



CHAPTER 22

Intercom

Intercom, a new type of phone line, combines the functionality of a traditional line and a speed dial. With an intercom line, a user can call the intercom line of another user, which auto-answers to one-way audio whisper. The recipient can then acknowledge the whispered call and initiate a two-way intercom call.

Users can use an intercom line to dial any other intercom line in the intercom partition, or the administrator can preconfigure the line to target an intercom line outside the intercom partition.



Note

Users can use an intercom line only to dial other intercom lines.

Introducing Intercom

Intercom allows a user to place a call to a predefined target. The called destination auto-answers the call in speakerphone mode with mute activated. This sets up a one-way voice path between the initiator and the destination, so the initiator can deliver a short message, regardless of whether the called party is busy or idle.

To ensure that the voice of the called party does not get sent back to the caller when the intercom call is automatically answered, Cisco Unified Communications Manager implements whisper intercom.

Whisper intercom means that only one-way audio exists from the caller to the called party. The called party must manually press a key to talk to the caller.



Note

An auto-answer tone will mark the beginning of the whisper state for both the sender and the recipient.

Intercom Directory Numbers and Default Devices

Starting with Release 6.1(1) of Cisco Unified Communications Manager, each intercom line needs a default device. The intercom feature requires configuration of the Default Activated Device field in the Intercom Directory Number Configuration window to make an intercom line display as active. The intercom line displays only on the designated default device.

When the administrator assigns an intercom line to a device, the system sets the device as the default device for the intercom line if not set previously. The administrator can modify the default device for the intercom line. When the administrator changes the default device to a different device, the intercom line gets removed from the original device, even though the intercom line may still be assigned to the original device.

Also starting with Release 6.1(1) of Cisco Unified Communications Manager, you can assign an intercom line to a device profile. Only when a user uses a device profile to log in to the default device that matches the default device of the intercom line does the intercom line become available. Otherwise, no intercom line displays when the user logs in.

Refer to the “[Intercom Directory Number Configuration Settings](#)” section of the *Cisco Unified Communications Manager Administration Guide* for configuration details.

**Note**

If an intercom line has been configured and assigned to a phone but fails to display on the phone, check that the Default Activated Device value is set to this device for this intercom line. If that configuration has taken place, check that the phone has been reset.

Intercom Directory Numbers and Cisco Extension Mobility

Be aware that intercom directory numbers (lines) are restricted to one device per intercom line. Because Cisco Extension Mobility is widely used, mobile users need the intercom feature but need it to be available only on a single device. You can assign intercom lines to either a regular device or to an extension mobility profile, but the system needs to enforce that an intercom line gets associated to either a regular device or to an extension mobility profile.

Because an extension mobility profile can be used on more than one phone simultaneously, use the Default Activated Device field to specify which device can display this intercom line. Intercom lines that are not used for extension mobility also require configuration of the Default Activated Device field.

The “[Intercom](#)” section of the “[Cisco Extension Mobility](#)” chapter of the *Cisco Unified Communications Manager Features and Services Guide* provides additional details about upgrading from Release 6.0(1) of Cisco Unified Communications Manager to Release 6.1(1) or later.

For more information about intercom, see the following sections:

- [System Requirements](#), page 22-2
- [Call and Line States](#), page 22-3
- [Interactions and Restrictions](#), page 22-4
- [Installing and Activating Intercom](#), page 22-6
- [Configuring Intercom](#), page 22-6
- [How to Use Intercom](#), page 22-7
- [BAT Considerations](#), page 22-22
- [Troubleshooting Intercom](#), page 22-23
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System Requirements

The system requirements for the intercom feature follow:

- Cisco Unified Communications Manager Release 6.0 or later
- Microsoft Internet Explorer (IE) 6 or Internet Explorer 7 or Netscape 7.1
- Cisco Unified IP Phones 8.3(1) or later

Intercom Support for Cisco Unified IP Phones

The system supports intercom on Cisco Unified IP Phones as shown in [Table 22-1](#)

Table 22-1 Intercom Support for Cisco Unified IP Phones

Cisco Unified IP Phone Model	SIP	SCCP
CTI Port		
7931	No	Yes
7941	Yes	Yes
7941G-GE		
7942		
7945		
7961		
7961G-GE		
7962		
7965		
7970		
7971		
7975		

Call and Line States

Intercom introduces a new call state for the intercom line, Whisper. Intercom also uses the existing Idle, Connected, Offhook, and Digits After First line states.

