



## **Installation and Configuration Guide Cisco Unified Contact Center Enterprise Release 9.0(1)**

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## Preface

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## Purpose

Welcome to the *Installation and Configuration Guide for Cisco Unified Contact Center Enterprise*, Release 9.0(1). This guide provides information to help you understand, install, and configure Cisco Unified Contact Center Enterprise (Unified CCE) in both production and laboratory environments.

The Unified CCE solution consists of multiple software and hardware components that you must install, configure, and integrate with each other. This guide describes each of those components and provides the installation and configuration information required for their deployment in a Unified CCE environment. This guide provides only Unified CCE-specific information. It does not provide generic non-Unified CCE installation and configuration information for individual components. As appropriate, this guide directs you to additional publications for this information.

The configuration information in this guide pertains only to initial Unified CCE setup. For more information about post-deployment configuration options and instructions, see the *Administration Guide for Cisco Unified Contact Center Enterprise*.

## Audience

This guide is written for anyone who is responsible for installing, configuring, and maintaining the Unified CCE in a production or laboratory system, including network administrators, Unified CCE administrators, and call center administrators.

# Organization

This guide contains the following chapters:

Chapter Title	Description
<a href="#">Introduction to Cisco Unified Contact Center Enterprise</a>	Provides a brief description of the Unified CCE system and an explanation of its components.
<a href="#">Cisco Unified Contact Center Enterprise platform specifications</a>	Provides hardware and software specifications for Unified CCE components. It also provides a list of component features not supported when components are deployed as part of a Unified CCE deployment.
<a href="#">Planning ahead</a>	Provides two sample dial plans and discusses the value of having a dial plan. Also, provides task checklists designed to help you track your progress as you install and configure the Unified CCE.
<a href="#">Installation and configuration of Unified Communications Manager for Cisco Unified Contact Center Enterprise</a>	Describes how to install and configure Cisco Unified Communications Manager (Unified CM) software for the Unified CCE.
<a href="#">Installation and configuration of Cisco Unified IP IVR for Cisco Unified Contact Center Enterprise</a>	Describes how to install and configure Unified IP IVR software.
<a href="#">Installation and configuration of Unified ICM, Unified CCE &amp; Unified CCH</a>	Describes how to install and configure the Unified ICM/Contact Center Enterprise & Hosted (Unified ICM/CCE/CCH) components.
<a href="#">Installation and configuration of Outbound Option</a>	Describes how to configure the optional Outbound Option for the Unified CCE.
<a href="#">Cisco Unified Customer Voice Portal and Cisco Unified Contact Center Enterprise</a>	Describes how to deploy Cisco Unified Customer Voice Portal (Unified CVP) software in a Unified CCE system.
<a href="#">Installation of CTI OS Server Agent and Supervisor Desktop Software for Cisco Unified Contact Center Enterprise</a>	Describes how to install and configure Cisco Agent Desktops and Cisco Supervisor Desktops and the Cisco CTI Object Server (OS) Agent Desktop and Supervisor Desktop.
<a href="#">Script Editor Localization</a>	Provides instructions for installing the language pack to localize the user interfaces of Script Editor.
<a href="#">Cisco Unified Contact Center Enterprise Laboratory System Setup</a>	This appendix provides advice on how to set up the Unified CCE in a laboratory system.

## Related documentation

Documentation for Cisco Unified ICM/Contact Center Enterprise & Hosted, as well as related documentation, is accessible from Cisco.com at: <http://www.cisco.com/cisco/web/psa/default.html>.

Related documentation includes the documentation sets for Cisco CTI Object Server (CTI OS), Cisco Agent Desktop, Cisco Agent Desktop - Browser Edition, Cisco Unified Contact Center Management Portal, Cisco Unified Customer Voice Portal (Unified CVP), Cisco Unified IP IVR, Cisco Unified Intelligence Center, and Cisco Support Tools.

- For documentation for these Cisco Unified Contact Center Products, go to <http://www.cisco.com/cisco/web/psa/default.html>, click **Voice and Unified Communications**, then click **Customer Collaboration**, then click **Cisco Unified Contact Center Products** or **Cisco Unified Voice Self-Service Products**, then click the product/option you are interested in.
- For troubleshooting tips for these Cisco Unified Contact Center Products, go to <http://docwiki.cisco.com/wiki/Category:Troubleshooting>, then click the product/option you are interested in.
- You can access documentation for Cisco Unified Communications Manager from: <http://www.cisco.com/cisco/web/psa/default.html>.
- You can access Technical Support documentation and tools from: <http://www.cisco.com/en/US/support/index.html>.
- You can access the Product Alert tool from (login required): <http://www.cisco.com/cgi-bin/Support/FieldNoticeTool/field-notice>.
- For more information about the Cisco software support methodology, see *Software Release and Support Methodology: ICM/IPCC* available at (login required): [http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1844/prod\\_bulletins\\_list.html](http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1844/prod_bulletins_list.html).
- For more information about language localizations, see the *Cisco Unified ICM/Contact Center Product and System Localization Matrix* available at the bottom of the following page: [http://www.cisco.com/en/US/products/sw/custcosw/ps1001/prod\\_technical\\_reference\\_list.html](http://www.cisco.com/en/US/products/sw/custcosw/ps1001/prod_technical_reference_list.html).

## Product naming conventions

In this release, the product names defined in the following table have changed. The New Name (long version) is reserved for the first instance of that product name and in all headings. The New Name (short version) is used for subsequent instances of the product name.



### Note

This document uses the naming conventions provided in each GUI, which means that in some cases the old product name is in use.

Old Product Name	New Name (long version)	New Name (short version)
Cisco IPCC Enterprise Edition	Cisco Unified Contact Center Enterprise	Unified CCE

Old Product Name	New Name (long version)	New Name (short version)
Cisco IPCC Hosted Edition	Cisco Unified Contact Center Hosted	Unified CCH
Cisco Intelligent Contact Management (ICM) Enterprise Edition	Cisco Unified Intelligent Contact Management Enterprise	Unified ICME
Cisco Intelligent Contact Management (ICM) Hosted Edition	Cisco Unified Intelligent Contact Management Hosted	Unified ICMH
Cisco CallManager/Cisco Unified CallManager	Cisco Unified Communications Manager	Unified CM

## Conventions

This manual uses the following conventions:

Convention	Description
<b>boldface font</b>	<p>Boldface font is used to indicate commands, such as user entries, keys, buttons, and folder and submenu names. For example:</p> <ul style="list-style-type: none"> <li>• Choose <b>Edit</b> &gt; <b>Find</b>.</li> <li>• Click <b>Finish</b>.</li> </ul>
<i>italic font</i>	<p>Italic font is used to indicate the following:</p> <ul style="list-style-type: none"> <li>• To introduce a new term; for example: A <i>skill group</i> is a collection of agents who share similar skills.</li> <li>• For emphasis; for example: <i>Do not</i> use the numerical naming convention.</li> <li>• A syntax value that the user must replace; for example: IF (<i>condition, true-value, false-value</i>)</li> <li>• A book title; for example: Refer to the <i>Cisco CRS Installation Guide</i>.</li> </ul>
window font	<p>Window font, such as Courier, is used for the following:</p> <ul style="list-style-type: none"> <li>• Text as it appears in code or that the window displays; for example:  <pre>&lt;html&gt;&lt;title&gt;Cisco Systems, Inc.&lt;/title&gt;&lt;/html&gt;</pre> </li> <li>• Navigational text when selecting menu options; for example: ICM Configuration Manager &gt; Tools &gt; Explorer Tools &gt; Agent Explorer</li> </ul>

Convention	Description
< >	Angle brackets are used to indicate the following: <ul style="list-style-type: none"><li>• For arguments where the context does not allow italic, such as ASCII output.</li><li>• A character string that the user enters but that does not appear on the window such as a password.</li></ul>

## Documentation and support

For more information about obtaining documentation, submitting a service request, and gathering additional information, see the monthly *What's New in Cisco Product Documentation*, which also lists all new and revised Cisco technical documentation, at:

<http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html>

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# Introduction to Cisco Unified Contact Center Enterprise



## Caution

Running the Cisco Unified ICM/Contact Center Enterprise & Hosted installation over the network is unsupported. You must either run the installer from the installation media (DVD) or copy the installer directory to the target machine and then run from the local machine. Various and miscellaneous errors can occur during installation over the network.

- [Unified CCE, page 1](#)
- [Unified CCE components, page 2](#)
- [Basic Unified CCE call flow, page 5](#)
- [Basic Unified CCE call flow using Unified CVP, page 6](#)
- [Transfers and conferences in a Unified CCE environment, page 7](#)

## Unified CCE

The Unified CCE is part of Cisco Unified Communications. The Unified CCE functions as a virtual automatic call distributor (ACD). Some of the capabilities of the Unified CCE include intelligent multichannel contact routing, ACD functionality, network-to-desktop computer telephony integration (CTI), interactive voice response (IVR) integration, call queuing, and consolidated reporting.

With Unified CCE, the contact center manager can configure agents to handle inbound and outbound voice, Web collaboration, text chat, and email requests. The agents can switch between these media on a task-by-task basis. Customers can choose the medium that is most comfortable and convenient for them.

The Unified CCE can optionally integrate with the Unified ICM to support networking with legacy ACD systems while providing a smooth migration path to a converged communications platform.

You can use the Unified CCE in a single-site environment or integrated into a multi-site contact center using the Cisco Contact Center Gateway, where Unified CCE functions as the child system in a parent/child deployment. For more information, see the *Contact Center Gateway Deployment Guide for Cisco Unified ICME/CCE/SCCE/CCX*. You can also use Unified CCE sites as service bureaus.

## Unified CCE components

This section describes the software components of the Unified CCE. For more information about software components and Unified CCE architecture, see the *Cisco Unified Contact Center Enterprise 9.0(1) Solution Reference Network Design Guide*.

## Unified CCE core components

You require the following core components for Unified CCE deployments:

Unified CCE Component	Description
Cisco Unified Communications Manager (Unified CM)	<p>Unified CM provides features comparable to those of a traditional PBX system and handles the switching requirements of the Unified CCE. It allows deployment of voice applications and the integration of telephony systems with Intranet applications.</p> <p>You must install the Unified CM software on a Cisco Media Convergence Server (MCS).</p>
Cisco Unified IP IVR (Unified IP IVR) or Cisco Unified Customer Voice Portal (Unified CVP)	<p>Unified IP IVR and Unified CVP both provide Interactive Voice Response (IVR) and queuing capability in the Unified CCE. You can select one of these IVR solutions to deploy in your Unified CCE system.</p>
Cisco Unified ICM/Contact Center Enterprise & Hosted	<p>Unified ICM/CCE/CCH provides intelligent multichannel contact routing and ACD functionality, including monitoring and controlling agent state, CTI capabilities, and gathering real-time and historical data for reporting in the Unified CCE.</p> <p>The Unified ICM/Unified CCE/Unified CCH includes the Router, Logger, Peripheral Gateways for the Unified CM and VRU PIMs, CTI Server, Administration and Data Servers, and Administration Client. Unified ICM/Unified CCE/Unified CCH software also provides Outbound Option, which enables agents to make outbound calls to customers, and Media Routing Peripheral Gateways (MR PGs) to connect to multichannel applications.</p>



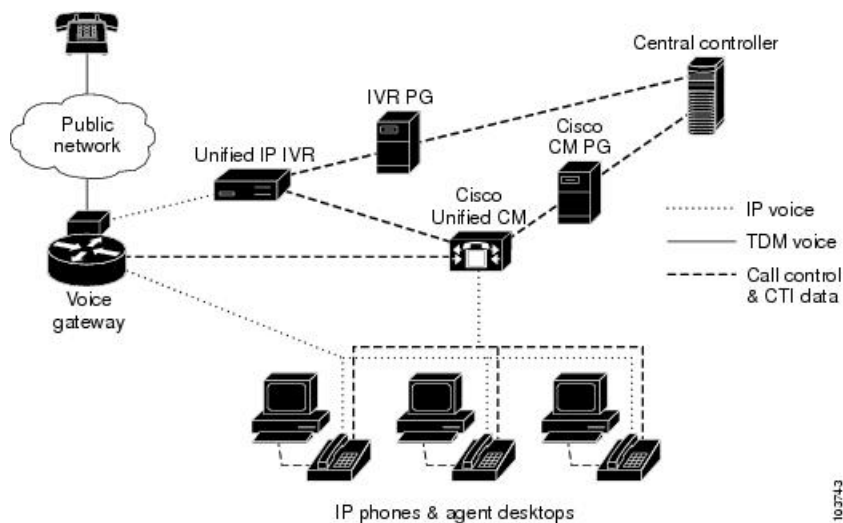
Unified CCE Component	Description
Cisco Computer Telephony Integration Option (CTI OS) CT IOS or CAD desktops	Cisco Computer Telephony Integration Option (CTI OS) and Cisco Agent Desktop/ Cisco Supervisor Desktop are server-based CTI solutions that provide desktops used by contact center agents and supervisors. You select which application to deploy in the Unified CCE. CTI OS includes the CTI OS Server, CTI OS Agent Desktop, Unified CCE Supervisor Desktop, CTI OS Toolkit, and Client Interface Library (CIL).  Cisco Agent Desktop/Cisco Supervisor Desktop includes the Cisco Desktop Administrator, Agent Desktop, and Supervisor Desktop.  Following are the deployment options for the desktop application: <ul style="list-style-type: none"> <li>• Windows application</li> <li>• Browser-based application</li> <li>• Cisco Unified IP Phone Agent, where there is no desktop application at all but just an XML application on the IP phone</li> </ul>
CRM connector	CRM Connectors provide pre-built integrations into CRM applications for SAP, Siebel, Salesforce, Microsoft CRM, and Peoplesoft.

In addition to these components, the Unified CCE includes Voice-over-IP (VoIP) gateways, and Peripheral Gateway with Unified CM and Unified IP IVR or Unified CVP PIMs.

## Unified CCE core software components

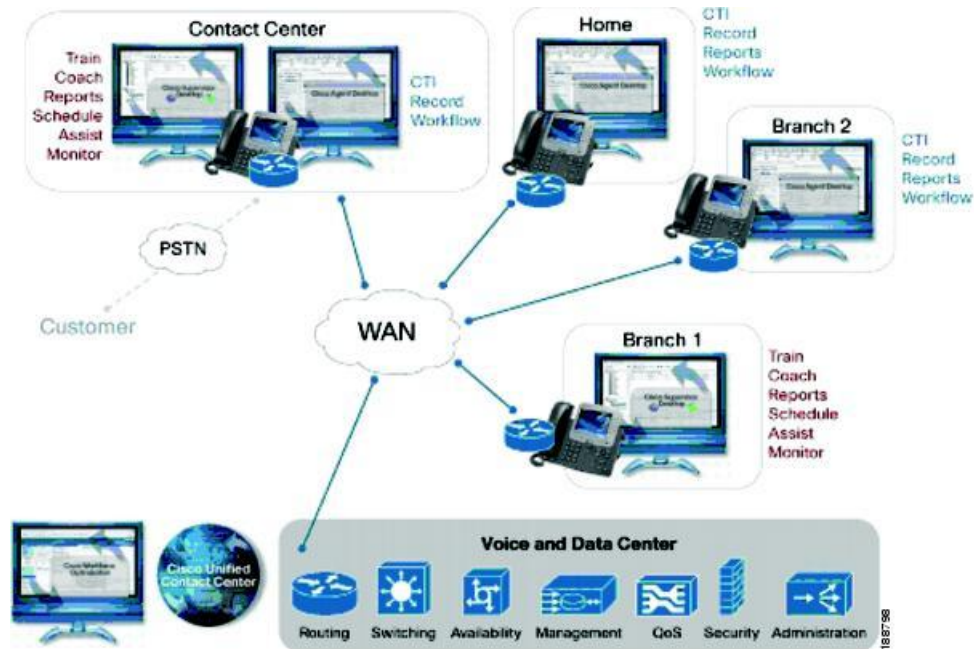
The following figure shows the core components of the Unified CCE system:

**Figure 1: Unified CCE components**



The following figure describes the variety of Agent Interfaces for Unified CCE:

**Figure 2: Agent interfaces for Unified CCE**



## Unified CCE optional software components

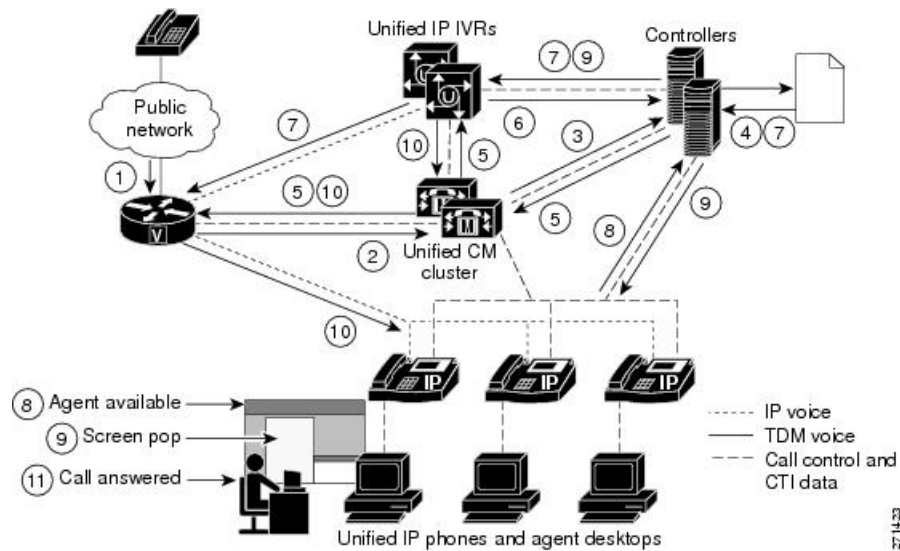
The following optional software components can be (but are not required to be) deployed in the Unified CCE. This group of components provide Web and email interactivity to the Unified CCE. They are referred to collectively as the Multichannel components. Other optional components are Outbound Option and Unified CCMP (listed in the following table).

Component	Description
Multichannel Components	This group of components called Cisco Interaction Manager provide Web and email interaction with Unified CCE. For more information about configuring the United CCE with these multichannel applications, see the <i>Cisco Unified Web &amp; E-Mail Interaction Manager System Administration Guide</i> .
Cisco Outbound Option	Outbound Option provides outbound dialing functionality. You can configure your contact center for automated outbound activities using Outbound Option. Agents who are not busy handling inbound requests can perform outbound calls, thereby maintaining a high level of agent productivity.
Cisco Unified Contact Center Management Portal (Unified CCMP)	The Unified CCMP provides a simple to use Web-based user interface to streamline the day-to-day provisioning and configuration operations performed by a contact center manager, team lead, or administrator.

## Basic Unified CCE call flow

The figure below shows the flow of a basic Unified CCE call. In this scenario, all of the agents are assumed to be “not ready” when the call arrives, so the call is routed by the Unified CCE to the Unified IP IVR. While the call is connected to the Unified IP IVR, call queuing treatment (announcements, music, and so on) is provided. When an agent becomes available, the Unified CCE directs the Unified IP IVR to transfer the call to that agent's phone. While the call is being transferred, the Unified CCE sends the caller data such as Automatic Number Identification (ANI) and Directory Number (DN) to the agent desktop software.

**Figure 3: Unified CCE call flow—Unified IP IVR**



The call flow shown above is as follows:

- 1 Call is delivered from the public switched telephone network (PSTN) to voice gateway.
- 2 A Media Gateway Control Protocol (MGCP) or H.323 Standard Protocol Route Request is sent to Unified CM.
- 3 A Java Telephony API (JTAPI) Route Request is sent to the Unified CCE.
- 4 The Unified CCE runs routing script. If no available agent is found, the Unified IP IVR label is returned from the routing script.
- 5 The Unified CCE instructs the Unified CM to transfer the call to the Unified IP IVR, and the Unified CM does as instructed.
- 6 The Unified IP IVR notifies the Unified CCE that the call arrived.
- 7 The Unified CCE instructs the Unified IP IVR to play queue announcements.
- 8 An agent becomes ready (completed previous call or just went ready).
- 9 The Unified CCE sends the call data to the selected agent screen and instructs the Unified IP IVR to transfer the call to the agent phone.

- 10 The Unified IP IVR transfers the Voice over Internet Protocol (VoIP) voice path to the selected agent phone.
- 11 The call is answered by the agent.

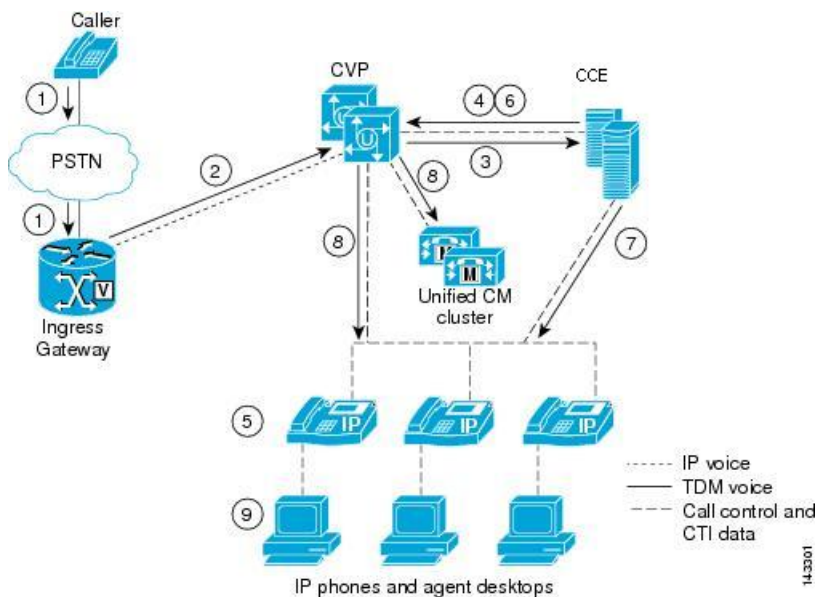
For more information, see the *Cisco Unified Contact Center Enterprise Solution Reference Network Design Guide*.

### Related Topics

[Labels, on page 101](#)

## Basic Unified CCE call flow using Unified CVP

**Figure 4: Unified CCE call flow—Unified CVP**



Following is the call flow:

- 1 Call is delivered from PSTN to ingress voice gateway.
- 2 Voice gateway sends SIP or H. 225 request to Unified CVP for the incoming call.
- 3 The Unified CVP sends route request to the Unified CCE, requesting instructions.
- 4 The Unified CCE runs routing scripts and instructs the Unified CVP for prompting and announcements.
- 5 An agent becomes ready (completed previous call or just went ready).
- 6 The Unified CCE instructs the Unified CVP to send the call to the available agent on the Unified CM.
- 7 The Unified CCE sends call data to selected agent screen.
- 8 The Unified CVP transfers the VoIP voice path to the selected agent phone on the Unified CM.
- 9 Call is answered by the agent.

# Transfers and conferences in a Unified CCE environment

## Transfers

Transfers involve three parties: the original caller, the transferring agent, and the target agent. The original caller is the caller that made the original call that was routed to the transferring agent. The transferring agent is the agent requesting the transfer to the target agent. The target agent is the agent receiving the transfer from the transferring agent. This terminology is used throughout this document when referring to the different parties.



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**Note** Cisco recommends that you do all call control (answer, release, transfer, conference, and so on) from the agent desktop application.

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When a transferring agent wants to transfer a call to another skill group or agent, the transferring agent clicks the transfer button on the Unified CCE Agent Desktop. A dialog box allows the transferring agent to enter the dialed number of a skill group or agent. An alphanumeric dialed number string (such as sales or service) is also valid. The transferring agent also selects whether this transfer is to be a single-step (blind) transfer or a consultative transfer. (Single-step transfer is the default.) The transferring agent then clicks OK to complete (single-step) or initiate (consultative) the transfer. The transfer request message flows from the transferring agent desktop to the CTI Server and then to the Unified CM PIM.

Any call data that was delivered to the transferring agent or added by the transferring agent is sent along with the transfer request to the Unified CM PIM.

## Conferences

Conferences involve three or more parties: the original caller, added participants, the conferencing agent, and the target agent. The original caller is the caller that made the original call that was routed to the conferencing agent. Added participants are parties that are already in an existing conference call. The conferencing agent is the agent requesting the conference to add the target agent. The target agent is the agent being added to the conference. This terminology is used throughout this document when referring to the various parties in a conference.



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**Note** Cisco recommends that you do all call control (answer, release, conference, transfer, and so on) from the agent desktop application.

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When a conferencing agent wants to conference a call to another skill group or agent, the conferencing agent clicks the conference button on the Unified CCE Agent Desktop. A dialog box allows the conferencing agent to enter the dialed number of a skill group or agent. An alphanumeric dialed number string (such as sales or service) is also valid provided you configure it in the Unified CCE Dialed Number Plan. The conferencing agent then clicks OK to initiate the conference. The conference request message flows from the conferencing agent desktop to the CTI Server and then to the Unified CM PIM.



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**Note** Single-step blind transfers are not supported.

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Any call data that was delivered to the conferencing agent or added by the conferencing agent is sent along with the conference request to the Unified CM PIM.

## Types of conferences

This section describes the types of conferences available to the user.

### Single-Step (Blind) Conference

A blind conference is used when the conferencing agent does not need to speak with the target agent. After specifying a blind conference in the conference dialog box on the agent desktop, the conferencing agent enters a DN and clicks the Initiate Conference button. The desktop then sends the conference request to the Unified CM PIM. Assuming a match is found in the Dialed Number Plan (DNP), the DNP type is valid, and post-route is selected, the Unified CM PIM generates the route request to get a routing label and then instructs the Unified CM to perform a single-step conference (without any further action from the conferencing agent).

The conferencing agent will see the call disappear from their desktop and they will transition to the next agent state (wrap-up, ready, or not ready), depending on the agent desk settings for the conferencing agent. While the call is being placed to the target agent, the original caller is temporarily placed on hold. When the target agent's phone begins ringing, the original caller hears the ringing (assuming auto-answer is not enabled). The target agent receives a screen pop with all call data, and the Answer button on their agent desktop is enabled when the phone begins ringing. Upon answering the call, the target agent is speaking with the original caller and the conference is then complete. If the target agent does not answer, then RONA (ring no answer) call rerouting logic will take over. If auto-answer is enabled, the original caller and the target agent do not hear any ringing; the call is just connected between the original caller and the target agent.

If the agent is conferencing the call to a generic (skill-group) DN to find an available agent with a particular skill, but no such agent is currently available, then you should configure the Unified CCE routing script to translation-route the call to a Unified IP IVR for queuing treatment. The call is still released from the conferencing agent desktop almost immediately. Any call data collected by the conferencing agent automatically passes to the IVR. The caller cannot hear any ring back tones because the Unified IP IVR CTI Port answers immediately. When the target agent becomes ready, the Unified CCE instructs the IVR to conference the call, and the Unified CCE populates the agent desktop with all call data.

If the agent has conferenced the call to a number that is not within the Unified CCE Dialed Number Plan, then the caller is conferenced anyway. The destination for the conferenced call depends upon the number that was dialed and what is configured in the Unified CM dial plan. Conferences not using the dialed number plan are not supported because of agent roaming restrictions, call data not following the call, and reporting limitations.

### Consultative Conference

When the Unified CM PIM receives the label from the Router indicating where to conference the call, the Unified CM PIM tells Unified CM to initiate a consultative conference to the number specified in the label. Unified CM places the original caller (or parties) on hold and makes a consultative call to the number specified in the label. The caller generally hears tone on hold while the conference is being completed. The exception is that if it is already a conference call, the parties can still hear and talk to each other but not the agent who is controlling the conference. There is a Unified CM configuration parameter for music on hold that, if enabled, plays music to the participants. When the target agent phone begins ringing, the Unified CM generates a Consult Call Confirmation message and a Device Ringing message.

The Consult Call Confirmation message causes the Unified CM PIM to notify the conferencing agent's desktop that the call is proceeding, and it enables the Conference Complete button. The conferencing agent can hear the target agent's phone ringing (assuming auto-answer is not enabled for the target agent). At any time after this, the agent can click the Conference Complete button to complete the conference (before or after the target answers their phone).

The Device Ringing message causes the Unified CM PIM to populate the target agent's desktop with call data and to enable their Answer button (assuming auto-answer is not enabled). When the target agent clicks the Answer button (or auto-answer is invoked), a voice path between the conferencing agent and target agent is established (assuming the conferencing agent has not clicked the Conference Complete button).

Generally the conferencing agent does not click the Conference Complete button before the target agent answers because the probable reason they used consultative conference was that they wanted to talk with the target agent before completing the conference. However, the conferencing agent can click the Conference Complete button at any time after it is enabled.

If the agent is conferencing the call to a generic DN to find an available agent with a particular skill, but no such agent is currently available, then you should configure the Unified CCE routing script to route the call to an IVR for queuing. In this scenario, the conferencing agent hears the Unified IP IVR queue announcements. The conferencing agent could press the Conference Complete button at any time to complete the conference. This particular scenario is known as warm transfer. The caller and the agent then begin hearing the Unified IP IVR queuing announcements while the agent still guides the caller or continues to process the call while waiting. Upon availability of an appropriately skilled agent, the Unified IP IVR conferences the call to this target agent and populates any call data onto their screen.

If the agent is conferencing the call to a number that is not in the Unified CCE Dialed Number Plan and a number that is not valid on the Unified CM, the conferencing agent hears the failed consultation call and can reconnect with the original caller, as explained in the section on Reconnect.

## Reconnect

During the consultation leg of a consultative conference, the conferencing agent can reconnect with the caller and release the consult call leg. To do so, the agent simply clicks the **Reconnect** button. This action causes the agent desktop to instruct the Unified CM PIM to instruct Unified CM to release the consultation call leg and to reconnect the agent with the original caller.

This is basically the process an agent should use when they want to make a consultation call but for foreseen or unforeseen reasons do not desire to complete the conference. After a call is successfully reconnected, the conferencing agent's desktop functionality is exactly the same as before they requested the conference. Therefore, the conferencing agent can later request another conference, and there is no limit to the number of consultation calls an agent can make.

Consultative conferences and reconnects are all done from the agent desktop and use the single Unified CM extension that is associated with the Unified CCE. The Unified CCE system does not support allowing the conferencing agent to place the original caller on hold and then use a second extension on their hardware phone to make a consultation call. The hardware phone offers a button to allow this kind of conference, but it is not supported in a Unified CCE environment. If an agent conferences a call in this way, any call data is lost because the Unified CCE did not route the call.

## Alternate

Alternate is the ability for the agent to place the consultation call leg on hold and then retrieve the original (or conference) call leg while in the midst of a consultative conference. The agent can then alternate again to

place the original caller back on hold and retrieve the consultation call leg. An agent can alternate a call as many times as they would like.

When the conferencing agent has alternated back to the original caller, the only call controls (buttons) that are enabled are Release and Alternate. The Conference (Complete) and Reconnect controls are disabled. The Alternate control alternates the conferencing agent back to talking with the consulted party. When the agent has alternated back to the consultation leg, the Release, Alternate, Conference, and Reconnect call controls are enabled. The Alternate control alternates the conferencing agent back to talking with the original caller. The Conference control completes the conference, and the Reconnect button drops the consulted party and reconnect the agent with the original caller.

## Non-DNP Conferences

Conferences to numbers not in the DNP or to numbers configured in the DNP with post-route set to No are allowed but do not result in a Unified CCE-routed call. In these scenarios, the PIM simply sends a call conference request directly to Unified CM and uses the dialed number from the conference dialog on the agent desktop. Call data is lost if the Unified CCE does not route the call. Cisco recommends that any dialed number for a conference should have a match in the DNP, that it be marked for post-route, and that it have a DNP type that is allowed for the conferencing agent (based on the agent's desk settings).

