Call Forwarding

Call Forwarding Overview

As a user, you can configure a Cisco Unified IP Phone to forward calls to another phone. The following call forwarding types are supported:

- **Call Forward No Bandwidth**—Forwards calls when a call to a directory number fails due to insufficient bandwidth, and provides forwarding functionality to an Automated Alternate Routing (AAR) destination using public switched telephone network (PSTN) as the alternate route or to a voicemail system.

- **Call Forward with Alternate Destination**—Forwards calls when a call to a directory number and the forwarded destination are not answered. The call gets diverted to an alternate destination as a last resort. This Call Forwarding type is also referred to as "MLPP Alternate Party destination."

- **Call Forward All (CFA)**—Forwards all calls to a directory number.

- **Call Forward Busy (CFB)**—Forwards calls only when the line is in use and the configured Call Forward Busy trigger value is reached.

- **Call Forward No Answer (CFNA)**—Forwards calls when the phone is not answered after the configured No Answer Ring Duration timer is exceeded or the destination is unregistered.

- **Call Forward No Coverage (CFNC)**—Forwards calls when the hunt list is exhausted or timed out, and the associated hunt-pilot for coverage specifies "Use Personal Preferences" for its final forwarding.

- **Call Forward Unregistered (CFU)**—Forwards calls when the phone is unregistered due to a remote WAN link failure, and provides automated rerouting through the Public Switched Telephone Network (PSTN). Calls can also be forwarded based on the type of caller: internal or external.

- **CFA Destination Override**—Forwards calls when the user to whom calls are being forwarded (the target) calls the user whose calls are being forwarded (the initiator). The phone of the initiator rings instead of call forwarding back to the target.

Call Forward All, Including CFA Loop Prevention and CFA Loop Breakout

Call Forward All (CFA) allows a phone user to forward all calls to a directory number.

You can configure CFA for internal and external calls and can forward calls to a voicemail system or a dialed destination number by configuring the calling search space (CSS). Unified Communications Manager includes a secondary Calling Search Space configuration field for CFA. The secondary CSS for CFA combines with the existing CSS for CFA to allow support of the alternate CSS system configuration. When you activate CFA, only the primary and secondary CSS for CFA are used to validate the CFA destination and redirect the call to the CFA destination. If these fields are empty, the null CSS is used. Only the CSS fields that are configured in the primary CSS for CFA and secondary CSS for CFA fields are used. If CFA is activated from the phone, the CFA destination is validated by using the CSS for CFA and the secondary CSS for CFA, and the CFA destination gets written to the database. When a CFA is activated, the CFA destination always gets validated against the CSS for CFA and the secondary CSS for CFA.

Unified Communications Manager prevents CFA activation on the phone when a CFA loop is identified. For example, Unified Communications Manager identifies a call forward loop when the user presses the CFwdALL softkey on the phone with directory number 1000 and enters 1001 as the CFA destination, and 1001 has forwarded all calls to directory number 1002, which has forwarded all calls to directory number 1003, which has forwarded all calls to 1000. In this case, Unified Communications Manager identifies that a loop has occurred and prevents CFA activation on the phone with directory number 1000.

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Tip   If the same directory number exists in different partitions, for example, directory number 1000 exists in partitions 1 and 2, Unified Communications Manager allows the CFA activation on the phone.

CFA loops do not affect call processing because Unified Communications Manager supports CFA loop breakout, which ensures that if a CFA loop is identified, the call goes through the entire forwarding chain, breaks out of the Call Forward All loop, and the loop is completed as expected, even if CFNA, CFB, or other forwarding options are configured along with CFA for one of the directory numbers in the forwarding chain.

For example, the user for the phone with directory number 1000 forwards all calls to directory number 1001, which has forwarded all calls to directory number 1002, which has forwarded all calls to directory number 1000, which creates a CFA loop. In addition, directory number 1002 has configured CFNA to directory number 1004. The user at the phone with directory number 1003 calls directory number 1000, which forwards to 1001, which forwards to 1002. Unified Communications Manager identifies a CFA loop, and the call, which breaks out of the loop, tries to connect to directory number 1002. If the No Answer Ring Duration timer expires before the user for the phone with directory number 1002 answers the call, Unified Communications Manager forwards the call to directory number 1004.

For a single call, Unified Communications Manager may identify multiple CFA loops and attempt to connect the call after each loop is identified.

Call Forwarding Configuration Task Flow

Procedure

	Command or Action	Purpose
Step 1	Configure Partitions for Call Forwarding, on page 3	Administrators can configure partitions to restrict Call Forwarding to certain numbers based on the design criteria and requirements.
Step 2	Configure Calling Search Space for Call Forwarding, on page 5	Administrators can configure calling search spaces to restrict Call Forwarding to certain numbers based on the design criteria and requirements.
Step 3	Configure Call Forwarding when Hunt List is Exhausted or Hunt Timer Expires, on page 6	You can forward a call when hunting fails (that is, when hunting is terminated without any hunt party answering, either because no hunt number from the list picked up or because the hunt timer timed out).
Step 4	Configure Call Forward No Bandwidth, on page 8	You can forward a call to an Automated Alternate Routing (AAR) destination using public switched telephone network (PSTN) as the alternate route or to a voicemail system when a call to a called directory number fails due to insufficient bandwidth.
Step 5	Configure Call Forward Alternate Destination, on page 9	You can forward calls that go unanswered to the directory number and the forwarded destination. Calls will get diverted to an alternate destination as a last resort.
Step 6	Configure Other Call Forwarding Types, on page 10	You can configure additional forwarding types such as CFA, CFB, CFNA, CFNC, and CFU. You can configure all these forwarding types from the **Directory Number Configuration** window.
Step 7	Enable Destination Override for Call Forwarding, on page 19	Administrators can override the CFA when the target of the CFA calls the initiator of the CFA. This allows the CFA target can reach the initiator for important calls.

