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- [Conventions, on page xviii](#)

Change History

This table lists changes made to this guide. Most recent changes appear at the top.

Change	See	Date
Initial Release of Document for Release 11.6(1)		August 2017
Added new chapters: Manage Remote Sites and Application Gateway.	Manage Remote Sites, on page 113 Application Gateway, on page 287	
Added external machine support for remote site in lab mode.	Simplex Mode, on page 315 Duplex Mode, on page 316	
Added a new chapter Database Administration.	Database Administration, on page 289	
Added new topics for Global, Main Site, and Remote Site settings.	Settings, on page 96 System Settings for Global, on page 96 System Settings for Main Site, on page 99 System Settings for Remote Site, on page 100	
Added a new topic Categorize by External Applications under Contact Categorization chapter.	Categorize by External Applications, on page 155	

About This Guide

Unified CCE Administration is a set of web-based tools for creating, configuring, and maintaining objects, such as agents, teams, skill groups, and call types, that are used to operate contact centers. This guide explains the complete set of Unified CCE Administration tools that are available in a Packaged CCE deployment for an Administrator who has the System Administrator role. Administrators with other roles, Supervisors, and those who sign in with other deployment types may not have access to all of tools documented in this guide.

Audience

This guide is prepared for:

- Contact center administrators who configure and run the contact center, manage agents and supervisors, and address operational issues.
- Contact center supervisors, who lead agent teams and are responsible for team performance.

This guide is written with the understanding that your system has been deployed by a partner or service provider who has validated the deployment type, virtual machines, and database and has verified that your contact center can receive and send calls.

Related Documents

Document or resource	Link
<i>Reporting Concepts for Cisco Unified ICM/Contact Center Enterprise</i>	https://www.cisco.com/c/en/us/support/customer-collaboration/unified-contact-center-enterprise/products-user-guide-list.html
<i>Cisco Packaged Contact Center Enterprise Documentation Guide</i>	https://www.cisco.com/c/en/us/support/customer-collaboration/packaged-contact-center-enterprise/products-documentation-roadmaps-list.html
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<i>Cisco Packaged Contact Center Enterprise Features Guide</i>	https://www.cisco.com/c/en/us/support/customer-collaboration/packaged-contact-center-enterprise/products-maintenance-guides-list.html

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Conventions

This document uses the following conventions:

Convention	Description
boldface font	Boldface font is used to indicate commands, such as user entries, keys, buttons, folder names, and submenu names. For example: <ul style="list-style-type: none">• Choose Edit > Find.• Click Finish.

Convention	Description
<i>italic font</i>	Italic font is used to indicate the following: <ul style="list-style-type: none">• To introduce a new term. Example: A <i>skill group</i> is a collection of agents who share similar skills.• A syntax value that the user must replace. Example: IF (<i>condition, true-value, false-value</i>)• A book title. Example: See the <i>Cisco Unified Contact Center Enterprise Installation and Upgrade Guide</i>.
window font	Window font, such as Courier, is used for the following: <ul style="list-style-type: none">• Text as it appears in code or that the window displays. Example: <code><html><title>Cisco Systems, Inc. </title></html></code>
< >	Angle brackets are used to indicate the following: <ul style="list-style-type: none">• For arguments where the context does not allow italic, such as ASCII output.• A character string that the user enters but that does not appear on the window such as a password.



CHAPTER 1

Getting Started

- [Solution Components](#) , on page 1
- [Sign In](#), on page 2
- [Single Sign-On Log Out](#) , on page 3
- [System Interface](#), on page 3

Solution Components

Cisco Packaged CCE components are:

The Cisco Unified CCE Rogger functions as the call router and makes all routing decisions. The Unified CCE Rogger also functions as the logger.

The Cisco Unified CCE PG contains the Peripheral Gateways (PG) that connect to Unified Communications Manager, the Media Routing (MR) peripherals, and the Voice Response Unit (VRU). The VRU in this case is a Cisco Unified Customer Voice Portal (CVP).

The Cisco Unified CCE AW-HDS-DDS stores contact center configuration data and reporting data.

The Cisco Unified Communications Manager Server functions as the call processing component. The Publisher stores the read-write database. Devices such as phones and gateways register to the Subscribers.

The Cisco Unified Customer Voice Portal (CVP) Server provides prompting, queuing, and call control. The Unified CVP Server combines the Call Server, Media Server, and VXML server functionality. This guide refers to the server as the Unified CVP Server.

The Cisco Unified CVP Operations Console (CVP OAMP) Server functions as the administrative and management component of the Unified CVP cluster.

The Cisco Unified CVP Reporting Server collects information from Unified CVP components and makes that information available to Cisco Unified Intelligence Center.

Cisco Unified Intelligence Center is a web-based reporting application that generates real-time and historical reports for Unified Contact Center Enterprise and Cisco Unified CVP. Unified Intelligence Center includes the Live Data VOS services. Live Data is a stream processing system that aggregates and processes the events in-stream and publishes the information. Unified Intelligence Center subscribes to the message stream to receive real time data and continuously update the Live Data reports.

The Unified Intelligence Center installation includes Cisco Identity Service (Cisco IdS) on the same VM. Cisco IdS is used to generate authentication and authorization requests for Single Sign-On.

Cisco Finesse is a browser-based agent and supervisor desktop.

Enterprise Chat and Email is an optional application that provides chat and email functionality to the contact center.

The VMs for these applications must be on the Side A and Side B servers as indicated in the following table.