## Agent-to-Agent Conferences

If the conference is to a specific agent, then the agent requesting the conference must enter the agent ID into the conference dialog box. The DNP entry matching the dialed number (agent ID) must have DNP type equal to PBX. This causes the PIM to place the dialed number (agent ID) into the Caller-Entered Digits (CED) field before it sends the route request to the Router. In the script editor, use the agent-to-agent routing node and specify the CED field as the location of the agent ID so that the Router routes this call properly.

Agent IDs should not match any of the extensions on the Unified CM cluster. If you begin all agent IDs with the same number and they all have the same length, you could set up a generic wildcard string that matches all agent IDs so that you need only one entry in the DNP for agent-to-agent routing.

If your environment has multiple PIMs, then you must use an agent ID number plan to determine which PIM contains this agent. Agent IDs by themselves are not unique. Agent IDs are associated with a specific PIM and can be reused on other PIMs. By not repeating agent IDs across the enterprise and by setting up a consistent agent ID assignment plan (such as all PIM 1 agent IDs begin with a 1, all PIM 2 agent IDs begin with a 2, and so on), you can parse the CED field in the script editor to determine which PIM contains the agent. The parsing may be done via a series of "if" nodes in the script editor or via a route-select node. The agent-to-agent node requires the PIM to be specified.

If the target agent is not in a ready state, the agent-to-agent script editor node allows alternative routing for the call.

## Conference Reporting

After a conference call is completed, a call detail record for the original call leg exists and a new call detail record is opened for the new call leg. The two call records are associated with one another via a common call ID assigned by the Unified CCE. The time during the consultation call leg, and before the conference is completed, is considered as talk time for the conferencing agent. For more information, see the *Unified CCE Reporting Guide*.



## Combination or Multiple Conferences

During a conference, only Unified CCE may (through the softphone) conference in other participants. Hardware phones might allow this function, but it is not supported by Unified CCE.

After a call is successfully conferenced, the agent can conference in additional parties. The limit on the number of participants depends on the bridging hardware used, the Unified CM configuration, and so forth.

## PSTN Transfers (Takeback N Transfer, or Transfer Connect)

Many PSTN service providers offer a network-based transfer service. These services are generally invoked by the customer premises equipment (CPE) out pulsing a series of Dual Tone Multi Frequency (DTMF) tones. The PSTN is provisioned to detect these tones and perform some specific logic based upon the tones detected. A typical outputs sequence might be something like \*827500. This DTMF string could mean, “transfer this call to site 2 and use 7500 as the DAIS value when delivering the call to site 2.” Unified CCE can invoke these types of transfers.

## Dialed Number Plan

The Unified CM PIM attempts to match the dialed number with an entry in the Dialed Number Plan. The Unified CCE Dialed Number Plan (DNP) is currently administered via the Bulk Configuration tool on the Unified CCE Administrative Server. Entries in the DNP are entered per peripheral (PIM), and all DNP entries for a particular PIM are downloaded to the PIM upon PIM startup. Updates and additions to the DNP are also sent to the PIM dynamically, and they take effect immediately and are used for the next call being conferenced. For the Unified CCE to route the conference and have all call data move with the conference and be saved for cradle-to-grave reporting, a match for the dialed number must be found in the DNP for the PIM where the agent is currently logged in.

Within the DNP, fuzzy (wildcard) matching of dialed number strings is allowed. The DNP is not the same as the Dialed Number table used by the Router and managed via the Configuration Manager tool. The Router maps dialed numbers to call types, and call types are mapped to Unified CCE routing scripts. This is how a specific dialed number is mapped to a routing script in the Router. For more information about editing dialed numbers, call types, and routing scripts, see the *Cisco Unified Contact Center Administration Guide*.

For help with designing a dial plan for your Unified CCE deployment, consult your Cisco Systems Engineer (SE).

## Dial plan type

You must configure entries in the Dialed Number Plan with a dial plan type. There are six predefined (via a list box) DNP types that correspond to the types specified in the agent desk settings profile. For a call or conference to proceed any further, the DNP type for that call must be allowed in the agent desk setting profile used by the conferencing agent. Because the Unified CM calling search spaces override any desk settings, it is best to allow all dial plan types in the agent desk settings.

**Note**

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Changes to the agent desk settings profile do not take effect until the agent logs out and logs in again.

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## Post route

You must configure entries in the Dialed Number Plan to indicate whether a post-route is required. For dialed numbers to be used in conference scenarios, Cisco recommends that the post-route option be set to Yes for conferences. When this field is set to Yes, the dialed number to be used for the route request must be supplied in the Dialed Number column of the Dialed Number Plan Editor.

## Route request

Assuming a match is found in the DNP for the conference, the DNP type is allowed for the conferencing agent, and the post-route option is set to Yes, then the PIM logic generates a route request to the Unified CCE central controller using the dialed number specified in this same DNP entry.

Upon receipt of the route request, the Router matches the dialed number to a call type and executes the appropriate routing script to find an appropriate target agent for the call. Within the routing script, any of the call data collected so far could be used in the intelligent routing of the call. The Router determines which device target (phone extension and desktop) the agent is logged in to and returns the label that points to that device target to the Unified CM PIM.



# CHAPTER 2

## Cisco Unified Contact Center Enterprise platform specifications

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This section provides information on hardware and software specifications for Unified CCE components. It also provides a list of any component features not supported when components are deployed as part of a Unified CCE deployment.

- [Server platforms, page 13](#)
- [Operating system requirements, page 14](#)
- [Network and Active Directory domain requirements, page 14](#)
- [Third-party software requirements, page 14](#)
- [Component version interoperability, page 15](#)
- [Licensing requirements and system limitations, page 15](#)
- [Internationalization and localization support, page 16](#)
- [Component features not supported in Unified CCE environment, page 16](#)

### Server platforms

Unified CCE 9.0(1) components are supported only on Cisco MCS or MCS-equivalent servers. For more information about hardware requirements including recommended platform sizing guidelines (not specific brands or models of servers), based on the types of available hardware systems, see the *Hardware and System Software Specification (Bill of Materials) for Cisco Unified ICM/Unified Contact Center Enterprise & Hosted, Release 9.0(1)*.

The table below provides general guidelines for which Unified CCE components you can install on the same machine. For more information about deployment models, performance limitations, network considerations, and installation options, see the *Cisco Unified Contact Center Enterprise Solution Reference Network Design Guide*.

**Caution**

Always install Unified CCE components on a “clean” machine - that is, one that has a fresh install of the operating system and any prerequisite software. Under no circumstances should you install Unified CCE components on a domain controller or DNS server.

Unified CCE Component	Hardware Installation Notes
Unified CM	Install on its own machine. Do not install other Unified CCE components on the Unified CM.
Unified ICM/Unified CCE/Unified CCH	Install Unified ICM/Unified CCE/Unified CCH components as duplexed (Side A and Side B) to ensure fault tolerance.
CTI OS or CAD	Install the CTI OS Agent and Supervisor Desktops on different machines.
Multichannel components	For more information about hardware for these components, see the <i>Cisco Unified Web &amp; E-Mail Interaction Manager System Administration Guide</i> .

## Operating system requirements

See the following documents for operating system requirements for Unified CCE components:

- For Unified CM, see the Cisco Unified Communications Manager Compatibility Matrix.
- For Unified IP IVR, see the *Cisco Unified Contact Center Express (Unified CCX) Software and Hardware Compatibility Guide*.
- For all other Unified CCE components, see the *Hardware and System Software Specification (Bill of Materials) for Cisco Unified ICM/Contact Center Enterprise & Hosted, Release 9.0(1)*.

## Network and Active Directory domain requirements

Unified CCE 9.0(1) components require a Windows Active Directory domain. For more information about Active Directory configuration and other network configuration requirements, see the *Staging Guide for Cisco ICM/Unified CCE & Hosted*. You can find additional network consideration and planning guidelines in the *Cisco Unified Contact Center Enterprise Solution Reference Network Design Guide*.

## Third-party software requirements

Many Unified CCE components require certain prerequisite third-party software that you must be load prior to installation. See the documents listed below to determine prerequisite software for each Unified CCE component.

For more information about supported third-party software version numbers, see *Hardware and System Software Specification (Bill of Materials) for Cisco Unified ICM/Contact Center Enterprise & Hosted, Release 9.0(1)*.

Unified CCE Component	Document
Unified CM	<i>Installing Cisco Unified Communications Manager</i>
Unified IP IVR	<i>Getting Started with Cisco Unified IP IVR and Cisco Unified Contact Center Express Installation Guide</i>
Unified CVP	<i>Installation and Upgrade Guide for Cisco Unified Customer Voice Portal</i> Also, see the <i>Planning Guide for Cisco Unified Customer Voice Portal</i>
Unified ICM/Unified CCE/Unified CCH	<i>Installation Guide for Cisco Unified ICM/Contact Center Enterprise &amp; Hosted</i>
Cisco CTI Object Server	<i>CTI OS System Manager's Guide for Cisco ICM/Unified CCE &amp; Hosted</i>
Cisco Outbound Option	<i>Outbound Option Guide for Cisco Unified Contact Center Enterprise &amp; Hosted</i>
Multichannel Components	See the <i>Cisco Unified Web &amp; E-Mail Interaction Manager System Administration Guide</i>
Unified CCMP	See the <i>Installation Guide for Cisco Unified Contact Center Management Portal</i>

## Component version interoperability

For more information about Cisco IP Phone and Unified CCE component (such as Unified CM, Unified IP IVR, CTI OS) versions supported by Unified CCE 9.0(1), see the *Cisco Unified Contact Center Enterprise (Unified CCE) Software Compatibility Guide* for the list of Cisco IP Phone and Unified CCE component (such as Unified CM, Unified IP IVR, CTI OS) versions supported by Unified CCE 9.0(1). This guide is updated regularly to reflect subsequent component releases and service releases.

## Licensing requirements and system limitations

For more information about licensing requirements and system limitations, see the *Hardware and System Software Specification (Bill of Materials) for Cisco Unified ICM/Contact Center Enterprise & Hosted, Release 9.0(1)*.

# Internationalization and localization support

For more information about Unified CCE Internationalization and Localization support, see the *Hardware and System Software Specification (Bill of Materials) for Cisco Unified ICM/Contact Center Enterprise & Hosted, Release 9.0(1)*.

## Related Topics

[Script Editor Localization, on page 125](#)

# Component features not supported in Unified CCE environment

This section lists features of individual components that are not supported when these components are used in a Unified CCE deployment:

- Unified CCE does not support CRS clustering (duplexed Unified IP IVRs that failover to the same CTI route points).
- CRS 5.0 (Unified IP IVR) does not allow multiple clusters to share the repository profile for scripts.
- Unified CCE 9.0(1) does not support partitioning.

Prior to installing and configuring Unified CCE components, consult the *Release Notes for Cisco Unified ICM/Contact Center Enterprise & Hosted, Release 9.0(1)* for a list of any component features or configurations not supported in a Unified CCE environment. The Unified CM in particular has certain features that you cannot use within IPCC Enterprise.

List of unsupported PGs:

- Md110
- Siemens
- Rolm9005
- Galaxy
- G2
- ACP1000
- Meridian
- Symposium Versions 4 and 5
- DMS100
- Expert Advisor

Other unsupported components:

- Application Bridge Server
- MEI Server
- Workforce Management

- G3 Dialer
- CAIN NIC
- AIN Network Gateway

**Component features not supported in Unified CCE environment**





## Planning ahead

Setting up a Unified CCE system involves creating a dial plan for your contact centers as well as a significant number of installation and configuration tasks. This chapter includes some sample dial plans. The included task checklists are designed to help you track your progress as you install and configure the Unified CCE. These checklists apply to both production and laboratory deployments.

- [Importance of dial plan, page 19](#)
- [Hardware installation checklist, page 21](#)
- [Component software installation checklist, page 22](#)
- [Component software configuration tasks, page 25](#)

## Importance of dial plan

Whatever your deployment model for the Unified CCE, it is always helpful to have a dial plan before you begin. The Dial Plan you use is associated with telephone networks and dialing patterns. There are many available books on the subject of dial plans, but the [Dial Plan Design Process](#), although written for a different Cisco product, provides an introduction to the concepts and shows the necessity of having a dial plan.

The following sections provide introductions to two sample dial/configuration plans that you can use as models when setting up a plan for your system.

## Unified CCE with Unified IP IVR sample plan

The following tables provide an abbreviated sample dial plan for a Unified CCE system that is using the Unified IP IVR as its IVR application for queuing. The first table shows the configuration of the Unified IP IVR with the Unified CM. The second table shows the configuration of the Unified IP IVR with the Unified CCE. The values used in the tables are just samples, but you can see where configuration values need to be the same or similar across the applications.

Unified IP IVR		Unified CM (Device Name)	
Value	Type	Value	Type

Unified IP IVR		Unified CM (Device Name)	
1501 - 1510	CTI Ports	IPIVR_1501 - IPIVR_1510	Phone
1	Unified CM Telephony Call Control Group with 10 CTI ports		
3000	Unified CM Telephony Triggers (Post Routing)	PR_3000	CTI Route Point
3001	Unified CM Telephony Triggers (Translation Routing)	TR_3001	CTI Route Point

Unified IP IVR		Unified CCE	
Value	Type	Value	Type
0	Unified ICM/Unified CCE/Unified CCH Post Routing	0	Trunk Group number
1	Unified ICM/Unified CCE/Unified CCH Translation Routing	1	Trunk Group number
5000	VRU Connection Port	5000	VRU Connection Port number (defined in PG/PIM setup)
BasicQ, CVInput, VisibleQ	ICM VRU Scripts	BasicQ, CVInput, VisibleQ	Network VRU Scripts
3000	Unified CM Telephony Triggers (post routing)	3000	Label in Unified ICM/Unified CCE/Unified CCH
3001	Unified CM Telephony Triggers (translation routing)	3001	Dialed Number for post routing

## Unified CCE with Unified CVP plan

The following table provides a sample dial plan for a Unified CCE system that uses the Unified CVP as its IVR application for queuing.

**Note**

The dots in some of the values shown represent data that you enter when you configure the gateway. For example, in the value “55551291..” the dots represent any number between 00 and 99.

Dial Peer	Extension	Destination-Pattern or Incoming called number	Type or Service	Session Target
<b>Voice Gateway</b>				
51291		55551291..	VoIP	Unified CVP
512919		5555129199T	bootstrap	
<b>Unified CVP</b>				
Dialed Number	Extension	Destination	Type	Target
5129199>	5555129199	5555129199 <correlation ID>	VRU label	Voice Gateway
51291>	55551291[00 - 99]	55551291[00 - 99]	CVP Route Point	Unified CVP
512>	55512....	555512....	Device	Unified CM
<b>Unified CM (Route Pattern)</b>				
Dialed Number	Extension	Destination	Type	Target
5129101!	5555129101	5555129101 <correlation ID>	Unified CM Label	Unified CVP
	1[000 - 9999]	5555121[000 - 999]	Agent Extensions	Unified CM
	2[000 - 9999]	2[000 - 999]	Route Points	Unified CM

## Hardware installation checklist

This section lists the basic order for Unified CCE component hardware installation. For hardware installation instructions, see the documentation packaged with each component.

Task	Notes
<p>Install the Media Convergence Servers for Unified CM and Unified IP IVR (if deploying).</p> <p>Install the servers for Unified ICM/Unified CCE/Unified CCH, PGs, Unified CVP (if deploying), the desktop (CTI OS or CAD), Outbound Option (if deploying) and the multichannel applications (if deploying).</p>	<p>Hardware and OS requirements for these servers are available from the <i>Hardware and System Software Specification (Bill of Materials) for Cisco Unified ICM/Contact Center Enterprise &amp; Hosted, Release 9.0(1)</i>.</p> <p>Network architecture requirements are described in the <i>Staging Guide for Cisco Unified ICM/Contact Center Enterprise &amp; Hosted</i>, and in the <i>Cisco Unified Contact Center Enterprise Solution Reference Network Design Guide</i>.</p>
<p>Install IP phones. Configure each IP phone with an IP address.</p>	<p>Install the IP phones after installing Unified CM. If you configure the phones through auto-registration, also enable auto-registration on the Unified CM before installing the phones.</p> <p>For more information about IP address configuration requirements, see the user documentation for your phone.</p> <p>For more information about supported IP Phones, see the <i>Compatibility Guide for Cisco Unified Contact Center Enterprise &amp; Hosted</i>.</p>
<p>Install the Gateways if you are using Unified CVP with Unified CCE.</p>	<p>Install the IOS image on the Ingress Gateway. For more information, see the Cisco IOS documentation.</p> <p>For more information about configuring the gateways, see the <i>Configuration and Administration Guide for Cisco Customer Voice Portal</i>.</p> <p>Also, see the <i>Planning Guide for Cisco Unified Customer Voice Portal</i>.</p>

**Note**

For more information, see the *Hardware and System Software Specification (Bill of Materials) for Cisco Unified ICM/Contact Center Enterprise & Hosted, Release 9.0(1)*.

## Component software installation checklist

This section lists the installation tasks for the Unified CCE software components.

**Note**

For more information about Cisco IP Phones and IPCC Enterprise components, such as Unified CM, Unified IP IVR versions, supported by IPCC Enterprise 9.0(1), see the *Cisco Unified Contact Center Enterprise Software Compatibility Guide*. The IPCC Enterprise Compatibility Guide is updated regularly to reflect subsequent component releases and services releases.



**Note**

Once the hostname of a server has been set, a change to the hostname of any server in the system is not supported.

Task	Unified CCE Installation Prerequisites	Unified CCE Installation Notes
1. Install Unified CM.	There are no Unified CCE-specific installation prerequisites for Unified CM.	See <a href="#">Installation and configuration of Unified Communications Manager for Cisco Unified Contact Center Enterprise</a> in this book. Also see the <i>Installation Guide for Cisco Unified Communications Manager</i> .
2. Install Unified IP IVR (if you are not installing Unified CVP).	Prior to installing Unified IP IVR you must install and configure the Unified CM and check your phone configuration in Unified CM Administration.	See <a href="#">Installation and configuration of Cisco Unified IP IVR for Cisco Unified Contact Center Enterprise</a> in this book, and the <i>Cisco Unified Contact Center Express Installation Guide</i> . Be sure to select the ICM option during the installation process.
3. Install Unified ICM/Unified CCE/ Unified CCH, including the Router, Logger, and Administration & Data Server.	Install Unified CM. Install Unified IP IVR if your Unified CCE uses Unified IP IVR for queuing.	See <a href="#">Installation and configuration of Unified ICM, Unified CCE &amp; Unified CCH</a> in this book. If you are deploying the Outbound Option, be sure to enable Outbound Option during setup of the Unified ICM/ Unified CCE/Unified CCH Logger component.
4. Install the UCCE System PG (if using Unified IP IVR) or the VRU PG and Unified CM PG (if using Unified CVP).	You must configure the PG before installing it.	The Unified CM and Unified IP IVR can use the same UCCE System PG (you must configure a PIM for each on the PG).
5. Install the JTAPI Client on the UCCE System PG or the Unified CM PG.	Before installing the JTAPI Client, you must configure the PG.	Install the JTAPI client on the UCCE System PG if using the Unified IP IVR. Install the client on the Unified CM PG if using the Unified CVP.
6. Install the Media Routing PG (MR PG) if deploying Multichannel options and/or Outbound Option.	Before setting up the MR PG using the Peripheral Gateway Setup Tool, you must configure it in the Unified ICM/Unified CCE/Unified CCH Configuration Manager.	See Chapter 6 for instructions.

Task	Unified CCE Installation Prerequisites	Unified CCE Installation Notes
7. Install the Unified CVP (if you are not installing Unified IP IVR).	<p>Install the Unified CM. On the Unified CM, you must configure the Unified CVP Voice Browser as a Gateway.</p> <p>Install the Unified ICM/Unified CCE/Unified CCH and configure and set up the PG containing the VRU PIMs.</p>	<p>If you are deploying a Unified CCE <b>laboratory system</b>, you can install all Unified CVP components on a single machine and you must install all components at the same time.</p> <p>If you are deploying a Unified CCE <b>production system</b>, you can install individual components on different machines. To maximize performance, do not install the Voice Browser or Call Server on the Media Server, to which you copy System Media Files.</p>
8. Install CTI Server.	<p>Install and configure the Unified CM.</p> <p>Install and configure Unified ICM/Contact Center Enterprise.</p> <p>Install and configure the Unified IP IVR or Unified CVP.</p>	<p>The CTI Server is a Unified ICM/Unified CCE/Unified CCH component that allows an external CTI application to communicate with a PG. The CTI Server is part of the Cisco Enterprise CTI product.</p> <p>You must install the CTI Server on the same machine as the Peripheral Gateway</p>
9. Install CTI OS or Cisco Agent Desktop software.	<p>Install CTI Server</p> <p>Prior to installing agent/supervisor desktops, you must install and configure all other non-optional Unified CCE software.</p>	<p>See the <i>Cisco CAD Installation Guide</i> or the <i>CTI OS System Manager's Guide</i>.</p>
10. Optionally, install the multichannel applications.	<p>Install and configure Unified ICM/Contact Center Enterprise &amp; Hosted.</p>	<p>See the <i>Installation and System Administration Guide for Cisco Interaction Manager</i>.</p>
11. Optionally, install Outbound Option.	<p>You must install the Unified CM, Unified ICM/Unified CCE/Unified CCH, and CTI Server before you install the Outbound Option.</p>	<p>Enable Outbound Option during the setup of the Unified ICM/CCE/CCH Logger component.</p>
12. Optionally, install Unified CCMP	<p>Install Unified ICM/CCE/CCH.</p>	<p>See the <i>Installation Guide for Cisco Unified Contact Center Management Portal</i>.</p>

**Note**

If you install the Unified CCE on a multi-lingual version of Windows 2008 R2, you must run the MUI language pack to install localized Script Editor user interfaces.

For more information about installing the Unified CCE components, see the following documents:

- *Installing Cisco Unified Communications Manager Guide*
- *Cisco Unified Contact Center Express Installation Guide* (for Unified IP IVR installation)
- *Installation and Upgrade Guide for Cisco Unified Customer Voice Portal*  
Also, see the *Planning Guide for Cisco Unified Customer Voice Portal*.
- *Installation Guide for Cisco Unified ICM/Contact Center Enterprise & Hosted*
- *CTI OS System Manager's Guide for Cisco Unified ICM/CCE & Hosted*
- *Installation Guide: Cisco Desktop Product Suite*

**Related Topics**

[Script Editor Localization, on page 125](#)

## Component software configuration tasks

Subsequent chapters in this book guide you through configuring each Unified CCE component/functionality area. Each chapter contains a list of the configuration tasks for that component, as well as a list of prerequisites that you must meet before you can configure that component.

Unified CCE Configuration Task	Described in...
1. Configure the Unified CM.	Chapter 4, "Installing and Configuring Cisco Unified Communications Manager for Cisco Unified Contact Center Enterprise"
2. Configure the Unified IP IVR (if deployed).	Chapter 5, "Installing and Configuring Cisco Unified IP IVR for Cisco Unified Contact Center Enterprise"
3. Configure Unified ICM/CCE/CCH.	Chapter 6, "Installing and Configuring Cisco Unified ICM/Contact Center Enterprise & Hosted for Cisco Unified Contact Center Enterprise"
4. Configure the Outbound Option (if deployed).	Chapter 7, "Installing and Configuring Outbound Option for Cisco Unified Contact Center Enterprise"
5. Configure Unified CVP (if deployed).	Chapter 8, "Using Cisco Unified Customer Voice Portal with Cisco Unified Contact Center Enterprise"
6. Configure Agent and Supervisor Desktops.	Chapter 9, "Installing Agent and Supervisor Desktops for Unified CCE"
8. Configure Reporting.	Chapter 10, "How to Configure Reporting for Cisco Unified Contact Center Enterprise"







# Installation and configuration of Unified Communications Manager for Cisco Unified Contact Center Enterprise

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This chapter describes how to install and configure Cisco Unified Communications Manager (Unified CM) for the Unified CCE system.

- [Unified CM, page 27](#)
- [Unified CM installation tasks, page 28](#)
- [Unified CM configuration tasks, page 28](#)
- [Unified CM Administration utility, page 29](#)
- [Configure IP Phones on Unified CM, page 29](#)
- [Set configuration on agent IP phone, page 30](#)
- [Unified CM Extension Mobility feature, page 30](#)
- [Configure CTI route point, page 31](#)
- [Configure CTI port, page 31](#)
- [Configure users for phones, Unified CM PG, and Unified IP IVR, page 32](#)
- [Configure Unified CM Telephony information for Unified CCX, page 33](#)
- [Configure Unified CM for Unified CVP, page 34](#)
- [Recovery number for failovers, page 35](#)
- [Call Search Space in Unified CM, page 35](#)

## Unified CM

The Unified CM provides features for which organizations have traditionally used PBX systems. The Unified CM uses open standards, such as TCP/IP, Session Initiation Protocol (SIP), H.323 standards (for packet-based multimedia communications systems), and Media Gateway Control Protocol (MGCP). The Unified CM allows

deployment of voice applications and the integration of telephony systems with Intranet applications. You must install the Unified CM software on the Cisco Media Convergence Server (MCS).

The Unified CM takes care of the switching requirements of the Unified CCE system. It uses Microsoft Internet Information Server (IIS) to allow remote administration with a standard Web browser, and it provides the basic services required for IP telephones, such as mapping IP addresses to specific devices and extensions, and managing Cisco Voice Gateways.

The Unified CM supports JTAPI for deploying Unified IP IVR and other applications. Telephony applications written to the JTAPI specification can gain the cross-platform benefits of Java.

For more information, see the following documentation:

- *Installing Cisco Unified Communications Manager*
- *Cisco Unified Communications Manager Administration Guide*
- *Cisco Unified Communications Manager Bulk Administration Tool Guide*
- *Cisco Unified Communications Manager Features and Services Guide*

## Unified CM installation tasks

To install the Unified CM, see [Installing Cisco Unified Communications Manager](#). There are no Unified CCE-specific installation prerequisites or instructions for the Unified CM.

After you install Unified CM and before you configure Unified CM for Unified CCE, ensure that:

- A Unified CM instance is created on the Unified CM server
- All Unified CM services and third-party services required by Unified CM are running
- The BAT Tool is installed on the Unified CM

## Unified CM configuration tasks

After you install the Unified CM, complete these tasks to configure the Unified CM for use with the Unified CCE. Perform tasks in the order listed. Note that steps 3 and 4 apply only to the Unified IP IVR and step 5 applies only to the Unified CVP. Instructions for each are included later in this document.

Unified CM Configuration Task	Notes
1. Configure the agent IP phones.	Prior to this, you must install your Cisco IP phones on your network. For more information, see the Cisco IP phone documentation.
2. Configure the CTI Route Points.	You need Route Points for both the Unified IP IVR and the Unified CVP. When using the Unified IP IVR, you can invoke the Unified CM from the Cisco Unified Contact Center Express (Unified CCX) Administration user interface and configure Route Points directly. You must still create the Route Points for dialed numbers in Unified CM Administration.

Unified CM Configuration Task	Notes
3. Configure the Call Control Ports.	For Unified IP IVR only. You can configure Call Control Ports directly in the Unified CCX Administration interface; you do not need to configure them in Unified CM.
4. Create user accounts and associate them with the JTAPI phones, Route Points, and Ports.	For Unified IP IVR only. Create one account to associate with the phones and PGs, and one account to associate with Unified IP IVR and the CTI Ports. When using Unified IP IVR, you can invoke the Unified CM from the Unified CCX Administration user interface using the Unified CM user ID and password. Then you can create users and assign them as Unified IP IVR users.
5. Add the Unified Presence Proxy server, create SIP trunks, and add route patterns.	For Unified CVP only. The Unified CVP documentation provides detailed instructions on how to configure Unified CM to work with Unified CVP. The instructions vary depending on whether you are using the SIP or the H.323 protocol.

## Unified CM Administration utility

You complete most Unified CM configuration tasks from the Unified CM Administration utility. Unified CM Administration is installed on each Unified CM server. To access Unified CM Administration in a Web browser, enter `http://<Unified_CM_servername>/ccmadmin`.

## Configure IP Phones on Unified CM

To function with the Unified CM, you must register each Cisco IP phone in your Unified CCE system and configure it within the Unified CM Administration database.

There are three different ways of doing this:

- **Manual configuration:** In manual configuration, each agent IP phone is configured individually. This document describes the manual configuration method.
- **Auto-registration:** Auto-registration allows you to automatically add a Cisco IP Phone to the Unified CM database when you connect the phone to your IP telephony network. During auto-registration, the Unified CM assigns the next available sequential directory number to the phone. In many cases, you might not want to use auto-registration; for example, if you want to assign a specific directory number to a phone. The procedure for setting up auto-registration is described in the *Cisco Unified Communications Manager Administration Guide*.
- **Bulk configuration:** The Unified CM Bulk Administration Tool lets you add, modify, and delete multiple Cisco IP Phones in batch mode. Procedures for using the Bulk Administration Tool are not described in this guide. For more information, see the *Bulk Administration Tool Guide for Cisco Unified Communications Manager*.

To manually configure agent IP phones on the Unified CM, perform the following steps for each agent IP Phone in your Unified CCE system:

### Procedure

---

- Step 1** In Unified CM Administration, select **Device > Phone**.
- Step 2** On the Find and List Phones page, click **Add New**.
- Step 3** On the Add a New Phone page, select the model of Cisco IP phone you are configuring from the Phone Type drop-down list, and click **Next**.
- Step 4** On the Phone Configuration page, select the device protocol from the drop-down list (either SCCP or SIP), and click **Next**.  
The next Phone Configuration page has many options to complete. The Unified CM Administration online Help is the best source for information to use for this page. When you are finished, click **Save**.  
A message appears that states that the phone was added to the database. To add a directory number to this phone, click one of the line links, such as *Line [1] - Add a new DN*, in the Association Information pane that appears on the left side of the window. Then continue by adding the directory number configuration settings. Note that the directory number is the agent's ID for logging in to the phone. If you use Outbound Option, set Call Waiting to On; otherwise, set it to Off.
- Step 5** Create additional phones, as necessary.
- 

## Set configuration on agent IP phone

You must set the configuration on each agent IP phone so that it can locate and connect to the Unified CM. To set the necessary configuration, on each agent IP phone in your Unified CCE system, complete the following steps:

### Procedure

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- Step 1** Press **Settings**.
- Step 2** Press **\*\*#** to unlock the configuration.
- Step 3** Select **Settings > Network Configuration > Select**.
- Step 4** Set Alternative TFTP to **Yes**.
- Step 5** Press **Save** and then press **Exit**.
- Step 6** Power cycle the phone. If you are using power plugs, pull the cord out of the phone and put it back in again. If you are using inline power, disconnect and then reconnect the network cable.
- 

## Unified CM Extension Mobility feature

Unified CM provides an Extension Mobility feature that lets users access their Cisco IP phone configuration, including line appearances, services, and speed dials, from other Cisco IP phones. If you enable Extension

Mobility, agents can share the same IP phone and retain their personal settings. In a Unified CCE system, IP phones with Extension Mobility have the same behavior and features as regular IP phones. Procedures for enabling Extension Mobility are not described in this guide. For more information, see the *Cisco Unified Communications Manager Features and Services Guide*.

## Configure CTI route point

A CTI Route Point is a virtual device that can receive multiple concurrent calls for application-controlled redirection. Calls are directed to a route point, which subsequently routes the call to an available CTI port--the front end of the redirection application. The CTI route point is the number a caller dials to access the application. You must configure at least one CTI route point for each redirection application in use. In the Unified CCE, these applications include the Unified IP IVR and Cisco JTAPI running on the PG.