Configure Partitions for Call Forwarding

Configure partitions to create a logical grouping of directory numbers (DNs) and route patterns with similar reachability characteristics. Partitions facilitate call routing by dividing the route plan into logical subsets that are based on organization, location, and call type. You can configure multiple partitions.

Configure partitions to restrict call forwarding to certain numbers based on your design criteria and requirements.

Procedure

Step 1   From Cisco Unified CM Administration, choose **Call Routing** > **Class of Control** > **Partition**.

Step 2   Click **Add New** to create a new partition.

Step 3   In the **Partition Name, Description** field, enter a name for the partition that is unique to the route plan.

Partition names can contain alphanumeric characters, as well as spaces, hyphens (-), and underscore characters (_). See the online help for guidelines about partition names.

Step 4   Enter a comma (,) after the partition name and enter a description of the partition on the same line.

The description can contain up to 50 characters in any language, but it cannot include double quotes ("), percentage sign (%), ampersand (&), backslash (\), angle brackets (<>), or square brackets ([ ]).

If you do not enter a description, Cisco Unified Communications Manager automatically enters the partition name in this field.

Step 5   To create multiple partitions, use one line for each partition entry.

Step 6   From the **Time Schedule** drop-down list, choose a time schedule to associate with this partition.

The time schedule specifies when the partition is available to receive incoming calls. If you choose **None**, the partition remains active at all times.

Step 7   Select one of the following radio buttons to configure the **Time Zone**:

- **Originating Device**—When you select this radio button, the system compares the time zone of the calling device to the **Time Schedule** to determine whether the partition is available is available to receive an incoming call.
- **Specific Time Zone**—After you select this radio button, choose a time zone from the drop-down list. The system compares the chosen time zone to the **Time Schedule** to determine whether the partition is available is available to receive an incoming call.

Step 8   Click **Save**.

Partition Name Guidelines for Call Forwarding

The list of partitions in a calling search space is limited to a maximum of 1024 characters. This means that the maximum number of partitions in a CSS varies depending on the length of the partition names. Use the following table to determine the maximum number of partitions that you can add to a calling search space if partition names are of fixed length.

Table 1: Partition Name Guidelines

Partition Name Length	Maximum Number of Partitions
2 characters	340
3 characters	256
4 characters	204

Partition Name Length	Maximum Number of Partitions
5 characters	172
...	...
10 characters	92
15 characters	64

Configure Calling Search Space for Call Forwarding

A calling search space is an ordered list of route partitions that are typically assigned to devices. Calling search spaces determine the partitions that calling devices can search when they are attempting to complete a call.

Configure calling search spaces to restrict Call Forwarding to certain numbers based on your design criteria and requirements.

Before you begin

Procedure

Step 1 From Cisco Unified CM Administration, choose **Call Routing** > **Class of Control** > **Calling Search Space**.

Step 2 Click **Add New**.

Step 3 In the **Name** field, enter a name.

Ensure that each calling search space name is unique to the system. The name can include up to 50 alphanumeric characters and can contain any combination of spaces, periods (.), hyphens (-), and underscore characters (_).

Step 4 In the **Description** field, enter a description.

The description can include up to 50 characters in any language, but it cannot include double-quotes ("), percentage sign (%), ampersand (&), back-slash (\), or angle brackets (<>).

Step 5 From the **Available Partitions** drop-down list, perform one of the following steps:

- For a single partition, select that partition.
- For multiple partitions, hold down the **Control (CTRL)** key, then select the appropriate partitions.

Step 6 Select the down arrow between the boxes to move the partitions to the **Selected Partitions** field.

Step 7 (Optional) Change the priority of selected partitions by using the arrow keys to the right of the **Selected Partitions** box.

Step 8 Click **Save**.

Configure Call Forwarding when Hunt List is Exhausted or Hunt Timer Expires

The concept of hunting differs from that of call forwarding. Hunting allows Unified Communications Manager to extend a call to one or more lists of numbers, where each list specifies a hunting order that is chosen from a fixed set of algorithms. When a call extends to a hunt party from these lists and the party fails to answer or is busy, hunting resumes with the next hunt party. (The next hunt party varies depending on the current hunt algorithm.) Hunting then ignores the Call Forward No Answer (CFNA), Call Forward Busy (CFB), or Call Forward All (CFA) configured values for the attempted party.

Call Forwarding allows detailed control as to how to extend (divert or redirect) a call when a called party fails to answer, or is busy and hunting is not taking place. For example, if the CFNA value for a line is set to a hunt-pilot number, a call to that line that is not answered diverts to the hunt-pilot number and begins hunting.

Before you begin

Procedure

Step 1	From Cisco Unified CM Administration, choose **Call Routing** > **Route/Hunt** > **Hunt Pilot**. The **Find and List Hunt Pilots** window is displayed.
Step 2	Click **Find**. A list of configured Hunt Pilots is displayed.
Step 3	Choose the pattern for which you want to configure call treatment when hunting fails. The **Hunt Pilot Configuration** window is displayed.
Step 4	Configure the fields in the **Hunt Pilot Configuration** for the **Hunt Call Treatment Settings** area. For more information on the fields and their configuration options, see Online Help.
Step 5	Click **Save**.

Hunt Call Treatment Fields for Call Forwarding

Field	Description
Hunt Call Treatment Settings	
Note	**Forward Hunt No Answer** or **Forward Hunt Busy** fields are designed to move calls through the route list. Queuing is used to hold callers in a route list. Therefore, if queuing is enabled, both **Forward Hunt No Answer** and **Forward Hunt Busy** are automatically disabled. Conversely, if **Forward Hunt No Answer** or **Forward Hunt Busy** are enabled, queuing is automatically disabled.