SIDE A Required VMs	SIDE B Required VMs
Unified CCE Rogger	Unified CCE Rogger
Unified CCE PG	Unified CCE PG
Unified CCE AW-HDS-DDS	Unified CCE AW-HDS-DDS
Unified CVP Server	Unified CVP Server
Unified CVP OAMP Server	—
Unified Intelligence Center Publisher (with Live Data and Cisco IdS)	Unified Intelligence Center Subscriber (with Live Data and Cisco IdS)
Finesse Primary	Finesse Secondary

Unified Communications Manager Publisher and Subscribers must be part of the deployment. They can be VMs on Side A and Side B, or they can be configured as external machines.

The Unified CVP Reporting Server and Enterprise Chat and Email (ECE) Data server VMs are optional.

ECE Data Server can be installed as a VM on Side B or configured as an external machine.



Note On-box installation for ECE is supported only on the B200 M4 and the C240 M4 servers. If Packaged CCE is installed on a B200 M3 or C240 M3, you can install ECE on an external machine.

SIDE A Other VMs	SIDE B Other VMs
Unified Communications Manager Publisher	Unified Communications Manager Subscriber 2
Unified Communications Manager Subscriber 1	Unified CVP Reporting Server (optional)
—	Enterprise Chat and Email (optional)



Note You cannot have any additional VMs on the Packaged CCE VMware hosts, even if you are using an external Unified Communications Manager cluster.

Sign In

Sign in to Unified CCE Administration at <https://<IP Address>/cceadmin>. <IP Address> is the address of the Side A or B Unified CCE AW or optional external HDS.

Administrators

Administrators sign in using their Active Directory credentials. For **username**, use the *user@domain.com* format.

The administrator's initial sign-in opens the *Home* menu.

Supervisors

Supervisors on an IPv6 network sign in to Unified CCE Administration at `https://<FQDN>/cceadmin`. `<FQDN>` is the fully qualified domain name of the Side A or B CCE AW or optional external HDS.

Supervisors sign in using their Active Directory (*user@domain.com*) or single sign-on credentials. If supervisors are enabled for single sign-on, after entering their username they are redirected to the Identity Provider sign-in screen to enter their credentials. Supervisors are redirected to Unified CCE Administration after successfully signing in.

The supervisor's initial sign-in opens to the *Manage* menu.

Languages

If the Language Pack is installed, the Sign-In window includes a Language drop-down menu, showing more than a dozen languages. English is the initial and the default language. Select any other language to see the user interface and the online help in that language. The system retains your choice for subsequent sign-ins until you change it again.

Single Sign-On Log Out

For a complete logout from all applications, sign out of the applications and close the browser window. In a Windows desktop, log out of the Windows account. In a Mac desktop, quit the browser application.



Note Users enabled for single sign-on are at risk of having their accounts misused by others if the browser is not closed completely. If the browser is left open, a different user can access the application from the browser page without entering credentials.

System Interface

What you see after a successful sign-in depends on whether you are an administrator or a supervisor. If you are an administrator, what you see also depends on your role and the departments with which you are associated. See [Administrators and System Access, on page 33](#).

Regardless of access privileges, all Administrators see:

- A **title bar** above the menu that shows their username and offers a Sign Out option. The system automatically signs you out after 30 minutes of inactivity.
- A **menu bar** with some or all of these three menus: *Home*, *Manage*, and *Settings*.

For administrators who have permission to access the Deployment tool, the menu bar also includes a **notification** icon. The **notification** icon indicates how many validation rule warnings and errors the system

has detected for machines in your deployment. Click the **notification** icon to open the Deployment tool, where you can see which machines have validation rule alerts and view details for those alerts.

Supervisors see only one menu—*Manage*—and have restricted access to the tools on that menu.

Menus

Manage

The tools you use most frequently are organized under the **Manage** menu. Depending on the tools to which you have access, the **Manage** menu contains some or all of these three submenus: **Agent**, **Call**, and **Other**.

System

Depending on the tools to which you have access, the **System** menu has some or all of these submenus: **General** and **Access**.

Lists

List Windows

Most tools open to a List window that has rows for all currently configured objects. For example, the Teams tool has a list with a row for each team, and the Call Types tool has a list with a row for each call type. List windows allow you to search, sort, edit, and delete from the list.

Permissions on List windows vary for administrators and supervisors and are noted in the topic for each tool.

Search a List

There is a Search field on the List window for most tools. The search interface is similar, with small variations, depending on the tool.

Search and Administrators

If you sign in as a global administrator, a search returns all objects.

If you sign in as a departmental administrator, a search returns all objects in the departments you administer, as well as all global objects (objects that are in no departments).

Basic Search

Some tools offer a basic search on the **Name** (or name-equivalent) and **Description** fields.

Enter all or part of either value to find matches. Clear the search by deleting text from the Search field.

Search for Tools with Department IDs

For objects that can be associated with a department, you can click the + icon to the right of the Search field to open a popup window, where you can:

- Enter a name or description (for call types and precision queues add **id**).
- Select departments, with options for **Globals and Departments**, **Globals only**, or **Departments only**.

Selecting **Globals and Departments** or **Departments only** enables an input field where you can enter a space-separated list of department names. (Departments is an OR search.)



Note Search by department is enabled only when departments are configured.

Agent Advanced Search

The Search field in the Agents tool offers an advanced and flexible search.

Click the + icon at the far right of the Search field to open a popup window, where you can:

- Select to search for agents only, supervisors only, or both.
- Enter a username, agent ID, first or last name, or description to search for that string.
- Enter one or more team names separated by spaces. (Team is an OR search--the agent or supervisor must be a member of one of the teams.)
- Enter one or more attribute names separated by spaces. (Attributes is an AND search--the agent or supervisor must have all attributes.)
- Enter one or more skill group names separated by spaces. (Skill Groups is an AND search.)
- Select departments, with options for **Globals and Departments**, **Globals only**, or **Departments only**.

