CHAPTER 33

Cisco CallManager Attendant Console

Cisco CallManager Attendant Console, a client-server application, allows you to set up Cisco IP Phones as attendant consoles. Employing a graphical user interface, the attendant console uses 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 Telephony Call Dispatcher (TCD) service on the Cisco CallManager server. Cisco TCD 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 TCD queues calls when all attendants are busy.

This section contains the following topics:

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 User area of Cisco CallManager Administration.

If a user cannot log in to the attendant console, make sure that Cisco CallManager and Cisco TCD 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 attendant console Settings dialog box.

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, refer to the "Configuring the ac User" in the *Cisco CallManager Administration Guide*.

Understanding Pilot Points and Hunt Groups

A pilot point, a virtual directory number that is never busy, alerts the Cisco Telephony Call Dispatcher (TCD) 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 TCD does not route calls to an instance of a shared line on attendant phone if any of the other instances of the shared line are in use.

For Cisco TCD 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 TCD 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 TCD finds the member with the longest idle time and, if available, routes the call. If not, Cisco TCD 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 TCD routes the call to voice mail without checking the other members of the group first.

- Circular Hunting—Cisco TCD maintains a record of the last hunt group member to receive a call. When a new call arrives, Cisco TCD routes the call to the next hunt group member in the hunt group. You can choose this option from the Attendant Console Configuration tool. For more information on this option, see the "Understanding Circular Hunt Groups" section on page 33-9.
- Broadcast Hunting—When a call arrives at the pilot point, Cisco TCD 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. Any attendant can answer the call from the Broadcast Calls window. You can choose this option from the Attendant Console Configuration tool. For more information on this option, see the "Understanding Broadcast Hunting" section on page 33-11

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 TCD 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 TCD 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 is controlled by the attendant console.

If a user and line number are specified, Cisco TCD 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 you specify if that line number is configured on the phone used by the attendant to log into the attendant console.

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

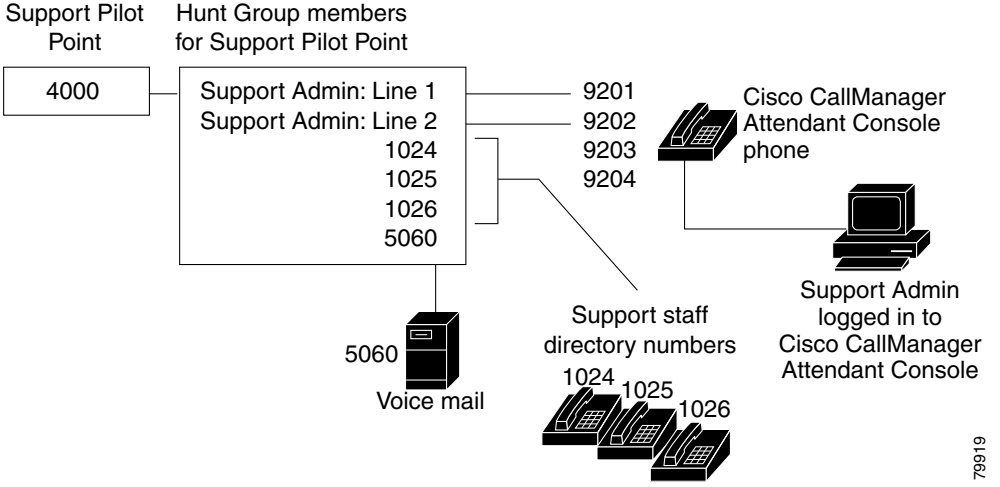
You can also handle overflow conditions by enabling call queuing. For more information about call queuing, see "Understanding Call Queuing" section on page 33-13.

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; i.e., 1024, 1025, and 1026, listed in the hunt group in that order
- A voice-mail number, 5060, which is the final member of the hunt group

Figure 33-1 Pilot Point and Hunt Group Example



As shown in Figure 33-1, 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 Telephony Call Dispatcher (TCD) 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, Cisco TCD that is associated with the pilot point checks the members of the hunt group in order, beginning with Support Admin, Line 1. Cisco TCD 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 TCD routes the call to the first available directory number, which is 1026. Because 1026 is available, the Cisco TCD never checks the 5060 number.