Field	Description
Forward Hunt No Answer	When the call that is distributed through the hunt list is not answered in a specific period of time, this field specifies the destination to which the call gets forwarded. Choose one of the following options: • **Do Not Forward Unanswered Calls** • **Forward Unanswered Calls to** • **Destination**—Enter a directory number to which calls must be forwarded to. • **Calling Search Space**—Choose a calling search space from the drop-down list which applies to all devices that use this directory number. • **Maximum Hunt Timer**—Enter a value (in seconds) that specifies the maximum time for hunting without queuing. Valid values are 1 to 3600. The default value is 1800 seconds (30 minutes). **Caution** Do not specify the same value for the Maximum Hunt Timer and the RNA Reversion Timeout on the associated line group. The forward no answer timer should be greater than the RNA timer of the line group. The forward no answer timer should not be multiples of RNA timer of line group. This timer is canceled if either a hunt member answers the call or the hunt list gets exhausted before the timer expires. If you do not specify a value for this timer, hunting continues until a hunt member answers or the hunt list is exhausted. If neither event takes place, hunting continues for 30 minutes, after which the call is received for final treatment. **Note** If hunting exceeds the number of hops that the **Forward Maximum Hop Count** service parameter specifies, hunting expires before the 30 minute maximum hunt timer value, and the caller receives a reorder tone.

Field	Description

Forward Hunt Busy	When the call that is distributed through the hunt list is not answered in a specific period of time, this field specifies the destination to which the call gets forwarded. Choose one of the following options:
	
	 • **Do Not Forward Unanswered Calls**
	
	 • **Use Forward Settings of Line Group Member**
	
	 • **Forward Unanswered Calls to**
	
	      • **Destination**—Enter a directory number to which calls must be forwarded to.
	
	      • **Calling Search Space**—Choose a calling search space from the drop-down list which applies to all devices that use this directory number.

Configure Call Forward No Bandwidth

Before you begin

Procedure

Step 1 From Cisco Unified CM Administration, choose **Call Routing** > **Directory Number Configuration**.
The **Find and List Directory Numbers** window is displayed.

Step 2 Click **Find**.
A list of configured directory numbers is displayed.

Step 3 Choose the directory number for which you want to configure call forward when there is insufficient bandwidth.
The **Directory Number Configuration** window is displayed.

Step 4 Configure the fields In the **AAR Settings** area. See Directory Number Configuration Fields for Call Forwarding, on page 8 for more information about the fields and their configuration options.

Step 5 Click **Save**.

Directory Number Configuration Fields for Call Forwarding

Field	Description
Voice Mail	Check this check box to forward the call to the voicemail. **Note** When you check this check box, Unified Communications Manager ignores the values in the **Destination** and **Calling Search Space** fields.

Field	Description
AAR Destination Mask	Enter a destination mask to determine the AAR destination to dial instead of using the external phone number mask.
AAR Group	Choose an AAR group from the drop-down list. It provides the prefix digits that are used to route calls that are otherwise blocked due to insufficient bandwidth. If you choose **None**, the server does not attempt to reroute the blocked calls. You can also configure this value in the **Precedence Alternate Party Timeout** service parameter from **System** > **Service Parameters**.
Retain this destination in the call forwarding history	By default, the directory number configuration retains the AAR leg of the call in the call history, which ensures that the AAR forward to voicemail system will prompt the user to leave a voice message. If you check the check box, the AAR leg of the call will be present in the call forwarding history.

Configure Call Forward Alternate Destination

Before you begin

Procedure

Step 1 From Cisco Unified CM Administration, choose **Call Routing** > **Directory Number Configuration**. The **Find and List Directory Numbers** window is displayed.

Step 2 Click **Find**. A list of configured directory numbers is displayed.

Step 3 Choose the directory number for which you want to configure an alternate destination. The **Directory Number Configuration** window is displayed.

Step 4 Configure the fields in the **MLPP Alternate Party And Confidential Access Level Settings** area. See for more information about the fields and their configuration options.

Step 5 Click **Save**.

MLPP Alternate Party And Confidential Access Level Settings Fields for Call Forwarding

Field	Description
Target (Destination)	Enter the number to which MLPP precedence calls should be diverted if this directory number receives a precedence call and neither this number nor its Call Forward destination answers the precedence call. Values can include numeric characters, octothorpe (#), and asterisk (*).
MLPP Calling Search Space	From the drop-down list, choose a calling search space to associate with the MLPP alternate party target (destination) number.
MLPP No Answer Ring Duration (seconds)	Enter the number of seconds (between 4 and 60) after which an MLPP precedence call will be directed to this directory number alternate party, if this directory number and its Call Forward destination have not answered the precedence call. You can also configure this value in the **Precedence Alternate Party Timeout** service parameter from **System** > **Service Parameters** from Cisco Unified CM Administration.

Configure Other Call Forwarding Types

You can configure Call Forward All (CFA), Call Forward Busy (CFB), Call Forward No Answer (CFNA), Call Forward No Coverage (CFNC), and Call Forward Unregistered (CFU) from the **Directory Number Configuration** window.

Before you begin

- For Call Forwarding functionality to work as intended, Cisco recommends that for the configured phones and the directory numbers in various partitions, the Call Forward Calling Search Spaces also be configured or else the forwarding may fail. When a call is forwarded or redirected to the Call Forward destination, the configured Call Forward Calling Search Space is used to forward the call.

- Configure Call Forward Alternate Destination, on page 9

Procedure

Step 1 From Cisco Unified CM Administration, choose **Call Routing** > **Directory Number Configuration**.

The **Find and List Directory Numbers** window is displayed.

Step 2 Configure the **Call Forwarding and Call Pickup Settings** fields in the **Directory Number Configuration** window to configure CFA, CFB, CFNA, CFNC, and CFU. See Call Forwarding Fields, on page 11 for information about the fields and their configuration options.

Step 3 Click **Save**.

