each hunt group according to the call-routing method that was chosen during configuration.

Consider the following guidelines when you are linking hunt groups together:

- Configure the individual pilot points and hunt groups first.
- For all except the last hunt group, make sure that the final member of the hunt group is the pilot point for the next hunt group. The pilot point from each group creates a link between the hunt groups, as seen in Figure 16-2.
- To handle overflow conditions, choose a voice-messaging or auto-attendant number as the final member of the last linked hunt group in the chain. If Cisco CallManager Attendant Console cannot route the call to any other members in the hunt groups, the call goes immediately to the voice-messaging number in the final hunt group.
- Check the Always Route Member check box in the Hunt Group Configuration window for only the final member of each hunt group.

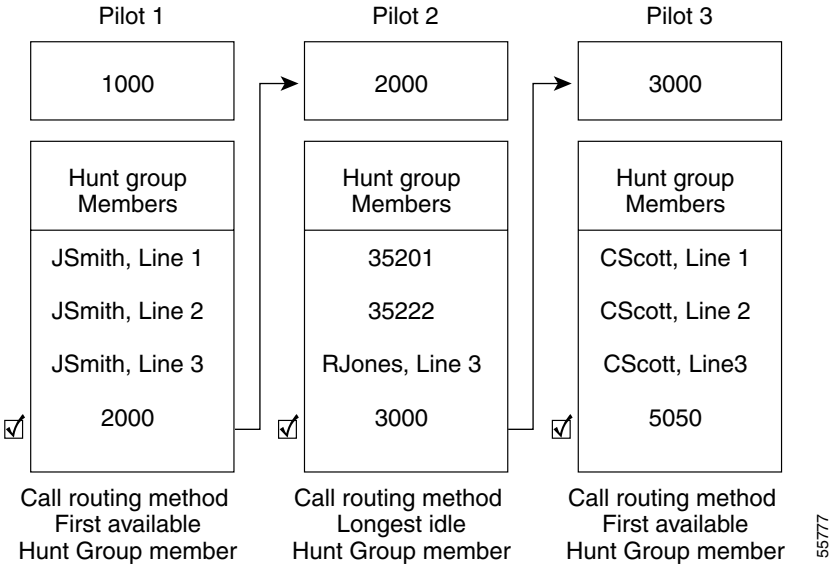
Caution Cisco strongly recommends that you do *not* link the last hunt group back to the first hunt group.

Example 2 Linked Hunt Groups Working Together

Consider the following information that is shown in Figure 16-2:

- Three pilot points that are numbered 1, 2, and 3 exist at directory numbers 1000, 2000, and 3000, respectively.
- The last hunt group member of Pilot 1 acts as the pilot point for Pilot 2, while the last hunt group member of Pilot 2 serves as the pilot point for Pilot 3.
- During hunt group configuration, the administrator checked Always Route Member for the last member of each hunt group.
- Each hunt group contains four members, including the linked pilot point.
- JSmith, RJones, and CScott designate attendant console users that are specified as user/line pairs in the hunt groups.
- In Pilot 2, two directory numbers, 35201 and 35222, exist.
- The final hunt group member of Pilot 3, voice-messaging number 5050, handles overflow conditions. The administrator checked Always Route Member when he configured this final hunt group member.

Figure 16-2 Linked Hunt Group Example



As represented in Figure 16-2, the following example describes a simple call- routing scenario for linked hunt groups:

1. The Cisco CallManager Attendant Console receives a call and directs it to the first pilot point of the chain, directory number 1000.
2. Because 1000 is a pilot point and First Available Hunt Group Member is chosen as the call-routing method, Cisco CallManager Attendant Console checks the members in the hunt group in order, beginning with JSmith, Line 1. Cisco CallManager Attendant Console determines that the first three members of the hunt group are unavailable and, therefore, routes the call to directory number 2000, the link to Pilot 2.
3. When the call reaches Pilot 2, Cisco CallManager Attendant Console attempts to route the call to the longest idle hunt group member. Because directory numbers 35201 and 35222 are busy, and RJones, Line 3, is offline, Cisco CallManager Attendant Console routes the call to the last member of the group, directory number 3000, the link to Pilot 3.
4. Cisco CallManager Attendant Console searches through Pilot 3 to find the first available member who is not busy. When Cisco CallManager Attendant Console determines that CScott, Line 2, is the first available member, Cisco CallManager Attendant Console routes the call to that line. Cisco CallManager Attendant Console never checks voice-messaging number 5050.

Understanding Circular Hunt Groups

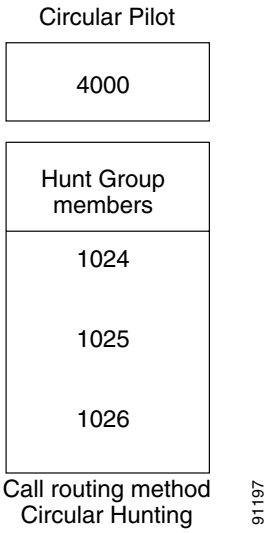
Circular hunt groups enable Cisco CallManager Attendant Console to route calls on the basis of last hunt group member to receive a call. Each hunt group maintains a record of which hunt group member receives a call. When a new call arrives, Cisco CallManager Attendant Console dispatches the call to the next hunt group member in the hunt group. In other words, Cisco CallManager Attendant Console routes the first call to a hunt group to the first hunt group member, the second call to the second hunt group member, and so on. After the last hunt group member receives a call, Cisco CallManager Attendant Console routes calls beginning with the first hunt group member again.

If you want to use circular hunting for linked hunt groups, set each of the pilot points of the linked hunt groups to circular hunting.

Example 3 Circular Hunting

Assume a pilot point that is named Circular exists at directory number 4000 and that you chose the Circular Hunting routing algorithm when you configured the pilot point. The hunt group for this pilot point contains the three directory numbers; that is, 1024, 1025, and 1026, listed in the hunt group in that order. Because the Always Route check box is not checked for any of the hunt group members, Cisco CallManager Attendant Console determines whether the directory number is busy before routing the call.

Figure 16-3 Circular Hunting Example



As shown in Figure 16-3, the following example describes a simple call-routing scenario where the user configured a Circular pilot point:

1. The Cisco CallManager Attendant Console receives a call and directs it to the Circular pilot point, directory number 4000.
2. Because 4000 is a pilot point and Circular Hunting is chosen as the call-routing option, Cisco CallManager Attendant Console routes the call to the first hunt group member, which is directory number 1024.
3. Cisco CallManager Attendant Console receives another call and directs it to the Circular pilot point, directory number 4000.
4. Because Circular Hunting is chosen as the call-routing option and directory number 1024 received the last call, Cisco CallManager Attendant Console attempts to route the call to the next hunt group member, which is directory number 1025.
5. Cisco CallManager Attendant Console determines that directory number 1025 is busy and routes the call to the next hunt group member, directory number 1026.
6. Cisco CallManager Attendant Console receives another call and directs it to the Circular pilot point, directory number 4000.
7. Because Circular Hunting is chosen as the call-routing option and directory number 1026 received the last call, Cisco CallManager Attendant Console attempts to route the call to the next hunt group member, which is directory number 1024.

Understanding Broadcast Hunting

Broadcast hunting enables Cisco Cisco CallManager Attendant Console to answer calls and place them into a queue. The attendant console displays the queued calls to all available attendants after inserting the calls into the queue and to all attendants that become available while the call is in the queue.

Note The attendant console only broadcasts calls to attendants that are set up as user/line number hunt group members in the broadcast hunting pilot point.

The queued calls appear in the Broadcast Calls window on the attendant PC. While in the queue, the callers receive music on hold if you have chosen an audio source from the Network Hold Audio Source and the User Hold MOH Audio Source drop-down list boxes in the Device Pool window or the Pilot Point Configuration window.

Any attendant in the hunt group that is online can answer the queued calls. Cisco CallManager Attendant Console does not automatically send the calls to an attendant. When an attendant answers a call, Cisco CallManager Attendant Console removes the call from the Broadcast Calls window and displays it in the Call Control window of the attendant who answered the call.