Understanding Linked Hunt Groups

Linking hunt groups together allows the Cisco TCD to search through more than one hunt group when routing calls. When configured properly, pilot points create a link between hunt groups. Cisco TCD 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 33-2.
- To handle overflow conditions, choose a voice-mail or auto-attendant number as the final member of the last linked hunt group in the chain. If Cisco TCD cannot route the call to any other members in the hunt groups, the call goes immediately to the voice-mail 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.

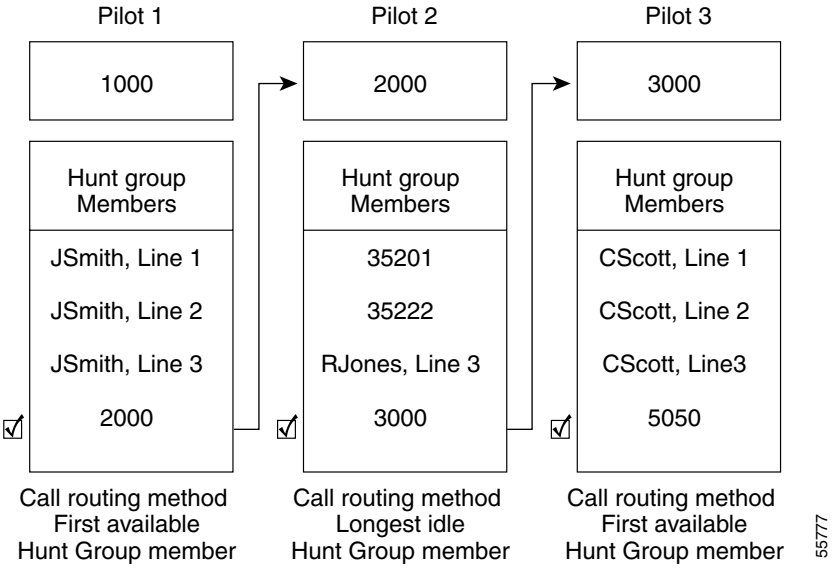
Example 2 Linked Hunt Groups Working Together

Consider the following information that is shown in Figure 33-2:

- 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-mail number 5050, handles overflow conditions. The administrator checked Always Route Member when he configured this final hunt group member.

Figure 33-2 Linked Hunt Group Example



As represented in Figure 33-2, the following example describes a simple call-routing scenario for linked hunt groups:

1. The Cisco Telephony Call Dispatcher (TCD) 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 TCD checks the members in the hunt group in order, beginning with JSmith, Line 1. Cisco TCD 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 TCD 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 TCD routes the call to the last member of the group, directory number 3000, the link to Pilot 3.
4. Cisco TCD searches through Pilot 3 to find the first available member who is not busy. When Cisco TCD determines that CScott, Line 2, is the first available member, Cisco TCD routes the call to that line. Cisco TCD never checks voice-mail number 5050.

Understanding Circular Hunt Groups

Circular hunt groups enable Cisco TCD 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 TCD dispatches the call to the next hunt group member in the hunt group. In other words, Cisco TCD 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 TCD routes calls beginning with the first hunt group member again.

To set up circular hunt groups, use the Cisco CallManager Attendant Console configuration tool that is located in C:\Program Files\Cisco\CallManagerAttendant\bin on the Cisco CallManager Attendant Console server. 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.

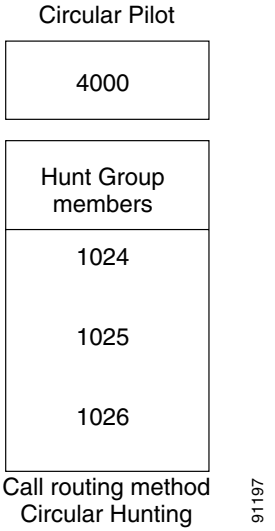
For information on the configuration tool, see the "Using the Attendant Console Configuration Tool" in the *Cisco CallManager Administration Guide*.

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 in the Cisco CallManager Attendant Console configuration tool for the Circular 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 TCD determines whether the directory number is busy before routing the call.