After you create a CTI route point, you can add and configure lines (directory numbers). CTI route points are used for post-routing with the Unified CCE. If the PG is down or the Unified CCE cannot route a call, you can post-route the call to another CTI Route Point.



### Note

- If you are using IP IVR 4.0(x) or later, you can configure the CTI Route Points controlled by the Unified IP IVR directly in the Unified CCX Administration interface; you do not need to configure them in the Unified CM. Consult your Unified IP IVR documentation for instructions. You must still create the Route Points for dialed numbers in Unified CM Administration.
- Each *CTI Route Point-PG User* pair is unique. Therefore, you cannot configure the same CTI Route Point for different partitions of the same PG User. However, you can associate the same CTI Route Point with multiple PG Users.

To configure a CTI Route Point:

### Procedure

- Step 1** In Unified CM Administration, select **Device > CTI Route Point**.
- Step 2** Under Find and List CTI Route Points, click **Add New**.
- Step 3** Use the Unified CM Administration online Help for guidance in completing the CTI Route Point Configuration Settings.
- Step 4** When you have finished, click **Save**.
- Step 5** Repeat these steps to create additional CTI Route Points, as necessary. For example, you might create two route points for inbound dialing (one for post routing and one for translation routing) and two for the Unified IP IVR (one for post routing and one for transfer to IVR).

## Configure CTI port

A CTI Port is a virtual port analogous to a trunk line in a traditional ACD or PBX setting. The CTI Port allows access to the post-routing capabilities of Unified IP IVR .

The number of ports you configure is determined by your needs and available licenses. To accept or place calls, the JTAPI subsystem requires one CTI port device for each call to be managed simultaneously.

### Procedure

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- Step 1** In Unified CM Administration, select **Device > Phone**.
  - Step 2** Click **Add New**.
  - Step 3** From Phone Type, select CTI Port. Click **Next**.
  - Step 4** In Device Name, enter a unique name for the device.
  - Step 5** From Device Pool, select **Default**.  
Use the Unified CM Administration online Help for guidance on the remaining fields. Ensure that Call Waiting is OFF.
  - Step 6** Click **Save**. A message appears confirming that the directory number was assigned to the current device. Click **OK**.
  - Step 7** Repeat the above steps to create additional port groups, as necessary.
- 

## Configure users for phones, Unified CM PG, and Unified IP IVR

The Unified CM supports JTAPI for deploying telephony applications. JTAPI gives the Unified CCE access to the Unified CM directory. JTAPI uses the directory to determine which Unified CCE devices it has the privilege to control.

You must associate a user account with each JTAPI device. For the Unified CCE, you must create a JTAPI user for

- the connection to Unified ICME/Unified CCE/CCH (the Unified CM PG), and
- the connection to Unified IP IVR (if deployed).

Instructions for installing the JTAPI Client on the Unified CM PG follow later in Chapter 6, “Installing and Configuring Unified ICM/CCE/CCH for Unified CCE.”

### Procedure

---

- Step 1** In Unified CM Administration, select **User Management > Application User**. The User Information page opens.
- Step 2** Enter a first and last name for the user.
- Step 3** In **User ID**, enter the User ID for the PG user.
- Step 4** In **Password**, enter a password. Re-enter it in **Confirm Password**.
- Step 5** In **PIN**, enter an IP phone password (at least five characters). Re-enter it in **Confirm PIN**.

- Note**
- Record the user names and passwords that you create for the JTAPI users. You need to supply these when you configure A) Unified CM connectivity for the Unified CM PG; B) the Unified IP IVR user in Unified CCX Administration.
  - Ensure that you add the user to the Standard CTI Enabled user group. To add a user to the Standard CTI Enabled user group, see the section "**Adding Users to the Standard CTI User Groups**" at [http://www.cisco.com/en/US/docs/voice\\_ip\\_comm/cucimoc/7\\_1/english/release/cucimocReleaseNote.html#wp61406](http://www.cisco.com/en/US/docs/voice_ip_comm/cucimoc/7_1/english/release/cucimocReleaseNote.html#wp61406).
  - If the phone of the user is a Cisco Unified IP Phone 9900, 8900, or 6900 series model, you must also add the user to the Standard CTI Allow Control of Phones supporting Connected Xfer and conf user group.

- Step 6** Click **Save**.
- Step 7** Bring up the profile for the user you just created. Select **User Management > Application User**, click **Find**, then click on the link for the user you just created in the **User ID** column.
- Step 8** Under Device Information, click **Device Association**.
- Step 9** Click **Find**.  
All the Device names and extensions display.
- Step 10** Select all of the devices this user controls.
- Step 11** Click **Save Selected/Changes**.
- Step 12** Repeat the above steps to create additional JTAPI users as necessary.

#### Related Topics

[Installation and configuration of Unified ICM, Unified CCE & Unified CCH, on page 57](#)

## Configure Unified CM Telephony information for Unified CCX

The Unified CM Telephony client is installed in the background after you configure the Unified CM Telephony user. The Unified CM Telephony client runs silently and verifies that the right version and the right client are installed.

#### Procedure

- Step 1** From the Unified CCX Administration menu bar, choose **System > Unified CM Configuration**. The Cisco Unified CM Configuration Web page opens.
- Step 2** Scroll down to **Unified CM Telephony Subsystem—Unified CM Telephony Provider Configuration** section and reconfigure the Unified CM Telephony information using the following fields:

Field	Description
	<b>Unified CM Telephony Subsystem—Unified CM Telephony Provider Configuration</b>

Field	Description
Selected CTI Managers	Lists the CTI Managers selected by the Unified CCX user. Select the required entry and move to the opposite list box using the right and left arrows. Arrange the order of the selected entries using the up and down arrows.  <b>Note</b> If you deselect CTI Managers from the Selected list box, a Microsoft IE or Mozilla Firefox window pops up informing you about the (list of) deselected CTI Managers.
Available CTI Managers	Lists the CTI Managers in the cluster. Move to the opposite list box using the right and left arrows.
<b>Cluster Wide Parameters</b>	
User Prefix	The syntax of the User ID is: <code>&lt;userprefix&gt;_&lt;nodeid&gt;</code> For example, if you set this field to <code>cti_user</code> , then the User ID for Node 1 will be <code>cti_user_1</code> . This is a mandatory field.
Password	Password you defined for the User ID in Unified CM. If a CTI Manager is already selected, then the corresponding password is displayed in this field. This is a mandatory field.
Confirm Password	Reenter the password that you provided in the Password field. This is a mandatory field.

- Step 3** Click the **Update** icon on top of the **Cisco Unified CM Configuration** Web page or the **Update** button that appears at the bottom of the Web page to save the changes.  
The Unified CM Configuration Web page refreshes to display the new settings. The newly selected CTI Manager is now enabled. If the selected CTI Manager cannot be enabled, an error message instructs you to reselect CTI Managers.

## Configure Unified CM for Unified CVP

Whether you plan to use Session Initiation Protocol (SIP) or H323 gateway with your Unified CCE system, you need to configure Unified CM so that it works with Unified CVP.



## Procedure

- 
- Step 1** The SIP trunk or the H323 gateway that refers to the Unified CVP to which you want to send the call. Configure the SIP trunk to the SIP Proxy Server (after configuring the SIP Proxy Server) or to the Unified CVP Call Server if you are not using a SIP Proxy.
  - Step 2** Add call routing (route patterns) to send the call from Unified CVP; for example, ring tone, playback dial patterns and ICM route table calls. The route pattern must match the label you are using to send the call to Unified CVP. Append “!” at the end of the route pattern to accommodate the correlation ID.
  - Step 3** Configure the Network VRU in Unified ICME/Unified CCE/Unified CCH.
  - Step 4** Point the Route Pattern to the SIP trunk or H.323 gateway.
- 

## Recovery number for failovers

You can set up your system with a recovery number for failover situations. For example, you might forward calls to voice mail. You might also decide to forward calls to another CTI Route Point or dialed number that sends the call to a special recovery script on the system.

After you determine an appropriate recovery number for your system, configure Call Forward No Answer and Call Forward Busy on the CTI Route Points for the Unified CM PG to point to this recovery number.

Also, configure the Call Forward on Busy (CFB) option on your phones to point to this number as well. You can use the Unified CM Bulk Administration Tool to do this for a group of phones, or you can configure each line individually using the Unified CM Administration Web pages. For more information about Unified CCE fault tolerance, see the [Cisco Unified Contact Center Enterprise Design Guide](#).

## Call Search Space in Unified CM

The Call Search Space (CSS) used for transfer defaults to the callers's (not the agent's) CSS. Using the defaults, calls that invoke the redirect operation using an unexpected CSS might not have access to the destination's partition in Unified CM, resulting in a dropped call.

The redirect operation is invoked by the following:

- Agents who initiate single-step transfer from their desktop client
- Unified CCE Dialer in CCE 7.1 or above
- Third-party CTI integrations that invoke the Deflect API of the CTI Server interface.

This is most likely to be seen as a day two issue or after a recent partition/CSS change in the Unified CM configuration.

The “UseRedirectAddressSearchSpace” registry key controls which CSS is used.

UseRedirectAddressSearchSpace can be set to 0, 1, or 3 where:

- DEFAULT\_SEARCH\_SPACE = 0
- CALLINGADDRESS\_SEARCH\_SPACE = 1

- ADDRESS\_SEARCH\_SPACE = 2



# Installation and configuration of Cisco Unified IP IVR for Cisco Unified Contact Center Enterprise

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This chapter describes how to install and configure the Unified IP IVR for the Unified CCE in both production and laboratory environments. Follow the instructions in this chapter if you are using the Unified IP IVR (as opposed to the Unified CVP) for queuing in your Unified CCE system. (If you are deploying Unified CVP instead of Unified IP IVR, see [Cisco Unified Customer Voice Portal and Cisco Unified Contact Center Enterprise](#).)

- [Unified IP IVR, page 38](#)
- [Installation of Unified IP IVR for Unified CCE, page 38](#)
- [Unified IP IVR installation prerequisites, page 39](#)
- [Unified IP IVR configuration tasks, page 39](#)
- [Access to Cisco Administration utility, page 40](#)
- [Configure Unified CM Telephony Provider for Unified IP IVR, page 40](#)
- [Configure Unified CM Telephony Call Control Group, page 41](#)
- [Configure Unified ICM subsystem, page 46](#)
- [Configure VRU script, page 48](#)
- [Translation routing and post routing, page 49](#)
- [Configure Unified IP IVR for Unified ICME/Unified CCE/Unified CCH translation routing, page 50](#)
- [Configure Unified IP IVR for Unified ICME/Unified CCE/Unified CCH post routing, page 52](#)
- [Configure Unified ICME post-routing application, page 53](#)
- [Start Unified CCX Engine, page 55](#)
- [Resynchronize Unified CM Telephony data, page 55](#)
- [Resynchronize Cisco JTAPI Client, page 55](#)
- [Unified ICME/Unified CCE/Unified CCH configuration for Unified IP IVR, page 56](#)

## Unified IP IVR

The Unified IP IVR is an application on the Cisco Unified Contact Center Express (Unified CCX) platform. Unified IP IVR provides Interactive Voice Response (IVR) and queuing capability in the Unified CCE system. Unified IP IVR is a multichannel (voice/data/Web) IP-enabled Interactive Voice Response solution that provides an open, extensible, and feature-rich foundation for the creation and delivery of IVR solutions using Internet technology. In addition to handling traditional telephony contacts, you can create Unified IP IVR applications to respond to HTTP requests and send email messages.

The Unified IP IVR automates the handling of calls by autonomously interacting with users. The Unified IP IVR processes user commands to facilitate command response features such as access to checking account information or user-directed contact routing. The Unified IP IVR also performs prompt and collect functions to obtain user data such as passwords or account identification. The Unified IP IVR supports Open Database Connectivity (ODBC) access to Microsoft SQL Server and MSDE databases.

You can use the Unified IP IVR to extract and parse Web-based content and present the data to customers using a telephony or HTTP interface.

The Unified IP IVR communicates with the Unified ICME/Unified CCE/Unified CCH software by way of the Service Control Interface (SCI) protocol.

The following Cisco documents provide additional information about the Installation and configuration tasks described in this chapter:

- *Cisco Unified Contact Center Express Installation Guide*
- *Cisco Unified Contact Center Express Administration Guide*
- *Getting Started with Cisco Unified IP IVR*

You can access these documents from the [Cisco Unified Contact Center Express Introduction Page](#).

## Installation of Unified IP IVR for Unified CCE

To install the Unified IP IVR, follow the step-by-step installation instructions included in the *Cisco Unified Contact Center Express Installation Guide*.

When you install Unified IP IVR for use with the Unified CCE, you must select the Unified IP IVR product package during installation. This installs the basic Unified IP IVR platform, which includes the basic components of Unified IP IVR and the default ICM scripts. The Unified CCX installation procedure has two main steps:

- **Installation:** Loads the Unified CCX software onto your system. At this time you can select the deployment type (Unified CM and a language). After completing the installation, confirm that the ICM option appears on the Subsystems menu of the Administration utility. If it does not, you might have to modify the license (.lic) file.
- **Server Setup:** After you install Unified IP IVR, you use the Unified CCX Administration Web utility to perform the initial system setup. This enables the specific Unified CCX components that run on a particular server.

Installing the Unified IP IVR provides the basic components of the application and default ICM scripts.

**Note**

Unified CCE does not support Unified CCX clustering (duplexed Unified IP IVRs that failover to the same CTI route points).

## Unified IP IVR installation prerequisites

Before installing and configuring Unified IP IVR for use with Unified CCE, you must install and configure the Unified CM.

When you configure the Unified CM, you must do the following:

- Configure one CTI Route Point for each post route number and/or one for each translation route DAIS.
- Configure CTI Ports for the Unified IP IVR. The port numbers you use when installing the JTAPI interface on the Unified IP IVR must match these numbers. From Unified CCX Administration, you can access Unified CM directly and do this.
- Create a Unified IP IVR user and associated the user with CTI Route Points and CTI Ports. Enabled CTI for the Unified IP IVR user. From Unified CCX Administration, you can access Unified CM directly and do this. For more information, see [Installation and configuration of Unified Communications Manager for Cisco Unified Contact Center Enterprise](#).

After you complete the installation, configure the Unified IP IVR for the Unified CCE as described in the section [Unified IP IVR configuration tasks](#).

## Unified IP IVR configuration tasks

After you install the Unified IP IVR, complete the following tasks to configure the Unified IP IVR for use with the Unified CCE Environment. Perform tasks in the order listed. Instructions for each are included later in this section.

Unified IP IVR Configuration Task	Notes
1. Configure a Unified CM Telephony Provider on Unified CCX Administration.	See <a href="#">Configure Unified CM Telephony Provider for Unified IP IVR</a> and the "Configuring a Unified CM Telephony Provider" section in the <i>Cisco Unified Contact Center Express Administration Guide</i> .
2. Configure Unified CM Telephony Call Control Groups and ensure that the information in the Unified CCX and the Unified CM are in synch.	See <a href="#">Configure Unified CM Telephony Call Control Group</a> and the "Adding a New Unified CM Telephony Call Control Group" section in the <i>Cisco Unified Contact Center Express Administration Guide</i> .
3. Configure the ICM Subsystem.	See <a href="#">Configure Unified ICM subsystem</a> and the "Provisioning the Unified ICME Subsystem" section in the <i>Cisco Unified Contact Center Express Administration Guide</i> .

Unified IP IVR Configuration Task	Notes
4. Create and upload VRU scripts.	See <a href="#">Configure VRU script</a> and the "Configuring Unified ICME VRU Scripts" section in the <i>Cisco Unified Contact Center Express Administration Guide</i> .
5. Configure the Unified IP IVR for Unified CCE Post and/or Translation Routing.	See <a href="#">Translation routing and post routing</a> and the sections about configuring post and translation routing in the <i>Cisco Unified Contact Center Express Administration Guide</i> .
6. Start the Unified CCX Engine.	See <a href="#">Start Unified CCX Engine</a> "Starting, Stopping, and Restarting Cisco Unified CCX Services" section in the <i>Cisco Unified Contact Center Express Administration Guide</i> .
7. Resynchronize the Unified CM Telephony Data	See <a href="#">Resynchronize Unified CM Telephony data</a> and the <i>Cisco Unified Contact Center Express Administration Guide</i> .
8. Resynchronize the Cisco JTAPI Client	See <a href="#">Resynchronize Cisco JTAPI Client</a> and the <i>Cisco Unified Contact Center Express Administration Guide</i> .

You can find the information you need to perform the preceding tasks in the *Cisco Unified CCX Administration Guide* and briefly described in the following sections.

## Access to Cisco Administration utility

You perform most of the tasks in this section from the Cisco Unified CCX Administration utility, which is installed on your Unified IP IVR server. Access Unified CCX Administration at: `http://<ipivr_server_name>/appadmin`.

## Configure Unified CM Telephony Provider for Unified IP IVR

After configuring Unified CM, you need to configure a Unified CM Telephony Provider for your Unified IP IVR. This user is identified in the Unified IP IVR software when you configure the Unified CM Telephony Provider.

### Procedure

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- Step 1** From the Unified CCX Administration menu bar, choose **System > Unified CM Configuration**. The **Unified CM Configuration** Web page opens.
- Step 2** On the Web page specify the following:
- Selected or Available CTI Managers:** Select the required entry and move to the opposite list box using the right and left arrows.
  - User Prefix:** The syntax of the User ID is: `<userprefix>_<nodeid>`. For example, if you set this field to `cti_user`, then the User ID for Node 1 is `cti_user_1`.

c) **Password**: The password you defined for the User ID in Unified CM.

**Step 3** Click **OK** and the Unified CM Configuration Web page refreshes to display the new settings. A Microsoft IE window pops up to confirm the newly selected CTI Manager.

**Step 4** Click **OK** in the Microsoft IE window.  
The newly selected CTI Manager is now enabled.

The Unified CM Telephony Providers area of the Unified CM Telephony Configuration Web page is a read-only page that displays the latest configured information. To view the configured information for the Unified CM Telephony Provider, from the Unified CCX Administration menu bar, select **Subsystems > Unified CM Telephony > Unified CM Telephony Provider**.

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## Configure Unified CM Telephony Call Control Group

A Call Control Group is a group of access points into the Unified CCE telephone network. You use Call Control Groups to associate Cisco Unified IP IVR applications, translation routes, post routes, busy treatments, and ring no answer treatments with a Unified CCE trunk group.

A CTI port is a virtual device that is used by Unified CM applications, including the Unified IP IVR, to create virtual lines. You configure CTI ports through Unified CM Administration. The CTI ports in a Call Control Group must have consecutive directory numbers. For example, if you want twenty CTI ports in a particular Call Control group, and the first number is 9001, the rest of the ports are 9002 through 9020. With twenty ports, the Unified IP IVR can handle twenty calls at a time.

If your Unified CCE deployment uses the System PG, your Group IDs must:

- be an odd number
- be unique for all Unified IP IVR handled by a System PG

For example, if a System PG handles multiple Unified IP IVRs and each Unified IP IVR has one CTI Port Group, then the CTI Port Group ID for the first Unified IP IVR should be 1, the port group ID for the second Unified IP IVR should be 3, and so on.

### Procedure

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**Step 1** From the Unified CCX Administration menu bar, choose **Subsystems > Unified CM Telephony > Call Control Group**.

The **Cisco Unified CM Telephony Call Control Group Configuration** Web page opens displaying the existing Unified CM Telephony Call Control Group information, if any.

**Step 2** Click **Add New** icon that appears in the tool bar in the upper, left corner of the window or the **Add New** button that appears at the bottom of the window to create a new CTI port.

The **Cisco Unified CM Telephony Call Control Group Configuration** Web page opens.

**Step 3** Use this Web page to specify the following information:

Page Area	Field	Description
Group Information	Group ID	<p>Corresponds to the trunk group number reported to Cisco Unified Intelligent Contact Management Enterprise (Unified ICME) when the Unified CCX server is part of the Unified ICME solution. Accept the automatic Group ID or enter a unique value. This is a mandatory field.</p> <p><b>Note</b> If a Stop icon displays beside the Group ID (on the Unified CM Call Control Group Configuration list page), it indicates that the data is invalid or out of sync with Unified CM data; if a Head icon displays, then the Group is valid.</p>
	Description	Description of the Group ID. Press the <b>Tab</b> key to automatically populate the Description field.
	Number of CTI Ports	<p>Number of CTI Ports assigned to the group. This is a mandatory field.</p> <p><b>Note</b> If this field is set to &lt;n&gt;, the system creates &lt;n&gt; ports for each Unified CCX Engine node (node in which Unified CCX Engine component is enabled).</p>
	Cisco IP Communicator soft phone Support	<p>Enables the auto-creation of Cisco IP Communicator soft phone groups. This is a mandatory field.</p> <p>Yes = provides automatic Cisco IP Communicator soft phone if the CTI port group is successful.</p> <p>No = Cisco IP Communicator soft phone port group is not created (default).</p>
Directory Number Information	Device Name Prefix	<p>The Device Name Prefix (DNP) used in the name given to all of the CTI Ports in this group.</p> <p>This is a mandatory field. The CTI ports for this port group is restricted to a maximum of 5 characters and has the following format: &lt;deviceprefix&gt;_&lt;directoryno&gt;</p> <p>For example, if the Device Name Prefix is CTP and the starting Directory Number is 7000, then the CTI Port that is created in Unified CM can have the device name CTP_7000.</p>
<b>Select Server for Telephony Port Group Configuration (displayed only in a HA over WAN deployment)</b>		



Page Area	Field	Description
	Select Server	<p>This field only appears in a HA over WAN deployment.</p> <p>In a HA over WAN setup, you need to configure directory information along with Unified CM-specific information for the ports in each node. This field displays the different Unified CCX nodes that are available in a HA over WAN deployment in a drop-down list.</p> <p>After you select a node, you can view the node-specific configuration details for the node. You can configure the data for the selected node. Click Update to save the updated configuration information. For more information about HA over WAN, see the <i>Cisco Unified CCX High Availability User Guide</i>.</p> <p><b>Note</b> In case of LAN deployment, this field does not appear as the same configuration data is applicable for both the nodes in the cluster.</p>

Page Area	Field	Description
Directory Number Information	Starting Directory Number	<p>A unique phone number. The value can include numeric characters and special characters (#) and (*). This is a mandatory field.</p> <p>The specified number of ports are created starting from the value specified in this field.</p> <p>The Directory Number that you enter can appear in more than one partition.</p> <p><b>Note</b> When a pattern is used as a Directory Number, the phone display and the caller ID display on the dialed phone contains characters other than digits. To avoid this, provide a value for Display (Internal Caller ID), Line Text Label, and External Phone Number Mask.</p>
	Device Pool	Set of common characteristics for devices, such as region, date/time group, softkey template, and MLPP information to which you want to assign this phone. Click the <b>Add Device Pools</b> button to specify the number of CTI ports for a selected device pool.
	DN Calling Search Space	<p>A collection of partitions that are searched to determine how a dialed number should be routed. The calling search space for the device and the calling search space for the directory number get used together. The directory number calling search space takes precedence over the device calling search space.</p> <p>For more information, see the <i>Cisco Unified Communications Manager System Guide</i>.</p>
	Location	The Cisco Unified Communications phone location setting specifies the total bandwidth that is available for calls to and from this location. A location setting of HUB_NONE means that the location feature does not keep track of the bandwidth that this Cisco Unified Communications phone consumes.
	Partition	The Cisco Unified Communications phone location setting specifies the total bandwidth that is available for calls to and from this location. A location setting of HUB_NONE means that the location feature does not keep track of the bandwidth that this Cisco Unified Communications phone consumes.
<b>Advanced Directory Number Information (only available if you click Show More)</b>		

Page Area	Field	Description
Directory Number (continued)	Alerting Name ASCII	This information is automatically populated based on the configuration in the Unified CM setup and displays the ASCII name filed used in one of the following situations: <ul style="list-style-type: none"> <li>• If the device is not capable of handling the Unicode strings</li> <li>• If the locals on end point devices do not match</li> <li>• If the Unicode string is not specified</li> </ul>
	Redirect Calling Search Space	A collection of partitions that are searched to determine how a redirected call should be routed.
	Media Resource Group List	A prioritized grouping of media resource groups. An application chooses the required media resource, such as a Music On Hold server, from the available media resources according to the priority order that is defined in a Media Resource Group List.  If you choose <none>, Unified CM uses the Media Resource Group that is defined in the device pool.
Directory Number Setting	Voice Mail Profile	A list of profiles defined in the Voice Mail Profile Configuration. The first option is <None>, which is the current default Voice Mail Profile that is configured in the Voice Mail Profile Configuration.
	Presence Group	A list of groups to integrate the device with the iPass server (a component running on Unified CM, provides information on the presence of various devices). The device or line information is provided to integrating applications.
	Require DTMF Reception	A Unified CM radio button to determine if DTMF reception is required. <b>Yes</b> is selected by default. If you select <b>No</b> , a warning message appears.
	AAR Group	Automated Alternate Routing (AAR) group for this device. The AAR group provides the prefix digits that are used to route calls that are otherwise blocked due to insufficient bandwidth. An AAR group setting of <None> specifies that no rerouting of blocked calls will be attempted.
	User Hold Audio Source	Audio source heard by the caller when the Unified CCX Script places the caller on hold via the Hold Step (when you press the hold key).
	Network Hold Audio Source	Audio source heard by the caller will when Unified CCX performs a Consult Transfer (when Unified CCX calls an agent). Use this entry for the .wav file (for example, .wav file playing a ring back tone) to play to the caller during this Consult Transfer.

Page Area	Field	Description
Call Forward and Pickup Settings	Call Pickup Group	The number that can be dialed to answer calls to this directory number in the specified partition.
	Display	Use a maximum of 30 alphanumeric characters. Typically, use the user name or the directory number (if using the directory number, the person receiving the call may not see the proper identity of the caller).  Leave this field blank to have the system display the extension.
	External Phone Number Mask	Phone number (or mask) that is used to send Caller ID information when a call is placed from this line.  You can enter a maximum of 30 number and X characters. The X characters represent the directory number and must appear at the end of the pattern. For example, if you specify a mask of 972813XXXX, an external call from extension 1234 displays a caller ID number of 9728131234.

- Step 4** When finished, click **Update** to create the specified number of CTI ports starting with *<Starting Directory Number>*. After creating the CTI ports, the respective CTI ports are associated to the Unified CM Telephony user configured in the Unified CM Telephony Provider page.
- Step 5** Press the **Tab** key to automatically populate the Description field.
- Step 6** Click **Add**.  
The **Unified CM Telephony Call Control Group Configuration** summary Web page opens. The call control group you added appears in the Group ID column.
- Step 7** As necessary, repeat these steps to create additional port groups and associate them with CTI ports.

## Configure Unified ICM subsystem

The Unified ICM subsystem of the Unified IP IVR system allows the Unified IP IVR software to interact with the Unified ICME/Unified CCE/Unified CCH software. Unified ICME/Unified CCE/Unified CCH software provides a central control system that directs calls to various human and automated systems. Unified ICME routing scripts can direct calls based on various criteria, such as time of day or the availability of subsystems. The Unified ICM subsystem is the queuing engine for Unified CCE, which includes Unified IP IVR.

### Procedure

- Step 1** In Unified CCX Administration, select **Subsystems > ICM > General**. The **Unified ICM Configuration** Web page opens.
- Step 2** Use this Web page to specify the following fields:

Field	Description
VRU Connection Port	<p>Enter the TCP IP port number configured in the VRU Peripheral Interface Manager (PIM) on the Unified ICM system.</p> <p>The system uses this TCP/IP socket number to receive messages from the Unified ICM system. You can copy the VRU Connection Port value from the VRU PIM configuration dialog box of the VRU PG machine.</p> <p>The default value is 5000. Use the default value unless you have a compelling reason to use a different port.</p>
PG Hosts Allow	<p>By default, any PG can connect in the Web Setup. For security reasons, the PG Hosts Allow field lets you to configure selected PGs, which you want to connect to the Unified IP IVR system using any one of the following three options:</p> <ul style="list-style-type: none"> <li>• <b>All</b>—Click the <b>All</b> radio button if you want any PG to be able to connect to the Unified IP IVR. This radio button is selected by default in the Web Setup.</li> <li>• <b>None</b>—Click the <b>None</b> radio button if you do not want even a single PG to connect to the Unified IP IVR.</li> <li>• <b>Specific</b>—Click the <b>Specific</b> radio button if you want to connect only specific PGs to the Unified IP IVR. After you select this option, you can enter the Host name or IP address for any one or both the PGs using the following fields: <ul style="list-style-type: none"> <li>◦ PG 1 Hostname/IP Address</li> <li>◦ Hostname/IP Address</li> </ul> </li> </ul> <p><b>Note</b> When you select the <b>Specific</b> option, the PG1 Hostname/IP Address is a mandatory field.</p>
Service Control	<p>If you click <b>Yes</b>, the Service Control interface allows the Unified ICM to provide call-processing instructions to Unified CCX. It also provides Unified ICM with event reports indicating changes in call state.</p> <p>You must enable the service control interface to use the ICM Subsystem.</p>
Parameter Separator	<p>Enter the character used to delineate individual parameters in a multiple parameter variable or accept the default (  [pipe]).</p>

Field	Description
Additional VRU Call Information	<p>Select the required variables to pass call-related information by selecting the check box. The following expanded call variables are available on the Unified ICM subsystem:</p> <ul style="list-style-type: none"> <li>• Task ID—Task ID that handles the current call.</li> <li>• Media—IDMedia ID that handles the current call.</li> <li>• Last Redirected Address—Transient part ID of the call.</li> <li>• Arrival Type—Arrival type of the call.</li> <li>• Session Handled—Boolean flag that the Unified ICME software or a Set Contact Info step with a Handled flag step sets to indicate whether the session is handled.</li> </ul> <p><b>Note</b> The Unified CCX automatically sets the flag whenever a call is connected to an agent.</p> <ul style="list-style-type: none"> <li>• VRU Script Name—Script name to run on the PreConnect feature.</li> </ul> <p><b>Note</b> All scripts under the default directory are listed in the drop-down list of the Script field in the Cisco Script Application Configuration page.</p> <ul style="list-style-type: none"> <li>• Config Param—Parameters for the VRU scripts on the PreConnect feature.</li> </ul>

**Step 3** Click **Update**.  
The configuration information is added to the system.

## Configure VRU script

The Unified CCE uses Voice Response Unit (VRU) scripts to handle interactions with contacts. These scripts are loaded as applications on the Unified CCX Engine.

The Unified IP IVR comes with some default scripts that are loaded as applications on the Unified CCX Engine. You also can create your own VRU scripts using the Cisco Unified CCX Editor. When configuring the Unified CCE, you can configure any VRU scripts that you plan to use. You must upload the scripts to the Unified IP IVR Repository so that the scripts are available whenever the Unified CCE sends a Run VRU Script request to Unified IP IVR.

### Procedure

- Step 1** In Unified CCX Administration menu bar, select **Subsystems > ICM > ICM VRU Scripts**. The ICM VRU Scripts Web page opens displaying the list of VRUs.
- Step 2** Click the **Add New** icon or button in the **ICM VRU Scripts** Web page.
- Step 3** Another **ICM VRU Scripts** Web page opens where you can specify values for the following fields:  
Enter a name for the VRU script that you want to add in the Script Name field.  
Select the Unified CCX script that you want to associate with the VRU script from the Script drop-down list.