Call Forwarding Fields

Field	Description
Call Forward and Call Pickup Settings	
Calling Search Space Activation Policy	Three possible values exist for this option: • **Use System Default**—The **CFA CSS Activation Policy** service parameter determines which Forward All Calling Search Space to use for Call Forwarding. If the **CFA CSS Activation Policy** service parameter is set to **With Configured CSS**, then Forward All Calling Search Space and secondary Calling Search Space for Forward All will be used for Call Forwarding. This is the default setting. • **With Configured CSS**—The Forward All Calling Search Space that is explicitly configured in the **Directory Number Configuration** window controls the Forward All activation and Call Forwarding. If the Forward All Calling Search Space is set to **None**, no CSS is configured for Forward All. A Forward All activation attempt to any directory number with a partition will fail. No change in the Forward All Calling Search Space and secondary Calling Search Space for Forward All occurs during the Forward All activation. • **With Activating Device/Line CSS**—A combination of the Directory Number Calling Search Space and Device Calling Search Space controls the Forward All activation and Call Forwarding without explicitly configuring a Forward All Calling Search Space. When Forward All is activated from the phone, the Forward All Calling Search Space and secondary Calling Search Space for Forward All automatically gets populated with the Directory Number Calling Search Space and Device Calling Search Space for the activating device. If the Forward All Calling Search Space is set to **None**, and when Forward All is activated through the phone, the combination of Directory Number Calling Search Space and activating Device Calling Search Space controls the Forward All attempt. **CFA CSS Activation Policy**—Ensure that you configure this service parameter correctly for Forward All to work as intended in the **Service Parameter Configuration** window. The service parameter includes two possible values: • **With Configured CSS**—The primary and secondary CFA Calling Search Space controls the Call Forwarding attempt. • **With Activating Device/Line CSS**—The primary and secondary CFA Calling Search Space is updated with primary Line Calling Search Space and activating Device Calling Search Space. **Roaming**—When a device is roaming in the same device mobility group, Cisco Unified Communications Manager uses the Device Mobility CSS to reach the local gateway. If a user sets Call Forward All at the phone, the CFA CSS is set to **None**, and the CFA CSS Activation Policy is set to **With Activating Device/Line CSS**, then: • The Device CSS and Line CSS is used as the CFA CSS when the device is in its home location. • If the device is roaming within the same device mobility group, the Device Mobility CSS from the Roaming Device Pool and the Line CSS is used as the CFA CSS. • If the device is roaming within a different device mobility group, the Device CSS and Line CSS is used as the CFA CSS.

Field	Description

Forward All	The fields in this row of fields specify the Call Forwarding treatment for calls to this directory number if the directory number is set to forward all calls. The value in the **Calling Search Space** field is used to validate the Forward All destination that is entered when the user activates Call Forward All from the phone. This field is also used to redirect the call to the Call Forward All destination.
	
	Configure the following values:
	
	• **Voice Mail**—Check this check box to use the value that is set in the **Voice Mail Profile Configuration** window.
	
	   Note When this check box is checked, Unified Communications Manager ignores the values in the **Destination** and **Calling Search Space** fields.
	
	• **Destination**—This field indicates the directory number to which all calls are forwarded. Use any dialable phone number, including an outside destination.
	
	• **Calling Search Space**—This value applies to all devices that use this directory number.
	
	• **Forward Maximum Hop Count**—Configure this parameter from the Cisco Unified CM Administrator, choose **System** > **Service Parameters**.
	
	   This service parameter specifies the maximum number of times that a single call can be forwarded or diverted, and has special considerations for QSIG calls. For an incoming QSIG call, the maximum value is 15 (per ISO specifications); if you specify a greater value in this field, the specified value will apply to non-QSIG calls and for an incoming QSIG call, the call will only divert a maximum of 15 times. When QSIG trunks are configured, Cisco recommends setting this parameter to 15.
	
	   For example, if the value of this parameter is seven, and a Call Forward All chain occurs consecutively from directory numbers 1000 to 007, which comprises seven hops, Cisco Unified Communications Manager prevents a phone user with directory number 2000 from activating CFA to directory number 1000, because no more than seven forwarding hops are supported for a single call.

Secondary Calling Search Space for Forward All	Because Call Forwarding is a line-based feature, in cases where the Device Calling Search Space is unknown, the system uses only the Line Calling Search Space to forward the call. If the Line Calling Search Space is restrictive and not routable, the forward attempt fails. Addition of a secondary calling search space for Call Forward All provides a solution to enable forwarding. The primary calling search space for Call Forward All and secondary calling search space for Call Forward All get concatenated (primary CFA CSS + secondary CFA CSS). Unified Communications Manager uses this combination to validate the CFA destination and to forward the call.

Field	Description
Forward Busy Internal	The fields in this row of fields specify the forwarding treatment for internal calls to this directory number if the directory number is busy. The values in the **Destination** and the **Calling Search Space** fields are used to redirect the call to the forward destination. Configure the following values:

- **Voice Mail**—Check this check box to use the configured values in the **Voice Mail Profile Configuration** window for internal calls.

Note	When this check box is checked, the calling search space of the voicemail pilot is used. Unified Communications Manager ignores the values in the **Destination** and the **Calling Search Space** fields.
Note	When this check box is checked for internal calls, the system automatically checks the **Voice Mail** check box for external calls. If you do not want external calls to be forwarded to the voicemail system, you must uncheck the **Voice Mail** check box for external calls.

- **Destination**—This field indicates the Call Forward Busy destination for internal calls. Use any dialable phone number, including an outside destination.

Note	When you enter a destination value for internal calls, the system automatically copies this value to the **Destination** field for external calls. If you want external calls to be forwarded to a different destination, you must enter a different value in the **Destination** field for external calls.