Because only one intercom call can occur at a time, the intercom call state maps directly to the line state, and call sort rules will remain unaffected.

[Table 22-2](#) lists the intercom call and line states.

Table 22-2 Intercom Call and Lines States

	Idle	Whisper	Off hook	Digits After First	Connect
Description	Idle intercom state	During whisper, the recipient receives the initiator voice, but the initiator does not receive the recipient voice. Callers on any other active calls with the recipient do not receive the initiator voice.	Only present when a target has not been preconfigured and an intercom target must be dialed.	Only present when a target has not been preconfigured and an intercom target must be dialed.	Connected specifies the connected state for the Intercom feature.
LED Behavior	LED not illuminated	Feature Key: Solid Amber	Feature Key: Solid Amber.	Feature Key: Solid Amber.	Feature Key: Solid Green
Icon	Idle	Whisper	Whisper	Whisper	Connect

Table 22-2 Intercom Call and Lines States (continued)

	Idle	Whisper	Off hook	Digits After First	Connect
Softkey Template	Default Cisco Unified Communications Manager Template	Connected No Feature	Intercom Off hook	Default Unified CM Digits After First template, Connected No Feature.	Connected No Feature
Other		An auto-answer tone precedes whisper.	“Inside” dial tone	No dial tone	

Interactions and Restrictions

The following sections describe the interactions and restrictions that are associated with intercom:

- [Interactions, page 22-4](#)
- [Restrictions, page 22-5](#)

Interactions

The following sections describe how intercom interacts with Cisco Unified Communications Manager applications and call processing:

- [Interactions with Barge, page 22-4](#)
- [Interactions with Do Not Disturb \(DND\), page 22-4](#)
- [Call Preservation, page 22-5](#)
- [Cisco Unified Survivable Remote Site Telephony \(SRST\), page 22-5](#)
- [Cisco Unified Communications Manager Assistant, page 22-5](#)
- [Interactions with CTI, page 22-5](#)
- [Interactions with Cisco Extension Mobility, page 22-5](#)
- [Interactions with Cisco Unified Communications Manager Attendant Console, page 22-5](#)

Interactions with Barge

When the intercom destination is a barge target, the Cisco Unified IP Phone can still support whisper intercom.

When the destination caller opts to talk to the intercom caller by pressing the intercom button, the original call has been put on hold, and the barge initiator will get released.

Interactions with Do Not Disturb (DND)

The intercom call will override DND on the destination phone.

Call Preservation

When a call is preserved, the end user needs to hang up before the phone can reregister with Cisco Unified Communications Manager. When the intercom call is in whisper mode, it represents a one-way medium, and the terminating side might have no user at all; therefore, only the intercom call in talkback mode will get preserved. (Whisper intercom will not get preserved.)

Cisco Unified Survivable Remote Site Telephony (SRST)

When Cisco Unified IP Phones register with SRST, the phones do not register intercom lines; therefore, the intercom feature will not be available when the phones are registered with SRST.

Cisco Unified Communications Manager Assistant

See the Cisco Unified Communications Manager Assistant Configuration Wizard chapter in the *Cisco Unified Communications Manager Administration Guide*.

Interactions with CTI

You can use CTI/JTAPI/TSP to set or modify the preconfigured target directory number for an intercom line. You will receive notification if the target directory number is updated or reconfigured through Cisco Unified Communications Manager Administration.

Be aware that CTI/JTAPI/TSP is backward compatible if the intercom line is not configured to be controlled by the application. If the intercom line is configured in the application user list, you may have to make changes and test the compatibility.

Interactions with Cisco Extension Mobility

Starting with Release 6.1(1) of Cisco Unified Communications Manager, the intercom feature interacts with Cisco Extension Mobility. The system presents an intercom line to a user who uses Cisco Extension Mobility to log in to a phone that supports the intercom feature if the device profile that the user uses to log in has an intercom line that is provisioned. The phone must be the default device for that intercom line.