- Step 4** Click **Add**. The second ICM VRU Scripts Web page closes, and the name of the VRU script you added appears in the first **ICM VRU Scripts** Web page.  
Repeat the steps mentioned to add any additional VRU scripts.
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## Translation routing and post routing

Depending on how you choose to do call routing, you must configure your Unified CCE deployment for post routing and possibly translation routing.

### Translation routing

In translation routing, the Unified CCE receives the call instead of the Unified IP IVR. Because the Unified IP IVR does not receive the call first, it does not run an initial script. After receiving the call, the Unified CCE runs a script. You must configure Unified CCE translation routing when you use the Unified IP IVR as a queue point for a Unified CCE solution in which calls are expected to be routed by the VRU PG to Unified IP IVR. The call attributes are reported as part of a configured translation-route on Unified CCE.

The Unified CCE routing scripts can direct calls based on various criteria, such as time of day or the availability of subsystems. Unified CCE routing scripts use the following four commands to interact with Unified IP IVR:

- **Connect** connects the call. The Unified CCE sends the connect message with a label to instruct Unified IP IVR where to direct the call.
- **Release** hangs up the call.
- **Run VRU Script** runs a VRU script on Unified IP IVR.
- **Cancel** cancels the VRU script that is currently running.

### Post routing

In post routing, the Unified IP IVR receives calls directly from the Unified CM. The Unified CM sends the call to the post routing route point on the Unified IP IVR. The Unified IP IVR searches the designated port group for a free CTI port and accepts the call. If there is no free port, the caller hears ringing until there is a free port to take the call.

If you configure the route point to run an initial application, such as a script to welcome the caller and collect an account number, the Unified IP IVR runs that script, notifies the Unified CCE about the call, and waits for further instructions. If you did not configure an initial application, the Unified IP IVR just informs the Unified CCE. The Unified CCE runs a routing script after being notified of the call. The Unified IP IVR system responds to the commands from the Unified CCE until it signals that the call is complete.

For example, the Unified CCE routing script could send a Run VRU Script request to the Unified IP IVR, instructing the Unified IP IVR to run a VRU script that plays music and thanks the caller for their patience. When an agent becomes available, the Unified CCE sends a Cancel request and the Unified IP IVR stops running the current VRU script. The Unified CCE then sends a Connect command with a Normal label that indicates the extension of the free agent. The Unified IP IVR system routes the call to the agent indicated on the label.

**Note**

The Unified CCE does not support post routing *within* a Unified CCE deployment. However, post routing *is* supported between a child Unified CCE and its parent in an Unified IPCC Gateway deployment. For more information, see the Unified IPCC Gateway documentation.

## Configure Unified IP IVR for Unified ICME/Unified CCE/Unified CCH translation routing

You must configure Unified ICME translation-routing applications when the Unified CCX server is used as a queue point for a Unified CCX solution in which calls are expected to be routed by the Unified ICME to the Unified CCX server. The call attributes are reported as part of a configured translation-route on the Unified ICME.

**Note**

Before you can configure a translation routing application, you must first upload the VRU scripts that the application needs.

To configure the Unified ICME translation-routing application, you must perform the following tasks.

- 1 Add a Unified ICME translation-routing application.

In addition to configuring general information such as name and ID, you must specify the script on which the Unified ICME translation-routing application is based.

- 2 Add a Unified CM Telephony trigger to the Unified ICME translation-routing application.

The Unified ICME translation-routing application is invoked by a Unified CM Telephony trigger, and does not support HTTP triggers.

### Procedure

- Step 1** In Unified CCX Administration, select **Applications > Application Management**. The **Application Management** Web page opens displaying the details of existing applications, if any.
- Step 2** Click **Add New** icon that appears in the tool bar in the upper, left corner of the window or the **Add New** button that appears at the bottom of the window. The **Add a New Application** Web page opens.
- Step 3** From the Application Type drop-down list, select **Unified ICME Translation Routing**. The **Unified ICME Translation-Routing configuration** Web page opens.
- Step 4** Use this Web page to specify the following fields.

Field	Description
Name	A name for the application.
Description	Use the Tab key to automatically populate this field.



Field	Description
ID	Accept the automatically-generated ID, or enter a unique ID. This field corresponds to the service identifier of the call reported to the Unified ICME and configured in the Unified ICME translation route.
Maximum Number of Sessions	The maximum amount of simultaneous sessions (instances) that the application can handle. <b>Note</b> The limit for the maximum number of simultaneous remote monitoring sessions is 16, but the actual number depends on your system's CPU and memory resources. Entering a number that is too high can result in unacceptable system performance.
Enabled	(Radio button) Accept <b>Yes</b> (the default).
Timeout (in seconds)	The maximum amount of time (in seconds) that the system waits to invoke the application before rejecting a contact.
Default Script	(Drop-down list) Choose a script to run to route a call to a default treatment if the following occurs: <ul style="list-style-type: none"> <li>• System error</li> <li>• Request by Unified ICME</li> </ul>

- Step 5** In the Name field, enter the name of the script on which the Unified CCE translation routing is based.
- Step 6** Press the **Tab** key to automatically populate the Description field.
- Step 7** In the ID field, accept the ID, or enter a unique ID. This field corresponds to the service identifier of the call reported to the Unified ICME and configured in the Unified ICME translation route.
- Step 8** In Maximum Number of Sessions, enter the maximum number of sessions that the application can handle simultaneously.
- Step 9** In the Enabled field, accept the default radio button **Yes**.
- Step 10** In the Timeout (in secs) field, enter a value (in seconds). This value is the maximum amount of time the system waits to invoke the application before rejecting a contact.
- Step 11** From the Default Script drop-down list, choose the script that runs if a system error occurs, or if instructed by the Unified ICME/Unified CCE/Unified CCH to route to the default treatment.
- Step 12** Click **Add**. A message displays confirming the operation was successfully executed.
- Step 13** Click **OK**.
- Step 14** Click **Add New Trigger**. The Add a New Trigger page opens.
- Step 15** From Trigger Type drop-down list, select **Unified CM/Unified CME Telephony**, and then click **Next**.
- Step 16** In Unified CCX Administration, select **Subsystems > Unified CM Telephony**.
- Step 17** On the Unified CM Telephony Configuration navigation bar, click the **Unified CM Telephony Triggers** hyperlink.  
The Unified CM Telephony Trigger Configuration summary Web page opens.
- Step 18** Click the **Add a New Unified CM Telephony Trigger** hyperlink.

The Unified CM Telephony Trigger Configuration Web page opens. Complete the fields on this page. For more information, see the online Help.

- Step 19** Click **Add**. The Unified CM Telephony Trigger Configuration summary Web page opens, and displays the new Unified CM Telephony trigger.

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For more information about adding applications and triggers to the Unified IP IVR see the online *Help* or the *Cisco Unified Contact Center Express Administration Guide*.

## Configure Unified IP IVR for Unified ICME/Unified CCE/Unified CCH post routing

To configure the Unified IP IVR for post routing, you must first add a Unified ICME/Unified CCE/Unified CCH post routing application and then assign a JTAPI trigger to this application.



**Note** Before you can configure a Unified ICME/Unified CCE/Unified CCH routing application, you must first upload any VRU scripts that the application needs.

### Procedure

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- Step 1** In Unified CCX Administration, select **Applications > Application Management**.
- Step 2** Click **Add a New Application**.
- Step 3** From the Application Type drop-down list, select **Unified ICME Post-Routing**.
- Step 4** In the Name field, enter the name of the script on which the post routing is based.
- Step 5** Press the **Tab** key to automatically populate the Description field.
- Step 6** In the ID field, accept the ID, or enter a unique ID. This field corresponds to the service identifier of the call reported to the Unified ICME/Unified CCE/Unified CCH and configured in the translation route.
- Step 7** In Maximum Number of Sessions, enter the maximum number of sessions that the application can handle simultaneously.
- Step 8** In the Enabled field, accept the default radio button **Yes**.
- Step 9** In the Timeout (in secs) field, enter a value (in seconds). This value is the maximum amount of time the system waits to invoke the application before rejecting a contact.
- Step 10** From the Default Script drop-down list, choose the script that runs if a system error occurs, or if instructed by the Unified CCE to route to the default treatment.
- Step 11** Click **Add**. A message appears confirming the operation was successfully executed.
- Step 12** Click **OK**.
- Step 13** Click **Add New Trigger**. The Add a New JTAPI Trigger page opens.
- Step 14** From Trigger Type drop-down list, select **Unified CM/Unified CME Telephony**, and then click **Next**.
- Step 15** In Unified CCX Administration, select **Subsystems > Unified CM Telephony**.
- Step 16** On the Unified CM Telephony Configuration navigation bar, click the **Unified CM Telephony Triggers** hyperlink.

The Unified CM Telephony Trigger Configuration summary Web page opens.

- Step 17** Click the **Add a New Unified CM Telephony Trigger** hyperlink.  
The Unified CM Telephony Trigger Configuration Web page opens. Complete the fields on this page. For more information, see the online Help.
- Step 18** Click **Add**. The Unified CM Telephony Trigger Configuration summary Web page opens, and displays the new Unified CM Telephony trigger.

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For more information about adding applications and triggers to Unified IP IVR see the online Help or the *Cisco Unified Contact Center Express Administration Guide*.

## Configure Unified ICME post-routing application

The Unified IP IVR system uses these applications to receive calls directly from the Unified CM, which sends the call to the post-routing route point on the Unified CCX system.

Unified ICME post-routing applications use the Unified CCX server as a queue point for the Unified ICME. In Unified ICME post-routing, the Unified IP IVR system receives calls directly from the Unified CM, which sends the call to the post-routing route point on the Unified CCX system. If you configure this route point to run an initial application, such as an application to welcome the caller and collect an account number, the Unified CCX system notifies the Unified ICME software about the call, and then waits for further instructions. If you do not configure an initial script, the Unified CCX system informs the Unified ICME software about the call, but takes no other action.

After notification, the Unified ICME system runs a script, which can comprise many different call-handling steps, including three commands that can be sent to the Unified CCX system:

- **Connect:** This request is automatically sent by the Unified ICME whenever an agent is available and the call can be connected to that agent.
- **Release:** This request releases the call.
- **Run VRU Script:** This request runs the VRU script.

To configure a Unified ICME post-routing application, you must perform the following tasks:

- Add a Unified ICME post-routing application. In addition to configuring general information such as name and ID, you must specify the script on which the Unified ICME post-routing application is based.
- Add a Unified CM Telephony trigger to the Unified ICME post-routing application. The Unified ICME post-routing application is invoked by a Unified CM Telephony trigger. The Unified ICME post-routing application does not support HTTP triggers.

To configure the Unified CCX server with the post-routing application and to add a Unified CM Telephony trigger, complete the following steps:

### Procedure

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- Step 1** From the Unified CCX Administration menu bar, choose Applications > Application Management.

The Application Management Web page opens displaying the details of existing applications.

**Step 2** Click **Add New** icon that appears in the tool bar in the upper, left corner of the window or the Add New button that appears at the bottom of the window.

**Step 3** From the Application Type drop-down list, choose **Unified ICME Post-Routing**. The **Unified ICME Post-Routing configuration** Web page opens.

**Step 4** Use this Web page to specify the following fields:

Field	Description
Name	A name for the application.
Description	Use the <b>Tab</b> key to automatically populate this field.
ID	Accept the automatically-generated ID, or enter a unique ID. This ID is the service identifier that is reported with the call back to Unified ICME.
Maximum Number of Sessions	The maximum amount of simultaneous sessions (instances) that the application can handle.  <b>Note</b> The limit for the maximum number of simultaneous remote monitoring sessions is 16, but the actual number depends on your system's CPU and memory resources. Entering a number that is too high can result in unacceptable system performance.
Enabled	(Radio button) Accept <b>Yes</b> (the default).
Timeout (in seconds)	The maximum amount of time (in seconds) that the system waits to invoke the application before rejecting a contact.
Initial Script	(Drop-down list) Choose a script to run when the Unified CCX receives a call. You can use this script to acquire initial digits from the caller and report the information to the Unified ICME as part of the notification of the incoming call. This capability allows the Unified ICME to correctly choose a Unified ICME script to serve the call.
Default Script	(Drop-down list) Choose a script to run to route a call to a default treatment if the following occurs: <ul style="list-style-type: none"> <li>• System error</li> <li>• Request by Unified ICME</li> </ul>

**Step 5** Click **Add**.  
The Unified ICME Post-Routing Web page refreshes, the Add New Trigger hyperlink appears in the left navigation bar, and the following message appears in the status bar on top: *The operation has been executed successfully.*

**Step 6** Now, add a trigger for the application

## Start Unified CCX Engine

After completing all the Unified CCE configuration for Unified IP IVR, return to this topic to start the Unified CCX Engine. The subsystems do not start until the configuration of all elements is complete and valid. The Unified CM can support more than one Unified CCX Engine.

### Procedure

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- Step 1** Select Cisco Unified CCX Serviceability from the Navigation drop-down list box in top right corner of the Unified CCX Administration menu bar and login with Unified CCX AppAdmin credentials.
  - Step 2** Choose **Tools > Control Center > Network Services** from the Unified CCX Serviceability menu bar.
  - Step 3** Click the **Unified CCX Engine** radio button below System Services and click **Restart** or **Stop and Start**.
- 

## Resynchronize Unified CM Telephony data

This resynchronizing process ensures that the Unified CM Telephony user, the call control groups, and the triggers match the version of Unified CM being used.

### Procedure

---

- Step 1** From the Unified CCX Administration menu bar, choose **Subsystems > Cisco Unified CM Telephony > Data Resync**.
  - Step 2** The Data Resync Web page opens after resynchronization displaying the Data Resync status of Unified CM Telephony Port Groups and Unified CM Telephony Triggers.  
You are now ready to provision a Unified CM Telephony trigger.
- 

## Resynchronize Cisco JTAPI Client

During the resynchronizing process, an additional check (effective with Cisco Unified CCX Release 5.0) ensures that the Unified CM Telephony Client (also known as the Cisco JTAPI Client) are the same between the clients installed on the Unified CCX node and the Cisco JTAPI Client installer. If the Unified CCX platform detects a mismatch, the system downloads and installs the compatible/required installer version.

### Procedure

---

- Step 1** Choose **Subsystems > Cisco Unified CM Telephony > Cisco JTAPI Resync** from the Unified CCX Administration menu bar.
- Step 2** The Cisco JTAPI Resync Web page opens displaying the status of Cisco JTAPI Client resynchronization. At this point, if there is an incompatible version, it automatically downloads the new client.

---

# Unified ICME/Unified CCE/Unified CCH configuration for Unified IP IVR

When configuring Unified ICME/Unified CCE/CCH for Unified IP IVR, note that some values must match across the applications.

Note the following during configuration:

- The VRU connection port number (5000) on Unified ICME/Unified CCE/Unified CCH (The Configuration dialog box appears to enter properties of the VRU peripheral when you configure the PIM) must match the VRU Connection port in Unified IP IVR.
- The Trunk Group peripheral number in the Unified ICME/Unified CCE/Unified CCH must match the CTI Port Group ID on Unified IP IVR.
- The Dialed Number defined in the Unified ICME/Unified CCE/ UnifiedCCH (Configuration Manager, choose **Tools > List Tools > Dialed Number List**) must match the Unified CM Telephony triggers in the Unified IP IVR for translation routing.
- The VRU scripts defined in the Unified ICME/Unified CCE/Unified CCH (Configuration Manager, select **Tools > List Tools > Network VRU Script List**) must match the ones defined in ICM VRU Scripts in Unified IP IVR.

## Related Topics

[VRU PG configuration and setup, on page 74](#)

[Configuration of Unified ICM/CCE/CCH for Unified CCE, on page 60](#)

[Configure dialed number, on page 96](#)

[Configure Network VRU script, on page 107](#)

[Unified CCE with Unified IP IVR sample plan, on page 19](#)



# Installation and configuration of Unified ICM, Unified CCE & Unified CCH

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This chapter describes how to install and configure Cisco Unified ICM/Unified CCE/Unified CCH.

For more information about Remote Administration, see Chapter 14 of the *Security Best Practices Guide for Cisco Unified ICM/Contact Center Enterprise & Hosted, Release 9.x(y)*.

- [Unified ICM/CCE/CCH, page 57](#)
- [Installation of Unified ICM/CCE/CCH for Unified CCE, page 59](#)
- [Configuration of Unified ICM/CCE/CCH for Unified CCE, page 60](#)

## Unified ICM/CCE/CCH

Unified ICM/CCE/CCH provides ACD functionality including monitoring and control of Agent State, routing and queuing of contacts, CTI capabilities, real-time data for agents and supervisors, and gathering real-time and historical data for reporting in the Unified CCE system.

The basic Unified ICM/CCE/CCH software includes the following components: Administration & Data Server, Router, Logger, Peripheral Gateway, CTI Server, and Administration Client.

## Unified ICM/CCE/CCH components

Before you can configure Unified ICM/CCE/CCH for use in a Unified CCE environment, you must first install the following Unified ICM/CCE/CCH components.



**Note**

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For more information about how to install these components, see the *Installation Guide for Cisco Unified ICM/Contact Center Enterprise & Hosted*.

---

Unified ICM/CCE/CCH Component	Description
Administration & Data Server	The Administration & Data Server receives real-time monitoring data directly from the Central Controller and passes the data on to other Administration & Data Servers. Depending on its defined role, an Administration & Data Server can support the following functionality: Configuration, Real-time and Historical Reporting, Call Detail Extraction, Call Variable, Agent Detail, and Cisco Unified Intelligence Suite (CUIS) feed. If given the proper role, an Administration & Data Server can also be the human interface to the system.
Administration Client	The Administration Client is the human interface to Unified ICM/CCE/CCH. You use the Administration Client to monitor activity in the Unified ICM/CCE/CCH system and to access the Configuration Manager tools. An Administration Client doesn't have its own database, but connects to Administration & Data Servers for its configuration and real-time data.
Router	The Router (along with the Logger) is the Central Controller component of Unified ICM/CCE/CCH. The Router executes routing scripts to determine the destination of each call. It also gathers data from the Peripheral Gateways and distributes monitoring data to the Administration & Data Server.
Logger	The Logger is the Unified ICM/CCE/CCH component that stores the Central database.
Historical Data Server (HDS) Databases	You must create an HDS database for every Administration & Data Server with an HDS role.
CTI Server	The CTI Server is the Unified ICM/CCE/CCH component that provides an interface between the agent desktops and the PG for Unified CM.
Peripheral Gateway	A Peripheral Gateway (PG) is the hardware platform and the logical software process that runs on the peripheral (ACD or VRU). It communicates the status of the peripheral to the central controller.

## Unified ICM/CCE/CCH installation prerequisites for Unified CCE

Before installing and configuring the Unified ICM/CCE/CCH for use with the Unified CCE, you must complete the tasks in the following table.



### Note

There are also prerequisites for installing Unified ICM/CCE/CCH on its own; that is, before you use it with the Unified CCE. For more information, see the *Installation Guide for Cisco Unified ICM/Contact Center Enterprise & Hosted*.



Unified ICM/CCE/CCH Installation Prerequisites	Installation and Configuration Notes
Install Unified CM	<p>On Unified CM Administration, you have:</p> <ul style="list-style-type: none"> <li>• Configured one CTI Route Point for each post route number and/or one for each translation route DAIS.</li> <li>• Created a Unified CM PG user and associated the user with CTI Route Points and CTI Ports.</li> <li>• Enabled CTI for the Unified CM PG user.</li> </ul>
Install Unified IP IVR (if deploying)	<p>On Unified IP IVR , you must have:</p> <ul style="list-style-type: none"> <li>• Configured the VRU Port Group.</li> <li>• Configured the Unified ICM Subsystem.</li> <li>• Uploaded VRU Scripts.</li> <li>• Specified the VRU Connection Port.</li> <li>• Configured translation routing on Unified IP IVR.</li> </ul> <p><b>Note</b> If you are using the Unified CVP for queuing, you install that after you install the Unified ICM/CCE/CCH.</p>

### Related Topics

[Cisco Unified Customer Voice Portal and Cisco Unified Contact Center Enterprise](#), on page 113

## Installation of Unified ICM/CCE/CCH for Unified CCE

Step-by-step installation instructions for the Unified ICM/CCE/CCH are included in the *Installation Guide for Cisco Unified ICM/Contact Center Enterprise & Hosted*. When you install the Unified ICM/CCE/CCH for use in a Unified CCE system, information in this section can help you to prepare.

When adding the Logger using the Web Setup Tool, if you deploy the Outbound Option, enable Outbound Option as described in [Enable Outbound Option during Unified ICM/CCE/CCH installation](#).

For more information about Outbound Option, see Chapter 7 of this guide and the *Outbound Option Guide for Cisco Unified ICM/Contact Center Enterprise & Hosted*.

### Enable Outbound Option during Unified ICM/CCE/CCH installation

Outbound Option is a Unified ICM/CCE/CCH optional feature that allows agents to make automatic outbound calls to customers. You enable this feature when adding a Logger using the Web Setup Tool.

During the process of adding a Logger, you come to the third Add Logger page, which has three check boxes.

## Procedure

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- Step 1** Select the **Enable Outbound Option** box.
- Step 2** Click **Next** and continue adding the Logger.
- 

For more information, see *Installation Guide for Cisco Unified ICM/Contact Center Enterprise & Hosted*.

# Configuration of Unified ICM/CCE/CCH for Unified CCE

After installation, complete the tasks described in this section to configure the Unified ICM/CCE/CCH for use in a Unified CCE Environment.

## Unified ICM/CCE/CCH configuration tasks

The following table lists the configuration tasks you require for the Unified ICM/CCE/CCH in a Unified CCE deployment. Perform these tasks in the order listed. Instructions are included later in this chapter.

Unified ICM/CCE/CCH Configuration Task	Notes
1. Configure agent desk settings.	
2. Configure a Network VRU.	
3. Configure and install the UCCE System PG (if using Unified IP IVR).	You must configure the PG in Configuration Manager before you set it up using the Peripheral Gateway Setup Tool. Create two PIMs, one for Unified CM and one for Unified IP IVR. <b>Note</b> The system PG is not supported for Precision Routing.
4. Configure and install the VRU PG (if using Unified CVP).	You must configure the PG in Configuration Manager before you set it up using the Peripheral Gateway Setup Tool.
5. Configure and install the Unified CM PG (if using Unified CVP).	You must configure the PG in Configuration Manager before you set it up using the Peripheral Gateway Setup Tool.
6. Install the JTAPI Client on the PG.	
7. Configure and install the MR PG.	You create MR PGs only if you deploy Outbound Option or the Multichannel options.  You must configure the MR PG in Configuration Manager before you set it up using the Peripheral Gateway Setup Tool.

Unified ICM/CCE/CCH Configuration Task	Notes
8. Configure network trunk groups.	
9. Configure trunk groups.	
10. Configure the Network VRU Bank.	For UCCE System PG deployments only.
11. Configure services.	
12. Configure skill groups and Precision Queue.	For Precision Queue configuration, refer to <a href="#">Precision Routing Release 9.0(1)</a> .
13. Configure persons.	
14. Configure agents.	
15. Configure routes.	
16. Configure ECC variables.	For Unified IP IVR or Unified CVP.
17. Configure call types.	
18. Configure dialed numbers.	
19. Configure device targets.	Not required for UCCE System PG deployments.
20. Configure labels.	Not required for UCCE System PG deployments.
21. Configure dialed number plan	
22. Configure translation routes.	Not required for UCCE System PG deployments.
23. Configure VRU scripts.	
24. Configure routing and administrative scripts.	

## Access to Configuration Manager

All the tasks in the section “How to Configure Unified ICM/CCE/CCH for Unified CCE” are performed from the Configuration Manager.

Accessing the Configuration Manager: If you are using an Administration & Data Server system or an Administration Client system, there is a “Unified CCE Tools” icon on the desktop after installation. Double-click the icon, and then select “Administration Tools”.

Click the appropriate icon to access Configuration Manager.

## Routing client

A Unified CCE routing client is anything that can generate a route request to the Unified CCE Central Controller (Central Controller). The Central Controller then executes a routing script and returns a routing label to the routing client. A redundant PIM is viewed as a single logical routing client, and only one side of a PIM is active at any point in time.

The Unified CM PIM (representing the entire Unified CM cluster), Unified IP IVR, and Unified CVP PIM are routing clients. For example, in a Unified CCE deployment with one Unified CM cluster (with any number of nodes) and two Unified IP IVRs, three routing clients are required: the Unified CM PIM and the two Unified IP IVR PIMs.

## Bulk Configuration Tool

You can use the Bulk Configuration Tool to insert and update multiple configuration records in a single transaction.

To access the Bulk Configuration Tool, in the Configuration Manager select **Tools > Bulk Configuration**.

The Bulk Configuration Tool lets you configure the following in bulk:

- Persons
- Agents
- Call types
- Dialed Numbers
- Dialed Number Plans
- Device Targets
- Labels
- Network Trunk Groups
- Network VRU Scripts
- Peripheral Targets
- Regions
- Scheduled Targets
- Services
- Skill Groups
- Trunks
- Trunk Groups
- VRU Port Maps
- Region Prefixes
- Routes

## Agent Desk Settings

Agent Desk Settings associate a set of permissions or characteristics with specific agents. The settings are comparable to Class of Service settings on a PBX or ACD. Desk settings are associated with an agent when you configure the agent. The desk settings are global in scope and you can apply them to any configured agent on any peripheral within a Unified ICM/CCE/CCH configuration.

Agent Desk Settings provide a profile that specifies parameters such as whether auto-answer is enabled, how long to wait before rerouting a call for Ring No Answer, what DN to use in the rerouting, and whether reason codes are needed for logging out and going not-ready. You must associate each agent with an agent desk setting profile in the Unified CCE configuration. A single agent desk setting profile can be shared by many agents. Changes made to an agent's desk setting profile while the agent is logged in are not activated until the agent logs out and logs in again.

If Agent Desk Settings are not associated with an agent, the agent is assigned the peripheral default settings, which depend on the peripheral to which the agent is assigned.

When you configure Agent Desk Settings, you specify the amount of non-active time after which an agent is automatically logged out, whether wrap up is required following incoming and outbound calls, the amount of time allocated for wrap up, and the method used for assist and emergency calls. You also specify settings for the Ring No Answer feature.

### About Ring No Answer

The Ring No Answer feature, configured in Agent Desk Settings, ensures that when an agent does not answer a call, the call is taken away from the agent after a specified number of seconds and re-assigned to another agent or queued.

When a call is routed to an agent but the agent fails to answer the call within a configurable amount of time, the Unified CM PIM for the agent who did not answer changes that agent's state to not ready (so that the agent does not get more calls) and launch a route request to find another agent. Any call data is preserved and popped onto the next agent's desktop. If no agent is available, the call can be sent back to the Unified IP IVR for queuing treatment again. Again, all call data is preserved. The routing script for this RONA treatment should set the call priority to "high" so that the next available agent is selected for this caller. In the agent desk settings, you can set the RONA timer and the DN used to specify a unique call type and routing script for RONA treatment.

This feature behaves and is configured differently depending on whether you deploy the Unified CVP or Unified IP IVR in the Unified CCE System.

**Note**

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The Dialed Number for Ring No Answer is peripheral-specific. Therefore, each Unified CM PG in your deployment must have its own set of Agent Desk Settings configured for it; you cannot use a particular desk setting across peripherals.

---

#### About Ring No Answer with Unified IP IVR

For Unified CCE systems in which you deploy the Unified IP IVR, the Ring No Answer feature ensures that when an agent does not answer a call the following applies:

- The call is taken away from that agent after ringing for a configurable number of seconds and is rerouted to a different agent or placed in queue.

- The state of the agent who did not answer the call is changed to “Not Ready.”

Reroute a call on Ring No Answer works as follows for Unified IP IVR:

- 1 A routing script connects the call to an agent.
- 2 If the agent does not answer the phone within the Ring No Answer time set in Agent Desk Settings, the Unified CM changes the agent's state to “Not Ready” and post routes the call to Unified ICM/CCE/CCH.
- 3 The Unified ICM/CCE/CCH Router runs a routing script using the dialed number specified in the agent desk setting record. The routing script associated with the DN typically looks for another agent and routes the call to that new agent.
- 4 If no agents are available, the call typically is translation routed or queued to the IVR, or sent to some other queue point. Queuing treatment is restarted.




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**Note**

Give the call the highest priority in the queue so that the call is routed to the next available agent.

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- 5 Any call data is preserved to be popped onto the agent screen. In addition, a flag is set in the database so that Unified ICM/CCE/CCH can report on all of the occurrences of Ring No Answer.

### About Ring No Answer with Unified CVP

For Unified CCE systems in which you deploy the Unified CVP, the Unified CM does not control the Unified CVP and cannot send an unanswered call back to the Unified CVP for re-queuing. You configure the Ring No Answer feature to only make the agent “Not Ready” when they do not answer a call, and use the Unified CVP Router Requery feature to re-queue the call.

As of Release 9.0, the Unified CVP deployment no longer requires that you configure the RNA timer on both sides (Unified CVP and Unified CCE); configure Ring No Answer (RNA) timeout only in Unified CVP. This removes the requirement to manually align the relevant Unified CVP and Unified CCE timer configuration. To configure RNA timeout in Unified CVP, see the **Patterns for RNA timeout on outbound SIP calls** section in the Unified CVP OAMP console.

Reroute a call on Ring No Answer works as follows for Unified CVP:

- 1 A routing script connects the call to an agent by sending a connect message to the Unified CVP. The script node should have Enable Target Requery enabled. To enable this, edit the node, select **Change** and check the **Enable Target Requery** check box.
- 2 The agent's phone rings.
- 3 If the phone is not answered (either via the agent desktop or physically going off-hook) within the Ring No Answer time set in Agent Desk Settings, Unified ICM/CCE/CCH makes the agent unavailable, but does not actually change the agent state to Not Ready until the call is redirected.
- 4 When the Unified CVP Ring No Answer timeout expires, the Unified CVP sends an EventReport=No Answer message to the Router instructing it to select another target according to the routing script and send a Connect message to Unified CVP. The target might be another agent or a VRU label to requeue the call.




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**Note**

Give the call the highest priority in the queue so that the call is routed to the next available agent.

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- 5 Any call data is preserved to be popped onto the second agent screen.



**Note** In addition, a flag is set in the database so that Unified ICM/CCE/CCH can report on all of the occurrences of Ring No Answer.

6 When the call is redirected from the original agent, the agent's state changes to "Not Ready."

## About Auto Answer in a multi-line environment

In a multi-line enabled environment, if you have selected Auto Answer on the Attributes tab of the ICM Configuration Manager Agent Desk Settings List tool, and you are on a call on your non-ACD line, the call will *not* auto-answer. However, if you turn on Unified CM Auto Answer, the call *will* answer.