You can specify the following values for each broadcast hunting pilot point:

- Queue Size—This field specifies the number of calls that are allowed in the queue. If the queue is full, Cisco CallManager Attendant Console routes calls to the "always route" hunt group member that i s specified on the Hunt Group Configuration window. If you do not specify an always route member, Cisco CallManager Attendant Console drops the call when the queue size limit is reached.
- Hold Time—This field specifies the maximum time (in seconds) that Cisco CallManager Attendant Console keeps a call in the queue. If the call is in the queue for longer than the "HoldTime," the call gets redirected to the "AlwaysRoute" member. If you do not configure an always route member, the call remains in the queue until an attendant becomes available.

Example 16-4 Broadcast Hunting Example

Assume a pilot point named Service exists at directory number 1000 and supports broadcast hunting. The hunt group for this pilot contains the following members:

- Three user/line number pairs for service staff; that is, Mary Brown/Line #1, Joe Williams/Line #2, and Doris Jones/Line #1, listed in the hunt group in that order
- A voice-messaging number, 7060, which is the final member of the hunt group

The following example describes a simple call-routing scenario where the user chose Broadcast Hunting during the configuration of the pilot point:

1. The Cisco CallManager Attendant Console receives a call and directs it to the Service Pilot Point, directory number 1000.
2. Because Broadcast is chosen as the call-routing option for the Service pilot point, the Cisco CallManager Attendant Console that is associated with the pilot point checks the queue. Cisco CallManager Attendant Console determines that the queue is not full and routes the call to the queue. The caller receives music on hold.

3. Cisco CallManager Attendant Console checks the members of the hunt group in order, beginning with Mary Brown/Line #1. Cisco CallManager Attendant Console determines that Mary Brown/Line #1 is available, Joe Williams/Line #2 is busy, and Doris Jones/Line #1 is available and, therefore, broadcasts the call to Mary Brown/Line #1 and Doris Jones/Line #1.
4. Mary Brown answers the call, and Cisco CallManager Attendant Console removes the call from the queue.

Understanding Call Queuing

You can configure a pilot point to support call queuing, so when a call comes to pilot point and all hunt groups members are busy, Cisco CallManager Attendant Console sends calls to a queue. While in the queue, the callers receive music on hold if you have chosen an audio source from the Network Hold Audio Source and the User Hold MOH Audio Source drop-down list boxes in the Device Pool window or the Pilot Point Configuration window. The attendants cannot view the queued calls. When a hunt group member becomes available, Cisco CallManager Attendant Console redirects the call to that hunt group member.

You enable queuing for a pilot point by checking the Queuing Enabled check box on the Pilot Point Configuration window. You must also enter a value in the Queue Size field and the Hold Time (in Seconds) field. The queue size specifies the number of calls that are allowed in the queue. If the queue is full, Cisco CallManager Attendant Console routes calls to the "always route" hunt group member that is specified on the Hunt Group Configuration window. If you do not specify an always route member, Cisco CallManager Attendant Console drops the call when the queue size limit is reached. The hold time specifies the maximum time (in seconds) that Cisco CallManager Attendant Console keeps a call in the queue. If the call is in the queue for longer than the "HoldTime," the call gets redirected to "AlwaysRoute" member. If the "AlwaysRoute" member is not configured, no action occurs.

Understanding the Cisco CallManager Attendant Console Directory

The attendant console server reads and caches directory entries at startup. After an initial handshake determines whether the directory entries changed since the previous log in, the attendant console downloads the directory user list. The attendant console also downloads the user list when the interval in the Directory Reload Interval field in the Attendant Settings dialog box expires or when the user clicks the Reload button in the Directory window.

The attendant console searches the following files (in order) for the user list:

- User list file that is specified in the Path Name of Local Directory File in the Attendant Settings dialog box on the attendant PC
- AutoGenerated.txt file that is generated by the Cisco CallManager Attendant Console service and stored in the userlist directory on the Cisco CallManager Attendant Console server when the Cisco CallManager Attendant Console service starts and when the directory sync period expires if the Directory Sync Period service parameter does not equal zero. The attendant console saves the file as CorporateDirectory.txt.

  To modify the Directory Sync Period service parameter, choose **System > Service Parameters**. Choose the appropriate server from the Server drop-down list box and choose the Cisco CallManager Attendant Console Server service from the Service drop-down list box.
- CorporateDirectory.txt file that you import using the Cisco CM Attendant Console User File Upload window (**Application > Cisco CM Attendant Console > Cisco CM Attendant Console User File Upload**). If you import a CorporateDirectory.txt file, it replaces the AutoGenerated.txt file created by the system.

The user list file exists in comma separate value (CSV) format and contains the following information:

- Last Name
- First Name
- Telephone Number
- Department

Note Directory entries without telephone numbers do not display in the attendant console Directory window.

The attendant console server also stores per-attendant information such as speed-dial groups/entries and window positions in the database, which ensures that each attendant can use the per-attendant settings from any PC into which the attendant logs.

Additional Information

See the "Related Topics" section on page 16-39.

Understanding the Cisco CallManager Attendant Console Server

The attendant console application registers with and receives call-dispatching services from the Cisco CallManager Attendant Console Server service. The CallManager Attendant Console Server service provides communication among Cisco CallManager servers, attendant consoles, and the Cisco IP Phones that are used with the attendant consoles.

Note If you use the attendant console in a cluster environment, make sure that all Cisco CallManagers within a cluster have the Cisco CallManager Attendant Console Server service activated and running. You must manually activate the service through Cisco CallManager Serviceability. Attendant console redundancy requires this setup to work properly; however, not all Cisco CallManager Attendant Console Servers are required to have a route point.

Cisco CallManager Attendant Console Server handles attendant console requests for the following items:

- Call dispatching from pilot point to the appropriate hunt group destination
- Line status (unknown, available, on hook, or off hook)
- User directory information (Cisco CallManager Attendant Console Server stores and periodically updates directory information for fast lookup by the attendant console.)

Note Cisco CallManager Attendant Console Server only monitors the status of internal devices and phones. An attendant console user cannot see line state for a phone that is connected to a gateway.

Cisco CallManager Attendant Console Redundancy

Every time that the attendant opens the Cisco CallManager Attendant Console, the following events occur:

- Cisco CallManager Attendant Console connects to a Cisco CallManager Attendant Console server and downloads the list of Cisco CallManager servers in the attendant phone device pool.
- Cisco CallManager Attendant Console caches the list of servers into the GlobalSettings.xml file that is located in C:\Program Files\Cisco\Call Manager Attendant Console\data.
- Cisco CallManager Attendant Console client application uses the server list to locate the servers that are running CTIManager. The list of CTI services provides scalability. Customer can provision a single machine as the call processing server (CTI server) instead of running the CTI service on the same machine as the Cisco CallManager and the Attendant Console Server services.
- The Cisco CallManager Attendant Console server inspects the Cisco CallManager database and uses the list of Cisco CallManager servers as the list of servers where the Cisco CallManager Attendant Console Server service should be active.

If a Cisco CallManager service fails, the following events occur:

- The attendant console that is attached to the failed server uses the list in the GlobalSettings.xml file to locate and connect to another Cisco CallManager server.
- The Cisco CallManager Attendant Console Server service that is running on the Cisco CallManager server takes over servicing of the route points that are associated with the failed Cisco CallManager.
- When the failed Cisco CallManager comes back up, its Cisco CallManager Attendant Console Server resumes servicing its route points and attendant consoles. The attendants resumes service with the recovered Cisco CallManager after the attendant closes and reopens the console.

Note Automated recovery exists. If a Cisco CallManager Attendant Console Server service fails, another Cisco CallManager Attendant Console Server service takes over.

To ensure redundancy for the Cisco CallManager Attendant Console application, perform one of the following tasks:

- In default configurations where CTIManager and Cisco CallManager Attendant Console Server are running on all nodes in the Cisco CallManager cluster, enter the IP address of one server that is running Cisco CallManager Attendant Console Server in the Attendant Settings dialog box on the attendant PC.
- If Cisco CallManager Attendant Console Server and CTIManager are not running on all nodes in the cluster, enter a comma separated list of the IP addresses of servers in the cluster that have an active CTIManager in the Call Processing Server Host Names or IP Addresses field on the Advanced Tab of the Attendant Settings dialog box on the attendant PC.