Selecting **Globals and Departments** or **Departments only** enables an input field where you can enter a space-separated list of department names. (Departments is an OR search.)

Related Topics

[Departments](#), on page 37

Sort a List

If a column in a List window has an arrow icon in the column header, click the **arrow** to sort in ascending or descending order.

Add Objects

Click **New** in a List window to open an Add window where you can complete fields to create and save a new object.

Update Objects

To edit an object in a List window, click in the row for that object. This opens a window where you can make and save modifications. This table explains which fields are editable for each tool.

In the List window for the Agent tool, you can edit descriptions, desk settings, and teams for multiple agents at once (see [Edit Description, Desk Settings, and Teams for Multiple Agents, on page 25](#)).



Remember Not all tools are available for all Deployment Types.

Tool	Editable Fields
Administrators	All fields
Agents	All fields except Site . If an agent is not enabled for single sign-on, you can check Change Password to reset the agent's password.
Attributes	All fields except Type .
Bucket Intervals	Name You cannot edit the built-in bucket interval.
Bulk Jobs	No fields
Call Types	All fields except the system-generated ID.
Desk Settings	All fields
Dialed Numbers	All fields except Site , Routing Type and Media Routing Domain .
Expanded Call Variables	For user-defined array and scalar expanded call variables, Name , Description , Maximum Length , Enabled , and Persistent are editable. For built-in expanded call variables, Enabled and Persistent are the only editable fields.
Media Routing Domains	All fields You cannot edit the built-in Cisco_Voice MRD or Multichannel MRDs for Enterprise Chat and Email.
Network VRU Scripts	All fields
Precision Queues	All fields
Reason Codes	Text and Description
Roles	For custom roles, all fields on both tabs are editable, and all access fields can be checked or unchecked. You cannot edit the four built-in roles.
Teams	All fields except Site .

Tool	Editable Fields
Skill Groups	<p>All fields except Site, Media Routing Domain and Peripheral Number.</p> <p>Note The Peripheral Number field is generated automatically when you add and save a new skill group. It shows the number of the skill group, as known on the peripheral.</p>

Delete Objects

To delete an object from a List window, hover over the row for that object to see the trash can icon at the end of the row. Click the **trash can** icon and confirm your intention to delete.

Departmental administrators cannot delete global objects. Objects are identified as global in the Department column in the List window.

When you delete an object from Unified CCE Administration, the system does one of the following:

- Immediately deletes the object.
- Marks the object for deletion and enables permanent deletion. (You delete the object permanently using the Deleted Objects tool in Configuration Manager.)
- Shows an error message explaining why the object cannot be deleted in its current state.

You cannot delete certain objects, including:

- Objects set as system defaults, such as the default desk settings.
- Objects referenced by other objects, such as a call type that is referenced by a dialed number.
- Most built-in objects, such as built-in expanded call variables.

This table lists the delete types for all Unified CCE Administration objects. Available objects depend on your role and deployment type.

Tool	Delete Type	Notes
Administrators	Permanent	—
Agents	Marked	—
Attributes	Marked	—
Bucket Intervals	Marked	—

Tool	Delete Type	Notes
Bulk Jobs	Permanent	Deletes the bulk job, its content file, and its log file from the host computer that created it. You can delete a bulk job that is in queue, has completed, or has failed. You cannot delete a bulk job that is in process. If your deployment includes two AW server hosts, you must delete a bulk job from the Unified CCE AW host on which it was created.
Call Types	Marked	—
Desk Settings	Permanent	—
Dialed Numbers	Marked	—
Expanded Call Variables	Marked	—
Media Routing Domains	Permanent	You cannot delete the built-in Cisco_Voice MRD or Multichannel MRDs for Enterprise Chat and Email (ECE).
Network VRU Scripts	Permanent	—
Precision Queues	Marked	Depends on whether the precision queue is referenced statically or dynamically in a script. .
Reason Codes	Marked	—
Roles	Permanent	—
Teams	Permanent	—
Skill Groups	Marked	—

Related Topics

[Permanent Deletion](#), on page 121

Popup Windows

Popup window selection

Many Add and Edit windows have popup windows for searching and choosing objects that are relevant to that tool.

Some popup windows allow you to chose one object. Other popup windows allow you to select multiple objects. For example, because an agent can be on only one team, the popup window for adding an agent to a team allows only one selection, while the Skill Group Members popup window allows you to select one or more agents to add to the skill group.

Click **Add** or click the **magnifying glass** icon to open the popup window, where you can locate and select items that are configured.

Keyboard Shortcuts

Press the question mark (?) key to open a window that shows the keyboard shortcuts that are applicable for that tool and for your status (Supervisor or Administrator).



Tip

The keyboard shortcuts window does not open when you press the (?) key in a text field. Press the **esc** key to remove focus from the text field and then press the (?) key.



PART I

Manage Users

- [Manage Agents, on page 13](#)
- [Manage Supervisors, on page 27](#)
- [Manage Administrators, on page 31](#)



CHAPTER 2

Manage Agents

- Agents, on page 13
- Add and Maintain Agents, on page 14
- Add an Agent by Copying an Existing Agent Record, on page 17
- Search for Agents, on page 18
- Manage Agent Environment, on page 18
- Manage Agent Expertise, on page 23
- Agent Reskilling, on page 24
- Edit Skill Group Membership for Multiple Agents, on page 24
- Edit Description, Desk Settings, and Teams for Multiple Agents, on page 25

Agents

Agents respond to contacts from customers. These contact requests are often phone calls, but can also be chat requests or emails.

You can configure the types of contacts that are routed to an agent. For example, if an agent is a member of a skill group that is set up for the Cisco_Voice routing domain only, that agent is a voice agent for that skill group. If an agent is a member of a skill group that is set up for a nonvoice routing domain, that agent is a multichannel agent for that skill group.