Figure 33-3 Circular Hunting Example



As shown in Figure 33-3, the following example describes a simple call-routing scenario where the user configured a Circular pilot point:

1. The Cisco Telephony Call Dispatcher (TCD) 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 TCD routes the call to the first hunt group member, which is directory number 1024.
3. Cisco TCD 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 TCD attempts to route the call to the next hunt group member, which is directory number 1025.
5. Cisco TCD determines that directory number 1025 is busy and routes the call to the next hunt group member, directory number 1026.
6. Cisco TCD 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 TCD 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.

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

You configure broadcast hunting for a pilot point by using the Attendant Console Configuration Tool. 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 TCD routes calls to the "always route" hunt group member specified on the Hunt Group Configuration window. If you do not specify an always route member, Cisco TCD drops the call when the queue size limit is reached.
- Hold Time—This field specifies the maximum time (in seconds) that Cisco TCD 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.

For information on the configuration tool, see the "Using the Attendant Console Configuration Tool" in the *Cisco CallManager Administration Guide*.

Example 33-4 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-mail 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 Telephony Call Dispatcher (TCD) 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 Telephony Call Dispatcher (TCD) that is associated with the pilot point checks the queue. Cisco TCD determines that the queue is not full and routes the call to the queue. The caller receives music on hold.

3. Cisco TCD checks the members of the hunt group in order, beginning with Mary Brown/Line #1. Cisco TCD 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 TCD 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. The caller receives music on hold while in the queue. The attendants cannot view the queued calls. When a hunt group member becomes available, Cisco TCD redirects the call to that hunt group member.

You enable queuing for a pilot point by choosing the pilot point in the Attendant Console Configuration Tool and checking the Enable Queuing check box. 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 TCD 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 TCD drops the call when the queue size limit is reached. The hold time specifies the maximum time (in seconds) that Cisco TCD 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.

For more information on accessing the Attendant Console Configuration Tool in the “Using the Attendant Console Configuration Tool” section of the *Cisco CallManager Administration Guide*.

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 and 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
- CorporateDirectory.txt file in the userlist directory on the Cisco CallManager Attendant Console server

Note For information on creating a CorporateDirectory.txt file, see the "Creating the CorporateDirectory.txt File" section on page 33-15.

- AutoGenerated.txt file generated by the Cisco TCD service and stored in the userlist directory on the Cisco CallManager Attendant Console server

Note For more information on the AutoGenerated.txt file, see the "AutoGenerated.txt File" section on page 33-16.

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 directory, which ensures that each attendant can use the per-attendant settings from any PC that the attendant logs into.

Related Topics

- Creating the CorporateDirectory.txt File, page 33-15
- AutoGenerated.txt File, page 33-16
- Configuring Cisco CallManager Attendant Console Settings, *Cisco CallManager Administration Guide*

Creating the CorporateDirectory.txt File

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

Step 1 Open a command window on the Cisco CallManager server.

Step 2 Enter *cd C:\Program Files\Cisco\CallManagerAttendant\bin*.

Step 3 Enter *builddir.bat*.

Step 4 Create a command that contains at a least the first two command line parameters. The default values for the remaining parameters may or may not work for your system, depending on how you configured your directory:

- -url <url value>
- -searchBase <searchbase value>
- -searchFilter (default: “(objectClass=inetOrgPerson)”)
- -managerDN (default: “”)
- -managerPW (default: “”)
- -department (default: “department”)

For example

```
builddir -url ldap://ldap.cisco.com -searchBase "ou=people,
o=cisco.com"
```

Step 5 Repeat this procedure on all the Cisco CallManager servers in the cluster.

Related Topics

- Understanding the Cisco CallManager Attendant Console Directory, page 33-14
- AutoGenerated.txt File, page 33-16

AutoGenerated.txt File

If the Directory Sync Period service parameter does not equal zero, Cisco TCD generates the AutoGenerated.txt file when the Cisco TCD service starts and when the directory sync period expires.

To modify the Directory Sync Period service parameter, choose **Service > Service Parameters**. Choose the appropriate server from the Server drop-down list box and choose the Cisco Telephony Call Dispatcher Service from the Service drop-down list box.

Related Topics

- Understanding the Cisco CallManager Attendant Console Directory, page 33-14
- Creating the CorporateDirectory.txt File, page 33-15

Understanding the Cisco Telephony Call Dispatcher

The attendant console application registers with and receives call dispatching services from the Cisco Telephony Call Dispatcher (TCD). The Cisco TCD, a Cisco CallManager 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 TCD 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 TCDs are required to have a route point.