Note For more information on accessing the Attendant Settings dialog box, see the "Configuring Cisco CallManager Attendant Console Settings" section on page 16-35.

System Requirements for Cisco CallManager Attendant Console

See the following sections for PC requirements and Cisco IP Phone requirements for using the attendant console:

- Attendant PC Requirements, page 16-12
- Cisco IP Phone and Voice-Messaging Requirements for Use with the Attendant Console, page 16-12

Attendant PC Requirements

The following list provides PC requirements for the attendant console:

- Operating system—Windows 2000 and Windows XP
- Network connectivity to the Cisco CallManager

Cisco IP Phone and Voice-Messaging Requirements for Use with the Attendant Console

The attendant console works in conjunction with a Cisco IP Phone. Configure the attendant console to connect the Cisco IP Phone to its registered Cisco CallManager server. To configure the attendant console, make sure that the IP Address or Host Name field in the Attendant Console Settings dialog box specifies the address of the Cisco CallManager server to which the Cisco IP Phone is normally registered.

Cisco IP Phones that are used with the attendant console must meet the following guidelines:

- Use the attendant console with any SCCP Cisco IP Phone Models 7902, 7905, 7912, 7940, 7960, and 7970. You cannot use SIP phones as attendant phones, but attendants can receive and handle calls from SIP phones.
- Make sure that the Cisco IP Phone is added as a device in Cisco CallManager before it is used with the attendant console.
- Make sure that you associate the attendant directory numbers in addition to the pilot points and devices with the ac user that you configured in the Application User Configuration window in Cisco CallManager Administration.
- Make sure that you configure voice messaging for each directory number the attendant can access. If you do not, the attendant cannot forward calls to voice-messaging system.
- Do not use a shared-line appearance for pilot points. Make sure that directory numbers for pilot points do not appear on any other device in the system. Attendant phones can share lines with other attendants or non-attendants.
- Disable call forwarding for lines and directory numbers on Cisco IP Phones that are used as attendant consoles.
- If an attendant console user will be logging in to the attendant console at more than one phone, ensure that each phone is set up according to these guidelines and that each phone is registered with its own attendant console.
- Based on the line settings on Directory Number Configuration window, Cisco CallManager Attendant Console can support multiple calls on a line. When no more outgoing calls can be made on a line, Cisco CallManager Attendant Console displays a warning message when the attendant attempts to make a call.

Interactions and Restrictions

The following sections describe the interactions and restrictions for Cisco CallManager Attendant Console:

Interactions

The following sections describe how Cisco CallManager Attendant Console interacts with Cisco CallManager applications:

Cisco CallManager Extension Mobility

If a user logs in to or logs off 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, see "Configuring Cisco CallManager Attendant Console Settings" section on page 16-35.

Music On Hold

If you have chosen an audio source from the Network Hold Audio Source and the User Hold MOH Audio Source drop-down list boxes in the Device Pool window or on the Pilot Point window, queued callers receive music on hold while in the queue. The selections you make on the Pilot Point Configuration window override those you make on the Device Pool window.

Call Park

You must associate the ac user to the Standard CTI Allow Call Park Monitoring group (found on the Cisco CallManager Administration User Group Configuration window). If you do not associate the ac user to this group, pilot points do not register, and the call control does not go up on the console.

CTI

You must associate the ac user to the Standard CTI Enabled users group and the Standard CTI Allow Call Park Monitoring group (found on the Cisco CallManager Administration User Group Configuration window). If you do not associate the ac user to these groups, pilot points do not register, and the call control does not go up on the console.

Restrictions

The following restrictions apply to Cisco CallManager Attendant Console:

- You cannot use SIP phones as attendant phones, but attendants can receive and handle calls from SIP phones.
- The attendant console does not show the correct call forward all (CFA) status of certain SIP phones, including Cisco SIP IP Phone models 7940 and 7960.
- Cisco CallManager Attendant Console Server does not route calls to an instance of a shared line on attendant phone if any other instances of the shared line are in use.
- If you use the attendant console in a cluster environment, make sure that all Cisco CallManagers within a cluster have the Cisco CallManager Attendant Console Server service activated and running. You must manually activate the service through Cisco CallManager Serviceability. Attendant console redundancy requires this setup to work properly; however, not all Cisco CallManager Attendant Console Servers are required to have a route point.
- Cisco CallManager Attendant Console does not support a dual monitor setup on the attendant PC.
- Cisco CallManager Attendant Console does not support Barge and cBarge; however, the client interface does display any activity that is related to these features.
- Do not use a shared-line appearance for pilot points and hunt group members. Make sure that directory numbers for pilot points and hunt group members do not appear on any other device in the system.
- Disable call forwarding for lines and directory numbers on Cisco IP Phones that are used as attendant consoles.
- Cisco CallManager Attendant Console recognizes partitions, but has the following problems working with them:
  - If a directory number exists in more than one partition, the attendant console displays the line state of the DN that changed last. This means that line state that appears for a particular individual in the directory may not be correct.
  - If a directory number in the hunt group also exists in another partition, Cisco CallManager Attendant Console may not route calls appropriately. Consider a scenario in which directory number 2000 exists in Partition1 and Partition2, and directory number 2000 (Partition1) exists in a hunt group. If directory number 2000 (Partition2) receives a call, Cisco CallManager Attendant Console considers the line state of directory number 2000 (Partition1) to be busy and does not route calls to that directory number.
- A user cannot activate call back for a Cisco CallManager Attendant Console pilot point number over a QSIG-enabled intercluster trunk or QSIG-enabled trunk. If the user attempts to activate call back to a Cisco CallManager Attendant Console pilot point number over a QSIG-enabled intercluster trunk or QSIG-enabled trunk, the message “Callback Cannot be activated on xxxx” displays on the user phone. The user can activate call back for a Cisco CallManager Attendant Console pilot point if that pilot point exists in the same Cisco CallManager cluster as the user DN.

- Cisco CallManager Attendant Console does not work with the group call pickup feature. The attendant console user interface cannot appropriately handle calls coming from or made to phones belonging to a call pickup group due to JTAPI and CTI limitations.
- Make sure that you do not add attendant console pilot points or hunt group members or any directory numbers on an attendant phone to line groups in Cisco CallManager Administration.

Installing and Activating Cisco CallManager Attendant Console

1. Use Cisco CallManager Serviceability to activate and start the Cisco CallManager Attendant Console Server service on all servers that are running the Cisco CallManager service and to activate the CTIManager service on one server in the cluster. Refer to the *Cisco CallManager Serviceability Administration Guid*e.
2. Configure Cisco CallManager Attendant Console in Cisco CallManager Administration. See the "Configuring Cisco CallManager Attendant Console" section on page 16-15.
3. Install and configure the Cisco CallManager Attendant Console plug-in on each attendant PC. For more information, see the "Installing the Cisco CallManager Attendant Console Plug-in on an Attendant PC" section on page 16-33, the "Starting Cisco CallManager Attendant Console After Installing Windows XP SP2" section on page 16-34, and the "Configuring Cisco CallManager Attendant Console Settings" section on page 16-35. After the attendant console is configured, it operates with the specified settings until the administrator changes them.
4. If the attendants require Cisco Attendant Console user windows to display in a language other than English, make sure that you install the Cisco IP Telephony Locale Installer on every server in the cluster. For more information, refer to the *Cisco IP Telephony Platform Administration Guide*.

Configuring Cisco CallManager Attendant Console

For successful configuration of Cisco CallManager Attendant Console, perform the steps in the configuration checklist. The following sections provide configuration information:

Configuration Checklist for Cisco CallManager Attendant Console

Perform the steps in Table 16-1 to set up the attendant console.