Agents can be located at a contact center site or designated as mobile agents who work elsewhere—perhaps from a home office. Setting up mobile agents is documented in the *Cisco Packaged Contact Center Enterprise Features Guide*, at <https://www.cisco.com/c/en/us/support/customer-collaboration/packaged-contact-center-enterprise/products-maintenance-guides-list.html>.

Agents can be assigned to skill groups and to one team. Teams are organizational units that reflect the reporting structure in a contact center. They can also be assigned attributes that indicate their proficiency—perhaps expertise in a certain language or technology.

Agents work from an agent desktop. Each agent is associated with one Desk Settings, either the current default desk settings or another desk settings. Desk settings are a set of permissions or characteristics that control the features agents can see and use while they are interacting with customers.

You can indicate that an agent is a supervisor. An agent with supervisor status can oversee multiple teams, can view reports that monitor activities of the agents on those teams, and can join and participate in agent/customer calls. Supervisors work from a supervisor desktop.

Navigate to **Unified CCE Administration > Manage > Agents** to view the Agent list. Based on their role and the departments they administer, Administrators can see and maintain all agents. Supervisors see a list of agents who are on teams they supervise.

Related Topics

- [Add and Maintain Agents](#), on page 14
- [Add an Agent by Copying an Existing Agent Record](#), on page 17
- [Edit Description, Desk Settings, and Teams for Multiple Agents](#), on page 25
- [Add Supervisor Status to an Agent](#), on page 29
- [Attributes](#), on page 45
- [Desk Settings](#), on page 19
- [Roles](#), on page 35
- [Skill Groups](#), on page 55
- [Teams](#), on page 22

Add and Maintain Agents

This procedure explains how to add an agent. For information on maintaining agents, see [Update Objects](#), on page 5 and [Delete Objects](#), on page 7.

You can add agents one at a time from the **List of Agents** window, using this procedure. You can also do the following:

- Create a new agent by copying an existing agent record (see [Add an Agent by Copying an Existing Agent Record](#), on page 17).
- Run bulk jobs to add or edit multiple agent records (see [Manage Bulk Jobs](#), on page 81).
- Edit the skill group membership for multiple agents at once (see [Edit Skill Group Membership for Multiple Agents](#), on page 24).
- Edit descriptions, desk settings, and teams for multiple agents at once (see [Edit Description, Desk Settings, and Teams for Multiple Agents](#), on page 25).

Procedure

-
- Step 1** Navigate to **Unified CCE Administration > Manage > Agents**.
- Step 2** Click **New** to open the **New Agent** page.
This page has **General**, **Description**, **Attributes**, **Skill Groups**, **Supervised Teams** tabs. You cannot save the agent until you have entered all the required fields on the **General** tab. You can complete other tabs as needed and in any order.
- Step 3** Complete the fields on the **General** tab:

Field	Required?	Description
Single Sign-On	no	<p>Indicates whether the agent is set for single sign-on (SSO). When SSO is enabled, the agent uses Active Directory or other SSO credentials to sign into the agent desktop and other tools.</p> <p>You can check this check box to enable SSO for this agent if SSO is set globally to mixed mode.</p> <p>You cannot edit this setting if SSO is enabled or disabled globally.</p> <p>If SSO is enabled globally, saving the agent's new or updated record enables SSO for the agent.</p>
Login Enabled	no	Checked by default. Uncheck the check box only if you do not want this agent to be able to sign in.
Is Supervisor	no	Check to configure this agent as a Supervisor.
Support Email & Chat	no	This check box appears only when ECE is configured for a peripheral set or a data center. By default, it is not checked.
Username	yes	<p>Enter a unique username for the Agent.</p> <p>Enter up to 255 ASCII characters as the username for this agent. The login name supports the use of all characters from 33 to 126 in the ASCII character set, except for the following: double quotation mark ("), forward slash (/), backward slash (\), square brackets ([]), colon (:), semicolon (;), pipe (), equal to (=), comma (,), plus sign (+), asterisk (*), question mark (?), angle brackets (< >), hash (#), percent (%), and SPACE.</p> <p>For supervisors and for agents with single sign-on (SSO) enabled, the username is the user's Active Directory or SSO account username.</p> <p>For supervisors who are not enabled for single sign-on (SSO), the Active Directory username must be in the user@domain format.</p> <p>Remember An agent who is designated as a supervisor signs in to Unified CCE Administration with this username.</p>
First Name	yes	See Native Character Sets, on page 313 .
Last Name	yes	See Native Character Sets, on page 313 .
Agent ID	-	<p>Enter a unique string of up to 11 digits.</p> <p>If you leave this field blank, Packaged CCE automatically generates a 7-digit agent ID, which you can later edit.</p> <p>The agent uses the Agent ID to sign in to Cisco Finesse.</p>
Description	no	<p>Enter a description of the agent.</p> <p>See Native Character Sets, on page 313.</p>