## Configure Agent Desk Settings

### Procedure

- Step 1** From the Configuration Manager, choose **Configure ICM > Enterprise > Agent Desk Settings > Agent Desk Settings List**.  
The Agent Desk Settings List dialog box opens.
- Step 2** Click **Retrieve** and then Click **Add**.
- Step 3** Fill in the Attributes tab information:
- Name.** Enter a name for the agent desk settings that is unique within the enterprise.
- Ring No Answer Time.** Enter the number of seconds (between 1 and 120) that a call may ring at the agent's station. If you are deploying the Unified CVP, make sure this number is less than the number set for the No Answer Timeout for Router Requery that you set in the Unified CVP.
- If you configure this timer, you do not need to configure the Unified CM Call Forward on No Answer for agent extensions in the Unified CM, unless you want them to be used when the agent is not logged in. If you set the Unified CM Call Forward No Answer time, enter a value at least 3 seconds higher than the ICM Ring No Answer Time on each Unified CM node.
- Ring no answer dialed number.** Enter the Unified ICM/CCE/CCH DN associated with the routing script that you want to use to reroute a call that an agent has not answered. If you are deploying the Unified CVP, leave this field blank.
- Logout non-activity Time.** Enter the number of seconds (between 10 and 7200) in which the agent can remain in Not Ready state before Unified ICM/CCE/CCH automatically logs out the agent.
- Work Mode on Incoming.** Select whether wrap-up is required following an incoming call. Select an option from the drop-down list.
- Work Mode on Outgoing.** Select whether wrap-up is required following an outgoing call. Select an option from the drop-down list.
- Wrap Up Time.** Enter the amount of time, in seconds, allocated to an agent to wrap up a call.
- Assist Call Method.** Select whether Unified ICM/CCE/CCH creates a consultative call or a blind conference call for a supervisor assistance request.
- Emergency Alert Method.** Select whether the Unified ICM/CCE/CCH creates a consultative call or a blind conference call for an emergency call request.

Blind conference is not supported if the call may queue on an IVR.

**Description.** Enter additional optional information about the agent desk settings.

**Step 4** Use the following boxes to select or de-select miscellaneous settings:

**Auto-answer.** Indicates whether calls to the agent are automatically answered. The agent is not required to take any action to answer the call. If a second call comes in while a call is in progress, the call is not automatically answered. This is the same behavior as with Unified CM.

**Idle Reason Required.** Indicates whether an agent is required to enter a reason before entering the Idle state.

**Logout Reason Required.** Indicates whether an agent is required to enter a reason before logging out.

**Auto Record on Emergency.** Indicates in a record request is automatically sent when an emergency call request starts.

**Cisco Unified Mobile Agent** (check box). Enables the Unified MA feature so that the agent can log in remotely and take calls from any phone. For more information about the Unified MA, see the *Mobile Agent Guide for Cisco Unified Contact Center Enterprise & Hosted*.

**Step 5** Click **Save** and then click **Close**.

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## Network VRU setup

Configuring a Network VRU is part of setting up queuing in your Unified CCE system. A VRU is a telecommunications computer that responds to caller-entered digits. A Network VRU supports the Unified ICM/CCE/CCH service control interface. A Unified ICM/CCE/CCH routing script can divert a call to a Network IVR (Unified CVP or Unified IP IVR) and instruct the IVR to perform specific processing before Unified ICM/CCE/CCH determines the final destination for the call. Each routing client can have one or more associated VRUs.

Setting up a Network VRU involves the following actions:

- Creating a Network VRU target for each VRU type deployed in your system.
- Inserting IVR nodes in the routing script (if you are using the Unified CVP).
- Configuring a media routing domain

## Create Network VRU target

### Procedure

---

**Step 1** In the Configuration Manager, select **Configure ICM > Targets > Network VRU > Network VRU Explorer**. The Network VRU Explorer dialog box opens.

**Step 2** Click **Retrieve** and then Click **Add Network VRU**.

**Step 3** On the Network VRU tab, add the following values:  
**Name:** Add a suitable name.



**Type:** If you are deploying the UCCE System PG, choose type 9. If you are deploying Unified CVP, choose type 10. If you are creating the VRU target for an MR PG, choose type 2.

**Step 4** Click **Save** and then click **Close**.

---

## Configure Media Routing Domain

You must establish Media Routing Domains (MRDs) for each multi-media class that your Unified CCE System supports. Valid media classes are: multi-session chat, single-session chat, blended collaboration, email, and voice. A MRD for the voice media class is installed by default with your Unified CCE software. You do not need to create a MRD for the Voice media class.

### Procedure

---

**Step 1** Start the Configuration Manager and select **Tools > List Tools > Media Routing Domain List**.

**Step 2** Click **Retrieve** and then click **Add**.

The Attributes tab appears.

**Step 3** On the Attributes tab, provide values for the following fields:

**Name.** Enter the enterprise name of the MRD.

**Media Class.** Use the drop-down list to select the media class for the integrated application.

**Max Time in queue.** The default maximum queue time for calls in queue is one hour. To override this default, modify the value of the Max Time In queue field.

The MR domain ID is automatically generated when you save the MRD.

**Step 4** After completing the required fields, click **Save**.

---

Repeat this procedure to add an MRD for each media class that your system supports.

## Unified CCE Peripheral Gateway

In Unified CCE terms, a *peripheral* is a switch such as an ACD or VRU that receives calls that are routed by the Unified CCE central controller. A *Peripheral Gateway* (PG) is the physical hardware platform and the logical software process that runs on it that communicates with an ACD or VRU. The PG reads status information from the peripheral and communicates it to the Unified CCE central controller. PGs and peripherals communicate with one another via Peripheral Interface Managers (PIMs), the Unified CCE proprietary interface between PGs and peripherals.

To allow direct communication between the Unified ICM/CCE/CCH and the Unified CM and the Unified IP IVR or the Unified CVP, you must configure peripherals and PGs for the Unified CM and the VRUs. You configure peripherals as part of the Peripheral Gateway configuration. Agents are grouped together by peripheral for the purposes of reporting, call handling, and other administrative functions.

Unified CCE 9.0(1) supports three basic types of peripheral gateways:

- The UCCE System PG is the easiest PG type to configure and maintain. It requires only a single PG with one Unified CM PIM and one VRU PIM to communicate with the Unified CM and the Unified IP IVR. The UCCE System PG is not supported with the Unified CVP; you can use it only with the Unified IP IVR.
- Install Unified CM and VRU peripherals on separate physical PGs when you use the Unified CVP. These PGs are individually referred to as the *Unified CM PG (CM PG)* and the *VRU PG*.
- The *Generic PG* is a consolidated PG that requires separate peripherals for both Unified CM and the VRU.

You can set up PG software on the same server as the Unified ICM/CCE/CCH central controller or on a different server. If the PG is in a different domain than the Central Controller, you must set up a trust relationship between the domains.

## UCCE System PG configuration

The *UCCE System PG* is the easiest PG type to configure and maintain. It requires only a single PG with one Unified CM PIM and one VRU PIM to communicate with the Unified CM and Unified IP IVR.

Use the Configuration Manager PG Explorer to configure the UCCE System PG and then run the Peripheral Gateway Setup tool on the PG machine to set up the UCCE System PG.



### Note

The UCCE System PG is not supported with Unified CVP; you can use it only with the Unified IP IVR. If you are using the Unified CVP as your IVR for queuing, you must configure and install both a Unified CM PG for Unified CM and a VRU PG for Unified CVP.

### Related Topics

[VRU PG configuration and setup, on page 74](#)

[Configure Unified CM PG, on page 77](#)

## Configure UCCE System PG

You must configure a PG in Configuration Manager before you can set it up.

### Procedure

- 
- Step 1** In the Configuration Manager, select **Tools > Explorer Tools > PG Explorer**.
- Step 2** Click **Retrieve**; then click **Add PG**.
- Step 3** Complete the Logical Controller section as follows:
- Logical Controller ID:** Unassigned. This value is auto-generated when the record is saved.
  - Physical Controller ID:** Unassigned. This value is auto-generated when the record is saved.
  - Name.** Enter a unique enterprise name for the PG.
  - Client Type:** Select UCCE System.
  - Configuration Parameters:** Leave blank.

**Description:** Enter any other information about the PG. Configuration Manager copies this value to the description fields of the logical interface controller, physical interface controller, peripheral, and (if applicable) the routing client records.

**Physical Controller Description:** Enter a description for the physical controller.

**Primary CTI Address:** If a CTI Server is installed at the PG, enter the address for the CTI server as <IP>:<port> in either dotted numeric or name format. This address is needed if an agent is connected through a CTI server rather than through a peripheral.

**Secondary CTI Address:** If a CTI server is installed at the PG and the system is duplexed, enter the address for the secondary CTI server as <IP>:<port> in either dotted numeric or name format.

**Reporting Interval:** Select the **15 Minute** or **30 Minute** reporting interval option (default is 30 Minute) in this field. Unified CCE software stores historical information in either half-hour or fifteen-minute summaries (but not both), based on the reporting interval value set. The Router sends these records to the Logger, which in turn writes them to the Central Database.

---

At this point, you are now ready to add the peripheral for the UCCE System PG.

## Configure UCCE System PG peripheral

To configure the peripheral for the UCCE System PG, complete the following steps:

### Procedure

**Step 1** With the PG record open in the Configuration Manager PG Explorer, highlight the PG icon in the tree hierarchy in the lower-left corner of the window.

**Step 2** On the Peripheral tab, enter the following:

**Name:** Enter a unique enterprise name for this peripheral.

**Peripheral Name:** Enter the name of the peripheral as it is known at the site. Unlike the Enterprise Name field, the value of this field does not have to be unique. For example, at each site you might label the peripherals Switch1, Switch2, and so forth.

**Client Type:** Select **UCCE System**.

**Location:** Enter the peripheral's location; for example, the name of a city, building, or department.

**Abandoned Call Wait Time:** Enter the minimum time (in seconds) an incoming call must be queued before being considered an abandoned call if the caller hangs up.

**Configuration Parameters:** As desired, enter a string containing any parameters that must be sent to the device to initialize it. In most cases, you leave this field blank.

**Peripheral Service Level Type:** The default type of service level calculation to be performed by the peripheral for it associated services. Select **Calculated by CallCenter**.

**Call Control Variable Map:** As desired, enter a string that describes the mappings of the peripheral's call control variables to Unified ICM/CCE/CCH call control variables.

**Agent Phone Line Control :** Specify one of the following agent phone line control options:

- **Single Line:** Enables single line monitoring and reporting (default).

- **All Lines:** Enables multi-line monitoring and reporting.

**Non ACD Line Impact :** Specify one of the following non ACD line impact options:

- **Available Agent Goes Not Ready:** Agent state is set to NOT READY with a system reason code when agent answers or places a call on a secondary line while in the AVAILABLE or NOT READY state.
- **Available Agent Stays Available:** Agent state is unchanged when agent is on a call on a secondary line.

**Description:** As desired, enter any additional information about the peripheral.

**Default Desk Settings:** Select the default desk settings for agents associated with the peripheral.

**Enable Post Routing:** Check this check box to enable the Unified CM peripheral to send route requests to the Router. When you check this check box, the Routing Client tab is enabled.

**Step 3** On the Advanced tab, enter the following:

**Available Holdoff Delay:** For the Unified CCE, set this field to zero.

**Answered Short Calls Threshold.** Maximum duration, in seconds, for a short call. Any calls with a duration below the threshold are considered short. You can choose to factor out short calls from handle times you calculate. For more information about configuring short calls, see *Reporting Guide for Cisco Unified ICM/Contact Center Enterprise & Hosted*.

**Network VRU.** The type of network VRU. Select the type 9 Network VRU you created earlier.

**Agent Auto-Configuration.** Not an option for Unified CCE. Leave this option disabled.

**Internal IPTA Only.** Be sure you check this check box for the UCCE System PG.

**Agent Targeting Mode:** Determines how the Router builds the labels. Select **Rule Preferred**.

**Note** When checked, agents on the PG can be targeted by that PG only--the Router uses the skill group IPTA configuration to select agents. When unchecked, for calls routed between different PGs, the Router picks the agent (which largely undoes the benefit of the UCCE System PG). Unchecking would also necessitate the creation of additional device targets.

**Step 4** On the Agent Distribution tab, enter the following:

**Enable Agent Reporting.** Check to allow Unified CCE reporting on agents.

**Agent Event Detail.** Enables label text (as opposed to numeric) Not Ready Reason Code reporting.

The **Agent Distribution Entries** section of this tab contains entries for agent Administration & Data Servers available for distributing agent report data for the selected peripheral. Click **New**, then define the values in the Currently Selected site section of this tab as follows:

- **Administration & Data Server site name:** The name of the currently selected site in the agent distribution entries list.
- **Agent real time data:** Check to enable the flow of agent real time data from the peripheral to the Administration & Data Server. Uncheck to disable the flow of agent real time data.
- **Agent historical data:** Check to enable the flow of agent historical data from the peripheral to the Administration & Data Server. Uncheck to disable the flow of agent historical data.

**Step 5** On the Routing Client tab, enter the following:

**Name.** An enterprise name for this routing client. The name must be unique among all routing clients in the enterprise.

**Timeout threshold.** The maximum time, in milliseconds, the routing client can wait for a response to a routing request.

**Late threshold.** The threshold value, in milliseconds, for classifying responses as late. Any response that exceeds this threshold is considered late even if it does not exceed the Timeout Threshold.

**Timeout limit.** The maximum time, in seconds, for which the routing client waits for a response. If the routing client receives no responses from the Unified ICM/CCE/CCH system within this limit, it terminates routing operation.

**Default media routing domain:** Enter Logical ID, Physical ID, and Peripheral ID.

**Default call type.** Use this call type for any route request that does not match a defined call type mapping. The drop-down list contains all configured call types. The Unified ICM/CCE/CCH uses the default call type for any routing request from the routing client that does not otherwise map to a call type. If you do not define a default call type for the routing client, the Unified ICM/CCE/CCH uses a general default call type if you define one through the System Information command.

**Configuration parameters.** Leave blank for Unified CCE.

**Dialed Number/Label map.** Indicates whether only specific labels are valid for each dialed number associated with this routing client (when selected) or whether all labels associated with the routing client are valid for any dialed number (when not selected). Leave unchecked for Unified CCE.

**Client type.** Indicates the type of client. Select **VRU**.

**Description.** Additional information about the routing client.

**Network routing client.** A name used to associate routing clients across instances.

**Network transfer preferred.** If checked, indicates that network transfer is preferred. When the target of a call is reachable by both a label defined for the requesting routing client and by another label defined for the network routing client that pre-routed the call, this option indicates which choice is preferred.

**Step 6** Click Save.

---

After you save the record, you can view the ID of a peripheral from the PG Explorer dialog box. To view a peripheral record, start the PG Explorer from the Configuration Manager. The Logical controller ID is found on the Logical controller tab and the Peripheral ID displays on the Peripheral tab.

## Set up UCCE System PG

After you configure the UCCE System PG set up the PG software using the Peripheral Gateway Setup Tool. Before you set up the System PG, record the Logical controller ID and Peripheral ID for the PG (from the PG Explorer).

### Procedure

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- Step 1** Launch the Peripheral Gateway Setup Tool: From the Desktop, double-click Unified CCE Tools, and select Peripheral Gateway Setup. Or, you can select **Start > All Programs > Cisco Unified CCE Tools > Peripheral Gateway Setup**.

The Cisco Unified ICM/Contact Center Enterprise & Hosted Peripheral Gateway Setup dialog box opens.

- Step 2** In the Instance Components section, select the ICM Instance to which you are adding the PG and click **Add** and choose **Peripheral Gateway** from the ICM Component Selection window.
- Note** If the instance to which you want to add the PG is not defined on this machine, add the instance using the same dialog box before proceeding with the PG set up. For more information about setting up instances, see *Installation Guide for Cisco Unified ICM/Contact Center Enterprise & Hosted*.
- Step 3** Enable the PG on both sides of the Router if you did not do this while adding the Routers:
- Open the Web Setup Tool for each Router machine and select **Routers** in the left pane of the page. The Router List page opens.
  - Check the check box of the Router you want to edit, and click **Edit**.
  - Proceed through the Edit Router pages until you come to the page where you enable the PG. Add the PG number or range and click **Finish**.
- Step 4** Return to the Peripheral Gateway Setup Tool and complete the following steps in the Peripheral Gateway Properties dialog box.
- Step 5** Choose **Production Mode** and **Auto Start at System Startup** unless you are specifically told otherwise by your Support representative. This ensures that the Peripheral Gateway can restart itself automatically if necessary.
- Step 6** In the ID field, select from the drop-down list the PG's device number as enabled in the Router.
- Step 7** In the Client Type sections, add **UCCE System** and **VRU** as the client types. Use the Add and Remove buttons to select or de-select PG types.
- Step 8** If the PG is duplexed, specify whether you are installing Side A or Side B. If the PG is simplexed, select Side A.
- Step 9** Click **Next**. The Peripheral Gateway Component Properties window opens.
- Step 10** In the Peripheral Gateway Configuration section of the window, enter the Logical Controller ID from the Logical\_Interface\_Controller record for the PG. The Logical Controller ID is defined in Configuration Manager when you configure the PG.
- Step 11** Add the peripheral interface managers (PIMs). You must add one (and only one) PIM for the UCCE System client type, and one PIM of client type VRU for each Unified IP IVR in your deployment. To add the VRU PIMs, complete the following steps:
- Click **Add**. Select **UCCE System** from the Client Type list. The UCCE System Configuration dialog box opens.
  - To put the PIM into service, check **Enabled**. This allows the PIM to communicate with the peripheral when the Peripheral Gateway is running.
  - In the Peripheral name field, enter the Peripheral name of the parent server from the Configuration Manager (use the PG Explorer tool to view the Peripheral name).
  - In the Peripheral ID field, from the Peripheral record, enter the Peripheral ID value from the Configuration Manager (use the PG Explorer tool to view the Peripheral ID).
  - In the Agent extension length field, enter the number of digits in the agent extension as defined on the Unified CM Administrator Web page. The default is 7; the maximum is 15.
  - In the Service field, enter the host name or the IP address of the machine that is running the Unified CM software. If using the host name, the name must be in the hosts file.
  - In the User ID field, enter the User ID entered for the PG on the Unified CM Administration Web page when you added the PG as a new user. (This field cannot be blank.)
  - In the User password field, enter the User Password entered for the PG on the Unified CM Administrator Web page. (This field cannot be blank.)
  - In the Mobile Agent Codec drop-down list, select a codec value. The default value is G.711.

- j) Click **OK**.  
To Add the VRU PIMs, complete the following steps:
- k) Click **Add**. Select **VRU** from the Available PIMs list. The VRU Configuration dialog box opens.
- l) To put the PIM into service, check **Enabled**. This allows the PIM to communicate with the peripheral when the Peripheral Gateway is running.
- m) In the Peripheral name field, enter the Peripheral name of the parent server from the Configuration Manager (use the PG Explorer tool to view the Peripheral name).
- n) Peripheral IDs for VRU PIMs are assigned automatically by Setup and are viewable only from the Windows registry. Values range sequentially from 4500-4999.
- o) In the VRU host name field, enter the name by which the VRU is known to the network.
- p) Enter the number of the VRU connection port to which the PG connects.
- q) In the Reconnect interval (sec) field, specify how often, in seconds, the PG tries to re-establish a lost connection to the VRU. The default value is usually appropriate.
- r) In the Heartbeat interval (sec) field, specify how often, in seconds, the PG checks its connection to the VRU. The default value is usually appropriate.
- s) In the DSCP field, use the drop-down list to override the default value and set it to the desired DSCP value.
- t) Click **OK**.

- Step 12** When you are done adding the PIMs, click **Next**.  
The **Device Management Protocol Properties** window appears.
- Step 13** If you prefer that the PG communicate with one side or the other of the Central Controller (for example, if the PG is collocated with one side), indicate the preferred side. Whether you specify a preferred side or not, if the PG cannot communicate with one side, it automatically switches to the other.
- Step 14** The Usable bandwidth (Kbps) fields input the bandwidth (in kilobits per second) available from the PG to the Router, side A and side B.  
Indicate whether the PG is local to or remote from each side of the Central Controller. If the PG is remote from either side, specify the maximum amount of bandwidth (in bits per second) the PG can use for communication with the Router. Use this option to prevent the PG from overloading the wide-area network. Click **Next**.
- Step 15** Indicate how often the PG should send heartbeats to the Central Controller. Specify the number of 100 millisecond intervals between heartbeats. For example, the default value of 4 means a heartbeat is sent every 400 milliseconds. The Router considers the PG to be off-line if it misses five consecutive heartbeats. (By default, this occurs in two seconds.)
- Step 16** Click **Next**. The Peripheral Gateway Network Configuration window displays.  
Enter the TCP/IP addresses or host name of the PG and, if it is duplexed, its pair. If the PG is simplexed, enter localhost for the B side addresses. Also enter the visible network addresses for the Router machines.
- Step 17** To configure the PG Quality of Service (QoS) settings, click **QoS**. The PG Private Link QoS Settings dialog box opens. Add your settings.
- Step 18** Click **Next**. The Check Setup Information window appears.  
Ensure that the settings appear as you intended. If you want to modify any settings before proceeding, use the **Back** button. When the settings are correct, click **Next** to begin Peripheral Gateway Setup configuration.
- Step 19** Click **Finish**.
-

## VRU PG configuration and setup

If you are using the Unified CVP as your IVR for queuing, set up a separate VRU PG for the Unified CVP and another the Unified CM PG for Unified CM.

In general, you can configure 32 peripherals per PG. The actual number of peripherals that can run on one PG depends on loading factors, such as calls per second and the number of agents. For more information about determining the number of peripherals and PGs you require in your system, see *Cisco Unified Contact Center Enterprise 9.0(1) Solution Reference Network Design Guide*.

## Configure VRU PG

You must configure a PG using Configuration Manager before you can set it up using the Peripheral Gateway Setup Tool.

### Procedure

- 
- Step 1** In the Configuration Manager, select **Tools > Explorer Tools > PG Explorer**.
- Step 2** Click **Retrieve**; then click **Add PG**.
- Step 3** Complete the Logical Controller section as follows:
- Logical Controller ID:** Leave blank. This value is auto-generated when the record is saved.
  - Physical Controller ID:** Leave blank. This value is auto-generated when the record is saved.
  - Name.** Enter a unique enterprise name for the PG, such as CVP\_PG.
  - Client Type:** Select **VRU**.
  - Configuration Parameters:** Leave blank.
  - Description:** Enter any other information about the PG. Configuration Manager copies this value to the description fields of the logical interface controller, physical interface controller, peripheral, and (if applicable) the routing client records.
  - Physical Controller Description:** Enter a description for the physical controller.
  - Primary CTI Address:** If a CTI Server is installed at the PG, enter the address for the CTI server as <IP>:<port> in either dotted numeric or name format. This address is needed if an agent is connected through a CTI server rather than through a peripheral.
  - Secondary CTI Address:** If a CTI server is installed at the PG and the system is duplexed, enter the address for the secondary CTI server as <IP>:<port> in either dotted numeric or name format.
  - Reporting Interval:** Select the **15 Minute** or **30 Minute** reporting interval option (default is 30 Minute) in this field. Unified CCE software stores historical information in either half-hour or fifteen-minute summaries (but not both), based on the reporting interval value set. The Router sends these records to the Logger, which in turn writes them to the Central Database.
-



## Set up VRU PG

After you configure the VRU PG, set up the PG software using the Peripheral Gateway Setup Tool. Before you install the VRU PG, record the Logical Controller ID and Peripheral ID for the PG (from the PG Explorer).

### Procedure

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- Step 1** Launch the Peripheral Gateway Setup Tool: From the Desktop, double-click Unified CCE Tools, and select Peripheral Gateway Setup. Or you can select **Start > All Programs > Cisco Unified CCE Tools > Peripheral Gateway Setup**.
- You must install the UCCE System PG with the ICM-CCE-CCH Installer, and set up the PG using the Peripheral Gateway Setup tool.
- The Cisco Unified ICM/Contact Center Enterprise & Hosted Peripheral Gateway Setup dialog box opens.
- Step 2** In the Instance Components section, select the Instance to which you are adding the PG and click **Add** and choose **Peripheral Gateway** from the ICM Component Selection window.
- Note** If the instance to which you want to add the PG is not defined on this machine, use the Peripheral Gateway Setup Tool to add it before proceeding with the PG set up. For more information about adding instances, see *Installation Guide for Cisco Unified ICM/Contact Center Enterprise & Hosted*.
- Step 3** Enable the PG on both sides of the Router if you did not do this while adding the Routers:
- Open the Web Setup Tool for each Router machine and select **Routers** in the left pane of the page. The Router List page opens.
  - Check the check box of the Router you want to edit, and click **Edit**.

c) Proceed through the Edit Router pages until you come to the page where you enable the PG. Add the PG number or range and click **Finish**.

- Step 4** Return to the Peripheral Gateway Setup Tool and complete the following steps in the Peripheral Gateway Properties dialog box.
- Step 5** Choose **Production Mode** and **Auto Start at System Startup** unless you are specifically told otherwise by your Cisco Support representative. This ensures that the Peripheral Gateway can restart itself automatically if necessary.
- Step 6** Specify whether the PG is part of a duplexed pair.
- Step 7** In the ID field, select from the drop-down list the PG's device number as enabled in the Router.
- Step 8** In the Client Type sections, add **VRU** as the client type. Use the Add and Remove buttons to select or de-select PG types.
- Step 9** If the PG is duplexed, specify whether you are installing Side A or Side B. If the PG is simplexed, select Side A.
- Step 10** Click **Next**. The Peripheral Gateway Component Properties window opens.
- Step 11** In the Peripheral Gateway Configuration section of the window, enter the Logical Controller ID from the Logical\_Interface\_Controller record for the PG. The Logical Controller ID is defined in Configuration Manager when you configure the PG.
- Step 12** Click **Add** to add the PIM. You must add a PIM for each peripheral associated with the VRU PG. All associated peripherals must be the VRU type, as specified in the Setup Options dialog box.
- Step 13** Choose the PIM and add from the Available PIMs list. The list contains only PIM numbers that are not already defined for this PG. The Configuration dialog box appears in which you can enter the properties of the Unified CVP VRU peripheral.
- Step 14** To put the PIM into service, check the **Enabled** option. This allows the PIM to communicate with the peripheral when the Peripheral Gateway is running.
- Step 15** When you are done setting options in the Peripheral Gateway Component Properties dialog box, click **Next**. Device Management Protocol Properties dialog box opens.
- Step 16** If you prefer that the PG communicate with one side or the other of the Central Controller (for example, if the PG is collocated with one side), indicate the preferred side. Whether you specify a preferred side or not, if the PG cannot communicate with one side, it automatically switches to the other.
- Step 17** The Usable bandwidth (Kbps) fields input the bandwidth (in kilobits per second) available from the PG to the Router, side A and side B.  
Indicate whether the PG is local to or remote from each side of the Central Controller. If the PG is remote from either side, specify the maximum amount of bandwidth (in bits per second) the PG can use for communication with the Router. Use this option to prevent the PG from overloading the wide-area network. Click **Next**.
- Step 18** Indicate how often the PG should send heartbeats to the Central Controller. Specify the number of 100 millisecond intervals between heartbeats. For example, the default value of 4 means a heartbeat is sent every 400 milliseconds. The Router considers the PG to be off-line if it misses five consecutive heartbeats. (By default, this occurs in two seconds.)
- Step 19** Click **Next**. The Peripheral Gateway Network Configuration window appears.  
Enter the TCP/IP addresses or host name of the PG and, if it is duplexed, its pair. If the PG is simplexed, enter localhost for the B side addresses. Also enter the visible network addresses for the Router machines.
- Step 20** To configure the PG Quality of Service (QoS) settings, click **QoS**. The PG Private Link QoS Settings dialog box opens. Add your settings.
- Step 21** Click **Next**. The Check Setup Information window appears.

Ensure that the settings appear as you intended. If you want to modify any settings before proceeding, use the **Back** button. When the settings are correct, click **Next** to begin Peripheral Gateway Setup configuration.

**Step 22** Click **Finish**.

---

## Configure Unified CM PG

When you configure a new PG, you must add at least one peripheral to it or you cannot save the configuration.

### Before You Begin

Install the Unified CM PG with the ICM-CCE-CCH Installer.

### Procedure

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**Step 1** In the Configuration Manager, select **Tools > Explorer Tools > PG Explorer**.

**Step 2** Click **Retrieve**, then click **Add PG**.

**Step 3** Complete the Logical Controller section as follows:

- a) **Logical Controller ID**—Leave blank. This value is auto-generated when the record is saved.
  - b) **Physical Controller ID**—Leave blank. This value is auto-generated when the record is saved.
  - c) **Name**. Enter a unique enterprise name for the PG, such as CM\_PG.
  - d) **Client Type**—Select **CallManager/SoftACD** from the drop-down list.
  - e) **Configuration Parameters**—Leave blank.
  - f) **Description**—Enter any other information about the PG. Configuration Manager copies this value to the description fields of the logical interface controller, physical interface controller, peripheral, and (if applicable) the routing client records.
  - g) **Physical Controller Description**—Enter a description for the physical controller.
  - h) **Primary CTI Address**—If a CTI Server is installed at the PG, enter the address for the CTI server as <IP>:<port> in either dotted numeric or name format. This address is needed if an agent is connected through a CTI server rather than through a peripheral.
  - i) **Secondary CTI Address**—If a CTI server is installed at the PG and the system is duplexed, enter the address for the secondary CTI server as <IP>:<port> in either dotted numeric or name format.
  - j) **Reporting Interval**—Select the **15 Minute** or **30 Minute** reporting interval option (default is 30 Minute) in this field. Unified CCE software stores historical information in either half-hour or fifteen-minute summaries (but not both), based on the reporting interval value set. The Router sends these records to the Logger, which in turn writes them to the Central Database.
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### What to Do Next

Use the Peripheral Gateway Setup Tool to set up the Unified CM PG.

## Set up Unified CM PG

After you configure the Unified CM PG, you set up the PG software using the Peripheral Gateway Setup Tool. Before setting up the VRU PG, record the Logical Controller ID and Peripheral ID for the PG (from the PG Explorer).

### Procedure

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- Step 1** Launch the Peripheral Gateway Setup Tool: From the Desktop, double-click Unified CCE Tools, and select **Peripheral Gateway Setup**. Or you can select **Start > Programs > Cisco Unified CCE Tools > Peripheral Gateway Setup**.  
The Cisco Unified ICM/Contact Center Enterprise & Hosted Peripheral Gateway Setup dialog box opens.
- Step 2** In the Instance Components section, select the instance to which you are adding the PG and click **Add** and choose **Peripheral Gateway** from the ICM Component Selection window.
- Note** If the instance to which you want to add the PG is not defined on this machine, use the same dialog box to add it before proceeding with the PG set up. For more information about adding instances, see the *Installation Guide for Cisco Unified ICM/Contact Center Enterprise & Hosted*.
- Step 3** Enable the PG on both sides of the Router if you did not do this while adding the Routers.
- Open the Web Setup Tool for each Router machine and select **Routers** in the left pane of the page. The Router List page opens.
  - Check the check box of the Router you want to edit, and click **Edit**.