Table 16-1 Attendant Console Configuration Checklist

Configuration Steps		Related Procedures and Topics
Step 1	Add attendant console users.	Configuring Cisco CallManager Attendant Console Users, page 16-17
Step 2	Configure directory numbers for the pilot points.	Configuring a Directory Number, *Cisco CallManager Administration Guide*
Step 3	Set up pilot points and hunt groups.	Understanding Pilot Points and Hunt Groups, page 16-2 Configuring Pilot Points, page 16-21 Configuring Hunt Groups, page 16-28
Step 4	Create the ac user and associate all pilot point devices with the user.	Configuring the ac User, page 16-20 Associating Devices and Pilot Points with the ac User, page 16-27
Step 5	Add the ac user to the Standard CTI Enabled group and the Standard CTI Allow Call Park Monitoring group.	Adding Users to a User Group, *Cisco CallManager Administration Guide*.
Step 6	Verify that the Cisco CallManager Attendant Console Server service activates and runs on all servers that are running the Cisco CallManager service. Verify that the CTIManager service activates and runs on one server in the cluster.	*Cisco CallManager Serviceability Administration Guide* Understanding the Cisco CallManager Attendant Console Server, page 16-10
Step 7	Make sure that each attendant Cisco IP Phone is set up correctly for use with the attendant console.	Cisco IP Phone and Voice-Messaging Requirements for Use with the Attendant Console, page 16-12
Step 8	Make sure that the attendant console PC is set up correctly for use with the attendant console.	Attendant PC Requirements, page 16-12
Step 9	Create dial rules to transform directory numbers into a dialable pattern. Each rule specifies which numbers to transform based on the beginning digits and length of the number. For example, you can create a dial rule that automatically removes the area code and prefix digits from a 10-digit telephone number beginning with 408525 and adds 89 to the beginning of the telephone number to provide access to an outside line. In this case, the number 4085256666 becomes 8956666.	Configuring Dial Rules, *Cisco CallManager Administration Guide* Dial Rules Overview, *Cisco CallManager System Guide*

Table 16-1 Attendant Console Configuration Checklist (continued)

Configuration Steps		Related Procedures and Topics
Step 10	Directory lookup rules transform caller identification numbers into numbers that can be looked up in the directory. For example, you can create a directory lookup rule that automatically removes the area code and 2 prefix digits from a 10-digit telephone, which would transform 4089023139 into 23139. If Cisco CallManager Attendant Console can match the number with a user in the speed dial entries of the attendant or in the directory, the attendant console displays the name in the Call Detail window.	Configuring Directory Lookup Dial Rules, page 30-2, *Cisco CallManager Administration Guide* Directory Lookup Dial Rules, *Cisco CallManager System Guide*
Step 11	If your centralized user list is located on a directory server that is separate from the Cisco CallManager server, create and upload the CorporateDirectory.txt file.	Creating and Uploading the CorporateDirectory.txt File, page 16-31
Step 12	Install and configure the attendant console on each attendant console user PC. **Note** After a Cisco CallManager upgrade, you must reinstall the Cisco CallManager Attendant Console Plug-in on the attendant PCs.	Installing the Cisco CallManager Attendant Console Plug-in on an Attendant PC, page 16-33 Starting Cisco CallManager Attendant Console After Installing Windows XP SP2, page 16-34 Configuring Cisco CallManager Attendant Console Settings, page 16-35

Configuring Cisco CallManager Attendant Console Users

This section covers the following procedures:

- Finding an Attendant Console User, page 16-17
- Configuring an Attendant Console User, page 16-19
- Deleting an Attendant Console User, page 16-20
- Configuring the ac User, page 16-20

Additional Information

See the "Related Topics" section on page 16-39.

Finding an Attendant Console User

Use the following procedure to find an attendant console user:

Note During your work in a browser session, Cisco CallManager Administration retains your attendant console user search preferences. If you navigate to other menu items and return to this menu item, Cisco CallManager Administration retains your user search preferences until you modify your search or close the browser.

Procedure

Step 1 Choose **Application > Cisco CM Attendant Console > Cisco CM Attendant Console User**.

The Find and List window displays.

Step 2 From the drop-down list box, choose one of the following criteria:

- begins with
- contains
- ends with
- is exactly
- is not empty
- is empty

Step 3 Specify the appropriate search text, if applicable, and click **Find**. You can also specify how many items per page to display.

Tip To find all attendant console users that are registered in the database, click **Find** without entering any search text.

A list of attendant console users displays by Name.

Tip To search for directory numbers within the search results, click the **Extend Query** check box, enter your search criteria as described in this procedure, and click **Find**.

Additional Information

See the "Related Topics" section on page 16-39.

Configuring an Attendant Console User

This section describes how to configure an attendant console user. You must add users through the Cisco CallManager Attendant Console User Configuration window in Cisco CallManager Administration before the users can log in to an attendant console.

Note Be aware that attendant console user IDs and passwords are *not* the same as directory users and passwords that are entered in the End User Configuration window in Cisco CallManager Administration.

Procedure

Step 1 Choose **Application > Cisco CM Attendant Console > Cisco CM Attendant Console User**.

Step 2 Perform one of the following tasks:

- To add a new attendant console user, click the **Add New** button.
- To update an existing attendant console user, locate the appropriate user as described in "Finding an Attendant Console User" section on page 16-17, and click the name of the user you want to update.

The Cisco CallManager Attendant Console User Configuration window displays.

Step 3 Enter the appropriate configuration settings as described in Table 16-2.

Step 4 Click **Save**.

Additional Information

See the "Related Topics" section on page 16-39.

Cisco CallManager Attendant Console User Configuration Settings

Table 16-2 describes Cisco CallManager Attendant Console user configuration settings.

Table 16-2 Attendant Console User Configuration Settings

Field	Description
User ID	Enter the login name for the attendant console user. Enter up to 50 alphanumeric characters.
Password	Enter a password of up to 50 alphanumeric characters.
Confirm	Enter the same password again.

Additional Information

See the "Related Topics" section on page 16-39.

Deleting an Attendant Console User

This section describes how to view, update, or delete a Cisco attendant console user.

Before You Begin

To find out which hunt groups are using the attendant console user, click the **Dependency Records** link from the Cisco CallManager Attendant Console User Configuration window. If the dependency records are not enabled for the system, the dependency records summary window displays a message. For more information about dependency records, refer to the "Accessing Dependency Records" section in the *Cisco CallManager Administration Guide*. If you try to delete an attendant console user that is in use, Cisco CallManager displays a message. To delete an attendant console user that is currently in use, you must perform either or both of the following tasks:

- Assign a different attendant console user to any hunt groups that are using the attendant console user that you want to delete. See the "Deleting Hunt Group Members" section on page 16-30.
- Delete the hunt groups that are using the attendant console user. See the "Deleting Hunt Group Members" section on page 16-30.

Procedure

Step 1 Locate the user you want to delete by using the procedure in the "Finding an Attendant Console User" section on page 16-17.

Step 2 Click the name of the user that you want to delete.

Step 3 To remove the user, click **Delete**.

Tip From the Find and List window, you can delete multiple users by checking the check boxes next to the appropriate users and clicking **Delete Selected**. You can delete all users in the window by clicking **Select All**, then clicking **Delete Selected**.

Additional Information

See the "Related Topics" section on page 16-39.

Configuring the ac User

You must configure one user named "ac" and associate the attendant phones and the pilot points with the user. If you do not configure this user, the attendant console cannot interact with CTIManager, and the attendant cannot receive calls.

Note After you use this procedure to create the ac user with the specified user ID and password, you can change the user ID and password. If you change the user ID, you must also change the JTAPI username field in the Service Parameters Configuration window for the Cisco CallManager Attendant Console Server service. For information on accessing the Cisco CallManager Attendant Console service parameters, see the "Cisco CallManager Attendant Console Server Configuration" section on page 16-31.

Perform the following procedure to configure the ac user.

Procedure

Step 1 Choose **User Management > Application User**.

The Find and List Application Users window displays.

Step 2 Click **Add New**.

The Application User Configuration window displays.

Step 3 In the User ID field, enter **ac**.

Step 4 In the Password field, enter **12345**.

Step 5 In the Confirm Password field, enter **12345**.

Step 6 Click **Save**.