Field	Required?	Description
Desk Settings	-	The Desk Settings field defaults to show the current system-default. (See System Settings for Main Site, on page 99.) To change it, click the magnifying glass icon to display the Select Desk Settings list where you can select a different desk setting.
Department	yes (for departmental administrators)	<p>A departmental administrator must select one department from the pop-up list to associate with this agent. The list shows all administrator's departments.</p> <p>A global administrator can retain the default value for this field, which sets the agent as global (belonging to no departments), or can select a department for this agent.</p> <p>See Departments, on page 37 for more information about associating agents with departments.</p>
Site	-	<p>The Site field displays Main by default.</p> <p>To add a site:</p> <ol style="list-style-type: none"> Click the magnifying glass icon to display the list of sites. Select the required site.
Team	no	<p>The Team field defaults to <i>None</i>. To change the setting, click the magnifying glass icon to display the Select Team list and select a team. Only the teams associated to the selected site display.</p> <p>If the agent is associated with a department, you see global teams and teams that are associated with that department in the list. If the agent is a global agent, you see only global teams in the list.</p>
Set Password	no	<p>If single sign-on is not enabled, this setting is checked by default. Uncheck the check box if you do not want to create a password for this agent.</p> <p>If single sign-on is enabled, the password settings on the General tab are disabled.</p>
Enter Password	no	<p>Enter and reenter a maximum of 256 ASCII characters to establish and confirm a password for this agent. Password is case-sensitive.</p> <p>The default <i>Minimum Password Length</i> is set in system settings. (See System Settings for Global, on page 96.)</p> <p>For a supervisor, the password must be the supervisor's Active Directory password.</p> <p>Tip An agent who is designated as a supervisor signs in to Unified CCE Administration with this password.</p>
Re-enter Password	no	—

Step 4 Complete the **Attributes** tab:

This tab shows the attributes associated with this agent and their current values.

Click **Add** to open a pop-up list of all attributes, showing the name and current default value for each.

- a) Click the attributes you want to add for this agent.
- b) From the **Value** drop-down list, choose the attribute value as appropriate for this agent.

Step 5 Complete the **Skill Groups** tab:

This tab shows the skill group membership for this agent.

- a) Click **Add** to open the **Add Skill Groups** pop-up. You can view only the skill groups associated to the selected site. Click the skill groups you want to add for this agent or supervisor.

Note You can view only the skill groups associated to the selected site in 2000 Agents deployment.

- b) Select the default skill group for the agent from the **Default Skill Group** drop-down list.

Step 6 Complete the **Supervised Teams** tab, if **Is Supervisor** is checked.

To select a team, click **Add** to display the **Add Supervised Teams** list, and click the row to select a team.

Note

- You can view only the teams that are associated to the selected site in 2000 Agents deployment.
- If the supervisor is associated with a department, you see only teams associated with that department in the list. If the supervisor is a global supervisor, you see all global and departmental teams in the list.

Step 7 Click **Save** to return to the List window, where a message confirms the successful creation of the agent.

Caution You cannot add a new agent in the following conditions:

- Out of Compliance expiry: The system is operating with an insufficient number of licenses and the system is in enforcement mode.
- Authorization expiry: The system has not communicated with **Cisco Smart Software Manager** or satellite for 90 days and the system has not automatically renewed the entitlement authorizations.
- Evaluation expiry: The license evaluation period has expired.

Add an Agent by Copying an Existing Agent Record

You can create a new agent by copying an existing agent record.

The following fields are copied to the new agent record:

- Department
- Description
- Desk settings
- Team
- Attributes

- Skill Groups
- Default Skill Group
- Site

All other fields are either cleared or set to the default value.

Procedure

-
- Step 1** Navigate to **Unified CCE Administration > Manage > Agents**.
 - Step 2** Click the agent you want to copy, and then click the **Copy** button in the **Edit Agent** page. The **New Agent** page opens.
 - Step 3** Review the fields on the **General**, **Attributes**, and **Skill Groups** tabs that were copied from the original agent record, and make any necessary changes. Enter information for the fields that were not copied.
 - Step 4** If the new agent is a supervisor, complete the fields on the **Supervisor** tab.
 - Step 5** Click **Save** to return to the List window, where a message confirms the successful creation of the agent.
-

Search for Agents

The Search field in the Agents tool offers an advanced and flexible search.

Click the + icon at the far right of the **Search** field to open a popup window, where you can:

- Select to search for agents only, supervisors only, or both.
- Enter a username, agent ID, first or last name, or description to search for that string.
- Enter one or more site names separated by spaces. (Site is an OR search.)
- Enter one or more peripheral set names separated by spaces (Peripheral Set is an OR search). The search is case-insensitive and does not support partial matches.



Note Search by department is available only when departments are configured.
Search by site is available only when remote sites are configured.

Manage Agent Environment

All agents have a desk settings configuration. They work on an agent desktop and enter reason codes on their agent desktops. Most agents belong to a team.

This section explains these tools, which are selections on the **Manage > Agent menu**.

Desk Settings

Desk settings are a collection of permissions or characteristics for the agent, such as how and when calls to the agent are redirected, how and when the agent enters various work states, and how requests to the supervisor are handled.

To configure desk settings, go to **Unified CCE Administration > Manage > Desk Settings**.

Administrators have unlimited access to Desk Settings configuration. Supervisors cannot access Desk Settings.



Note For any change, you perform in the **Agent Desk Settings** to take effect, log out and then log in to the Finesse Agent Desktop.

Add and Maintain Desk Settings

Procedure

- Step 1** Navigate to **Unified CCE Administration > Manage > Desk Settings**.
- Step 2**
- Step 3** Click **New** to open the **New Desk Settings** window.
- Step 4** Complete the following fields:

Field	Required?	Description
Name	yes	Enter a unique name that will identify the desk settings, using a maximum of 32 alphanumeric characters.
Description	no	Enter a description for the desk settings.
Logout Inactivity Time	no	Enter the number of seconds an agent can be inactive while in the Not Ready state before the system logs the agent out. This number can be from 10 seconds to 7200 seconds (2 hours). Leave this field blank to disable the timer. For agents who handle both voice and nonvoice tasks in the Cisco Finesse agent desktop, leave this field blank.
Wrapup on Incoming	yes	From the drop-down menu, select Optional (the default), Required , Not Allowed , to indicate whether the agent is allowed or required to enter wrap-up data after an incoming call. A selection of Optional means the agent can choose to enter wrap-up data or to answer another call.