Cisco TCD 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 TCD stores and periodically updates directory information for fast lookup by the attendant console.)

Note Cisco TCD 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

Each time 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 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 running CTIManager.
- 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 TCD 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 TCD 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 TCD 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 TCD service fails, another Cisco TCD 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 TCD are running on all nodes in the Cisco CallManager cluster, enter the IP address of one server running Cisco TCD in the Attendant Settings dialog box on the attendant PC.
- If Cisco TCD 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, refer to the "Configuring Cisco CallManager Attendant Console Settings" section in the *Cisco CallManager Administration Guide*.

Understanding Cisco CallManager Attendant Console Service Parameters

The Cisco CallManager Attendant Console Server Configuration window lists service parameters and enables you to configure trace parameters for the Cisco Telephony Call Dispatcher (TCD). You obtain information about the parameters by clicking the "i" button help icon in the upper, right corner of the Cisco CallManager Attendant Console Server Configuration window.

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

Cisco CallManager Attendant Console Performance Monitors

Microsoft Performance Monitor counters for Cisco CallManager Attendant Console allow you to monitor the amount of time Cisco TCD has been running, the amount of time since the Cisco TCD has been 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 TCD is functioning normally.
- The left-most digit of CcmLineLinkState indicates whether Cisco TCD 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 TCD 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, refer to the *Cisco CallManager Serviceability System Guide* and the *Cisco CallManager Serviceability Administration Guide*.

Cisco CallManager Attendant Console Requirements

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

- Attendant PC Requirements, page 33-20
- Cisco IP Phone and Voice Messaging Requirements for Use with the Attendant Console, page 33-20

Attendant PC Requirements

The following list provides PC requirements for the attendant console:

- Operating system—Windows 2000, Windows XP, or Windows NT 4.0 (highest Service Pack 6) workstation or server
- 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 Cisco IP Phone Models 7960/7940.
- 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 User area of Cisco CallManager Administration.
- Make sure that you configure voice messaging for each directory number that is accessible by the attendant. If you do not, the attendant cannot forward calls to voice messaging system.
- 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.
- 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.
- Cisco CallManager Attendant Console does not support Barge and cBarge; however, the client interface does display any activity that is related to these features.

Cisco CallManager Attendant Console Installation and Configuration

You access and install the attendant console from the Cisco CallManager Application Plugin Installation window. To locate the attendant console plugin, open Cisco CallManager Administration and choose **Application > Install Plugins > Cisco CallManager Attendant Console plugin**.

Configure each attendant console to meet the following criteria:

- Provide the attendant console user and password.
- Connect to the correct Cisco CallManager TCD 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. Once configured, the attendant console operates with the specified settings until the administrator changes them.

If you change IP addresses of the Cisco CallManager servers or the device pool of the attendant phone changes, the attendants must close and open Cisco CallManager Attendant Console, so the application can download the list of servers in the Cisco CallManager group. If you changed 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. For more information on changing the value in the Attendant Server Host Name IP address field, see "Configuring Cisco CallManager Attendant Console Settings" in the *Cisco CallManager Administration Guide*.

From the attendant PC, you can also configure the duration after which the held icons in the attendant console change color. The color of the held icons indicates how long a call has been on hold. 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 change these values, edit the WaitTimeMedium and WaitTime Long parameters in the GlobalUI.properties file that is located on the attendant PC in C:\Program Files\Cisco\CallManager Attendant Console\etc. The WaitTimeMedium parameter indicates the time before the held icon turns yellow. The WaitTimeLong parameter indicates the time before the held icon turns red.

Note Cisco recommends that you do not change the default values of the WaitTimeMedium and WaitTimeLong parameters.

Cisco CallManager Attendant Console Dial Rules

You can create dial rules and directory lookup rules for Cisco CallManager Attendant Console to transform directory numbers and caller IDs. Dial rules transform directory numbers to create a dialable pattern. Directory lookup rules transform caller IDs to numbers that can be looked up in the directory. 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.

To create this dial rule, create the following entry in the DialRules.xml file:

```
<DialRules>
<DialRule BeginsWith="408525" NumDigits="10" DigitsToRemove="5"
PrefixWith="89"/>
</DialRules>
```

You can also create a directory lookup rule that automatically adds 40852 to 5-digit numbers beginning with 5. In this case, the number 56666 becomes 4085256666.