Note If you want to change the ac user ID and password after the ac user has been created, use this procedure to change the values. If you change the user ID, you must also enter the new user ID in the JTAPI username field in the Service Parameters Configuration window for the Cisco CallManager Attendant Console Server service. For information on accessing the Cisco CallManager Attendant Console service parameters, see the "Cisco CallManager Attendant Console Server Configuration" section on page 16-31.

Additional Information

See the "Related Topics" section on page 16-39.

Configuring Pilot Points

Before the Cisco CallManager Attendant Console Server can route calls, you must configure pilot points and hunt groups through Cisco CallManager Administration.

Note After you configure the pilot points, make sure that you configure the ac user and associate all pilot points with the ac user.

This section contains the following topics:

Additional Information

See the "Related Topics" section on page 16-39.

Finding a Pilot Point

This section describes how to find a pilot point.

Note During your work in a browser session, Cisco CallManager Administration retains your pilot point search preferences. If you navigate to other menu items and return to this menu item, Cisco CallManager Administration retains your pilot point search preferences until you modify your search or close the browser.

Procedure

Step 1 Choose **Application > Cisco CM Attendant Console > Pilot Point**.

The Find and List window displays.

Step 2 From the drop-down list box, choose one of the following criteria:

- Pilot Point
- Calling Search Space
- Device Pool
- Pilot Number
- Partition

Step 3 Specify the appropriate search text, if applicable, and click **Find**. You can also specify how many items per page to display.

Tip To find all pilot points that are registered in the database, click **Find** without entering any search text.

A list of pilot points displays.

Tip To search for a pilot point within the search results, click the **Extend Query** check box, enter your search criteria as described in this procedure, and click **Find**.

Step 4 To view a specific pilot point, click the pilot point name.

Step 5 To delete or reset multiple pilot points from the Find and List Pilot Points window, check the check boxes next to the appropriate pilot points. You can choose all the phones in the window by checking the **Select All** button. Then, do one of the following:

- To delete the pilot points, click **Delete Selected**. When the delete confirmation dialog box displays, click **OK**.
- To reset the pilot points, click **Reset Selected**. When the Device Reset window displays, click **Restart**.

Additional Information

See the "Related Topics" section on page 16-39.

Configuring a Pilot Point

This section describes how to configure a pilot point and how to associate the directory number with that pilot point.

Before You Begin

Configure directory numbers to associate with the pilot points.

For more information on configuring directory numbers, see the "Configuring a Directory Number" section in the *Cisco CallManager Administration Guide*.

Procedure

Step 1 Choose **Application > Cisco CM Attendant Console > Pilot Point**.

The Find and List Pilot Points window displays.

Step 2 Perform one of the followings tasks:

- To copy an pilot point, locate the appropriate phone as described in "Finding a Pilot Point" section on page 16-22, and click the **Copy** button.
- To add a new pilot point, click the **Add New** button.
- To update an existing phone, locate the appropriate phone as described in "Finding a Pilot Point" section on page 16-22.

Step 3 Enter the appropriate settings as described in Table 16-3.

Step 4 Click **Save**.

Step 5 To associate a directory number for the pilot point, click the **Line [1]** link.

The Directory Number Configuration window displays.

Step 6 Enter the directory number that you want to use for the pilot point from the Directory Number field and click **Save**.

Note After the pilot point is created, you must configure a hunt group to specify which attendants receive the calls that come in to the pilot point. For more information, see the "Configuring Hunt Group Members" section on page 16-28.

Tip After you configure the pilot points, remember to configure the ac user and associate the devices/pilot points with the ac user. See the "Configuring the ac User" section on page 16-20 and the "Associating Devices and Pilot Points with the ac User" section on page 16-27 for more information.

Additional Information

See the "Related Topics" section on page 16-39.

Pilot Point Configuration Settings

Table 16-3 describes pilot point configuration settings.

Table 16-3 Pilot Point Configuration Settings

Field	Description
Pilot Name	Enter up to 15 alphanumeric characters, including spaces, to specify a descriptive name for the pilot point.
Description	Enter a description of the pilot point. This description can contain up to 50 characters.
Device Pool	The device pool comprises a group of Cisco CallManagers in prioritized order. The first Cisco CallManager in the list represents the primary Cisco CallManager for the pilot point.
Calling Search Space	To designate the partitions that the pilot point searches when it attempts to route a call, choose a calling search space from the drop-down list. You can configure the number of calling search spaces that display in this drop-down list box by using the Max List Box Items enterprise parameter. If more calling search spaces exist than the Max List Box Items enterprise parameter specifies, the **Find** button displays next to the drop-down list box. Click the **Find** button to display the Select Calling Search Space window. Enter a partial calling search space name in the **List items where Name contains** field. Click the desired calling search space name in the list of calling search spaces that displays in the **Select item to use** box and click **OK**. **Note** To set the maximum list box items, choose **System > Enterprise Parameters** and enter a value in the Max List Box Items field.
Route Calls To	Choose the method by which Cisco CallManager Attendant Console routes calls to attendants. The available methods include • First Available Hunt Group Member—Routes incoming calls to the first available member of a hunt group. • Longest Idle Hunt Group Member—Routes incoming calls to the route group member that has been idle for the longest time. If the voice-messaging number is the longest idle member of the group, Cisco CallManager Attendant Console routes the call to voice-messaging system without first checking the other members of the group. • Circular Hunting—Cisco CallManager Attendant Console maintains a record of the last hunt group member to receive a call. When a new call arrives, Cisco CallManager Attendant Console routes the call to the next hunt group member in the hunt group. • Broadcast Hunting—When a call arrives at the pilot point, Cisco CallManager Attendant Console answers the call, places the call on hold, adds the call to the queue, and displays the call in the Broadcast Calls window on attendant PCs. While on hold, the caller receives music on hold, if it is configured. Any attendant can answer the call from the Broadcast Calls window.
Location	This field specifies a selection of locations that are defined by using **System > Location**. When a location is defined, a location name, audio and video bandwidths get specified.

Table 16-3 Pilot Point Configuration Settings (continued)

Field	Description
Media Resource Group	Choose the appropriate Media Resource Group List. A Media Resource Group List specifies a prioritized list of media resource groups. Cisco CallManager Attendant Console selects the required media resource (for example, a Music On Hold server, transcoder, or conference bridge) from the available media resource groups according to the priority order that is defined in the media resource group list. **Note** For more information on media resource group lists, see "Configuring a Media Resource Group List" in the *Cisco CallManager Administration Guide*.
Network Hold MOH Audio Source	Choose the audio source that Cisco CallManager Attendant Console uses for network hold, including transfer hold, conference hold, and call park hold.
User Hold MOH Audio Source	Choose the audio source that Cisco CallManager Attendant Console uses when the attendant places a caller on hold.
Queuing Enable	If you want Cisco CallManager Attendant Console to queue calls when all attendants in a hunt group are busy, check the **Queuing Enable** check box. To complete the call-queuing configuration, enter values in the Queue Size and Queue Hold Time (in Seconds) fields.
Queue Size	This field specifies the number of calls that are allowed in the queue. If the queue is full, Cisco CallManager Attendant Console routes calls to the "always route" member that is specified on the Hunt Group Configuration window. If you do not specify an always route member, Cisco CallManager Attendant Console drops the call when the queue size limit is reached. The range is 0 to 255. The default specifies 32.
Queue Hold Time (in Seconds)	This field specifies the maximum time (in seconds) that Cisco CallManager Attendant Console keeps a call in the queue. If a call remains on hold for the number of seconds that are entered in this field and you configured an "always route" hunt group member on the Hunt Group Configuration window, Cisco CallManager Attendant Console sends the call to the always route member that is specified on the Hunt Group Configuration window. If you do not configure an always route member, the call remains in the queue until an attendant becomes available. Enter 0 in this field to keep calls in the queue until an attendant becomes available. The range is 0 to 3600 seconds. The default specifies 0.

Additional Information

See the "Related Topics" section on page 16-39.

Deleting a Pilot Point

This section describes how to delete a pilot point.