Wrapup on Outgoing	yes	From the drop-down menu, select Optional (the default), Required , or Not Allowed to indicate whether the agent is allowed or required to enter wrap-up data after an outgoing call. A selection of Optional means the agent can choose to enter wrap-up data or to answer another call.
Wrapup Timer	no	Enter a value in seconds between 1 and 7200 to specify the time within which the agent can enter wrap-up data before being timed out. The default is 7200 seconds.
Supervisor Assist Call Method	no	From the drop-down menu, select either: <ul style="list-style-type: none"> • Consultative Call (default): The caller is aware when the supervisor joins the call. This option is supported in CTI OS and Finesse agent desktops. • Blind Conference: The caller is not aware when the supervisor joins the call. This option is supported only in CTI OS agent desktops.
Emergency Call Method	no	From the drop-down menu, select either: <ul style="list-style-type: none"> • Consultative Call (default): The caller is aware when the supervisor joins the call. This option is supported in CTI OS and Finesse agent desktops. • Blind Conference: The caller is not aware when the supervisor joins the call. This option is supported only in CTI OS agent desktops.
Agent State after RONA	no	From the drop-down menu select either: <ul style="list-style-type: none"> • Not Ready (default): The agent is set as not ready after RONA. • Ready: The agent is set as ready after RONA.
Mobile Agent	no	From the drop-down menu select one of the following: <ul style="list-style-type: none"> • Not Allowed: In this mode, Mobile Agent is not allowed. • Call by Call: In this mode, the Mobile Agent's phone is dialed for each incoming call. When the call ends, the Mobile Agent's phone is disconnected before being made ready for the next call. • Nailed Up: In this mode, the agent is called at login time and the line stays connected through multiple customer calls. • Agent Chooses: In this mode, an agent can select a call delivery mode at login.

Enable mobile agent	no	Unchecked by default. When checked, indicates that the agent is a Mobile Agent who can sign in remotely and take calls from any phone. With this selected, the agent can also sign in as a normal agent.
Require Idle Reason	no	Unchecked by default. When checked, indicates that the agent must enter a reason before entering the Idle state.
Require Logout Reason	no	Unchecked by default. When checked, indicates that the agent must enter a reason before logging out.
Play zip tone	no	Unchecked by default. Checked, will play a zip tone to the agent when call is auto-answered. Note Only if the administrator enables the Auto answer option, Play ziptone can be enabled.

Note There is no RONA timer field on the Desk Settings tool. The Requery on No Answer (RONA) timer on the Unified Cisco Unified Voice Portal (CVP) controls the agent desk settings for Packaged CCE.

Step 5 Save the desk settings to return to the List window, where a message confirms the successful creation.

Reason Codes

Agents enter reason codes on their agent desktops when they become idle (enter “Not Ready” state). Reason codes appear in Unified Intelligence Center reports and help identify agent behavior. Are agents taking an inappropriate number of breaks? How long are agents at lunch or in meetings?

If you configure reason codes in the agent desktop software, then configure the same reason codes in Unified CCE Administration to ensure consistency in reporting.

Navigate to **Unified CCE Administration > Manage > Reason Codes** to configure reason codes.

Supervisors cannot access the Reason Codes tool.

Add and Maintain Reason Codes

Procedure

Step 1 Navigate to **Unified CCE Administration > Manage > Reason Codes**.

Step 2 Click **New** to open the **New Reason Code** window.

Step 3 Complete the following fields:

Field	Required?	Description
Text	yes	Enter up to 40 characters to name the reason code.
Code	yes	Enter a unique positive integer between 0 and 65,535.

Description	no	Enter up to 255 characters to describe the reason code. There is no restriction of characters. See Native Character Sets, on page 313 .
--------------------	----	--

Step 4 Save the reason code to return to the List window, where a message confirms the successful creation.

Teams

You can create teams to associate a set of agents with supervisors. Supervisors can run reports on the team and receive Supervisor Assist requests from the team members.



Note Supervisor Assist must be indicated in the Desk Settings tool and must be supported by the agent desktop.
Agent cannot be a member of more than one team.

Administrators can see and maintain teams .

Supervisors have display-only access to the Teams tool.

To configure teams, go to **Unified CCE Administration > Manage > Teams**.

Related Topics

[Add and Maintain Teams](#), on page 22

[Agents](#), on page 13

[Manage Supervisors](#), on page 27

[Add and Maintain Desk Settings](#), on page 19

Add and Maintain Teams

Procedure

Step 1 Navigate to **Unified CCE Administration > Manage > Teams**.

Step 2 Click **New** to open the **New Team** window.

Step 3 Complete the fields on the General tab:

Field	Required?	Description
Name	yes	Enter up to 32 alphanumeric characters.
Description	no	Enter up to 255 characters to describe the team. See Native Character Sets, on page 313 .

Field	Required?	Description
Site	yes	<p>The Site field displays Main by default.</p> <p>To add a different site:</p> <ol style="list-style-type: none"> Click the magnifying glass icon to display the list of sites with Agent PG configured. Select the required site.
Supervisor Script Dialed Number	no	<p>Click the magnifying glass icon to display the Select Supervisor Script Dialed Number list.</p> <p>The list includes all dialed numbers with a routing type of Internal Voice.</p> <p>Click a row to select a dialed number for supervisor assistance and close the list.</p>

Step 4 Complete the Members tab:

This tab shows a list of agents on the team.

Click **Add** to open the **Add Agents** popup window. The agents associated to the selected site display. The row for each agent has four columns: a column that is either blank or that shows an “i” icon, a column with the agent's username, a column with the agent's last name, and a column with his first name.