- **Calling Search Space**—The Forward Busy Internal Calling Search Space is used to forward the call to the Forward Busy Internal destination. It applies to all devices that use this directory number.

Note	If the system is using partitions and calling search spaces, Cisco recommends that you configure the Call Forward Calling Search Spaces. When a call is forwarded or redirected to the Call Forward destination, the configured Call Forward Calling Search Space is used to forward the call. If the **Calling Search Space** field is set to **None**, the forward operation fails if the system uses partitions and calling search spaces. For example, if you configure the Forward Busy destination, you should also configure the Forward Busy Calling Search Space. If you do not configure the Forward Busy Calling Search Space and the Forward Busy destination is in a partition, the forward operation fails.
Note	When you choose a calling search space for internal calls, the system automatically copies this value to the calling search space setting for external calls. If you want external calls to be forwarded to a different calling search space, you must choose a different value in the **Calling Search Space** field for external calls.

The Call Forward Busy trigger is configured for each line appearance and cannot exceed the maximum number of calls that are configured for a line appearance. The Call Forward Busy trigger determines how many active calls exist on a line before the Call Forward Busy setting is activated (for example, ten calls).

Tip	Keep the busy trigger slightly lower than the maximum number of calls so that users can make outgoing calls and perform transfers.
Tip	If a call gets forwarded to a directory number that is busy, the call is not completed.

Field	Description

Forward Busy External	The fields in this row of fields specify the forwarding treatment for external calls to this directory number if the directory number is busy. The **Destination** and **Calling Search Space** fields is used to redirect the call to the forward destination.
	
	Configure the following values:
	
	• **Voice Mail**—Check this check box to use the configured values in the **Voice Mail Profile Configuration** window for external calls.
	
	    Note When this check box is checked, the calling search space of the voicemail pilot is used. Unified Communications Manager ignores the values in the **Destination** and the **Calling Search Space** fields.
	
	    Note When this check box is checked for internal calls, the system automatically checks the **Voice Mail** check box for external calls. If you do not want external calls to be forwarded to the voicemail system, you must uncheck the **Voice Mail** check box for external calls.
	
	• **Destination**—This field indicates the Call Forward Busy destination for external calls. Use any dialable phone number, including an outside destination.
	
	    Note When you enter a destination value for internal calls, the system automatically copies this value to the **Destination** field for external calls. If you want external calls to be forwarded to a different destination, you must enter a different value in the **Destination** field for external calls.
	
	• **Calling Search Space**—The Forward Busy External Calling Search Space forwards the call to the Forward Busy External destination. It applies to all devices that use this directory number.
	
	    Note If the system is using partitions and calling search spaces, Cisco recommends that you configure the Call Forward Calling Search Spaces. When a call is forwarded or redirected to the Call Forward destination, the configured Call Forward Calling Search Space is used to forward the call. If the **Calling Search Space** field is set to **None**, the forward operation fails if the system uses partitions and calling search spaces. For example, if you configure the Forward Busy destination, you should also configure the Forward Busy Calling Search Space. If you do not configure the Forward Busy Calling Search Space and the Forward Busy destination is in a partition, the forward operation fails.
	
	    Note When you choose a calling search space for internal calls, the system automatically copies this value to the calling search space setting for external calls. If you want external calls to be forwarded to a different calling search space, you must choose a different value in the **Calling Search Space** field for external calls.

Field	Description
Forward No Answer Internal	The fields in this row of fields specify the forwarding treatment for internal calls to this directory number if the directory number does not answer. The **Destination** and **Calling Search Space** fields are used to redirect the call to the forward destination. Configure the following values: • **Voice Mail**—Check this check box to use the configured values in the **Voice Mail Profile Configuration** window. **Note** When this check box is checked, the calling search space of the voicemail pilot is used. Unified Communications Manager ignores the values in the **Destination** and the **Calling Search Space** fields. **Note** When this check box is checked for internal calls, the system automatically checks the **Voice Mail** check box for external calls. If you do not want external calls to be forwarded to the voicemail system, you must uncheck the **Voice Mail** check box for external calls. • **Destination**—This field indicates the directory number to which an internal call is forwarded when the call is not answered. Use any dialable phone number, including an outside destination. **Note** When you enter a destination value for internal calls, the system automatically copies this value to the **Destination** field for external calls. If you want external calls to be forwarded to a different destination, you must enter a different value in the **Destination** field for external calls. • **Calling Search Space**—The Forward No Answer Internal Calling Search Space is used to forward the call to the Forward No Answer Internal destination. It applies to all devices that use this directory number. **Note** If the system is using partitions and calling search spaces, Cisco recommends that you configure the Call Forward Calling Search Spaces. When a call is forwarded or redirected to the Call Forward destination, the configured Call Forward Calling Search Space is used to forward the call. If the **Calling Search Space** field is set to **None**, the forward operation fails if the system uses partitions and calling search spaces. For example, if you configure the Forward No Answer destination, you should also configure the Forward No Answer Calling Search Space. If you do not configure the Forward No Answer Calling Search Space and the Forward No Answer destination is in a partition, the forward operation fails. **Note** When you choose a calling search space for internal calls, the system automatically copies this value to the calling search space setting for external calls. If you want external calls to be forwarded to a different calling search space, you must choose a different value in the **Calling Search Space** field for external calls.