- c) Proceed through the Edit Router pages until you come to the page where you enable the PG. Add the PG number or range and click **Finish**.
- Step 4** Return to the Peripheral Gateway Setup Tool and complete the following steps in the Peripheral Gateway Properties dialog box.
- Step 5** Choose **Production Mode** and **Auto Start at System Startup** unless you are specifically told otherwise by your Cisco Support representative. This ensures that the Peripheral Gateway can restart itself automatically if necessary.
- Step 6** Specify whether the PG is part of a duplexed pair.
- Step 7** In the ID field, select from the drop-down list the PG's device number as enabled in the Router.
- Step 8** In the Client Type sections, add **CallManager** as the client type. Use the Add and Remove buttons to select or de-select PG types.
- Step 9** If the PG is duplexed, specify whether you are installing Side A or Side B. If the PG is simplexed, select Side A.
- Step 10** Click **Next**. The Peripheral Gateway Component Properties window opens.
- Step 11** In the Peripheral Gateway Configuration section of the window, enter the Logical Controller ID from the Logical\_Interface\_Controller record for the PG. The Logical Controller ID is defined in Configuration Manager when you configure the PG.
- Step 12** Click **Add** to add the PIM. You must add a PIM for each peripheral associated with the VRU PG. All associated peripherals must be the VRU type, as specified in the Setup Options dialog box.
- Step 13** Choose the PIM and add from the Available PIMs list. The list contains only PIM numbers that are not already defined for this PG. The Configuration dialog box appears in which you can enter the properties of the Unified CVP VRU peripheral.
- Step 14** To put the PIM into service, check the **Enabled** option. This allows the PIM to communicate with the peripheral when the Peripheral Gateway is running.
- Step 15** When you are done setting options in the Peripheral Gateway Component Properties dialog box, click **Next**. Device Management Protocol Properties dialog box opens.
- Step 16** If you prefer that the PG communicate with one side or the other of the Central Controller (for example, if the PG is collocated with one side), indicate the preferred side. Whether you specify a preferred side or not, if the PG cannot communicate with one side, it automatically switches to the other.
- Step 17** The Usable bandwidth (Kbps) fields input the bandwidth (in kilobits per second) available from the PG to the Router, side A and side B.  
Indicate whether the PG is local to or remote from each side of the Central Controller. If the PG is remote from either side, specify the maximum amount of bandwidth (in bits per second) the PG can use for communication with the Router. Use this option to prevent the PG from overloading the wide-area network. Click **Next**.
- Step 18** Indicate how often the PG should send heartbeats to the Central Controller. Specify the number of 100 millisecond intervals between heartbeats. For example, the default value of 4 means a heartbeat is sent every 400 milliseconds. The Router considers the PG to be off-line if it misses five consecutive heartbeats. (By default, this occurs in two seconds.)
- Step 19** Click **Next**. The Peripheral Gateway Network Configuration window appears.  
Enter the TCP/IP addresses or host name of the PG and, if it is duplexed, its pair. If the PG is simplexed, enter localhost for the B side addresses. Also enter the visible network addresses for the Router machines.
- Step 20** To configure the PG Quality of Service (QoS) settings, click **QoS**. The PG Private Link QoS Settings dialog box opens. Add your settings.
- Step 21** Click **Next**. The **Check Setup Information** window appears.

Ensure that the settings are as you intended. If you want to modify any settings before proceeding, use the **Back** button. When the settings are correct, click **Next** to begin Peripheral Gateway Setup/configuration.

**Step 22** Click **Finish**.

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## JTAPI Client installation on PGs

The Cisco JTAPI Client is a Java Telephony Application Programming Interface implementation that communicates with the Unified CM.

After setting up the UCCE System PG and the Unified CM PG, you must install the Cisco JTAPI Client so that the PG can communicate via JTAPI with the Unified CM. You install the Cisco JTAPI Client from Unified CM Administration.

## Install JTAPI Client on PGs

### Procedure

---

- Step 1** Open a browser window on the PG machine.
  - Step 2** Enter the URL for the Unified CM Administration utility: `http://<Unified CM machine name>/ccmadmin`.
  - Step 3** Enter the user name and password that you created when installing and configuring the Unified CM.
  - Step 4** Choose **ApplicationPlugins**. Click **Find**.
  - Step 5** Click the link next to **Download Cisco JTAPI for Windows**. If there is an option between a 32-bit and a 64-bit version, select the 32-bit version. A File Download box opens.
  - Step 6** Choose **Save** and save the file to a location of your choice.
  - Step 7** On the Security Warning box, click **Yes** to install.
  - Step 8** Choose **Next** or **Continue** through the remaining Setup screens. Accept the default installation path.
  - Step 9** Click **Finish**.
  - Step 10** Reboot the machine to ensure proper operation of JTAPI.
- 

## Media routing PG setup

If you are deploying Outbound Option or multichannel applications, you must create Media Routing Peripheral Gateways (MR PGs) in your Unified CCE system.

To create a Media Routing Peripheral Gateway, use the Configuration Manager Network VRU Explorer and the PG Explorer. You first configure the PG in the Configuration Manager and then set up the PG using the Peripheral Gateway Setup Tool.

## Configure MR PG

You must configure a PG before you can set it up. At the time you configure a new PG, you must add at least one peripheral to it or you cannot save the configuration.

You must install the MR PG with the ICM-CCE-CCHInstaller, and set up the PG using the Peripheral Gateway Setup tool.

### Procedure

- 
- Step 1** In the Unified ICME Configuration Manager, select **Tools > Explorer Tools > PG Explorer**.
- Step 2** Click **Retrieve**; then click **Add PG**.
- Step 3** Complete the Logical Controller section as follows:
- Logical Controller ID:** Leave blank. This value is auto-generated when the record is saved.
- Physical Controller ID:** Leave blank. This value is auto-generated when the record is saved.
- Name.** Enter a unique enterprise name for the PG.
- Client Type:** Select **MR PG** from the drop-down list.
- Configuration Parameters:** Leave blank.
- Description:** Enter any other information about the PG. The Unified ICME Configuration Manager copies this value to the description fields of the logical interface controller, physical interface controller, peripheral, and (if applicable) the routing client records.
- Physical Controller Description:** Enter a description for the physical controller.
- Primary CTI Address:** Enter the address for the primary CTI server. Make this entry in the form of *<an IP address or server name where the CTI server is installed>*: *<Client Connection Port Number>*.
- Secondary CTI Address:** Enter an address for a secondary CTI server (for duplexed systems).
- 

At this point, you are now ready to add the Outbound Option and/or multichannel peripherals. Note that you cannot save the PG configuration you entered thus far until you add at least one peripheral.

## Configure MR PG peripherals

To add peripherals to your MR PG, follow the same steps described for configuring an UCCE System PG peripheral. When completing the tab fields, use the same values you used before, except for the following:

For more information, see *Configuration Guide for Cisco Unified ICM/Contact Center Enterprise & Hosted*.

### Procedure

- 
- Step 1** On the Peripheral tab, use these values in place of those specified for the UCCE System PG peripheral:
- Client type.** MR PG.
- Default desk setting.** None.

**Enable post routing.** Checked.

**Step 2** On the Advanced tab, use these values in place of those specified for the UCCE System PG peripheral:  
**Network VRU.** Select the Type 2 Network VRU you created earlier.

**Agent auto configuration.** Unchecked.

**Step 3** On the Agent Distribution tab, do not specify a distributor site name.

**Step 4** On the Routing Client tab, use these values in place of those specified for the UCCE System PG peripheral:  
**Client type.** MR PG.

**Network transfer preferred.** Checked

**Step 5** Click **Save**.

**Step 6** On the Default Route tab, **Cisco Voice** displays as the default.

## Set up MR PG

When choosing where to set up the MR PG, be aware you can only set up two PGs per server. You must also consider the impact to overall performance. If you are setting up the MR PG in a laboratory environment, you can set up the PG on the Unified ICM/CCE/CCH sprawler (all-in-one) machine.

For Outbound Option, you must configure one peripheral per Dialer on the MR PG.

For more information, see *Configuration Guide for Cisco Unified ICM/Contact Center Enterprise & Hosted*.

### Procedure

**Step 1** Launch the Peripheral Gateway Setup Tool: From the Desktop, double-click Unified CCE Tools, and select **Peripheral Gateway Setup**. Or you can select **Start > Programs > Cisco Unified CCE Tools > Peripheral Gateway Setup**.

The Cisco Unified ICM/Contact Center Enterprise & Hosted Peripheral Gateway Setup dialog box opens.

**Step 2** Select the IPCC instance.

**Step 3** Click **Add** in the Instance Components section.

**Step 4** Enable the PG on both sides of the Router if you did not do this while adding the Routers:

- a) Open the Web Setup Tool for each Router machine and select **Routers** in the left pane of the page. The Router List page opens.
- b) Check the check box of the Router you want to edit, and click **Edit**.
- c) Proceed through the Edit Router pages until you come to the page where you enable the PG. Add the PG number or range and click **Finish**.

**Step 5** Return to the Peripheral Gateway Setup Tool and complete the following steps in the Peripheral Gateway Properties dialog box.

- a) Choose **Production Mode**. Do not set the Auto Start feature until after the installation is complete.
- b) Specify whether the PG is part of a duplexed pair.
- c) In the ID field, select from the drop-down list the PG's device number as enabled in the Router.



- d) If the PG is duplexed, specify whether you are installing Side A or Side B. If the PG is simplexed, select Side A.
- e) Use the Client Type Selection section of the window to select **MediaRouting** and click **Add**.

**Step 6** Enter the Logical Controller ID generated when you configured the PG. Click **Add** and select **PIM 1** from the list. The MediaRouting Configuration box appears.

**Step 7** Complete the following steps:

- a) To put the PIM into service, check the **Enabled** option. This allows the PIM to communicate with the peripheral when the Peripheral Gateway is running.
- b) Enter the peripheral name in the Peripheral name field. In most cases, the enterprise name from the associated Peripheral record is the most appropriate name to use. When creating peripheral names, use short descriptive names and keep the length to a minimum. Enter the Peripheral ID created when you configured the MR PG.
- c) In Application Hostname (1), enter the host name or the IP address of the multichannel application server machine. If you are configuring the Outbound Option PIM, enter the IP address or hostname of the BA\_IP Dialer.
- d) In Application Connection Port (1): for Outbound Option, enter the connection port to be used by the BA\_IP Dialer. Otherwise, accept the default port number (38001) on the application server machine that the PIM will use to communicate with the application.

If two applications will interface with the Unified ICM, in Application Hostname (2), enter the host name or the IP address of the second application server machine. If using the host name, the name must be in the hosts file.

If two applications will interface with the Unified ICM, in Application Connection Port (2), enter the port number on the second application server machine that the PIM will use to communicate with the application.

For Heartbeat Interval (seconds), specify how often the PG should check its connection to the call server. Use the default value.

For Reconnect Interval (seconds), specify how often the PG should try to re-establish a lost connection to the call server. Use the default value.

Click **OK**.

**Step 8** From the Peripheral Gateway Component Properties window, click **Next**. The Device Management Protocol Properties window appears.

- a) Enter the appropriate settings and click **Next**. The Peripheral Gateway Network Interfaces window appears.
- b) Enter the appropriate settings and click **Next**. The **Check Setup Information** window appears.

**Step 9** Verify the setup information and click **Next**.

**Step 10** When the Setup Complete window appears, click **Finish**.

## Trunk groups

For the Unified CCE, the *Network Trunk Group* is the placeholder in the Unified ICM/CCE/CCH database for the trunk group; it performs no other function.

For deployments that:

- Use the UCCE System PG, you must create one Network Trunk Group for each UCCE System PG peripheral.

- Do not use the UCCE System PG, you must create two Network Trunk Groups: one for the Unified CM and one for the Unified IP IVR or Unified CVP. If you are deploying the Unified CVP, create one Network Trunk Group per Call Server.

A *trunk* is a telephone line connected to a call center and used for incoming or outgoing calls. A Unified ICME *Trunk Group* is a collection of trunks associated with a single peripheral and usually used for a common purpose. For the Unified CCE, the trunk groups for VRU peripherals are used primarily as a place holder in the Unified ICM/CCE/CCH database.

Create a trunk group for each Unified CM peripheral and a trunk group for each Unified IP IVR application. For Unified IP IVR, the trunk group peripheral number in the Unified ICM/CCE/CCH must match the CTI Port Group ID on Unified IP IVR. If you are deploying Unified CVP, you must create two trunk groups for each Unified CVP Call Server that match the Group Numbers configured in Unified CVP Application Administration.

This section describes how to configure individual Network Trunk Groups and trunk groups. You can also configure them in bulk.

## Configure trunk group

To configure a Network Trunk Group (and the trunk group under it) in the Unified ICM/CCE/CCH:

### Procedure

**Step 1** From the Configuration Manager, choose **Configure ICM > Peripherals > Trunk Group > Network Trunk Group Explorer**. The ICM Network Trunk Group Explorer dialog box opens.

**Step 2** Click **Retrieve**.

**Step 3** Click **Add Network Trunk Group**. The Network Trunk Group tab opens.

**Step 4** Add a unique name for the Network Trunk Group and an appropriate description.

**Step 5** Click **Add Trunk Group** to add a trunk group.

**Step 6** Complete these fields:

**Peripheral.** Select the peripheral to which the trunk group is associated.

**Peripheral Number.** Enter the number of the trunk group as understood by the peripheral. This number must be unique among all trunk groups associated with the peripheral. For Unified IP IVR, this number must:

- 1 Match a CTI Port Group ID configured on the Unified IP IVR
- 2 Be an odd number
- 3 Be unique for all Unified IP IVRs handled by an UCCE System PG

For example, if an UCCE System PG handles four Unified IP IVRs and each Unified IP IVR peripheral has one CTI Port Group, then the CTI Port Group ID for the first Unified IP IVR should be 1, the port group ID for the second Unified IP IVR should be 3, and so on. For the Unified CVP, this number must match a Call Server Group Number configured on the Call Server.

**Peripheral Name.** Enter the name of the trunk group as understood by the peripheral. This name must be unique among all trunk groups associated with the peripheral.

**Name.** Enter the enterprise name of the trunk group. The Unified ICM/CCE/CCH forms a default for this name using the entries from the Peripheral and Peripheral Name fields.

**Extension.** Leave this field blank.

**Trunk Count.** Select **Use Trunk Data**. When you specify **Use Trunk Data**, the system software determines the trunk count dynamically by counting the associated records in the Trunk table.

**Configuration Parameters.** Leave this field blank.

**Description.** Enter an optional description.

- Step 7** To add trunks to the trunk group, click **Add Trunk**.
  - Step 8** Add trunks as desired.
  - Step 9** Click **Save** and then click **Close**.
  - Step 10** Repeat these steps to create all necessary trunk groups.
- 

## Network VRU Bank

The *Network VRU Bank* allows load balancing across multiple VRUs to occur and eliminates the need for complex translation-route configuration.

Configure a Network VRU Bank, only if your deployment uses the UCCE System PG.

Do this after having configured the following:

- Network VRU
- Network Trunk Group
- All other trunk groups

### Configure Network VRU Bank

#### Procedure

---

- Step 1** From the Configuration Manager, choose **Explorer Tools > Network VRU Explorer**. The Network VRU Explorer dialog box opens.
- Step 2** Click **Retrieve** and select your Network VRU.
- Step 3** Select the Network VRU Bank tab and click **Add**.  
The Select Trunk Group dialog box opens, displaying the all trunk groups configured on all UCCE System PG peripherals.
- Step 4** Select the trunk group associated with the translation routing group on your Unified IP IVR. Make the appropriate trunk group selection for each Unified IP IVR in your deployment.
- Step 5** Click **OK**.
- Step 6** Click **Add Label** to add a label for the Network VRU Bank. The label must be the CTI Route Point trigger for the Translation-Routing application on the Unified IP IVR. By default, in the Label tab, the first field shows the selected Network VRU, *not* the Network VRU Bank:
  - a) Click the drop-down list box to show the available Network VRU banks.
  - b) Select a Network VRU bank in the drop-down list.

- c) Then configure the label for the Network VRU bank.
- d) Repeat the steps to configure labels for all of the Network VRU Banks.

---

If Network VRU Bank labels are available, the Router uses them when it balances the load between the Unified IP IVRs. If the Router cannot find an eligible Network VRU Bank labels, it uses the Network VRU label.

## Services

A *service* refers to a type of processing that a caller requires. For example, separate services might be defined for Sales, Support, or Accounts Payable. Services are often associated with a peripheral, and are sometimes referred to as peripheral services. An agent is assigned one or more skills that in turn is associated with services. Routing to a Unified ICM/CCE/CCH service effectively targets an agent assigned to a Unified ICM/CCE/CCH skill group associated with the Unified ICM/CCE/CCH service.

Services on the Unified ICM/CCE/CCH correspond to CTI Route Points on Unified CM.




---

**Note** On Unified CCE systems that interface with Unified CVP systems, you *must* configure two services with Peripheral Numbers of 1 and 2. However, outside of these services the preferred method of defining Unified CCE routable tasks is by defining call types.

---




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**Note** For the two Unified CVP services, you do not need to configure Service Members, Routes, Peripheral Targets, or Labels.

---

## Configure a service

### Procedure

---

- Step 1** From the Configuration Manager menu, choose **Tools > Explorer Tools > Service Explorer**. The Service Explorer dialog box opens.
- Step 2** Select the peripheral for which you want to create a service and click **Retrieve**.
- Step 3** Click **Add Service**.  
The Service Configuration window opens.
- Step 4** On the Service tab, enter the following:  
**Media Routing Domain**.

**Peripheral Number.** Enter the number for the service on the peripheral. This field must be unique for all services for the peripheral, but not necessarily across all peripherals. If you are deploying the Unified CVP, enter 1 for the first service and 2 for the second service.

**Peripheral Name.** Enter a name that describes the service.

**Enterprise Name.** Enter an enterprise name for the service. This name must be unique among all the services in the enterprise. If you do not enter a value, this name is autogenerated.

**Config Param.** Not used for the Unified CCE.

**Description.** Enter any additional information about the service.

**Service Level Type.** Indicates how the Unified ICM/CCE/CCH calculates the service level for the service. You can choose to omit abandoned calls from the calculation, treat them as having exceeded the threshold (negative impact on service level), or treat them as answered calls (positive impact on service level). You can also choose to use the default specified for the peripheral.

**Service Level Threshold.** Enter the time in seconds, for the service level. The Unified ICM/CCE/CCH tracks the percentage of calls answered within this threshold. If this field is negative, the value of the default for the peripheral is used.

**Step 5** On the Advanced tab, enter the following:

**Peripheral Service Level.** Indicates the type of service level calculation that the peripheral performs for this service. This setting has no effect because the PG does not report a peripheral service level.

**Schedule name.** Identifies an imported schedule associated with the service.

**Extension.** If you are deploying Outbound Option, enter the extension to associate with this service. This corresponds to a CTI Route Point defined in Unified CM and is associated with the PG User.

**Step 6** On the Service Members tab, select skill groups to associate with this service.

**Step 7** Click **Apply**.

**Step 8** Repeat this procedure to add any other services.

## Skill groups

A *skill group* is a collection of agents that share a common set of skills. Skill groups are associated with a peripheral and are referred to as Peripheral Skill Groups. Skill groups are generally members of Services.

You configure skill groups within the Unified CCE so that you can group together agents with similar skills. You can associate agents with one or more skill groups. Skill groups are associated with a specific Unified CM PIM. You can group skill groups from multiple PIMs into Enterprise Skill Groups. Calls may be directed to (routed to) Enterprise Skill Groups to share the load across multiple call centers and/or Unified CM installations. Similarly, reporting may be done on Enterprise Skill Groups.

Unified CCE agents are assigned one or more skills by associating the agent with the desired skill.

After you create services and skill groups, you associate one or more skill groups with a service by making them members of that service.

This section describes how to configure individual skill groups. You can also create these records in bulk using the Bulk Configuration Tool.



### Note

A Unified CCE agent must be assigned to at least one skill group in order to log in.

## About default skill groups

The default skill group acts as a bucket to capture information about calls not routed by Unified ICM/CCE/CCH routing scripts.

A default skill group captures call statistics for calls that are not routed by a routing script. A call placed directly to an agent's extension is an example of such a scenario.

Using a default skill group helps to do the following:

- Ensure the agent and skill group reports balance with the service and call type reports, because service and call type reports include only Unified ICM/CCE/CCH-routed calls.
- Isolate and identify non-Unified ICME-routed calls within the agent and skill group report.

You do not have to create a default skill group—it is automatically created when you establish Peripheral Gateways for your system. When an agent logs in, the agent is assigned the default skills.

If you deploy multichannel applications in your Unified CCE system, default skill groups are created for each Media Routing Domain that you configure.

## ICM picks the agent skill group attribute

“ICM picks the agent” (IPTA) means that the central controller is responsible for selecting the actual agent who handles a request, not just the service or skill group. For each skill group that you configure using the Configuration Manager, you select whether the Unified ICM/CCE/CCH picks the agent when routing calls to that skill group.

In legacy ICM Enterprise deployments, the ICM central controller determines which Automated Call Distributor (ACD) has the appropriate service or skill group to handle a request and the ACD selects the actual agent to handle the call. The ICM central controller pre-routes calls by targeting an ACD and the ACD post-routes calls by selecting the agent.

In a Unified CCE environment, the Central Controller handles the post routing of requests to agents. Choose the “ICM picks the agent” option for all skill groups that you configure for the Unified CCE.

The IPCC Enterprise Gateway feature introduces a layer of complexity to IPTA. In IPCC Enterprise Gateway configurations, the Unified ICM/CCE/CCH Central Controller pre-routes voice calls to a Unified CCE system, and the Unified CCE central controller selects the agent to handle the calls.



### Note

In a IPCC Enterprise Gateway configuration, the Central Controller can route only voice calls to the Unified CCE system; it cannot route non-voice requests, such as text chat and email, or Outbound Option requests. Non-voice requests and Outbound Option requests are routed internally by the Unified CCE system.

## Configure skill group

You configure skill groups in the Unified ICME using the Configuration Manager Skill Group Explorer tool. In addition to configuring skill groups, you can also use this tool to configure routes, peripheral targets (DAIS), and labels.

Configure only base skill groups for Unified CCE. Sub-skill groups, while supported, are supported.

## Procedure

---

- Step 1** From the Configuration Manager, select **Configure ICM > Peripherals > Skill Group > Skill Group Explorer**.  
The Skill Group Explorer dialog box opens.
- Step 2** In the Select filter data section, select the peripheral from the drop-down list:
- Step 3** Click **Retrieve** and then click **Add Skill group** to add a new skill group for the selected peripheral.
- Step 4** Click the **Skill Group** tab and enter values for the following:  
**Media Routing Domain.** Use `Cisco_Voice` for Unified ICM/CCE/CCH agents that do not use other media. For more information, see the *Cisco Unified Web & E-Mail Interaction Manager System Administration Guide*.  
**Peripheral Number.** Enter the skill group number as known by the peripheral. This value must be unique among all skill groups for the peripheral, but does not need to be unique across peripherals.  
**Peripheral Name.** Enter the local name for the skill group. This value must be unique among all skill groups for the peripheral, but does not need to be unique across peripherals.  
**Name.** The Configuration Manager generates the value for this field. This is a unique name for the skill group made up of a default value from the peripheral's enterprise name and the skill group's peripheral name.  
**Available Holdoff Delay.** For the Unified CCE peripheral type, set this field to 0.  
**Priority.** This is a read-only field and defaults to 0.  
**Extension.** Leave blank for the Unified CCE peripheral type.  
**ICM picks the agent.** Check this check box.
- Step 5** Click **Save** and then click **Close**.
- Step 6** Repeat this procedure to add any additional skill groups.
- 

## Configure service members

To make a skill group a member of a service, you establish mappings of skill groups to services. Each skill group can be mapped to zero, one, or more services. Each service can have zero, one, or more skill group members. By mapping skill groups to services, you create an organizational structure that allows you the maximum flexibility in routing calls to the correct agents.

To associate a skill group with a service, complete the following steps:

### Procedure

---

- Step 1** From the Configuration Manager, choose **Configure ICM > Peripherals > Service > Service Explorer**.

The Service Explorer dialog box opens.

- Step 2** Click **Retrieve**.
  - Step 3** Click the service that directs the skill group and then click the **Service Members** tab.
  - Step 4** On the Service Members tab, click **Add** to associate a skill group with the service.
  - Step 5** Click **OK**.
  - Step 6** Click **Save** and then click **Close**.
  - Step 7** Repeat this procedure for each skill group you want to associate with a service.
- 

## Person records

All Unified CCE agents must have a *Person* record. When you create an Agent record, you can associate the record with an existing Person record. If you do not associate the Agent record with an existing Person record, a new Person record is automatically created when you create the agent.

This section describes how to configure individual Person records. You can also create these records in bulk using the Bulk Configuration Tool.

### Related Topics

[Configure agent, on page 91](#)

## Configure a Person record

To configure a Person record before configuring an agent, complete the following steps:

### Procedure

---

- Step 1** From the Configuration Manager, choose **Peripherals > Person > Person List**. The Person List dialog box opens.
  - Step 2** Click **Retrieve** and then click **Add**.
  - Step 3** in the Attributes tab, enter information in the following fields:
    - First Name.** Enter the person's first name.
    - Last Name.** Enter the person's last name.
    - Login Name.** Enter the person's login name.
    - Password.** Enter a password for the person.
    - Enable Logins.** Check this check box.
  - Step 4** Click **Save** and then click **Close**.
  - Step 5** Repeat this procedure to add additional Person records.
-



## Agents

The *agent* is the person who responds to requests from the customer. Agents can work on tasks involving several media types, such as email, chat, and voice. You must associate agents with a peripheral and be a member of one or more skill groups. You can also group agents into agent teams.

To create an Agent record, you must associate a person with the agent. For an existing Agent record, you can select a different person (from the current one selected) to be associated with that Agent record. If you select a person for a temporary agent, you make that agent permanent. You cannot demote an agent to be a temporary one. You configure agents using the Agent Explorer.

A Unified ICM/CCE/CCH agent's personal information is stored in the database's Person table.

This section describes how to configure individual agents. You can also create these records in bulk using the Bulk Configuration Tool.

**Authentication:** Agents are configured within the Unified CCE and are associated with one specific Unified CM PIM (that is, one Unified CM cluster). Within the Unified CCE configuration, you also configure the password for the agent to use at login. These passwords are local only to the Unified CCE application and do not interact with the Active Directory or any other encryption or authentication system.

## Configure agent

### Procedure

- 
- Step 1** Select **Tools > Explorer Tools > Agent Explorer**.  
The Agent Explorer dialog box displays.
- Step 2** Select the peripheral you want associated with the agent from the drop-down list and click **Retrieve**.
- Step 3** Click **Add Agent** to display the Agent configuration tab.
- Step 4** In the Agent tab, enter information in the following fields:
- Last Name.** Enter the agent's last name.
  - First Name.** Enter the agent's first name.
  - Login Name.** Enter the name the agent uses to login. This name must be unique in the enterprise.
  - Password.** Enter the agent's password. This password is validated during the agent login process.
  - Login Enabled.** Check this check box if you want to enable the agent to login.
  - Select Person.** Click this button to select a person to associate with the agent record. You can select a person for a new agent, an existing agent, or a temporary agent.
  - Enterprise Name.** Enter an enterprise name for the agent that is unique within the enterprise. The default is a combination of the peripheral name with the agent's first and last name.
  - Peripheral Name.** Enter a name for the agent as known to the peripheral.
  - Peripheral Number.** Enter the agent's login ID. This number identifies the agent to the peripheral. This number needs to be unique among all agents for the peripheral, but does not need to be unique across all peripherals. Agent IDs can be up to nine digits long. The first digit in the ID must be 1 through 9. It cannot

be 0. Also, this number cannot be the same as the extensions on the Unified CM cluster for this agent. Finally, the ID can not exceed the extension length specified in the Unified CM Peripheral Gateway Setup

- Step 5** Click the Advanced tab and enter information in the following fields:
- Desk Setting.** Use the drop-down list to select the desktop settings to be associated with the agent. If you do not make a selection, the Unified ICM/CCE/CCH applies the default desk settings defined for the peripheral.
- ConfigParam.** Use this field to enter any specific configuration parameters that may be required. Make entries in this field only if instructed to do so by your Cisco support representative.
- Description.** Enter any other information you want about the agent.
- Agent State Trace.** Select to enable the agent's state trace control. When enabled, the Unified ICM/CCE/CCH records every state transition made by the agent.
- Step 6** Click **Save**.
- Step 7** Repeat this procedure to configure additional agents.
- 

## Configure agent supervisor

When you create an agent, you can assign that agent to be an agent supervisor.

### Procedure

---

- Step 1** On the open Agent Explorer for the agent that you want to make a supervisor, click the Supervisor tab.
- Step 2** On the Supervisor tab, enter information in the following fields:
- Supervisor Agent.** Check this check box to indicate that the selected agent is a supervisor.
- Domain name.** Select the trusted domain name from the drop-down list. The location button when selected, lists the Active Directory folders in the selected domain.
- Supervisor login as user.** Enter the Active Directory user ID of the selected agent.
- If you enter an existing user from the domain in the edit box, a message appears stating “The account <name> in domain <domain name> exists. Do you want to associate an agent supervisor with this existing account?” If you select “Yes,” the agent supervisor is associated as a Unified ICM/CCE/CCH user. If you select “No,” the user must enter a name again.
- If the user does not exist, the user is created on the domain.
- Note** A single user with Configuration Manager credentials cannot be defined as both a “Supervisor” and an “Unified ICM/CCE/CCH user”. The following error occurs in such case: “User XXX in YYY Domain exists as an ICM user or is already a Supervisor. Please select another user.” To circumvent this limitation, create two records for this user with the same basic username, but with a different role appended to each (for example, for user1 create user1\_supervisor and user1\_icm). A user who is defined as a supervisor agent can access and use the Supervisor Desktop, Agent Re-skilling Web Tool. Supervisors can also add and remove members of their teams.
- Supervisor login password.** Enter the Active Directory User password for the account of the selected supervisor agent.

**Description.** Enter an optional description for the supervisor.

**Step 3** Click **Save**.

---

## Assign agent to skill group

Agents must be assigned to at least one skill group in order to log in. You can assign agents to the most appropriate skill groups according to their talents and skills to ensure that the most appropriate agent for a request responds to the customer.

### Procedure

---

- Step 1** From the Agent Explorer dialog box, choose the **Skill Group Membership** tab.
- Step 2** From the Skill group name list, select the skill groups to which you want this agent assigned.
- Step 3** Click **Add**.  
The Add Skill Group Membership box opens, showing the skill groups to which the agent has been assigned.
- Step 4** Click **OK**.
- Step 5** Click **Save** and then click **Close** on the Agent Explorer dialog box.
- Step 6** Repeat this procedure to assign additional agents to skill groups.
- 



**Note** You can remove agents from the Skill Group tab if necessary by selecting the agent and clicking **Remove**, then **Save**.

---

## Configure agent team

The Unified ICM/CCE/CCH allows you to group individual agents into agent teams that supervisors can manage. Agent teams are assigned to specific peripherals, so you must assign all agents of a given team to the same peripheral. You assign agents individually to agent teams.

When configuring agent teams, you should be aware of the following rules:

- An agent can be a member of only one agent team.
- An agent team can have only one Primary Supervisor.
- A supervisor can be a supervisor of any number of agent teams.
- A supervisor for an agent team can also be a member of that agent team.
- All agents belonging to an agent team and all supervisors for that agent team must be on the same peripheral.

## Procedure

---

- Step 1** From the Configuration Manager, select **Configure ICM > Peripherals > Agent Team > Agent Team List**.
- Step 2** Click **Retrieve** and then **Add** to add a new agent team.
- Step 3** Click the **Attributes** tab and enter values in the following fields:
- Name.** Enter an enterprise name for the agent team that is unique within the enterprise.
- Peripheral:** Enter the name of the agent team peripheral. You can select the name from the drop-down list.
- Supervisor Script Dialed Number:** Select a dialed number for the agent team from the drop-down list. If you have not created a supervisor script, select the default, "none". When you create the script, return to this screen and enter the dialed number for the script.
- Description:** Enter additional information about the agent team.
- Step 4** Click the **Members** tab and click **Add**.
- Step 5** Choose the agents that you to assign to the team and click **OK**.
- Step 6** Click the **Supervisor** tab and choose the supervisor from the Primary Supervisor drop-down list.
- Step 7** To add a secondary supervisor, click the **Add** button and select a secondary supervisor from the list. Click **OK**.
- Step 8** Click **Save** and then click **Close**.
- 

## About supervisory features

Supervisors of agent teams can take advantage of supervisory features available with their Agent Desktop software. The following table describes these features.

For more information about setting up Supervisory features, see *Administration Guide for Cisco Unified ICM/Contact Center Enterprise* .