If an agent already has an “i” icon indicating that the agent is a member of a team, hover over the icon to see the name of that team. Clicking an agent who already has a team removes that agent from that team and reassigns the agent to this team.

Step 5 Complete the Supervisors tab:

This tab shows the supervisors for the team and allows you to add supervisors.

- Click **Add** to add supervisors to the team. The supervisors associated to the selected site display.
- Click one or more rows to select supervisors. The supervisors are now in the List of Supervisors.
- Continue to another tab, or click **Save** to return to the List window, where a message confirms the successful creation of the team.

Manage Agent Expertise

There are two ways that agents can be categorized such that calls are sent to them based on their experience and their expertise in handling specific types of customer concerns.

- You can add an agent to one or more skill groups. For example, agents who work on fulfilling orders might be added to a *Customer Service* or a *Tracking Orders* skill group.
- You can assign one or more attributes to an agent. For example, an agent who speaks fluent Spanish might be assigned an attribute of *Spanish*.

Agent Reskilling

Supervisors can reskill agents who are on teams that they supervise. This procedure explains how to reskill a single agent. For information on reskilling multiple agents at once, see [Edit Skill Group Membership for Multiple Agents, on page 24](#).



Note If you remove an agent from the agent's default skill group, the agent's default skill group is changed to the system defined default skill group.

Procedure

- Step 1** Navigate to **Unified CCE Administration Manage > Agent > Agents**.
- Step 2** Click the agent you want to reskill.
- Step 3** Click the **Skill Groups** tab.
- Step 4** To add a skill group, click the **magnifying glass** icon to open the pop-up list of skill groups. Work in the pop-up window to add skill groups to the agent.
- Step 5** To remove a skill group, click the skill group's **x** icon in the **List of Skill Groups** section of the **Skill Groups** tab.
- Step 6** Click **Save**.

Edit Skill Group Membership for Multiple Agents

Using the Agent tool, you can edit skill group membership for up to 50 agents at once.

In Packaged CCE deployments only, the agents must all belong to the same site and same department, or all be global agents. The **Edit** button disables if you select:

- Agents from multiple sites or multiple departments.
- A mix of global and departmental agents.
- A mix of agents on main site and remote site.

If you remove an agent from the agent's default skill group, the agent's default skill group is changed to the system defined default skill group.



Tip Use the **Search** field to find the agents whose skill group membership you want to edit. For example, you could find agents belonging to a particular department, team, or skill group, or with certain attributes. (See [Search for Agents, on page 18](#).)

Procedure

- Step 1** Navigate to **Unified CCE Administration > Manage > Agents**.
- Step 2** Check the check box for each agent whose skill group membership you want to edit.
- To select all agents in a list, check the **select/deselect all** check box in the list header. (The check box is enabled for *select all* only when the number of agents in the list is less than or equal to 50.)
- The total number of selected agents appears above the agent list. To uncheck all agents, click the **select/deselect all** check box. (The check box is enabled for *deselect all* when you check one or more agents in the list, regardless of the number of agents in the list.)
- Step 3** Click **Edit > Skill Groups**.
- The **Edit Skill Groups** dialog opens with a list of skill groups.
- The **# of Selected Agents** column indicates how many of the selected agents currently belong to each skill group.
- In Packaged CCE deployments only, if you select agents from a specific department and a site, global skill groups on that site, and skill groups for that department and site appear in the list. If you have selected global agents from a specific site, all global and departmental skill groups on that site appear in the list.
- Step 4** In the **Action** column, click the + icon for each skill group to which you want to add the selected agents. Click the x icon for each skill group from which you want to remove the selected agents.
- Note** If all selected agents belong to a skill group, only the x icon appears for that skill group. If none of the selected agents belong to a skill group, only the + icon appears for that skill group.
- The total number of skill groups that you are adding and removing appears at the bottom of the dialog.
- Step 5** To undo a skill group membership change, click the **Undo Add** icon in the **Action** column for that skill group.
- Step 6** Click **Save**, and then click **Yes** to confirm the changes.
-

Edit Description, Desk Settings, and Teams for Multiple Agents

Using the Agent tool, you can edit the description, desk settings assignment, and team membership for up to 50 agents at once.

The agents must all belong to the same site and same department, or all be global agents. The **Edit** button disables if you select:

- Agents from multiple sites or multiple departments.
- A mix of global and departmental agents.
- A mix of agents on main site and remote site.



Tip Use the **Search** field to find the agents whose settings you want to edit. For example, you could find agents belonging to a particular department, team, or skill group, or with certain attributes. (See [Search for Agents](#), on page 18.)

Procedure

- Step 1** Navigate to **Unified CCE Administration > Manage > Agents**.
- Step 2** Check the check box for each agent whose description, desk settings, and team membership you want to edit.
- To select all agents in a list, check the **select/deselect all** check box in the list header. (The check box is enabled for *select all* only when the number of agents in the list is less than or equal to 50.)
- The total number of selected agents appears above the agent list. To clear all agents, check the **select/deselect all** check box. (The check box is enabled for *deselect all* when you check one or more agents in the list, regardless of the number of agents in the list.)
- Step 3** Click **Edit > General**.
- The **Edit General Details** pop-up windows opens.
- Step 4** To change the description for all selected agents, check the **Description** check box and enter the description in the text field.
- Step 5** To assign desk settings to all selected agents:
- Check the **Desk Settings** check box.
 - Click the **magnifying glass** icon to display the **Select Desk Settings** list, and then select the desk setting.
- Step 6** To assign all selected agents to a team:
- Check the **Team** check box.
 - Click the **magnifying glass** icon to display the **Select Teams** list, and then select the team.
- Step 7** Click **Save**, and then click **Yes** to confirm the changes.
-



CHAPTER 3

Manage Supervisors

You can configure agents to have supervisor status.