Field	Description
Forward No Answer External	The fields in this row of fields specify the forwarding treatment for external calls to this directory number if the directory number does not answer. The **Destination** and **Calling Search Space** fields are used to redirect the call to the forward destination. Configure the following values: • **Voice Mail**—Check this check box to use the configured values in the **Voice Mail Profile Configuration** window. **Note** When this check box is checked, the calling search space of the voicemail pilot is used. Unified Communications Manager ignores the values in the **Destination** and the **Calling Search Space** fields. **Note** When this check box is checked for internal calls, the system automatically checks the **Voice Mail** check box for external calls. If you do not want external calls to be forwarded to the voicemail system, you must uncheck the **Voice Mail** check box for external calls. • **Destination**—This field indicates the directory number to which an external call is forwarded when the call is not answered. Use any dialable phone number, including an outside destination. **Note** When you enter a destination value for internal calls, the system automatically copies this value to the **Destination** field for external calls. If you want external calls to be forwarded to a different destination, you must enter a different value in the **Destination** field for external calls. • **Calling Search Space**—The Forward No Answer External Calling Search Space is used to forward the call to the Forward No Answer External destination. It applies to all devices that use this directory number. **Note** If the system is using partitions and calling search spaces, Cisco recommends that you configure the Call Forward Calling Search Spaces. When a call is forwarded or redirected to the Call Forward destination, the configured Call Forward Calling Search Space is used to forward the call. If the **Calling Search Space** field is set to **None**, the forward operation fails if the system uses partitions and calling search spaces. For example, if you configure the Forward Busy destination, you should also configure the Forward No Answer Calling Search Space. If you do not configure the Forward No Answer Calling Search Space and the Forward No Answer destination is in a partition, the forward operation fails. **Note** When you choose a calling search space for internal calls, the system automatically copies this value to the calling search space setting for external calls. If you want external calls to be forwarded to a different calling search space, you must choose a different value in the **Calling Search Space** field for external calls.

Field	Description
Forward No Coverage Internal	The **Destination** and **Calling Search Space** fields are used to redirect the call to the forward destination. Configure the following values: • **Voice Mail**—Check this check box to use the configured values in the **Voice Mail Profile Configuration** window. **Note** When this check box is checked, Unified Communications Manager ignores the values in the **Destination** and **Calling Search Space** fields. When this check box is checked for internal calls, the system automatically checks the **Voice Mail** check box for external calls. If you do not want external calls to forward to the voicemail system, you must uncheck the **Voice Mail** check box for external calls. • **Destination**—This field specifies the directory number to which an internal nonconnected call is forwarded when an application that controls that directory number fails. Use any dialable phone number, including an outside destination. **Note** When you enter a destination value for internal calls, the system automatically copies this value to the **Destination** field for external calls. If you want external calls to be forwarded to a different destination, you must enter a different value in the **Destination** field for external calls. • **Calling Search Space**—The Forward No Coverage Internal Calling Search Space is used to forward the call to the Forward No Coverage Internal destination. This value applies to all devices that use this directory number. **Note** If the system is using partitions and calling search spaces, Cisco recommends that you configure the Call Forward Calling Search Spaces. When a call is forwarded or redirected to the Call Forward destination, the configured Call Forward Calling Search Space is used to forward the call. If the **Calling Search Space** field is set to None, the forward operation fails if the system uses partitions and calling search spaces. For example, if you configure the Forward Busy destination, you should also configure the Forward No Coverage Calling Search Space. If you do not configure the Forward No Coverage Calling Search Space and the Forward Busy destination is in a partition, the forward operation fails. **Note** When you choose a calling search space for internal calls, the system automatically copies this value to the calling search space setting for external calls. If you want external calls to be forwarded to a different calling search space, you must choose a different value in the **Calling Search Space** field for external calls.

Field	Description
Forward No Coverage External	The **Destination** and **Calling Search Space** fields are et used to redirect the call to the forward destination. Specify the following values: • **Voice Mail**—Check this check box to use the configured values in the **Voice Mail Profile Configuration** window. **Note** When this check box is checked, Unified Communications Manager ignores the values in the **Destination** and the **Calling Search Space** fields. When this check box is checked for internal calls, the system automatically checks the **Voice Mail** check box for external calls. If you do not want external calls to forward to the voicemail system, you must uncheck the **Voice Mail** check box for external calls. • **Destination**—This field specifies the directory number to which an internal nonconnected call is forwarded when an application that controls that directory number fails. Use any dialable phone number, including an outside destination. **Note** When you enter a destination value for internal calls, the system automatically copies this value to the **Destination** field for external calls. If you want external calls to be forwarded to a different destination, you must enter a different value in the **Destination** field for external calls. • **Calling Search Space**—The Forward No Coverage External Calling Search Space is used to forward the call to the Forward No Coverage External destination. This value applies to all devices that use this directory number. **Note** If the system is using partitions and calling search spaces, Cisco recommends that you configure the Call Forward Calling Search Spaces. When a call is forwarded or redirected to the Call Forward destination, the configured call forward calling search space is used to forward the call. If the **Calling Search Space** is **None**, the forward operation may fail if the system is using partitions and calling search spaces. For example, if you configure the Forward No Coverage destination, you should also configure the Forward No Coverage Calling Search Space. If you do not configure the Forward No Coverage Calling Search Space, and the Forward No Coverage destination is in a partition, the forward operation may fail. **Note** When you choose a calling search space for internal calls, the system automatically copies this value to the calling search space setting for external calls. If you want external calls to be forwarded to a different calling search space, choose a different value in the **Calling Search Space** field for external calls.
Forward on CTI Failure	This field applies only to CTI route points and CTI ports. The fields in this row specify the forwarding treatment for external calls to this CTI route point or CTI port if the CTI route point or CTI port fails. Configure the following values: • **Voice Mail**—Check this check box to use the configured values in the **Voice Mail Profile Configuration** window. **Note** When this check box is checked, Unified Communications Manager ignores the values in the **Destination** and **Calling Search Space** fields. • **Destination**—This field specifies the directory number to which an internal nonconnected call is forwarded when an application that controls that directory number fails. Use any dialable phone number, including an outside destination. • **Calling Search Space**—This value applies to all devices that use this directory number.
Forward Unregistered Internal	This field applies to unregistered internal DN calls. The calls are rerouted to a specified destination or voicemail. **Note** You must also specify the maximum number of forwards in the **Service Parameters Configuration** window for a directory number in the **Max Forward UnRegistered Hops to DN** service parameter. This parameter specifies the maximum number of forward unregistered hops that are allowed for a directory number at the same time. This parameter limits the number of times the call can be forwarded due to unregistered DN when a forwarding loop occurs. Use this count to stop forward loops for external calls that have been Call Forward Unregistered. Unified Communications Manager terminates the call when the value that is specified in this service parameter is exceeded.