Feature	Description
Supervisor and emergency assist	<p>An agent can activate supervisor assist or emergency assist buttons on the desktop when they need special assistance from the primary or secondary supervisor assigned to their team. There are two types of supervisory assist calls: existing calls (consultative) and no call.</p> <p><b>Existing call:</b> Consult must be selected as an option on the agent desktop settings for supervisor or emergency assist. If the agent is on a call when they activate either the supervisor or emergency assist feature on their desktop, the CTI software activates the conference key on behalf of the agent's phone and calls the supervisor via the Supervisor or Emergency Assist script. (This example assumes the emergency or supervisor assist script has an Agent-to-Agent node to find a supervisor.) The supervisor answers the call and consult privately with the agent. During the consultation, the supervisor can decide to barge into the call.</p> <p><b>No call:</b> If the agent is not on a call when they activate either the supervisor or emergency assist feature on the agent's desktop, the CTI software activates the make call functionality on behalf of the agent's phone and calls the supervisor via the Supervisor or Emergency Assist script.</p> <p><b>Note</b> Blind Conference is not supported for Emergency and Supervisor Assist.</p>
Barge-in	When the supervisor activates the Barge-in feature from their desktop, the agent's desktop completes a conference to the supervisor, so that the supervisor can join into the conversation with the call.
Intercept	If the supervisor decides to intercept (take over) the call, the supervisor activates the Intercept button on their desktop. This causes the agent to be dropped out of the conference, thereby allowing the supervisor to take over the call.

## Dialed numbers

The *dialed number* (DN) is the number that the caller dials to initiate the call and identifies the Unified ICM/CCE/CCH routing script that should be run. Dialed numbers must be set up for ring no answer, dialed number plan entries, and for Supervisor/emergency calls.

For the Unified CM to generate a route request to the Unified CCE, the Unified CM must associate the DN with a CTI Route Point that is associated with the Unified CCE JTAPI User. You must configure the DN in the Unified CCE. After the Unified CCE receives the route request with the DN, that DN is mapped to a Unified CCE Call type, which is then mapped to a Unified CCE routing script.

The Unified ICM/CCE/CCH generates a unique value for the Label Name list after you configure a dialed number.

This section describes how to configure individual dialed numbers. You can also create these records in bulk using the Bulk Configuration Tool.

## Configure dialed number

### Procedure

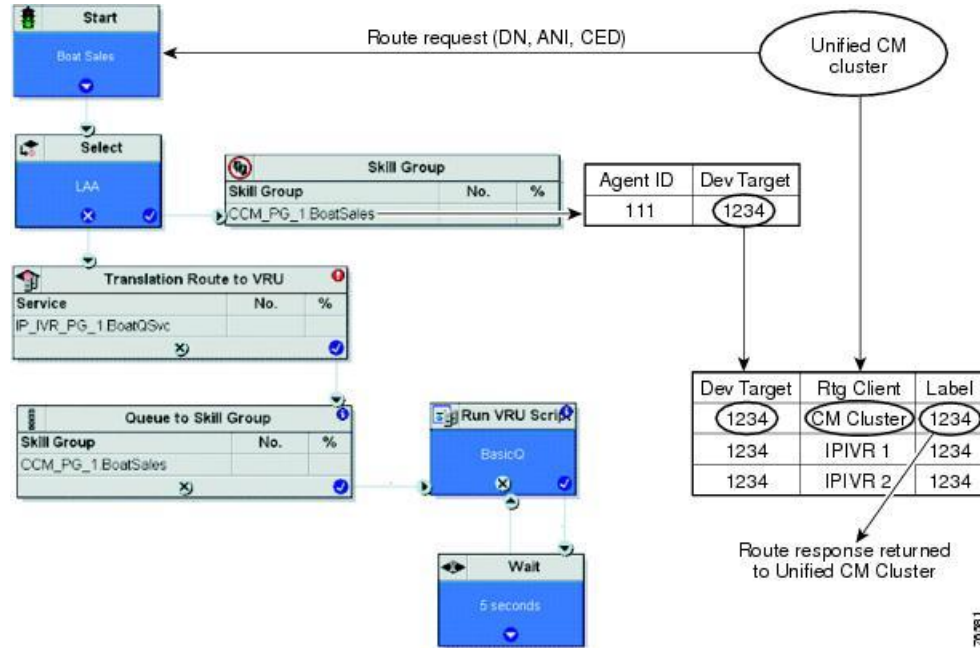
- 
- Step 1** From the Configuration Manager, choose **Tools > List Tools > Dialed Number/Script Selector List**. The Dialed Number/Script Selector List dialog box opens.
- Step 2** Click **Retrieve** and then click **Add**. The Attributes tab displays.
- Step 3** In the Attributes tab, enter values in the following fields:
- Routing client.** Choose the enterprise name of the routing client associated with this dialed number. After you select a routing client and save to the database, this field becomes read only.
- Media Routing Domain**
- Dialed number string.** Enter the string value that the routing client passes to the Unified ICME for this dialed number (for example: 8005551212).
- Name.** Enter the enterprise name for the dialed number. This name must be unique among all dialed numbers in the system. If you do not enter a value, this is autogenerated.
- Customer.** Use the drop-down list to select the customer (Unified ICME instance) associated with the dialed number.
- Default label.** Choose the name of the default label for this dialed number. The label must have been previously defined for it to be in the selection list. Use the Configuration Manager's Label List tool to define labels. If the Unified ICME fails to determine a target for the call within the routing client's time-out threshold, then the default label for the dialed number is used.
- Description.** Enter a description for the dialed number.
- Permit application routing.** If you intend to route calls from a parent system to this dialed number, check this dialog box.
- Note** If you build your software script to capture ECC variables and you want those variables passed to Cisco Agent Desktop agents after they queue to an IVR, then you *must* check this check box. This enables the data to be sent when a call is queued. Do this for all the dialed numbers to which calls queue.
- Reserved by IVR.** For IVR dialed numbers, you must check the **Reserved by IVR** check box. This prevents the CallManager PIM from trying to exert control on the calls arriving on these Route Points.
- Step 4** On the DN Mapping tab, as desired, click **Add** to specify a call type and other dialing information to associate with this dialed number.
- Step 5** Click **Save** to enter the dialed number information.
- Step 6** Repeat this procedure to add any additional dialed numbers.
- 

## Unified CCE call routing

The example routing script in the following figure illustrates how the Unified CCE routes calls. In this routing script, the Unified CM PIM (or cluster) is the routing client. Upon receipt of the route request, the Unified

CCE maps the DN to a call type and then maps the call type to this routing script. In this routing script, the Router first uses a Select node to look for the Longest Available Agent (LAA) in the BoatSales skill group on the CCM\_PG\_1 peripheral gateway (or cluster). The Router determines that agent 111 is the LAA. Agent 111 is currently logged in from device target 1234 (Unified CM phone extension 1234 in this scenario). The Router then determines the label to be returned, based upon the device target and routing client combination. The appropriate label is then returned to the routing client (Unified CM cluster) so that the call can be routed properly to that phone (device target).

Figure 5: Call routing



## Routes

The *route* is a value returned by a routing script that maps to a target or a peripheral. Those targets include services, skill groups, agents, translation routes, queue points, or CTI route points. The Unified ICM/CCE/CCH converts a route to a label (for ACDs) or a device target (for Unified CCE) to direct to the request destination.

When you create a route, you associate the route with a service.

This section describes how to configure individual routes. You can also create these records in bulk using the Bulk Configuration Tool.

### Configure route

#### Procedure

- Step 1** From the Configuration manager, choose **Tools > Explorer Tools > Skill Group Explorer**.

The Skill Group Explorer dialog box opens.

**Step 2** Click **Retrieve**.

**Step 3** Choose the skill group for which you are creating the route.

**Step 4** Click **Add Route**.  
The Route tab opens.

**Step 5** In the Route tab, enter information in the following fields:  
**Skill group priority.** The priority level of the subskill groups: 1=primary; 2=secondary; 3=tertiary; and so on. The value 0 indicates a base skill group. This is the default when there is only one skill group and there are no priorities.

**Name.** The enterprise name of the route.

**Description.** Enter an optional description of the route.

**Service Name:** The name for the service.

**Step 6** Click **Save**.



**Caution**

When you break the association between a route and a peripheral, the Unified ICM/CCE/CCH removes the Route ID value from all peripheral targets that reference that route.

---

## Agent Target Rule

The Agent Targeting Rules (ATR) configures ICM call routing by specifying the agent extension range, instead of configuring Device Targets and Labels for every phone/Routing Client. This simplifies the call routing configuration for the IPCC agent PGs. Also, this feature reduces the amount of memory used by the Router because a large number of Device Targets and Labels are replaced by a few rules. ATRs are therefore, the preferred method for installation.

### Configure individual Agent Targeting Rule

#### Procedure

---

**Step 1** Configure the PGs and routing clients.  
You must configure the PGs and routing clients prior to configuring the Agent Targeting Rules.

**Note** For more information about the Unified CCE/Unified CCH Peripheral Gateways, how to configure and install the System PG, and how to configure and install the Generic PG (this section also covers the CallManager PG), see the *Installation and Configuration Guide for Cisco Unified Contact Center Enterprise & Hosted*.

**Step 2** From the Configuration Manager, choose one of the following:

- **Configure ICM > Targets > Device Target > Agent Targeting Rule.**
- **Tools > List Tools > Agent Targeting Rule.**



The ICM Agent Targeting Rules dialog box opens.

**Step 3** Click **Retrieve**.

**Step 4** Click **Add**.

**Step 5** Enter a name for the rule.

**Step 6** Select a peripheral where the rule will be associated.

**Step 7** Select the rule type:

- Agent Extension
- Substitute Agent Extension: Enter the agent extension prefix and agent extension length.
- Translation Route: Select a Translation Route.

**Step 8** Select one or more routing clients that can initiate the route request.

**Step 9** Enter the agent's extension range.

**Step 10** Click **Save**.

**Step 11** Test the rule configuration by routing calls from each routing client to each agent extension you defined. If you defined a range, simplify the test by testing the lower and the upper limits of the agent extension, and a sampling of the extensions in between the range limits.

- Note**
- In a NAM environment, you can use Agent Targeting Rules on the Customer ICM (CICM) side in a Cisco Unified Contact Center Hosted (Unified CCE Hosted) deployment to target agents. However, if label validation is required on the NAM side, you must either define all the labels that can be generated by the ATRs at the CICM on the NAM side, or you must turn label validation off. The Validate Returned Labels check box in the Unified ICM Gateway node must be unchecked for calls routed using ATR to work. Not defining the labels, and turning label validation on, results in calls failing at the NAM even though a response with a valid label was sent from the CICM.
  - When configuring ATR for Translation Route, if you are using Agent Targeting Rule type 3 (Translation Route), you must also configure the Translation Route DAIS as dialed numbers associated with the target agent's peripheral routing client in Unified ICM. You must map the dialed numbers to the route points that are configured in Unified CCM and associated with the JTAPI user. This is necessary to complete the Translation Route Rule.
  - To use the Agent Targeting Rules, you must upgrade both the Central Controller and the PGs to the same version of the Unified ICM that supports the Agent Targeting Rules feature.

## Device targets

A *device target* is a telephony device that can be uniquely addressed by a telephone number. Unified CCE systems require that you configure a device target for each IP telephone that may be used by an agent. A device target is not associated with any one peripheral. Each device target must have one or more associated labels, although only one label may exist per routing client. The Unified ICM/CCE/CCH uses the device target to locate the label that routes a call to a Unified CCE agent.

An agent is dynamically associated to a device target at the time the agent logs in to a peripheral. The agent log-in request specifies the device target, or targets, to be associated with the agent. The association between the agent and the device target lasts until the agent logs out of the peripheral.

After you configure device targets, you can verify that you have configured agents properly in the Unified ICM/CCE/CCH by placing an Agent to Agent call. This test verifies your installation and configuration of the JTAPI client, CTI OS, and agents in the Unified ICM/CCE/CCH. To verify agent configuration, you must log in as an agent and then make a call to another agent. Calling another agent requires that you use the agent ID and not the phone number of the instrument.

You must configure each IP phone in the Unified CCE as a device target. You can configure only one extension on the phone as a device target. You can configure additional extensions on the phone, but those extensions will not be known to the Unified CCE and, thus, no monitoring or control of those additional extensions is possible. The Unified CCE provides call treatment for ring no answer (RONA), therefore it is not necessary to configure call forwarding on ring-no-answer in the Unified CM configuration for the phones. Unless call center policy permits warm (agent-to-agent) transfers, the Unified CCE extension also should not be published or dialed by anyone directly, and only the Unified CCE should route calls to this phone extension.

At agent login, the agent ID and phone extension are associated, and this association is released when the agent logs out. This feature allows the agent to log in to any agent phone. At agent login, the Unified CM PIM requests the Unified CM to begin monitoring the agent phone and to provide device and call control for that phone. As mentioned previously, each phone must be mapped to the Unified CCE JTAPI user ID in order for the agent login to be successful.

This section describes how to configure individual device targets. You can also create these records in bulk using the Bulk Configuration Tool.

## Configure device target




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**Note** You do not have to configure device targets if your deployment uses the UCCE System PG.

---

### Procedure

---

**Step 1** From the Configuration Manager, select **Configure ICM > Targets > Device Target > Device Target Explorer**.

The **Device Target Explorer** window opens.

**Step 2** Click **Retrieve** and then click **Add Device Target**.

The Device Target tab opens.

**Step 3** In the Device Target tab, enter values in the following fields:

**Name.** Enter an enterprise name for the target. This name must be unique among all device targets in the enterprise.

**Global Address.** A unique identifier. You can use the global address field to enforce validation that the agent desktop and agent phone are at the same IP Address for media terminated agent desktops, including the Unified CCE agent. The decimal format for an IP address is xxx.xxx.xxx.xxx. For example: 128.127.500.224. If you are not validating the IP address of an agent desktop and agent phone, then the global address can be any unique string.

**Note** Entering an IP Address for an Unified CCE agent that uses an IP hard phone prevents agent log in.

**Config Parameters.** Use this field to enter any specific configuration parameters you may require:

- /devtype (CiscoPhone)
- /dn (full phone number) /ext (extension)

The Unified ICM/CCE/CCH gives this string to the Unified CM to initialize the device.

Using the extension (ext) may be optional, depending on your environment. In most cases, using the dialed number (DN) is sufficient. The DN must start with a number 1 through 9 (0 is not allowed), and the extension length must match the length that you indicated in the Unified CM Peripheral Gateway Setup.

**Description.** Enter a description of the device. This is an optional field used to provide additional information about the device.

**Step 4** Click Save.

---

## Labels

You require labels for device targets and VRU services for the Unified CCE. The Unified ICM/CCE/CCH Script Editor requires that you create scripts targeting a skill group or service. The skill group or service identifies a set of routes to a peripheral, which in turn identifies a set of device targets.

The Unified ICM/CCE/CCH returns labels to routing clients that have requested a route. The routing client uses the label to deliver the task. With the Unified CCE, the routing label is associated with the Device Target. The Unified ICM/CCE/CCH also requires a label when sending a call to a CTI Route Point or a VRU.

Special labels might instruct the routing client to take another action such as play a busy signal or an unanswered ring to the caller.

The Unified ICM/CCE/CCH can select a logged-on and available agent using one of the many selection criteria available in the Unified ICME Scripting Language. Given the agent, the Unified ICM/CCE/CCH chooses an associated Device Target based on the type of resource requested.

Labels are the response to a route request from a routing client. The label is a pointer to the destination where the call is to be routed (basically, the number to be dialed by the routing client). Many labels in a Unified CCE environment correspond to the Unified CCE phone extensions so that the Unified CM and the Unified IP IVR can route or transfer calls to the phone of an agent who has just been selected for a call.

Often, the way a call is routed to a destination depends upon where the call originated and where it is being terminated. For example, suppose you have an environment with two regionally separated Unified CM clusters, Site 1 and Site 2. A phone user at Site 1 typically dials a four-digit extension to reach another phone user at Site 1. To reach a phone user at Site 2 from Site 1, users might dial a seven-digit number. To reach a phone user at either site from a PSTN phone, users might dial a 10- digit number. From this example, you can see how you need a different label, depending upon where the call is originating and terminating.

Each combination of device target and routing client must have a label. For example, a device target in a Unified CCE deployment with a two-node Unified CM cluster and two Unified IP IVRs requires three labels. If you have 100 device targets (phones), you need 300 labels. If there are two regionally separated Unified CM clusters, each with two Unified IP IVRs and 100 device targets per site, then you need 1200 labels for the six routing clients and 200 device targets (assuming you want to route a call from any routing client to any device target). If calls are to be routed to device targets only at the same site as the routing client, then you need only 600 labels (three routing clients to 100 device targets, and then doubled for Site 2).

Labels are also used to route calls to Unified IP IVR CTI Ports. Details on configuring labels are provided in the Unified CCE Installation Guide, available on Cisco.com. A bulk configuration tool is also available to simplify the configuration of the labels.

This section describes how to configure individual labels. You can also create these records in bulk using the Bulk Configuration Tool.

## Configure label



### Note

You do not have to configure labels if your deployment uses the UCCE System PG.

### Procedure

- 
- Step 1** In the **Device Targets Explorer** window, select the target (service) for which you are creating the label and click **Add Label**.
- Step 2** In the Label tab, enter values in the following fields:
- Routing Client.** Select the enterprise name of the routing client that can receive the label. You must configure a label for each type of Unified CCE routing client, including the interexchange carriers, NICs, Network VRUs and post-routing PGs.
  - Label.** Enter the literal string of characters to be returned to the routing client.
  - Label Type.** Enter the label type. The label type for the Unified CCE is Normal.
  - Customer.** Choose the customer (Unified ICM/CCE/CCH Instance) from the drop-down list.
  - Description.** Enter optional information about the label.
- Step 3** Click **Save**.
- 

The Unified ICM/CCE/CCH generates a unique value for the Label Name list after you save the attributes. Repeat this procedure to add any additional labels.

## Call types

A *call type* is a category of Unified ICM/CCE/CCH routable task. Each call type has a schedule that determines which routing script or scripts are active for that call type at any time.

There are two classes of call types:

- Voice (phone calls). Voice call types are categorized by the dialed number (DN), caller-entered digits (CED), and calling line ID (CLID). The CED and CLID can be optional, depending on the call.
- Non-voice (email and text chat). Non-voice call types are categorized by the Script Type Selector, Application String 1, and Application String 2. Application String 1 and Application String 2 can be optional, depending on the application.

This section describes how to configure individual call types. You can also create these records in bulk using the Bulk Configuration Tool.

## Configure call types

### Procedure

---

- Step 1** From the Configuration Manager, select **Tools > List Tools > Call Type List**.  
The Call Type List dialog box opens.
- Step 2** Click **Retrieve** and then click **Add**.  
The Attributes tab appears.
- Step 3** In the Attributes tab, enter values for the following fields:  
**Name.** Enter an enterprise name for the call type. This name must be unique among call types in the system.  
**Customer.** Choose the customer (Unified ICM/CCE/CCH Instance) from the drop-down list.  
**Service level threshold.** The service level threshold is the target maximum time that a caller spends in a queue before being connected to an agent. When you set up a peripheral, you specify a default service level threshold for all services associated with that peripheral. If you enter a negative number, the service level threshold from the Peripheral table is used.  
This field is prepopulated with the default service level threshold for this peripheral and grayed out. If you wish to override this default, check the **Override System Information Default** check box to the right of this field and enter a different value.  
You can also set the Service Level in the Configuration Manager with the System Information tool. When the service level is defined with the Call Type tool, this setting overrides a setting made with the System Information tool. If service level is not defined with the Call Type tool, but is defined with the System Information tool, the Unified ICME uses the System Information setting.  
**Service level type.** Indicates how the system software calculates the service level for the service. The default is the level specified for the associated peripheral. To set a different level type, check the **Override System Information Default** check box and select the type you want from the selection box.  
**Bucket Intervals.** Indicates the Bucket Intervals setting for the call type. Bucket intervals are defined with the Bucket Intervals List tool. If you wish to override the defined default, check the **Override System Information Default** check box and select a different Bucket Intervals setting.  
**Description.** Enter an optional description of the call type.
- Step 4** Click **Save** to enter the call type information.
- 

Repeat this procedure to add additional call types. To facilitate Unified CCE reporting, it is good practice to create separate call types for IVR applications and queuing applications.

## Translation routing and queuing

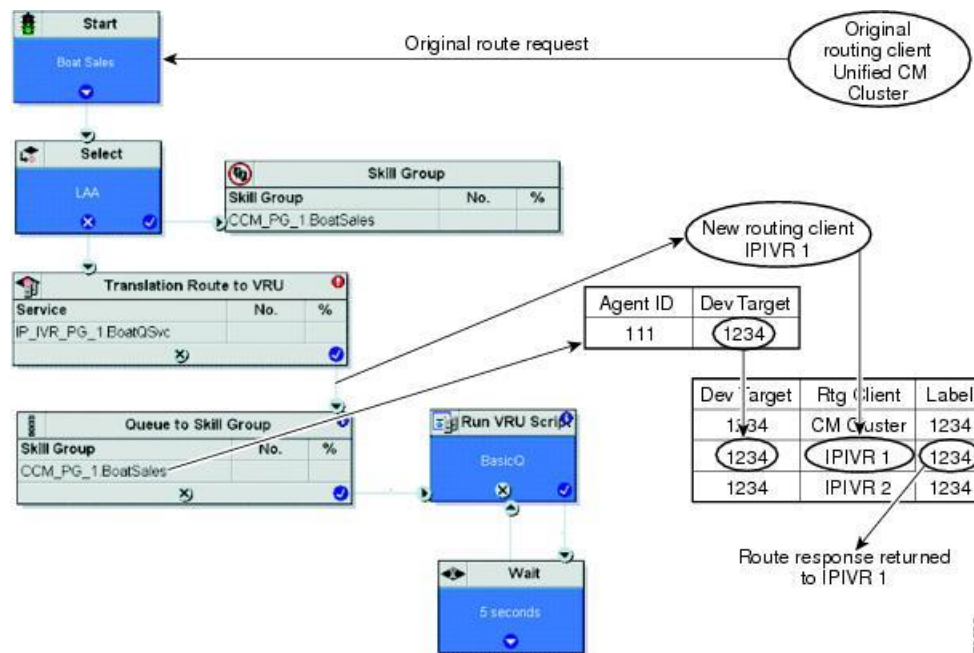
If no agents are available, then the Router exits the Select node and transfers the call to a Unified IP IVR to begin queuing treatment. The transfer is completed using the Translation Route to VRU node. The Translation Route to VRU node returns a unique translation route label to the original routing client, the Unified CM cluster. The translation route label equals a DN configured in the Unified CM. In the Unified CM, that DN is mapped to a CTI Route Point that is associated with the JTAPI user for the Unified IP IVR to which the

call is being transferred. Unified CM and Unified IP IVR execute the JTAPI routing control messaging to select an available CTI Port.

When the call is successfully transferred to the Unified IP IVR, the Unified IP IVR translation routing application first sends a request instruction message to the Unified CCE via the SCI between the Unified IP IVR and the Unified CCE. The Unified CCE identifies the DN as being the same as the translation route label and can re-associate this call with the call that was previously being routed. The Unified CCE then re-enters the routing script that was previously being run for this call. The re-entry point is the successful exit path of the Translation Route to VRU node. (See the following figure.) At this point, the routing client has changed from the Unified CM cluster to IPIVR1.

While the call was being transferred, the routing script was temporarily paused. After the transfer to the Unified IP IVR is successfully completed, the Unified IP IVR becomes the routing client for this routing script. Next the routing script queues the call to the BoatSales skill group and then instructs the Unified IP IVR to run a specific queue treatment via the Run VRU Script node. Eventually agent 111 becomes available, and as in the previous example, the label to be returned to the routing client is identified based upon the combination of device target and routing client. The routing client is now the Unified IP IVR. The label returned (1234) when agent 111 becomes available causes the Unified IP IVR to transfer the call to agent 111 (at extension 1234).

**Figure 6: Translation routing and queuing**



For each combination of Unified CM cluster and Unified IP IVR, you require a translation route and a set of labels. For example, if a deployment has one Unified CM cluster and four Unified IP IVRs, then you require four translation routes and sets of labels.

For deployments with multiple Unified IP IVRs, the Unified CCE routing script should select the Unified IP IVR with the greatest number of idle Unified IP IVR ports and then translation-route the call to that specific Unified IP IVR. If no Unified IP IVR ports are available, then the script should execute a Busy node. If a high number of calls are executing Busy nodes, then it is important to resize your Unified IP IVR port capacity.

## Configure translation routes

Use the Translation Route wizard to configure the translation routes for the Unified CM and VRU peripherals. This wizard automates the correct associations with peripheral targets, labels, and routes.



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**Note** Run the Translation Route Wizard only if you included the Unified CVP in your Unified CCE System.

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### Procedure

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- Step 1** In the Configuration Manager, select **Tools > Wizards > Translation Route Wizard**. The Translation Route Wizard introductory dialog box opens.
- Step 2** Click **Next**. The Acquire Lock and Select Configuration Task dialog box opens.
- Step 3** Select **Create New**.
- Step 4** Click **Next**. The Define Translation Route dialog box opens. The graphic on the left of the dialog box shows the entities you are defining while using the Translation Route Wizard.
- Step 5** Enter a long and short name for the translation route and, optionally, a description (the short name is used in forming target names).
- Step 6** Click **Next**. The Select Configuration dialog box opens.
- Step 7** Choose the single peripheral, single routing client configuration from the drop-down list. The graphic changes to show the configuration you select.
- Step 8** Click **Next**. The Select Peripheral Gateway, Peripherals, and Services dialog box opens.
- Step 9** Enter values for the following fields:
  - Peripheral Gateway**. Choose the gateway target for the translation route.
  - Peripheral**. Choose the single peripheral or the peripheral to route calls to.
  - Service/Service Array**. If the translation route is associated with a single peripheral, choose the service associated with the translation route. If the translation route is associated with multiple VRUs, then select a service array.
- Step 10** Click **Next**. The Select Routing Clients and Dialed Numbers dialog box opens. Use this dialog box to specify the Unified CM peripheral (or VRU peripheral) as the routing client from which translation routed calls originate. For the Unified CCE the dialed number string is not applicable.
- Step 11** Click **Next**. The Select Network Trunk Groups for Routing Clients dialog box opens. Choose at least one network trunk group to be used in peripheral targets associated with the translation route.
- Step 12** Choose a routing client, select a network trunk group value for it, and click **Add**.

The Network Trunk Group appears in the list at the bottom of the dialog box.

- Step 13** Click **Next**.  
The Configure DAIS dialog box opens.
- Step 14** Use this dialog box to specify the DAIS values that map to route points on the VRU. Do one of the following (either a or b):
- To enter a specific DAIS value, click **Add DAIS** and enter the value.
  - To add a range of DAIS values, typically required by a translation route, click **Add DAIS Range**.  
A dialog box prompts you to enter a starting and ending DAIS value. The Translation Route Wizard automatically generates the DAIS values in the range.
- Step 15** Click **Next**.  
The Configure Label dialog box appears.
- Step 16** 16. Use this dialog box to define a label that maps to the DAIS/CTI route points. A label consists of a prefix and a suffix. Each DAIS value requires a unique label. Do one of the following:
- Enter prefixes and suffixes individually.
  - Use the buttons in this dialog box to set a range of values or to base the prefix or suffix values on the DAIS values.
- Step 17** Click **Next**.  
The Wizard Complete dialog box opens.
- Step 18** Click **Create Translation Route** to create the translation route and its associated entities.  
First, the Translation Route Wizard displays a success message and then the dialog box appears.
- Step 19** Do one of the following:
- To see details about the translation route you just created, click **Run Report**.
  - To return to the beginning of the Translation Route Wizard and perform a new task, select **Start New Task** and click **Finish**.
  - To exit the Translation Route Wizard, click **Finish**.

**Note**

You can also use the Translation Route Explorer to create a translation route or to modify a translation route that you created with the Translation Route Wizard. Select **Configuration Manager > Tools > Explorer Tools > Translation Route Explorer**.

## Network VRU scripts

*VRU Scripts* differ from Unified ICM/CCE/CCH routing scripts. A configured VRU Script runs only when the Unified ICM/CCE/CCH instructs it to do so from a routing script. A VRU Script on the Unified ICM/CCE/CCH is the configured record for the VRU script that resides on the Unified IP IVR. A VRU Script executes to collect digits, play hold music, or perform many other common IVR functions.

After you configure a Network VRU Script, you can access the VRU in Unified ICM/CCE/CCH scripts, troubleshoot scripts, and perform VRU error checking.



This section describes how to configure individual Network VRU Scripts. You can also create these records in bulk using the Bulk Configuration Tool.

## Configure Network VRU script

### Procedure

---

- Step 1** From the Configuration Manager, select **Tools > List Tools > Network VRU Script List**. The Network VRU Script List dialog box opens.
- Step 2** Click **Retrieve** and then click **Add**.
- Step 3** On the Attributes tab, enter the configuration information for the VRU script as follows:  
**Network VRU**. Specify the Network VRU with which this script should be associated.  
**VRU Script Name**. Enter script name; for example, BasicQ.  
**Name**. Enter the script file name; for example, BasicQ.aef  
**Timeout [seconds]**. Enter 180.  
**Configuration param**. Leave blank.  
**Customer**. Choose the same Unified ICM/CCE/CCH customer you chose for call type from the drop-down list.
- Step 4** Check the **Interruptible** check box.
- Step 5** Click **Save** and the click **Close**.
- 

### What to Do Next

Before you can use a VRU script, you must upload it to the Repository in Unified IP IVR.

### Related Topics

[Configure VRU script, on page 48](#)

## Access to VRUs in Unified ICM/CCE/CCH scripts

After you configure the Network VRU and IVR scripts, you can use the Script Editor to write a routing script to send a call to the VRU and invoke a specific VRU script.

For deployments that include the Unified CVP, you use the Translation Route to VRU node to send calls to the Network VRU and invoke IVR scripts. You should not use Translation Route to VRU node for deployments that use the UCCE System PG. Instead, use any one of Queue to Skill Group or Send to VRU nodes.

## About Troubleshooting Scripts

If a timeout occurs on a VRU script, it is possible that the Router does not notify the VRU PIM that a timeout has occurred. Because the VRU PIM is not informed of the problem, it does not notify the VRU to cancel the script.

At this point, the options for script flow include the following:

- The failure path in the Router script sends the call to a label, the VRU PIM gets a Connect and, if the IVR supports it, generates a Cancel message. This is the most common result.
- Before the Router picks a label, the VRU script completes and the VRU sends a Script Result message to the Router. The Router then sends a Dialogue Failure Event because it is not expecting a Script Result. This is the next most common result.
- The failure path in the Router script tries to run another VRU script. This is not a common result.

Currently, the best resolution to this problem is to use longer time-outs or create shorter VRU scripts. Be aware that the failure exit from the Run VRU Script node is a problem that you may need to resolve.

## About VRU error checking

A special call variable `VruStatus`, allows you to check the result of the last IVR node (Send To VRU/Translation Route to VRU/Run VRU Script) that the Unified ICM/CCE/CCH processed. The following table lists this variable's values.

Value	Meaning	Description
0	VRU_SUCCESS	The last VRU node was successful.
1	VRU_ERROR	The last VRU node failed because of a routing or configuration error.
2	VRU_TIMEOUT	The last Send To VRU or Translation Route to VRU node failed because the routing client did not respond within 20 seconds or the last Run VRU Script node failed because the timeout limit defined for the script expired.
3	VRU_ABORTED	The last VRU node did not complete because the caller hung up or was otherwise lost. (Because this causes the routing script to terminate immediately, this value is never seen.)
4	VRU_DIALOG_FAILED	The last VRU node failed because communication with the VRU ended unexpectedly.
5	VRU_SCRIPT_NOT_FOUND	The VRU failed because the referenced VRU script was not found in the Unified ICM/CCE/CCH configuration.