To create this directory lookup rule, create the following entry in the DialRules.xml file:

```
<DirectoryLookupRules>
<DirectoryLookupRule BeginsWith="5" NumDigits="5" DigitsToRemove=""
PrefixWith="40852"/>
</DirectoryLookupRules>
```

For more information on creating dial rules and directory lookup rules, refer to "Creating Cisco CallManager Attendant Console Dial Rules" in the *Cisco CallManager Administration Guide*.

Cisco CallManager Attendant Console Interactions

If a user logs into or logs off of the Cisco IP Phone by using Cisco CallManager Extension Mobility while logged into 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" in the *Cisco CallManager Administration Guide*.

Dependency Records

To find directory numbers that a specific pilot point is using or hunt groups that a specific Cisco CallManager Attendant Console User is using, click the Dependency Records link that is provided on Cisco CallManager Administration, Cisco CallManager Attendant Console User, or Pilot Point Configuration windows. The Dependency Records Summary window displays information about directory numbers that are using the pilot point or hunt groups for the user. To find out more information about the directory number or hunt group, click the directory number or hunt group, and the Dependency Records Details window displays. 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 Accessing Dependency Records, Updating or Deleting an Attendant Console User, and Updating or Deleting a Pilot Point in the *Cisco CallManager Administration Guide*.

Cisco CallManager Attendant Console Configuration Checklist

Perform the steps in Table 33-1 to set up the attendant console.

Table 33-1 Attendant Console Configuration Checklist

Configuration Steps		Related Procedures and Topics
Step 1	Add attendant console users in Cisco CallManager Administration.	Configuring Cisco CallManager Attendant Console Users, *Cisco CallManager Administration Guide*
Step 2	Set up pilot points and hunt groups in Cisco CallManager Administration.	Understanding Pilot Points and Hunt Groups, page 33-3 Configuring Pilot Points, *Cisco CallManager Administration Guide* Configuring Hunt Groups, *Cisco CallManager Administration Guide*
Step 3	Create the ac user and associate all pilot point devices with the user.	Configuring the ac User, *Cisco CallManager Administration Guide* Associating Devices and Pilot Points with the ac User, *Cisco CallManager Administration Guide*
Step 4	Verify that the Cisco Telephony Call Dispatcher (TCD) service activates and runs on all servers that are running the Cisco CallManager service. Verify that the CTIManager service runs on one server in the cluster.	*Cisco CallManager Serviceability Administration Guide* Understanding the Cisco Telephony Call Dispatcher, page 33-16 Viewing Cisco CallManager Attendant Console Performance Monitors, *Cisco CallManager Administration Guide*
Step 5	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 33-20
Step 6	Make sure that the attendant console PC is set up correctly for use with the attendant console.	Attendant PC Requirements, page 33-20

Table 33-1 Attendant Console Configuration Checklist (continued)

Configuration Steps		Related Procedures and Topics
Step 7	Make sure to create the appropriate dial rules and directory lookup rules in the DialRules.xml file and copy the file to each Cisco CallManager server in the cluster.	Cisco CallManager Attendant Console Dial Rules, page 33-23 Creating Cisco CallManager Attendant Console Dial Rules, *Cisco CallManager Administration Guide*
Step 8	Install and configure the attendant console on each attendant console user PC.	Cisco CallManager Attendant Console Server Configuration, *Cisco CallManager Administration Guide* Configuring Cisco CallManager Attendant Console Settings, *Cisco CallManager Administration Guide*

Where to Find More Information

Related Topics

- Configuring Cisco CallManager Attendant Console Users, *Cisco CallManager Administration Guide*
- Configuring Hunt Groups, *Cisco CallManager Administration Guide*
- Viewing Cisco CallManager Attendant Console Performance Monitors, *Cisco CallManager Administration Guide*
- Cisco CallManager Attendant Console Server Configuration, *Cisco CallManager Administration Guide*
- Viewing Cisco CallManager Attendant Console Performance Monitors, *Cisco CallManager Administration Guide*
- Cisco CallManager Attendant Console Server Configuration, *Cisco CallManager Administration Guide*
- Configuring Cisco CallManager Attendant Console Settings, *Cisco CallManager Administration Guide*

Additional Cisco Documentation

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