Before You Begin

To find out which virtual directory numbers are using the pilot point, click the **Dependency Records** link from the Pilot Point Configuration window. If the dependency records are not enabled for the system, the dependency records summary window displays a message. For more information about dependency records, refer to the "Accessing Dependency Records" section in the *Cisco CallManager Administration Guide*. If you try to delete a pilot point that is in use, Cisco CallManager displays a message. To delete a pilot point that is currently in use, you must delete the virtual directory numbers that are using the pilot point.

Note You do not have to restart Cisco CallManager Attendant Console Server or Cisco CallManager service after you delete a pilot point for the deletion to take effect.

Procedure

Step 1 Locate the pilot point by using the procedure in the "Finding a Pilot Point" section on page 16-22.

Step 2 Click the name of the pilot point that you want to delete. The Pilot Point Configuration window displays with information for the chosen pilot point.

Step 3 To remove the pilot point, click the **Delete** button.

Approximately 10 minutes after you delete a pilot point, Cisco CallManager Attendant Console stops directing calls to any hunt group members that are associated with that pilot point.

Tip From the Find and List window, you can delete multiple pilot points by checking the check boxes next to the appropriate pilot points and clicking **Delete Selected**. You can delete all pilot points in the window by clicking **Select All**, then clicking **Delete Selected**.

Additional Information

See the "Related Topics" section on page 16-39.

Resetting a Pilot Point

You must reset the pilot point after you update pilot point configuration settings. When you reset the pilot point, the Cisco CallManager service continues to run, and call processing continues to occur. Perform the following procedure to reset the pilot point:

Procedure

Step 1 Locate the pilot point that you want to reset by using the procedure in the "Finding a Pilot Point" section on page 16-22.

Step 2 Click the name of the pilot point that you want to reset.

Step 3 Click **Reset**.

The Reset window displays.

Step 4 Click one of the following buttons:

- **Restart**—Restarts the selected device for the pilot point without shutting the device down (reregisters the phones with Cisco CallManager).
- **Reset**—Shuts down the selected device for the pilot point and brings it back up (performs a complete shutdown and reinitialization of the phone).
- **Close**—Returns you to the previous window without restarting or resetting the selected device.

Additional Information

See the "Related Topics" section on page 16-39.

Associating Devices and Pilot Points with the ac User

Before the attendant uses the attendant console, you must associate the attendant console phones and pilot points to the ac user. Perform the following procedure:

Procedure

Step 1 Choose **User Management > Application User**, and perform a search for the ac user that you set up in the "Configuring the ac User" section on page 16-20. For more information on performing a user search, see the "Finding an End User" in the *Cisco CallManager Administration Guide*.

The ac user information appears in the Application User Configuration window.

Step 2 Choose the pilot points from the Available Devices list in the Device Associations box that you want to associate with the ac user and click the down arrow to move the pilot points to the Controlled Devices box. To choose multiple pilot points, Ctrl+click the pilot points. To locate specific pilot points, click the **Find More Pilot Points** button, locate the pilot points as described in "Finding a Pilot Point" section on page 16-22, check the check boxes next to the pilot points that you want to associate to the ac user, and click **Add Selected**.

Step 3 Click **Save**.

Additional Information

See the "Related Topics" section on page 16-39.

Configuring Hunt Groups

After you configure the pilot point, you must configure the hunt group. A hunt group comprises an ordered list of destinations (either directory numbers or attendant console user/line numbers) to which Cisco CallManager Attendant Console directs incoming calls.

This section covers the following procedures:

- Configuring Hunt Group Members, page 16-28
- Hunt Group Configuration Settings, page 16-29
- Deleting Hunt Group Members, page 16-30

Additional Information

See the "Related Topics" section on page 16-39.

Configuring Hunt Group Members

This section describes how to add and update hunt group members.

Before You Begin

Configure the pilot point for which you want to add hunt group members, including associating the directory number to the pilot point, as described in the "Configuring Pilot Points" section on page 16-21.

Procedure

Step 1 Find the pilot point for which you want to configure hunt group members as described in the "Finding a Pilot Point" section on page 16-22.

Step 2 Do one of the following:

- To add a hunt group member, click the **Add Member** button in the Hunt Group Member Information area.
- To edit an existing hunt group member, choose the hunt group member and click the **Edit Member** button in the Hunt Group Member Information area.

The Hunt Group Configuration window displays.

Step 3 Enter the appropriate configuration settings for the new hunt group member as described in Table 16-4.

Step 4 Click **Save**.

Step 5 Do one of the following

- To add a new hunt group member to the pilot point, click **Add New** and repeat Step 3 and Step 4.
- To create another hunt group member by copying the hunt group member that is displayed in the Hunt Group Configuration window, click **Copy** and repeat Step 3 and Step 4.
- To delete the hunt group member that is displayed, click **Delete**.
- To close the Hunt Group Configuration window and return to the Pilot Point Configuration window, click **Close**.

Step 6 To reorder the hunt group list, choose the member that you want to reorder from the list. Click the up and down arrows to move that member to a new position in the list.

If you are configuring a linked hunt group, make sure that the final member of each hunt group is the pilot point for the next hunt group.

Caution Cisco strongly recommends that you do not link the last hunt group back to the first hunt group.

For an example of a linked hunt group, see the "Understanding Linked Hunt Groups" section on page 16-5.

Additional Information

See the "Related Topics" section on page 16-39.

Hunt Group Configuration Settings

Table 16-4 describes hunt group configuration settings.

Table 16-4 Hunt Group Configuration Settings

Field	Description
Pilot Point	Displays the name of the pilot point for which you are configuring hunt group members.
Pilot Number (DirN)	Displays the directory number that is associated with the pilot point for which you are configuring hunt group members.
Hunt Group Member	This read-only field reflects the information that you choose from the Hunt Group Configuration window whether you enter the device directory number or the attendant console user name and line number; for example: • Call directory number 35201 (directory number example) • Direct Call to Mary Brown, Line 1 (user and line number example)
Member Option	Choose Device Member or User Member. If you choose the Device Member radio button, complete the fields in the **Device Member Information** section. If you choose the User Member, complete the User Name and Line Number fields in the **User Member Information** section. **Note** If you specify an attendant console user and line number, Cisco CallManager Attendant Console first checks whether the attendant console user is logged in to an attendant console and online before attempting to route the call. When you specify a user and line number, the user can log in to and receive calls on any Cisco IP Phone in the cluster that the attendant console controls.
Directory Number	Choose the directory number that you want to include in the hunt group. This field is only available if you chose the Device Member radio button from the Member Option field. **Caution** If you are configuring a linked hunt group, Cisco strongly recommends that you do not include any pilot point numbers in the hunt group except as the final member. Including other pilot point numbers in the hunt group may cause a continuous route loop.

Table 16-4 Hunt Group Configuration Settings (continued)

Field	Description
Always Route Member	If you want Cisco CallManager Attendant Console to always route calls to this hunt group member, whether it is busy or not, check this check box. If this check box is checked, Cisco CallManager Attendant Console does not check whether the line is available before routing the call. To manage overflow conditions, check this check box for voice-messaging or auto-attendant numbers that handle multiple, simultaneous calls. For linked hunt groups, only check the **Always Route Member** check box when you are configuring the final member of each hunt group.
User Name	From the drop-down list, choose the attendant console user that will serve as a hunt group member. This field is only available if you chose the User Member radio button from the Member Option field. Only attendant console users that are added in the Cisco CallManager Attendant Console User Configuration window appear in this list.
Line Number	From the drop-down list, choose the appropriate line numbers for the hunt group. This field is only available if you chose the User Member radio button from the Member Option field. **Note** You can add the same user to the same line only once within a single hunt group. For example, you cannot add Mary Brown, Line 1, more than once in the hunt group.

Additional Information

See the "Related Topics" section on page 16-39.

Deleting Hunt Group Members

This section describes how to delete hunt group members.

Procedure

Step 1 Choose **Application > Cisco CM Attendant Console > Pilot Point**.

The Pilot Point Configuration window displays.

Step 2 In the Hunt Group member Information group box, click the name of the member that you want to delete and click **Delete Member**.

The delete confirmation dialog box displays.