Refer to the “[Intercom Directory Number Configuration](#)” chapter in the *Cisco Unified Communications Manager Administration Guide* and the “[Cisco Extension Mobility](#)” section on page 8-1 for configuration details.

Interactions with Cisco Unified Communications Manager Attendant Console

See the “[Restrictions](#)” section on page 22-5.

Restrictions

The following restrictions apply to the Intercom feature:

- Intercom calls do not follow a coverage path.
- Hold – As long as the intercom call is in Whisper mode, user cannot place it on hold. After it becomes a two-way call, user can place it on hold.

- Call Forwarding – The system does not allow intercom calls cannot be forwarded.
- Transfer – The system does not allow an intercom call to be transferred.
- iDivert – The system does not allow an intercom call to be diverted.
- Call Pickup/Directed Call Pickup – The call pickup groups do not include intercom calls.
- DND – Intercom overrides Do Not Disturb (DND).
- If sufficient bandwidth does not exist, the intercom call fails.
- If two intercom calls are directed to a target, the first one goes through; the second fails with a busy tone.
- Barge and cBarge – Intercom does not work with Barge and cBarge features.
- Conferencing – The system does not allow intercom calls to be conferenced.
- When an active call is being monitored or recorded, the user cannot receive nor place intercom calls.
- The Cisco Unified Communications Manager Attendant Console does not support the intercom feature. The attendant console GUI shows intercom and other lines, but does not display the hunt group member line when the intercom feature is configured on a phone that is a member of a hunt group.

Installing and Activating Intercom

Because intercom comes standard with Cisco Unified Communications Manager Release 6.0 and later, it automatically gets installed and activated.

Configuring Intercom

To use the intercom feature, both the caller and called phones require a dedicated intercom line button. This line will have its own Directory Number (DN), which is its intercom code, and partition (intercom group). The Calling Search Space for this intercom line gets used to restrict the access of intercom destination from this phone.

**Note**

To guarantee that no accidental use of the intercom feature occurs by an unauthorized phone, users cannot access intercom partition and Calling Search Space from other administrative windows, except under the intercom feature.

**Note**

The system does not allow an intercom line to be shared on multiple devices. It should not have any other feature-related configuration, such as forward, pickup, voice mail profile, and so on.

**Tip**

A phone can have more than one intercom button that is assigned.

Configuration Checklist for Intercom

Table 22-3 shows the logical steps for configuring the Cisco Unified Communications Manager Intercom feature in Cisco Unified Communications Manager.

Table 22-3 Cisco Unified Communications Manager Intercom Configuration Checklist

Configuration Steps		Related Procedures and Topics
Step 1	Create intercom partition. Note When you create an intercom partition, the administration user interface will automatically generate a corresponding intercom calling search space with the same name and includes this new intercom partition initially.	Intercom Partition Configuration , <i>Cisco Unified Communications Manager Administration Guide</i> .
Step 2	Create intercom calling search space. Note Do this if you need to create an intercom calling search space other than the one that is generated automatically when you create the intercom partition.	Intercom Calling Search Space Configuration , <i>Cisco Unified Communications Manager Administration Guide</i> .
Step 3	Create intercom translation pattern. Note Consider this step to be optional.	Intercom Translation Pattern Configuration , <i>Cisco Unified Communications Manager Administration Guide</i> .
Step 4	Create intercom directory number.	Intercom Directory Number Configuration , <i>Cisco Unified Communications Manager Administration Guide</i> .
Step 5	Assign intercom directory number to a phone.	Directory Number Configuration , <i>Cisco Unified Communications Manager Administration Guide</i> .

How to Use Intercom

The following sections explain, through written word and the use of illustrations, how to use intercom.

- [Case Studies](#), page 22-7
- [Illustrated Explanation of Intercom](#), page 22-8

Case Studies

The following information explains how intercom works when it is initiated to an idle phone and to a busy phone.

Intercom to an Idle Phone

When Alice intercoms Bob, Bob will receive an intercom tone first, followed by the voice of Alice. Alice, however, will not hear Bob.

If Bob has his headset on, he will use it to hear Alice; otherwise, the speaker will get used.

Intercom to a Busy Phone

Bob and Carol are speaking when Alice places an intercom call to Bob. The voice of Alice voice will get mixed with the voice of Carol voice to be played to Bob; however, Alice cannot hear Bob, while Carol will continue to hear Bob.