Field	Description
Forward Unregistered External	This field applies to unregistered external DN calls. The calls are rerouted to a specified destination or voicemail. **Note** You must also specify the maximum number of forwards in the **Service Parameters Configuration** window for a directory number in the **Max Forward UnRegistered Hops to DN** service parameter. This parameter specifies the maximum number of forward unregistered hops that are allowed for a directory number at the same time. This parameter limits the number of times the call can be forwarded due to unregistered DN when a forwarding loop occurs. Use this count to stop forward loops for external calls that have been Call Forward Unregistered. Unified Communications Manager terminates the call when the value that is specified in this service parameter is exceeded.
No Answer Ring Duration (seconds)	This field specifies the seconds to wait before forwarding the unanswered call to the Call Forward No Answer destination, if specified. Make sure the value that is specified in this parameter is less than the value that is specified in the **T301 Timer** service parameter. If the value in the **Forward No Answer Timer** service parameter is greater than the value that is specified in the **T301 Timer** service parameter, the call is not forwarded and the caller receives a busy signal. Leave this field empty if you want to set the value in the Cisco Unified Communications Manager **Forward No Answer Timer** service parameter.

Enable Destination Override for Call Forwarding

Enable the destination override for call forwarding, Unified Communications Manager ignores the CFA destination when it matches the calling party number. The override applies to both internal and external calls.

In cases where the calling party number has been transformed, the calling party number does not match the CFA destination, no override occurs.

Before you begin

Procedure

Step 1   From Cisco Unified CM Administration, choose **System** > **Service Parameters**.
The **Service Parameter Configuration** window is displayed.

Step 2   In the **Clusterwide Parameters (Feature - Hold Reversion)** area, set the **CFA Destination Override** service parameter value to **True**.

Call Forwarding Interactions

Feature	Interaction
Call Back	Calls that are made from the CallBack notification screen will override all the Call Forward configured values on the target DN. The calls should be made before the CallBack recall timer expires, otherwise the calls will not override the Call Forward configured values.

Feature	Interaction
Call Display Restrictions	The Connected Number Display restriction applies to all calls that originate in the system. When this value is set to **True**, this field interacts transparently with existing Unified Communications Manager applications, features, and call processing. The value applies to all calls that terminate inside or outside the system. The Connected Number Display is updated to show the modified number or redirected number when a call is routed to a Call Forward All or Call Forward Busy destination, or gets redirected through a call transfer or CTI application.
Do Not Disturb	On Cisco Unified IP Phones, the message that indicates that the Do Not Disturb (DND) feature is active takes priority over the message that indicates that the user has new voice messages. However, the message that indicates that the Call Forward All feature is active has a higher priority than DND.
External Call Control	External Call Control intercepts calls at the translation pattern level, while Call Forward intercepts calls at the directory number level. External Call Control has higher priority; for calls where call forward is invoked, Unified Communications Manager sends a routing query to the adjunct route server if the translation pattern has an External Call Control profile assigned to it. Call Forwarding is triggered only when the adjunct route server sends a Permit decision with a Continue obligation to the Unified Communications Manager. **Note** The **Call Diversion Hop Count** service parameter that supports External Call Control, and the **Call Forward Call Hop Count** service parameter that supports Call Forwarding are independent of each other; they work separately.
Extension Mobility Cross Cluster	Cisco Extension Mobility Cross Cluster supports Call Forwarding.
Extend and Connect	Extend and Connect supports Call Forward All.
Immediate Divert	When the Forward No Answer field in the **Directory Number Configuration** window is not configured, Call Forward uses the clusterwide CFNA timer service parameter, **Forward No Answer Timer**. If a user presses the iDivert softkey at the same time as the call is being forwarded, the call gets diverted to an assigned call forward directory number (because the amount of time set on the timer was too short), not the voicemail. To resolve this situation, set the CFNA timer service parameter to enough time (for example, 60 seconds).
Logical Partitioning	Unified Communications Manager performs logical partitioning policy check using the geolocation identifier information that associates with the incoming and forwarded devices. This handling applies to all types of call forwarding.

Feature	Interaction
Multilevel Precedence and Preemption (MLPP)	**Call Forward Busy** • You can optionally configure a preconfigured Precedence Alternate Party target for any MLPP-enabled station. • Cisco Unified Communications Manager applies the Call Forward Busy feature to forward a precedence call in the usual manner before it applies to any Precedence Alternate Party Diversion procedures to the call. • The system preserves precedence of calls across multiple forwarded calls. • If the incoming precedence call is of higher precedence than the existing call, preemption occurs. Both the preempted parties in the active call receive a continuous preemption tone until the station to which the precedence call is directed hangs up. After hanging up, the station to which the precedence call is directed receives precedence ringing. The destination station connects to the preempting call when the station goes off hook. **Call Forward No Answer** • For calls of Priority precedence level and above, call processing preserves the precedence level of calls during the forwarding process and may preempt the forwarded-to user. • If an Alternate Party is configured for the destination of a precedence call, call processing diverts the precedence call to the Alternate Party after the Precedence Call Alternate Party timeout expires. If no Alternate Party value is configured for the destination of a precedence call, call processing diverts the precedence call to the Call Forward No Answer value. • Normally, precedence calls are routed to users and not to the voicemail system. The administrator sets the **Use Standard VM Handling For Precedence Calls** enterprise parameter to avoid routing precedence calls to voicemail systems. If the incoming precedence call is of equal or lower precedence than the existing call, call processing invokes normal call-forwarding behavior. If the destination station for a precedence call is nonpreemptable (that is, not MLPP-configured), call processing invokes call-forwarding behavior. Alternate Party Diversion (APD) comprises a special type of call forwarding. If users are configured for APD, APD takes place when a precedence call is directed to a directory number (DN) that is busy or does not answer. MLPP APD applies only to precedence calls. An MLPP APD call disables the DN Call Forward No Answer value for precedence calls.