## Routing and administrative script configuration

After you complete your Unified ICM/CCE/CCH configuration, you can write routing scripts and administrative scripts:

- A *routing script* processes call routing requests from a routing client. Typically it examines several targets and applies selection rules to find an available qualified agent or a target with the shortest expected delay. You can set up different routing scripts to execute for different types of tasks. You can define call types in terms of the telephone number the caller dialed, the number the caller is calling from, and

additional digits entered by the caller. For each call type, you can schedule different routing scripts to execute on different days or at different times of the day.

- An administrative script runs periodically to perform a task, such as setting variables.

You create, maintain, and monitor Unified ICM/CCE/CCH scripts using the Script Editor.

<b>For Information about:</b>	<b>See:</b>
Creating Unified ICM/CCE/CCH scripts	<i>Configuration Guide for Cisco ICM/Unified Contact Center Enterprise &amp; Hosted</i>
Designing scripts for Unified CCE using the Script Editor	<i>Scripting and Media Routing Guide for Cisco Unified ICM/Contact Center Enterprise &amp; Hosted</i>
Planning scripts for your Unified CCE reporting needs	<i>Reporting Guide for Cisco Unified Contact Center Enterprise &amp; Hosted</i>
Creating scripts for Outbound Option	<i>Outbound Option Guide for Cisco Unified Contact Center Enterprise &amp; Hosted</i>





# Installation and configuration of Outbound Option

This chapter provides minimal information about installing and configuring the Outbound Option for Unified CCE. For more information, see the *Outbound Option Guide for Cisco Unified Contact Center Enterprise & Hosted*.

- [Outbound Option, page 111](#)
- [Outbound Option installation prerequisites, page 111](#)
- [Outbound Option installation and configuration, page 112](#)
- [Outbound dialing campaigns, page 112](#)

## Outbound Option

Outbound Option is an optional feature of Unified CCE that provides outbound dialing functionality along with the existing inbound capabilities of Unified CCE. With Outbound Option, you can configure contact centers for automated outbound activities. Agents who are not busy handling inbound requests can perform outbound calls, thereby maintaining a high level of agent productivity.

For Unified CCE, you require a Cisco voice gateway to place customer calls.

## Outbound Option installation prerequisites

Before you install the Outbound Option software, you must have a working Cisco Unified Contact Center Enterprise system with a Router, Logger, Administration & Data Server, an UCCE System PG or Unified CM and VRU PGs, CTI Server, and Unified CM connectivity with agents and CTI Route Points. During the installation of Unified ICM/Unified CCE/Unified CCH when you are setting the Logger component properties using the Web Setup Tool, be sure to enable Outbound Option.

### Related Topics

[Component software configuration tasks, on page 25](#)

## Outbound Option installation and configuration

For more information about installing and configuring the Outbound Option, see the “Installing Outbound Option” chapter in *Outbound Option Guide for Cisco Unified Contact Center Enterprise & Hosted*.

Make sure that you complete the prerequisites listed in Chapter 3 of this guide. For more information about the tasks you must complete and the prerequisites you must satisfy, see the “Before You Begin” section in the *Outbound Option Guide for Cisco Unified Contact Center Enterprise & Hosted*.

In the Installing Outbound Option chapter in the *Outbound Option Guide for Cisco Unified Contact Center Enterprise & Hosted* follow the instructions in these sections:

- IPCC Enterprise Outbound Configuration
- Cisco Unified Communications Manager/Gateway Configuration
- Software Installation and Database Creation

## Outbound dialing campaigns

After you install Outbound Option, you can begin creating outbound dialing campaigns. Instructions for creating and managing outbound campaigns, and for writing scripts for use with Outbound Option, are provided in the *Outbound Option Guide for Cisco Unified Contact Center Enterprise & Hosted*.



## CHAPTER 8

# Cisco Unified Customer Voice Portal and Cisco Unified Contact Center Enterprise

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This chapter provides information about Cisco Unified Customer Voice Portal (Unified CVP) and how you must deploy in a Unified CCE system. It also describes some guidelines and best practices to follow while you use the Unified CVP in a Unified CCE environment.

For more information about installing Unified CVP in a Unified CCE deployment, see the *Installation and Upgrade Guide for Cisco Unified Customer Voice Portal*.

For more information about planning and configuring the Unified CVP for Unified CCE, see the *Configuration and Administration Guide for Cisco Customer Voice Portal* and the *Planning Guide for Cisco Unified Customer Voice Portal*.

Follow the instructions in this chapter if you are using the Unified CVP (as opposed to the Unified IP IVR ) for queuing in your Unified CCE system. (If you are deploying the Unified IP IVR instead of the Unified CVP, see Chapter 5, “Installing and Configuring Unified IP IVR for Unified CCE.”)

- [Unified CVP, page 113](#)
- [Preconfiguration steps—Unified CVP for Unified CCE, page 115](#)

## Unified CVP

You can deploy the Unified CVP in the Unified CCE system to provide call control, IVR queuing, and call treatment.

The Unified CVP integrates with the Unified CCE via a VRU Peripheral Gateway (PG). This integration allows the Unified CCE to control Unified CVP VoIP switching and IVR services. This integration also allows the Unified CCE to control the agent selection application and to initiate the Real-Time Transport Protocol (RTP) stream transfer from the VoiceXML gateway to the selected agent.

The Unified CVP integration with the Unified CCE requires that you use the traditional Unified CM PG for Unified CCE integration with the Unified CM.

The Unified CVP can also provide IVR services for Unified CCE Outbound Option IVR campaigns and post-call customer surveys.

This guide provides basic information for configuring the Unified CVP for the Unified CCE. The exact manner in which you configure the Unified CVP depends on the deployment model of the Unified CVP that you are

using for your system. For more information about configuring Unified CVP in your deployment model, see *Administration and Configuration Guide for Cisco Unified Customer Voice Portal (Unified CVP)* and the *Planning Guide for Cisco Unified Customer Voice Portal*.

## Unified CVP installation prerequisites

Before installing and configuring Unified CVP, you must do the following:

Unified CVP Installation Prerequisite	Notes
Install the Unified CM.	On the Unified CM, you must configure the Unified CVP Voice Browser as a Gateway or SIP Trunk for the Call Server. If you use the H323 protocol, you need an H323 Gatekeeper configured and an H323 Gatekeeper controlled trunk.
Install the Unified ICME/Unified CCE/Unified CCH and the PG containing the VRU PIMs.	<p>In the Unified ICME/Unified CCE/Unified CCH, you must complete the following:</p> <ul style="list-style-type: none"> <li>• Configured a Network VRU (type 10)</li> <li>• Configured a VRU PG and a Unified CM PG (and installed the PGs)</li> <li>• Installed the JTAPI client on the PG</li> <li>• Configured Network VRU Trunk Groups</li> <li>• Configured skill groups, persons, agents, and routes</li> <li>• Configured ECC Variables</li> <li>• Configured call types, Dialed Numbers, Device Targets, Labels, and a Dialed Number Plan.</li> <li>• Configured Translation Routes (optional depending on the call flow)</li> <li>• Configured scripts--VRU, routing, and administrative</li> </ul> <p>See Chapter 6 for instructions.</p>

## Unified CVP as Type 10 Network VRU

Most implementations of the Unified CVP are covered by a type 10 Network VRU, which is designed to simplify the configuration requirements in Unified CVP Comprehensive Model deployments.

The type 10 Network VRU has the following behavior:

- There is a handoff of routing client responsibilities to the Unified CVP switch leg.
- There is an automatic transfer to the Unified CVP VRU leg, resulting in a second transfer in the case of calls originated by the VRU, ACD, or Unified CM.



- For calls originated by the Unified CM, the Correlation ID transfer mechanism is used. The Correlation ID is automatically added to the end of the transfer label defined in the Type 10 Network VRU configuration.
- The final transfer to the Unified CVP VRU leg is similar to a type 7 transfer, in that a release message is sent to the VRU prior to any transfer.

In Unified CVP implementations, define a single type 10 Network VRU and associate all Unified ICME/Unified CCE/Unified CCH VRU scripts with it. It requires one label for the Unified CVP Switch leg routing client, which transfers the call to the Unified CVP VRU leg. If calls are to be transferred to Unified CVP from Unified CM, you need another label for the Unified CM routing client, and this label must be different from the label you used for the CVP Routing Client. This label transfers the call to the Unified CVP Switch leg. The Unified ICME/Unified CCE/Unified CCH Router sends this label to the Unified CM with a Correlation ID concatenated to it. Configure the Unified CM to handle these arbitrary extra digits.

Configure the Unified CVP Switch leg peripheral to point to the same type 10 Network VRU. Also, associate all incoming dialed numbers for calls that are to be transferred to the Unified CVP with a Customer Instance that points to the same type 10 Network VRU.

For calls that originate at a Call Routing Interface VRU or at a TDM ACD, use a TranslationRouteToVRU node to transfer the call to the Unified CVP Switch leg peripheral. For all other calls, use either a SendToVRU node, a node that contains automatic SendToVRU behavior (such as the queuing nodes), or a RunExternalScript.

For more information, see the *Cisco Unified Customer Voice Portal Solution Reference Network Design (SRND)*.

## Preconfiguration steps—Unified CVP for Unified CCE

After installation, you must configure the Unified CVP for integration with the Unified CCE. The following list provides the planning information you need before configuring:

- The Unified CVP call flow model you are implementing.
- The network topology for your system, including addresses and names of the solution components.
- The failover strategy for Gateways, Unified CVP components, and media servers.
- The strategy for inbound call routing (that is, dial-peers versus Gatekeeper or Proxy Server).
- The naming resolution system for Gateways (DNS versus configured on the Gateway).
- If using a VRU other than Unified CVP, the VRU trunk group number and number of trunks.
- The locale values to be used for ASR and/or TTS.
- Whether the same set of VRUs are to be used for all cases, or whether that is determined separately for each customer (dialed number).

Generally, in addition to the pre-requisites of installing and configuring the Unified CM and the Unified ICME/Unified CCE/Unified CCH, configuring the Unified CVP means configuring the following:

- Unified CVP Call Server (SIP or H.323)
- IOS Gateway
- Gatekeeper (H323) or a SIP Proxy

For more information about planning and configuring the Unified CVP for the Unified CCE, see the *Configuration and Administration Guide for Cisco Customer Voice Portal* and *Planning Guide for Cisco Unified Customer Voice Portal*.

**Related Topics**

[Unified CCE with Unified CVP plan, on page 20](#)



# Installation of CTI OS Server Agent and Supervisor Desktop Software for Cisco Unified Contact Center Enterprise

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You can deploy either Cisco CTI OS or Cisco Agent Desktop/Cisco Supervisor Desktop in the Unified CCE system to provide Agent and Supervisor Desktops. This chapter provides information on installing these options for Unified CCE.

- [Agent and Supervisor Desktops for Unified CCE, page 117](#)
- [Agent and Supervisor Desktop installation prerequisites, page 118](#)
- [Agent and Supervisor Desktop installation tasks, page 118](#)
- [CTI OS Server and desktop installations, page 119](#)
- [Cisco Agent Desktop installation and configuration, page 120](#)

## Agent and Supervisor Desktops for Unified CCE

Cisco Computer Telephony Integration Object Server (CTI OS) and Cisco Agent Desktop are server-based CTI solutions that provide desktops used by contact center agents and supervisors. Both desktop packages are supported by the Unified CCE. You deploy one or the other in your Unified CCE system:

- CTI OS includes the CTI OS Server, CTI OS Agent Desktop, Unified CCE Supervisor Desktop, CTI OS Toolkit, and the Client Interface Library (CIL). It provides an object-oriented software development toolkit for development and deployment of CTI applications.
- Cisco Agent Desktops and Cisco Supervisor Desktops includes the Desktop Administrator, Agent Desktop, and Supervisor Desktop.

Regardless of which agent desktop software you deploy; that is, Cisco Agent Desktop or CTI OS, both communicate to the Unified CCE via the CTI server, which you set up using the Peripheral Gateway Setup Tool. The CTI Server is the CTI gateway into the Unified CCE data and services. It allows the Unified CCE to deliver agent, call, and customer data in real time to a server and/or workstation application as events occur throughout the life of a call.

**Note**

This guide does not describe post-installation configuration of CTI OS and Cisco Agent Desktop features. For more information, see the *Administration Guide for Cisco Unified Contact Center Enterprise*.

The following Cisco documents provide more information about the installation/configuration tasks described in this section:

- *CTI OS System Manager's Guide for Cisco Unified ICM/Contact Center Enterprise & Hosted*
- *Cisco Agent Desktop Installation Guide*
- *Administration Guide for Cisco Unified Contact Center Enterprise*

## Agent and Supervisor Desktop installation prerequisites

Before installing and configuring Agent and Supervisor Desktop software for use with the Unified CCE, you must complete the following tasks:

- Install and configure the Unified CM
- Install and configure the Unified CCE

## CTI OS Silent Monitor feature prerequisites

CTI OS includes a Silent Monitor feature, which enables a supervisor to listen to an agent's call by forwarding voice traffic from an agent's phone to the supervisor's computer. The supervisor listens to the call through the sound card on their computer, not the phone.

- If the agent is using a hard phone, connect the agent's computer to the second port on the agent's phone to forward the agent's voice traffic to the supervisor.
- If the agent is using the Cisco IP Communicator soft phone, the supervisor must have a hard phone connected to their computer to use Silent Monitor for that agent.

**Note**

For more information about configuring the Silent Monitor feature, see the *CTI OS System Managers Guide*.

## Agent and Supervisor Desktop installation tasks

The following table lists the configuration tasks you require to install the CTI OS Server and Agent/Supervisor desktops in a Unified CCE deployment. Perform these tasks in the order listed. Instructions for each are included later in this section.

Desktop Installation Task	Notes
1. Install and configure the CTI OS Server.	

Desktop Installation Task	Notes
2. Install CTI OS Agent and Supervisor Desktops, OR install Cisco Agent Desktop and Cisco Supervisor Desktops.	
3. Start CTI OS Services.	

## CTI OS Server and desktop installations

CTI OS incorporates the CTI OS Server, the CTI OS Toolkit, Cisco Agent Desktop, Cisco Supervisor Desktop and Client Interface Library.



### Note

- The CTI OS Server is installed on the same server as the PG or CG.
- *Do not* install the desktop software on the PG, CG or CTI OS Server.

## CTI OS Server installation

For more information about installing CTI OS Server, see the chapter “CTI OS Server Installation” in the *CTI OS System Manager's Guide for Cisco Unified ICM/Contact Center Enterprise & Hosted*.

## CTI OS Supervisor Desktop installation



### Warning

CTI OS uses certificates (self-signed or third-party) for authentication between the CTI OS Server and desktop clients. This is an optional feature and the warning is applicable only if you enable security when you install the CTI OS Server. *Before* you install the Supervisor Desktop, you must know which (self-signed or third party) certificate type your company uses. *After* you install the Supervisor Desktop, you need to copy key and request files from the client to the Certificate Authority (CA) machine, sign them, and then return signed files to the client. If you are not already familiar with the CTI OS certificate signing procedures used at your company, please consult your CTI OS administrator or the *CTI OS System Manager's Guide for Cisco Unified ICM/Contact Center Enterprise & Hosted* before proceeding with desktop software installation.

For more information about installing the CTI OS Supervisor Desktop see the chapter “CTI Toolkit Desktop Client Installation” in the *CTI OS System Manager's Guide for Cisco Unified ICM/Contact Center Enterprise & Hosted*.

## CTI OS Agent Desktop installation

**Warning**

CTI OS uses certificates (self-signed or third party) for authentication between the CTI OS Server and desktop clients. This is an optional feature and the warning is applicable only if you enable security when you install the CTI OS Server. *Before* you install the Supervisor Desktop, you must know which (self-signed or third party) certificate type your company uses. *After* you install the Supervisor Desktop, you must copy key and request files from the client to the Certificate Authority (CA) machine, sign them, and then return signed files to the client. If you are not already familiar with the CTI OS certificate signing procedures used at your company, please consult your CTI OS administrator or the *CTI OS System Manager's Guide for Cisco Unified ICM/Contact Center Enterprise & Hosted* before proceeding with desktop software installation.

For more information about installing the CTI OS Agent Desktop, see the chapter “CTI Toolkit Desktop Client Installation” in the *CTI OS System Manager's Guide for Cisco Unified ICM/Contact Center Enterprise & Hosted*

## Cisco Agent Desktop installation and configuration

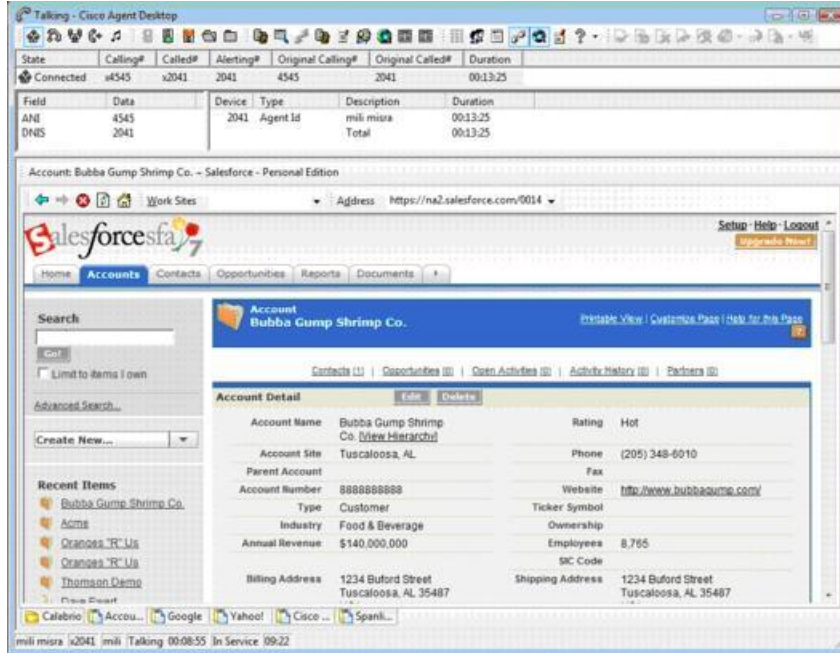
### Cisco Agent Desktop pre-installation requirements

For the Cisco Agent Desktop applications to work properly, you must organize your agents into teams and you must designate some as supervisors. Create agents, teams, and supervisors in the Unified CCE before you install Cisco Agent Desktop software.

The Cisco Agent Desktop is an out-of-the-box desktop application that enables the agent to perform agent state control (including login, logout, ready, not ready, and wrap up) and call control (including answer, release, hold, retrieve, transfer, conference, make call). The Cisco Agent Desktop requires use of a Cisco Unified IP phone or Cisco IP Communicator (softphone). You can use other phones as well using the Mobile

Agent option. Other features, such as an integrated chatting application, call recording, and workflow automation, may be included. See the following figure.

**Figure 7: Cisco Agent Desktop**



Use the following worksheet to assemble the configuration information you require during Unified AM installation. Depending on your configuration, you may not need to complete every section of the worksheet.

Item	Value
<b>Primary Directory Services</b>	
Host name / IP address	
Logical contact center name	
<b>Secondary Directory Services</b>	
Host name / IP address	
<b>Base Services</b>	
Host name / IP address	
<b>Recording &amp; Playback Services</b>	
Host name / IP address	
Host name / IP address	
<b>VoIP Monitor Services</b>	
Host name / IP address	

Item	Value
Host name / IP address	
Host name / IP address	
Host name / IP address	
<b>Unified CM (Publisher)</b> Host name / IP address	
<b>Unified CM (Subscribers)</b> Host name / IP address	
Host name / IP address	
Host name / IP address	
Host name / IP address	
<b>Unified CM Database</b> Unified CM version	
Database login ID	
Database password	
<b>Unified CCE SQL Logger Database</b> (On Central Controller) Instance name	ipcc
Login ID	
Password	
<b>Side A</b> Host name / IP address	
<b>Side B</b> Host name / IP address	
<b>CTI Service Associated with Unified CM</b> Peripheral ID	1000
<b>Side A</b> Host name / IP address	
Port	
<b>Side B</b> Host name / IP address	



Item	Value
Port	
<b>CTI Service Associated with Unified IP IVR</b>	
Peripheral ID	
<b>Side A Host name / IP address</b>	
Port	
<b>Side B Host name / IP address</b>	
Port	
<b>CTI OS (Server 1)</b> (On PG) Peripheral ID	
<b>Side A Host name / IP address</b>	
Port	
<b>Side B Host name / IP address</b>	
Port	
<b>CTI OS (Server 2)</b> (On PG) Peripheral ID	
<b>Side A Host name / IP address</b>	
Port	
<b>Side B Host name / IP address</b>	
Port	
<b>Backup Data</b> Location path	

## Cisco Agent Desktop component installation order

To install the Cisco Agent Desktop, follow the step-by-step installation instructions included in the *Cisco Agent Desktop Installation Guide*.

You must install the Unified AM components in the following order:

- 1 Services
- 2 Desktop Administrator
- 3 Supervisor Desktop and Agent Desktops

You install the Cisco Agent Desktop Services and the Desktop Administrator from the Cisco Agent Desktop CD. The Cisco Agent Desktop Configuration application runs automatically after you install the services and Desktop Administrator on the Unified CCX server. Following that, you can change your configuration settings by launching the Desktop Administrator.

The supervisor and the Agent Desktops are installed from the Web server on which you install the Unified AM services.

For more information, see the *Cisco Desktop Administrator User's Guide*.

## Start CTI OS Service after installation

The CTI OS Server runs as a Windows service on the host computer. You can start, stop, or cycle the CTI OS Server from the Service Management Page in the Web Setup Tool, which you can run in any supported browser. Optionally, you can use the Unified CCE Service Control tool on the desktop.

To start the CTI OS Service from the Unified CCE Service Control tool, complete the following steps:

### Procedure

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- Step 1** On the CTI OS Server machine, open **Unified CCE Service Control**.
  - Step 2** Select **CTI OS Service**.
  - Step 3** Click **Start**.
-



## Script Editor Localization

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You can localize Script Editor by installing the Language Pack.

- [Supported languages, page 125](#)
- [Language Pack installation, page 125](#)

### Supported languages

English is the default language and is installed with Unified CCE Setup installer. If you want to localize Script Editor, you must run the Language Pack.

The following 5 languages are supported by Script Editor:

- English (US)
- French (France)
- French (Canada)
- Japanese
- Chinese (Simplified)

The Language Pack Installer is on the same DVD with the Unified CCE Setup media.

### Language Pack installation

In Unified ICM 9.0(1), the Language Pack installation is a separate process from the Unified ICM setup. Run the Language Pack Installer to select the language you want after you complete the Unified CCE setup.

If you install the Unified ICM on a English Windows Server 2008 R2, you can run Language Pack to localize Script Editor.

If you install the Unified ICM on a localized version of Windows Server 2008 R2, you should be all set after running the Language Pack.

If you plan to install the Unified CCE on a multilingual version of Windows Server 2008 R2, you must follow the procedure listed in [Installing the Multilingual User Interface \(MUI\) OS Language Pack on an English Windows Server 2008 R2, on page 126](#) to set up your Windows system.

If you install the Unified ICM on a multilingual version of Windows Server 2008 R2, you must make sure that the language you selected during the Language Pack installation matches the language setting in Windows regional options.

To check that there is a match, do the following:

- 1 Select **Start > Control Panel > Clock, Language and Region**.
- 2 In the **Clock, Language and Region** window, click **Region and Language**.
- 3 Click the **Administrative** tab.
- 4 On the **Administrative** tab, in **Language for non-Unicode programs** section, the language under **Current Language for non-Unicode programs** should be the same as the language you selected during the Language Pack installation.

## Check language setting

If you install the Unified CCE on a multilingual version of Windows 2008, you must make sure that the language you select during the Language Pack installation matches the language setting in Windows regional options.

### Procedure

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- Step 1** Select **Start > Settings > Control Panel > Regional and Language Options**.
  - Step 2** Click the **Advanced** tab.
  - Step 3** Under **Select a language to match the language version of the non-Unicode programs you want to use**, the language displayed on the pull-down list should be the same as the language you selected during the Language Pack installation.
- 

### What to Do Next

Follow the procedure listed in “Date format adjustment after localization” to change the date format used by the Jaguar Server.

### Related Topics

[Date format adjustment after localization](#)

## Installing the Multilingual User Interface (MUI) OS Language Pack on an English Windows Server 2008 R2

To localize the Windows system, perform the following steps:

## Procedure

---

- Step 1** Set up an English Windows Server 2008 R2 with SP 1.
  - Step 2** Insert the MUI installation DVD from Microsoft. The languages supported are included in the installation DVD.
  - Step 3** Select **Start > Settings > Control Panel > Clock, Language and Region**.
  - Step 4** In the **Clock, Language and Region** window, click **Region and Language**.
  - Step 5** In the **Region and Language** dialog box, click **Keyboards and Languages** tab.
  - Step 6** On the **Keyboards and Languages** tab, click **Install/Uninstall Languages**.
  - Step 7** In the **Install/Uninstall Languages** dialog box, click **Install display languages**.
  - Step 8** Click **Browse** folder, locate the folder of the language you wish to install from MUI DVD.
  - Step 9** Select the language that you want to install and then click **Next**.
  - Step 10** Review the Microsoft Software License Terms and select **Accept** and click **Next**.
  - Step 11** When the installation completes, reboot your machine.
- 

The Windows system is now in the localized language.





## APPENDIX **A**

# Cisco Unified Contact Center Enterprise Laboratory System Setup

This appendix provides advice on how to set up Unified CCE in a laboratory environment.

- [Unified CCE laboratory hardware requirements, page 129](#)
- [Sprawler installation, page 130](#)

## Unified CCE laboratory hardware requirements

Using Unified CCE in a laboratory environment requires less equipment than you need in a production environment. A laboratory that includes Outbound Option and multichannel components can be deployed on as few as three boxes for a laboratory setup. In a more heavily trafficked production environment, you can install the Unified IP IVR and the Unified ICM/CCE/CCH Logger on separate machines. You can also separate the CTI OS Agent and Supervisor Desktops.

You require the following minimum hardware in a Unified CCE laboratory. For more information about box specifications and OS requirements, see the *Hardware and System Software Specification (Bill of Materials) for Cisco Unified ICM/Contact Center Enterprise & Hosted*.

Hardware	Specifications
Cisco IP phones	Model 7960 (three or more)
Unified CM + Unified IP IVR	1 Cisco Media Convergence Server (MCS) or equivalent for VOS.
Unified CCE. Router, Logger, Administration & Data Server, UCCE System PG, CTI Server, CTI OS Server, Outbound Option Dialer and Media Routing PG for Outbound Option (optional)	1 Cisco Media Convergence Server (MCS) or equivalent
<b>Note</b> You cannot have a CCE system with Outbound Option in a CVP environment. This requires three PG types on the same machine, which is a deployment that Cisco does not support.	

Hardware	Specifications
CTI OS Agent and Supervisor Desktops or Cisco Supervisor Desktop Agent/Supervisor Desktop server	1 Cisco Media Convergence Server (MCS) or equivalent

## Sprawler installation

For a laboratory setup, you can choose to install all of the Unified ICM/CCE/CCH components on one server, called a *sprawler*. Before you configure the Unified ICM/CCE/CCH software in the laboratory, ensure that the Microsoft Windows planning and pre-installation tasks are complete. For more information, see the *Staging Guide for Cisco Unified ICM/Contact Center Enterprise & Hosted*.

### Installation of Unified ICM/CCE/CCH components on sprawler

In a production environment, you typically install Unified ICM/CCE/CCH components on several different machines. In a laboratory environment, however, you can install all Unified ICM/CCE/CCH components on a single machine, called a sprawler.

You can install the following Unified ICM/CCE/CCH components on a sprawler:

- Administration & Data Server
- Logger
- Router
- Peripheral Gateways (PGs)
- CTI Server
- CTI OS Server
- CTI OS Agent and Supervisor Desktop
- Outbound Option Dialer

A sprawler installation requires some specific installation settings for each Unified ICM/CCE/CCH component. These are listed in the following table.



When installing the:	Do the following:
Administration & Data Server	<p>Specify the following in the Web Setup Add Administration &amp; Data Server wizard:</p> <ol style="list-style-type: none"> <li>1 On the Role page, select one of the following roles: <ul style="list-style-type: none"> <li>• For a small to medium deployment, select <b>Administration Server, Real-time and Historical Data Server and Detail Data Server (AW-HDS-DDS)</b></li> <li>• For a large deployment, select <b>Administration Server and Real-time and Historical Data Server (AW-HDS)</b></li> </ul> </li> <li>2 On the Database and Options page, check <b>Configuration Management Service (CMS) Node</b></li> </ol> <p>When using the ICM Database Administrator tool to create a Historical Data Server database, set the data size to 500 MB and the log size to 100 MB.</p>
Router	<p>Specify the following in the Web Setup Add Router wizard:</p> <ol style="list-style-type: none"> <li>1 On the Deployment page, specify <b>Side A</b> and <b>Simplex</b>.</li> <li>2 On the Router Connectivity page, enter the host name or IP Address of the Side A Router in the Side B fields.</li> </ol>
Logger	<p>Specify the following in the Web Setup Add Logger wizard:</p> <ol style="list-style-type: none"> <li>1 On the Deployment page, specify <b>Side A</b> and <b>Simplex</b>.</li> <li>2 On the Central Controller Connectivity page, enter the host name or IP Address of the Side A Router in the Side B Router field, and enter the host name or IP Address of the Side A Logger in the Side B Logger field.</li> </ol> <p>When you use the ICM Database Administrator tool to create a Historical Data Server database, set the data size to 500 MB and the log size to 100 MB.</p> <p>When you use the ICM Database Administrator tool to create the Outbound Option private database, set the data size to 300 MB and the log size to 100 MB.</p>
Call Manager PG, VRU PG or UCCE System PG, and MR PG	<ol style="list-style-type: none"> <li>1 On the Device Management Protocol Properties dialog box, select Router is local (for Side A and Side B).</li> <li>2 On the Peripheral Gateway Network Interfaces dialog box, remove any value references for Side B.</li> </ol>

When installing the:	Do the following:
CTI Server	<ol style="list-style-type: none"> <li><b>1</b> On the CTI Server Properties dialog box, choose Production mode and Side A. In the CG node properties section of that box, select a CG Node from the ID field drop-down list. Be sure that the CG number matches the PG number; for example, for PG1, the ID field should read CG1.</li> <li><b>2</b> On the CTI Server Component Properties dialog box, make a note of the Client Connection Port Number, which is typically 42027.</li> <li><b>3</b> On the CTI Network Interface Properties dialog box, be sure that there are values for Node A but none for Node B in the three sections of that box.</li> </ol>
Outbound Option Dialer	<ol style="list-style-type: none"> <li><b>1</b> On the first Outbound Option Dialer Properties dialog box, choose Production Mode.</li> <li><b>2</b> On the second Outbound Option Dialer Properties dialog box, leave the CTI Server B and CTI Server Port B field blank.</li> </ol>
CTI OS Server	On the CTI Server Information dialog box, leave the Name or IP Address and Port fields in the System B section blank.
CTI OS Client Toolkit (includes CTI OS Agent and Supervisor Desktops)	On the CTIOS Server Information dialog box, leave the Name or IP Address and Port fields in the CTIOS Server B section blank.



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