For most cases, Carol will only hear Bob, but not Alice; however, if Bob is using speakerphone when conversing with Carol, the voices of Alice and Bob might be mixed when they are sent to Carol.

The busy phone means that an active call exists on the phone of Bob, or it represents an outgoing call that has not connected yet.

For intercom terminating caller to end the intercom call without talking to the originator, the caller needs to press I-help button followed by intercom button to bring the softkey set for intercom into focus. User then can press 'EndCall' softkey to end the call.

Illustrated Explanation of Intercom

The following information shows how intercom works in several different scenarios.

- [Scenario 1, page 22-8](#)
- [Scenario 2, page 22-11](#)
- [Scenario 3, page 22-13](#)
- [Scenario 4, page 22-15](#)
- [Scenario 5, page 22-17](#)

Scenario 1

The phone that belongs to Anna, while idle, receives an intercom call from Gerald who is the preconfigured intercom target.

Figure 22-1 Idle



- Before Gerald places the intercom call to Anna, her phone is idle.
 - The line key and the intercom key appear dark.

Figure 22-2 *Whisper*

- The intercom line becomes active, and a call from Gerald appears.
 - The intercom key displays solid amber.
- Both phones receive auto-answer alert tones.
- Anna hears Gerald speaking, but Gerald cannot hear Anna until she addresses the intercom call.

**Note**

Pressing the Mute key will not address the intercom call; it will only cause the status line to display “That key is not active here.”

Figure 22-3 Connected



- Anna addresses the intercom call by pressing the intercom line key.
 - The intercom key displays solid green.



Note

The call timer does not reset but continues from the whisper state.

Scenario 2

Anna, while her phone is idle, places an intercom call to Gerald's phone, the preconfigured intercom target.

Figure 22-4 *Whisper*



Figure 22-5 Connected



- Gerald addresses the intercom call by pressing the intercom line key.
 - The intercom key displays solid green.



Note

The call timer does not reset.

Scenario 3

Anna, while on a connected or held call, receives an intercom call from Gerald, the preconfigured intercom target

Figure 22-6 *Whisper*

- While Anna is speaking on the phone, the preconfigured intercom line indicator flashes amber, which indicates that Gerald is calling Anna on the intercom line.
 - The line key displays solid green.
 - The intercom key displays solid amber.

**Note**

When Auto Line Select is disabled, which represents the default, the current call retains focus.

- The phone that Anna is using plays an auto-answer alert tone, followed by the voice of Gerald.
- Anna can hear Gerald, but Gerald cannot hear Anna until she addresses the intercom call.
- The current caller, who is at 9873 and is on the line with Anna, can hear Anna but cannot hear Gerald.

Figure 22-7 Connected



- Anna addresses the intercom call by pressing the intercom line key.
 - The line key flashes green.
- The intercom call gains focus, and the previous call gets put on hold.
 - The intercom line key displays solid green.



Note

The call timer represents the cumulative call time from the whisper state and the current connected state.

Scenario 4

Anna, while on a whispered or connected intercom call, receives a new call on the primary line.

Figure 22-8 Connected



- Anna is talking to Gerald on an intercom line when a call displays for 9824, which is her extension. The intercom call retains focus.
 - The line key flashes amber.
 - The intercom key displays solid green.

Figure 22-9 Idle



- Anna accepts the incoming call by pressing the 9824 line key.
 - The line key displays solid green.
- The incoming call receives focus and gets connected.
- The system clears the intercom call.
 - The intercom key displays dark.

Scenario 5

Anna, while idle, places an intercom call to Gerald. The intercom line has no preconfigured target.

Figure 22-10 Idle



- All the line keys display dark.

Figure 22-11 Dial Out



- Anna presses the intercom line key, which invokes the dial-out state.
 - The intercom key displays solid amber.
- The phone receives an “inside” dial tone.

**Note**

At this time, if Anna dials any number other than an intercom number, the phone receives a fast busy tone.

Figure 22-12 Digits After First



- Anna begins to dial, which invokes the digits after first state.
 - The intercom key displays solid amber.