Step 3 To remove the hunt group member, click **OK**. To cancel the deletion, click **Cancel**.

Additional Information

See the "Related Topics" section on page 16-39.

Cisco CallManager Attendant Console Server Configuration

From the Service Parameters Configuration window, you can set service parameters for the Cisco CallManager Attendant Console Server service. You obtain information about the parameters by clicking the "i" button help icon in the upper, right corner of the window.

Caution Do not change any service parameters without permission of a Cisco Technical Assistance Center engineer. Doing so may cause system failure.

Perform the following steps to update Cisco CallManager Attendant Console Server service parameters.

Procedure

Step 1 Choose **System > Service Parameters**.

The Service Parameter Configuration window displays.

Step 2 From the Server drop-down list box, choose a server.

Step 3 From the Service drop-down list box, choose the Cisco CallManager Attendant Console Server service.

Note You must activate the Cisco CallManager Attendant Console service on a server before the server displays in the Cisco CallManager Attendant Console Servers list. For more information on activating a service, refer to the *Cisco CallManager Serviceability Administration Guide*.

The window refreshes and displays all configured service parameters for the Cisco CallManager Attendant Console service.

Step 4 Update the appropriate parameter value. To set all service parameters for this instance of the service to the default values, click the **Set to Default** button.

To view a list of parameters and their descriptions, click the **i** button in the upper, right corner of the window. To view the list with a particular parameter at the top, click that parameter in the Cisco CallManager Attendant Console Server Configuration window.

Step 5 Click **Update**.

The window refreshes, and Cisco CallManager updates the service parameter with your changes.

Additional Information

See the "Related Topics" section on page 16-39.

Creating and Uploading the CorporateDirectory.txt File

You can create and upload a CorporateDirectory.txt file if your centralized user list is located on a directory server that is separate from the Cisco CallManager server. To do this, perform the following procedure:

Procedure

Step 1 On your PC, create a corporate directory file named CorporateDirectory.txt that contains comma separated entries for each user in the format Last Name, First Name, Telephone Number, Department. Create one line for each user in the directory. You can include empty values for fields. The system ignores blank lines and lines starting with pound (#) or semi-colons (;). The following represents a sample directory file:

```
Doe, Jane, 67890, Engineering
Doe, John, 12345, Sales
Doe, Rodney, 12346, Marketing
Doe, Brian, 12347, Customer Support
Smith,,,Marketing
Clark,,,
```

Note The CorporateDirectory.txt filename is case-sensitive.

Step 2 In Cisco CallManager Administration, choose **Application > Cisco CM Attendant Console > Cisco CM Attendant Console User File Upload**.

The Attendant Console User File Upload window displays.

Tip To view a sample directory file, choose the **View Sample CorporateDirectory.txt File** link. Then, click the browser Back button to return to the Attendant Console User File Upload window. If you have previously uploaded a corporate directory file, you can view that file by clicking the **View Current CorporateDirectory.txt File** link.

Step 3 Choose **Upload File**.

The Upload File window displays.

Step 4 Browse to the CorporateDirectory.txt file and click **Upload**.

When Cisco CallManager Administration completes the file upload, a confirmation window displays.

Note Although Cisco CallManager can import any file that you specify, the system can only use data from files that are named CorporateDirectory.txt.

Step 5 Click **Close**.

Note To update the corporate directory list, update the CorporateDirectory.txt file and upload the file again. Cisco CallManager Administration overwrites the previous file.

Additional Information

See the "Related Topics" section on page 16-39.

Deleting the CorporateDirectory.txt File

If you want to use the user list generated by the Cisco CallManager Attendant Console service rather than a user list that you imported from a separate directory server, you must delete the CorporateDirectory.txt file that you imported. The Cisco CallManager Attendant Console service will generate a new AutoGenerated.txt file when the Cisco CallManager Attendant Console service starts and when the directory sync period expires if the Directory Sync Period service parameter does not equal zero.

To delete the CorporateDirectory.txt file, use the following procedure:

Procedure

Step 1 In Cisco CallManager Administration, choose **Application > Cisco CM Attendant Console > Cisco CM Attendant Console User File Upload**.

The Attendant Console User File Upload window displays.

Step 2 Click the **Delete** button that appears next to the CorporateDirectory.txt link.

Step 3 To delete the CorporateDirectory.txt file, click **OK**. To continue without deleting the file, click **Cancel**.

Note The Cisco CallManager Attendant Console service will generate a new AutoGenerated.txt file when the Cisco CallManager Attendant Console service starts and when the directory sync period expires if the Directory Sync Period service parameter does not equal zero.

Additional Information

See the "Related Topics" section on page 16-39.

Installing the Cisco CallManager Attendant Console Plug-in on an Attendant PC

You access the Cisco CallManager Attendant Console plug-in from the Cisco CallManager Application Plugin Installation window. This section describes how to install the attendant console on a user PC.

Before You Begin

Add the attendant console user and the phone that you want to associate with the attendant console to the Cisco CallManager database. For more information on adding users, see the "Configuring an Attendant Console User" section on page 16-19. For more information on adding phones, "Configuring Cisco IP Phones" section in the *Cisco CallManager Administration Guide*.

Make sure that you have administrative privileges on the attendant PC when installing Cisco CallManager Attendant Console.

Procedure

Step 1 From each Cisco CallManager Attendant Console PC, browse into a server that is running Cisco CallManager Administration and log in with administrative privileges.

Tip To browse into the server, enter https://<CM-server-name>/ccmadmin/showHome.do, where <CM-server-name> equals the name of the server, in the Address bar in the web browser.

Step 2 From Cisco CallManager Administration, choose **Application** > **Plugins**.

Step 3 Click the icon for the Cisco CallManager Attendant Console.

The Cisco CallManager Attendant Console installation wizard runs.

Step 4 To acknowledge the installation, click **Yes**.

Step 5 In the initial installation wizard window, click **Next**.

Step 6 You can install the attendant console to the default location or use the Browse button to specify a new location; after specifying a location, click **Next**.

Step 7 In the Ready to Install window, click **Next**.

Step 8 After the installation program finishes installing files, choose whether you want to restart the computer now or later; then, click **Finish**.

Step 9 If prompted, restart the computer.

If you installed Windows XP SP2 on the client PC, see the "Starting Cisco CallManager Attendant Console After Installing Windows XP SP2" section on page 16-34 for information on unblocking the firewall, so the attendant can use the attendant console.

Step 10 If the attendant does not have administrative privileges on the PC, grant read, write, and execute permissions on the folder where you installed Cisco CallManager Attendant Console. By default, you install the Cisco CallManager Attendant Console in C:\Program Files\Cisco\CallManager Attendant Console. For more information on setting folder permissions, refer to your operating system documentation.

Step 11 Configure or update any attendant console settings that you did not configure during the installation process. See the "Configuring Cisco CallManager Attendant Console Settings" section on page 16-35.

Tip If you change IP addresses of the Cisco CallManager servers or the device pool of the attendant phone changes after you install the attendant console plug-in, the attendants must close and open Cisco CallManager Attendant Console, so the application can download the list of servers in the Cisco CallManager group.

Additional Information

See the "Related Topics" section on page 16-39.

Starting Cisco CallManager Attendant Console After Installing Windows XP SP2

When you start Cisco CallManager Attendant Console for the first time after you install Windows XP SP2, a dialog box displays that indicates that Windows Firewall has blocked some features of the ACClient application. To create an exception in the Windows Firewall, so you can continue using Cisco CallManager Attendant Console, click **Unblock**. The operating system configures the exception automatically.

After you unblock the firewall, configure or update any attendant console settings that you did not configure during the installation process. See the "Configuring Cisco CallManager Attendant Console Settings" section on page 16-35.

Additional Information

See the "Related Topics" section on page 16-39.

Configuring Cisco CallManager Attendant Console Settings

Configure each attendant console to meet the following criteria:

- Provide the attendant console username and password.
- Connect to the correct Cisco CallManager Attendant Console server and directory number for the Cisco IP Phone that the attendant uses with the attendant console.