Feature	Interaction
Originally called party name in Placed Call History	When privacy is configured only in the SIP profile of the called party device and Call Forward All (CFA), or Call Forward Busy (CFB), or Call Forward Unregistered (CFUR) is enabled, the configured alerting name is displayed instead of "private". To ensure that "private" is displayed for call forwarding, Cisco recommends that you configure the name presentation restriction in the translation pattern or the route pattern rather than in the SIP profile.
Rollover Lines	By using call forwarding settings, you can create rollover lines for a shared line. This could be a useful for some call center situations. With rollover lines, when someone dials a number (e.g. 1-800-HOTLINE), the call always is routed to a specific phone line. This may be a shared line that is shared by multiple phones. If line 1 is busy, the call rolls over to line 2, if line 2 is busy it rolls over to line 3, and so on. Line 2 or 3 become available only if line 1 is busy. This type of call functionality is possible via call forwarding busy settings and the Busy Trigger as follows: • On line 1, set the Busy Trigger to 1 and configure Call Forward Busy to the second line in the chain. • On line 2, set the Busy Trigger to 1 and configure Call Forward Busy to the third line in the chain • Continue this for as many lines as meets your needs.
Secure Tone	Call Forward All is supported on protected phones.
Session Handoff	When the user hands off a call, a new call gets presented on the desk phone. While the desk phone is flashing, Call Forward All is not triggered on the desk phone for the call that was handed off.
Shared Lines	When you use a shared line with Call Forward All (CFA) setting and choose the 'Calling Number' as 'Redirected Party's External Phone Number' presentation in the outgoing trunk, then the redirected number that is displayed may not be consistent when shared lines have different E164 numbers configured. So we recommend using the same E164 number across Shared lines.

Call Forwarding Restrictions

Feature	Restriction
Call Forwarding	• If Call Forward All activation occurs in Unified Communications Manager or the Cisco Unified Communications Self Care Portal, Unified Communications Manager does not prevent the CFA loop. • Unified Communications Manager prevents Call Forward All loops if CFA is activated from the phone, if the number of hops for a Call Forward All call exceeds the value that is specified for the Forward Maximum Hop Count service parameter, and if all phones in the forwarding chain have CFA activated (not CFB, CFNA, or any other call forwarding options). For example, if the user with directory number 1000 forwards all calls to directory number 1001, which has CFB and CFNA configured to directory number 1002, which has CFA configured to directory number 1000, Unified Communications Manager allows the call to occur because directory number 1002 acts as the CFB and CFNA (not CFA) destination for directory number 1001. • You cannot activate Call Back if you forward all calls to voicemail system. • An uncommon condition in connection with the Forward No Answer Timeout exists when you press the iDivert softkey. For example, if a manager presses the iDivert softkey immediately after the Forward No Answer timeout, Call Forward forwards the call to a preconfigured directory number. However, if the manager presses the iDivert softkey before the Forward No Answer timeout, Immediate Divert diverts the call to the voicemail of the manager.
Immediate Divert	When Call Forward All (CFA) and Call Forward Busy (CFB) are activated, the system does not support Immediate Divert (CFA and CFB have precedence over Immediate Divert).
Intercom	You cannot forward Intercom calls.
Log Out of Hunt Group	When a phone that is running SIP (7906, 7911, 7941, 7961) is logged in to hunt groups and Call Forward All is activated, the call gets presented to the phone that is running SIP. When 7940 and 7960 IP phones that are running SIP are logged in to hunt groups and Call Forward All is activated, the phone gets skipped and the next phone in the line group is rung.

Feature	Restriction
Logical Partitioning	Logical partitioning handling does not take place in the following circumstances: • When both the caller and forwarded devices are Voice over IP (VoIP) phones. • When geolocation or a geolocation filter is not associated with any device.
Multilevel Precedence and Preemption (MLPP)	Multilevel Precedence and Preemption (MLPP) support for supplementary services specifies the following restrictions for Call Forwarding: • Call Forward All (CFA) support for inbound MLPP calls always forwards the call to the MLPP Alternate Party (MAP) target of the called party, if the MAP target is configured. In the event of an incorrect configuration (that is, if no MAP target is specified), the call gets rejected, and the calling party receives reorder tone. • Call Forward No Answer (CFNA) support for inbound MLPP calls forwards the call once to a CFNA target. After the first hop, if the call remains unanswered, the call is sent to the MAP target of the original called party, if the MAP target is configured. In the event of an incorrect configuration (that is, if no MAP target is specified), the call gets rejected, and the calling party receives reorder tone. • Call Forward Busy (CFB) support for inbound MLPP calls forwards the call up to the maximum number that is configured for forwarding hops. If the maximum hop count is reached, the call is sent to the MAP target of the original called party, if the MAP target is configured. In the event of an incorrect configuration (that is, no MAP target is specified), the call gets rejected, and the calling party receives reorder tone.
Call Forward Classification with Call Transfer	When a call is transferred, the call classification takes on the classification of the transferred leg, rather than the original leg. For example: • Incoming call from PSTN is received by a receptionist. This is an external call. • The receptionist transfers the call to extension 3100. The transferred call is now an internal call. • The user at extension 3100 is busy, but has Call Forward External configured to send external calls back to the receptionist. However, because the call takes on the classification of the second leg (internal), the call goes to voicemail.