Figure 22-13 Whisper



- After Anna dials the intercom number, the whisper state exists.
 - The intercom key displays solid amber.
- The phone plays an auto-answer alert.
- Gerald can hear Anna, but Anna cannot hear Gerald until he addresses the intercom call.

Figure 22-14 Connected



- Gerald addresses the intercom call by pressing the intercom line key.
 - Anna can see that the intercom key displays solid green.
- The call timer does not reset but, instead, continues from the whisper state.

BAT Considerations

The Cisco Unified Communications Manager administrator can use the Bulk Administration Tool (BAT) to add many intercom users at once instead of adding users individually. Refer to the *Cisco Unified Communications Manager Bulk Administration Guide* for more information.

Troubleshooting Intercom

Getting Busy Tone When Dialing Out of Intercom Line

Symptoms: Phone plays busy tone when user is dialing out of intercom line.

-
- Step 1** Ensure that the DN is in the same intercom partition as the calling number.
 - Step 2** If it is, ensure that the dialed out DN is configured on another phone and that phone is registered with same Cisco Unified Communications Manager cluster.
-

Intercom Calls Do Not Go to Connected State When Going Off Hook by Using Speaker, Handset, or Headset.

Symptoms: User cannot go into talkback mode for intercom calls by using headset, handset, or speaker.

-
- Step 1** This situation exists by design. The only way to go into the connected state for intercom calls is by pressing the corresponding line button.
 - Step 2** User can end call by using speaker, handset, or headset.
-

Troubleshooting – SCCP

Intercom Lines Not Showing Up on Phone When Button Template Has Them

Symptoms: Intercom lines do not display on the phone.

-
- Step 1** Check the phone version. Ensure that it is 8.3(1) or above.
 - Step 2** Determine whether the button template is assigned to the phone.
 - Step 3** Capture the sniffer trace between Cisco Unified Communications Manager and the phone. In the button template response, see whether intercom lines get sent to the phone (button definition = 0x17).
-

Intercom Lines Not Showing Up When Phone Falls Back to SRST

Symptoms: The phone, which was configured with Cisco Unified Communications Manager Release 6.0(x) or later, includes two intercom lines. Cisco Unified Communications Manager stops and falls back to SRST. The intercom lines do not display.

-
- Step 1** Check the SCCP version of SRST. If SRST supports SCCP version 12, it will support intercom lines.
 - Step 2** If SRST supports SCCP version 12, capture a sniffer trace and ensure that the button template that the phone sent includes intercom lines.
-

Troubleshooting – SIP

For phones that are running SIP, use the following debug commands.

Debug sip-messages sip-task gsmfsmIsm sip-adapter.

Configuration of Phones That Are Running SIP

Show config - The command on the phone displays if intercom lines are configured as regular lines with featureid-->23.

Cisco Extension Mobility User Is Logged In But Intercom Line Does Not Display

Symptoms: The Cisco Extension Mobility user is logged into a phone but the user intercom line does not display.

-
- Step 1** Check that the Default Activated Device is configured on the intercom directory number.
- Step 2** Check that the Default Activated Device matches the device to which the user is logged in.
-

Where to Find More Information

Related Topics

- [Introducing Intercom, page 22-1](#)
- [System Requirements, page 22-2](#)
- [Call and Line States, page 22-3](#)
- [Interactions and Restrictions, page 22-4](#)
- [Installing and Activating Intercom, page 22-6](#)
- [Configuring Intercom, page 22-6](#)
- [How to Use Intercom, page 22-7](#)
- [BAT Considerations, page 22-22](#)
- [Troubleshooting Intercom, page 22-23](#)
- [Intercom Calling Search Space Configuration, *Cisco Unified Communications Manager Administration Guide*](#)
- [Intercom Partition Configuration, *Cisco Unified Communications Manager Administration Guide*](#)
- [Intercom Directory Number Configuration, *Cisco Unified Communications Manager Administration Guide*](#)
- [Intercom Translation Pattern Configuration, *Cisco Unified Communications Manager Administration Guide*](#)
- [Cisco Extension Mobility, page 8-1](#)

Additional Cisco Documentation

- [Cisco Unified Communications Manager Administration Guide](#)
- [Cisco Unified Communications Manager System Guide](#)
- [Cisco Unified Communications Manager Features and Services Guide](#)