After you install the attendant console, you must configure the attendant console before a user can log in to the console. Use the procedure in this section to configure settings that are not specified during installation, to view current settings, or to update the attendant console configuration.

After it is configured, the attendant console operates with the specified settings until the administrator changes them.

Note If you change the IP addresses of the nodes in the cluster, you may also need to change the IP address in the Attendant Server Host Name or IP Address field in the Attendant Console Settings dialog box.

Procedure

Step 1 On the PC where the attendant console is installed, choose **Start > Programs > Cisco CallManager > Cisco CallManager Attendant Console** or click the Cisco CallManager Attendant Console icon on the desktop; then, click **Yes** to launch the attendant console.

Step 2 Click **Settings**.

Step 3 Enter the appropriate configuration settings, as described in Table 16-5.

Step 4 Click **Save**. You have now configured the settings for the attendant console, and the settings can now be used for call-distribution activities.

Additional Information

See the "Related Topics" section on page 16-39.

Attendant Console Configuration Settings

Table 16-5 describes Cisco CallManager Attendant Console configuration settings.

Table 16-5 Settings Dialog Box

Field/Check Box	Notes
Basic Tab (Cisco requires that you enter the information in the appropriate fields.)	
Attendant Server Host Name or IP Address	Enter the appropriate information in the field.
Directory Number of Your Phone	Confirm or enter the directory number of the Cisco IP Phone that the attendant uses with the attendant console. If you enter a directory number that appears on more than one device, the Device Selector dialog box displays when you click **Save**. Choose the device that you want to use with the attendant console from the drop-down list box and click OK.
Attendant Console Client CallBack Port	If you are using a firewall, specify the port that the firewall should use to send callback messages to the attendant console client. Valid port numbers include 0 and port numbers equal to or greater than 1023.
Advanced Tab (You can enter information in these optional fields to change the default settings.)	
Path of Local Directory File	If you want the console to access a local user list rather than a centralized user list from Cisco CallManager Administration, enter the path to the user list file on the attendant PC or network share that contains the directory information.
Directory Reload Interval (in seconds)	Enter the time (in seconds) that the Cisco CallManager Attendant Console server waits before reloading the user list that displays in the Directory window of the Cisco CallManager Attendant Console.
Call Processing Server Host Name or IP Address	Enter the call processing server host name or IP address if it differs from the attendant server that you specified on the Basic tab.
Local Host IP Address (for line state)	Enter the IP address that your client uses to receive line state updates. **Note** If the attendant PC has two Network Interface Cards (NICs), you can specify the IP address that will receive line state updates.
Enable Trace	Check the check box to ensure that you can troubleshoot issues that are associated with the attendant console.

Table 16-5 Settings Dialog Box (continued)

Field/Check Box	Notes
Enable Audible Alerts	To enable audible alerts that indicate when the attendant receives calls (incoming and broadcast), drops calls, parks calls, and places calls on hold as well as that indicate how long calls have been on hold, check the **Enable Audible Alerts** check box. The audible alerts sound once per call event. The "audio" subdirectory of the Cisco CallManager Attendant Console application contains the audible alert files. By default, the system specifies the directory location, C:\Program Files\Cisco\Call Manager Attendant Console\audio.
Show Accessibility Messages	To enable accessibility messages, so dialog boxes display information about the status of the attendant console, such as when call control goes up or down, check the **Show Accessibility Messages** check box.The screen reader that an attendant has installed on the PC can then read these messages.
Hold Call When Dial Pad is Active	If you want the attendant console to place a call on hold while the attendant uses the Dial Pad window, check this check box. **Note** If the attendant uses a screen reader, you may want to check this check box, so that the caller does not hear the screen reader detail the information on the window.

Additional Information

See the "Related Topics" section on page 16-39.

Configuring Held Icon Timers

The color of the held icons on the attendant console indicates how long a call has been on hold. The WaitTimeMedium parameter indicates the time before the held icon turns yellow. The WaitTimeLong parameter indicates the time before the held icon turns red. By default, the held icon turns yellow when a call remains on hold for 60 seconds and turns red when the call remains on hold for 120 seconds. To configure the duration after which the held icons change color, perform the following procedure.

Note Cisco recommends that you do not change the default values of the held icon timers.

Procedure

Step 1 Open the GlobalUI.properties files that are located on the attendant PC in the ..\Program Files\Cisco\CallManager Attendant Console\etc directory.

Step 2 To change the time before the held icon turns yellow, edit the WaitTimeMedium parameter.

Step 3 To change the time before the held icon turns red, edit the WaitTimeLong parameter.

Step 4 Save and close the GlobalUI.properties file.

Additional Information

See the "Related Topics" section on page 16-39.

Dependency Records

To find specific directory numbers, refer to the "Dependency Records Buttons" section in the *Cisco CallManager Administration Guide*.

Troubleshooting Cisco CallManager Attendant Console

Performance monitor counters for Cisco CallManager Attendant Console in real-time monitoring tool (RTMT) allow you to monitor the time that Cisco CallManager Attendant Console Server service has been running, the amount of time since the Cisco CallManager Attendant Console Server service was started, the number of calls that have occurred, the number of calls that have been redirected, the number of attendants that are registered, the number of pilot points, and the number of registered clients.

The CcmLineLinkState performance monitor for the attendant console provides a quick way to check whether the attendant console is functioning correctly:

- If the CcmLineLinkState counter is 11, this state indicates that Cisco CallManager Attendant Console Server service is functioning normally.
- The left-most digit of CcmLineLinkState indicates whether Cisco CallManager Attendant Console Server service is connected to and registered with the Cisco CallManager CTI. If this digit is 0, a problem may exist with the CTI or the directory.
- The right-most digit of CcmLineLinkState indicates whether Cisco CallManager Attendant Console Server service can perceive line state information through Cisco CallManager. If this digit is 0, a problem probably exists with Cisco CallManager.

Note When an attendant console user cannot log in to the attendant console and no line state information is available, view the CcmLineLinkState performance monitor to verify that all components of attendant console are functioning properly.

For more information about performance monitor counters and alarms, refer to the *Cisco CallManager Serviceability System Guide* and the *Cisco CallManager Serviceability Administration Guide*.

Additional Information

See the "Related Topics" section on page 16-39.

Related Topics

- End User Configuration, *Cisco CallManager Administration Guide*
- Dependency Records, *Cisco CallManager Administration Guide*
- Application Users and End Users, *Cisco CallManager System Guide*

Attendant Console

- Configuration Checklist for Cisco CallManager Attendant Console, page 16-16
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Attendant Console Server

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- Cisco CallManager Attendant Console Redundancy, page 16-11
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Attendant Console User

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- Finding an Attendant Console User, page 16-17
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Hunt Groups

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- Understanding Linked Hunt Groups, page 16-5
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- Configuring Hunt Groups, page 16-28
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Media Resources

- Media Resource Management, *Cisco CallManager System Guide*
- Music On Hold, page 6-1

- Understanding Music On Hold, page 6-1
- Music On Hold Audio Sources, page 6-8

Pilot Points

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- Finding a Pilot Point, page 16-22
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- Pilot Point Configuration Settings, page 16-24
- Resetting a Pilot Point, page 16-26
- Associating Devices and Pilot Points with the ac User, page 16-27

Dial Rules

- Application Dial Rules Configuration, *Cisco CallManager Administration Guide*
- Directory Lookup Dial Rules Configuration, *Cisco CallManager Administration Guide*

Directory Lists

- Understanding the Cisco CallManager Attendant Console Directory, page 16-9
- Creating and Uploading the CorporateDirectory.txt File, page 16-31
- Deleting the CorporateDirectory.txt File, page 16-33

Attendant Console Plug-in

- Installing the Cisco CallManager Attendant Console Plug-in on an Attendant PC, page 16-33
- Starting Cisco CallManager Attendant Console After Installing Windows XP SP2, page 16-34
- Configuring Cisco CallManager Attendant Console Settings, page 16-35
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- Configuring Held Icon Timers, page 16-37

Additional Documentation

- *Cisco CallManager Serviceability Administration Guide*
- *Cisco CallManager Serviceability System Guide*
- *Cisco CallManager Attendant Console User Guide*