Supervisors with Single Sign-on (SSO) enabled, use their SSO credentials to sign in to Unified CCE Administration.

Supervisors with Single Sign-on (SSO) disabled, use their Unified ICM credentials to sign in to Unified CCE Administration.

With Supervisor status, agents can perform the following tasks:

- Supervise multiple teams and can be both a supervisor and a member of a team.
- Generate reports and view data for the teams they supervise and the agents on those teams.
- Use a supervisor desktop to barge-in, intercept, silently monitor, and log out agents.
- Join an agent or customer call to assist on a consultative or emergency basis. The agent's ability to request supervisor assistance is a setting on the Desk Settings.
- Change the attributes, and skill groups of agents who are on teams they supervise. Supervisors can also change the passwords for agents who do not have single sign-on enabled.

To configure supervisors in Unified CCE Administration, go to **Unified CCE Administration > Manage > Agents**. Select an agent and click the Supervisor tab.

- [Supervisor Access and Permissions, on page 27](#)
- [Add Supervisor Status to an Agent, on page 29](#)

Supervisor Access and Permissions

Supervisors can access tools on the Manage menu, as follows:

Tool	Permissions
Agents	<p>On the Agent List page, supervisors can see and edit settings for the agents that they supervise.</p> <ul style="list-style-type: none"> • General tab: Supervisors can edit the password for agents who do not have single sign-on enabled. Other fields are read-only. <p>After changing the agent's password,</p> <ul style="list-style-type: none"> • The agent can sign in to Cisco Finesse only after 30 minutes, or • Restart Unified Intelligence Center Reporting Service and then the agent can sign in to Cisco Finesse. <ul style="list-style-type: none"> • Attributes tab: Supervisors can add, modify, and remove attributes for agents on teams they supervise. • Skill Groups tab: Supervisors can add and remove the agent's membership in skill groups and can change the agent's default skill group. • Supervised Teams tab: Read-only for supervisors. <p>Supervisors can also change skill group or attribute assignments for up to 50 agents at once by selecting the agents on the Agent List page, and then clicking Edit > Skill Groups or Edit > Attributes.</p> <p>Note If a supervisor attempts to make numerous membership changes at once (in excess of 3500 in a single save), the system alerts the supervisor of attempting too many changes in a single operation.</p>
Attributes	<p>On the Attributes List window, supervisors can see and edit agent attribute assignments. Supervisors cannot add or delete attributes.</p> <ul style="list-style-type: none"> • General tab: Fields are read-only. • Agents tab: Supervisors can add and remove attribute assignments for agents that they supervise.
Precision Queues	Read-only.
Skill Groups	<p>On the Skill Group List page, supervisors can see and edit membership for skill groups. Supervisors cannot add or delete skill groups.</p> <ul style="list-style-type: none"> • General tab: Fields are read-only. • Members tab: Supervisors can add and remove skill groups for agents that they supervise.
Teams	Read-only.

Add Supervisor Status to an Agent

This procedure explains how to create a supervisor. For information on maintaining supervisors, see [Update Objects, on page 5](#) and [Delete Objects, on page 7](#).



Remember The agent to whom you are adding supervisor status must already exist in Active Directory.

In Unified CCE Administration, go to **Unified CCE Administration > Manage > Agents**.

Procedure

- Step 1** Create a new agent or edit an existing agent. See [Add and Maintain Agents, on page 14](#).
 - Step 2** Check **Is Supervisor** to configure this agent as a Supervisor.
 - Step 3** Click the **Supervised Teams** tab.
 - Step 4** Select the teams for this supervisor:
 - a) Click **Add** next to **List of Supervised Teams** to open **Add Supervised Teams**.
 - b) Click the team name to add the team.
 - Step 5** Click **Save** to create the supervisor.
-



CHAPTER 4

Manage Administrators

The Packaged CCE deployment of Unified CCE Administration offers extensive flexibility in the configuration of administrator users and in ways to limit their system access.

Administrator access is controlled by the roles and department tools available from the **System** menu. Only administrators with the SystemAdmin role can access these tools.



Note Administrator password and role changes can take up to 30 minutes to take effect.



Note If the system administrator is assigned to "None" (no role), then that administrator has access all the tools in the Configuration Manager.

- [Add and Maintain Administrators, on page 31](#)
- [Administrators and System Access, on page 33](#)
- [Roles, on page 35](#)
- [Departments, on page 37](#)

Add and Maintain Administrators

This procedure explains how to add an administrator. For information on maintaining administrators, see [Update Objects, on page 5](#) and [Delete Objects, on page 7](#).

To add, edit, or delete administrators, an administrator must have the SystemAdmin role. Administrators cannot add, update, or delete themselves.

Procedure

- Step 1** Navigate to **Unified CCE Administration > System > Administrators**.
This opens a **List of Administrators** that shows all administrators who are currently configured.
- Step 2** Click **New** to open the **New Administrator** window.
- Step 3** Complete the following fields:

Field	Required?	Description
Domain	no	From the drop-down menu, select the domain for this administrator.
Username	yes	Enter a unique name for the administrator, using a maximum of 64 characters. The account must already exist in Active Directory under the selected domain.
Description	no	Enter a maximum of 255 characters to describe the role. See Native Character Sets, on page 313 for details on valid characters for this field.
Role	no	<i>ConfigAdmin</i> is the default role for a new administrator. Click the magnifying glass icon to open the List of Roles pop-up window. Select a role for this administrator. For more information see the topic
Read only	no	This check box defaults to unchecked, indicating that the administrator has full access to the tools this role allows. Check this check box to limit the administrator to read-only access.
Access to All Departments	no	<p>This check box defaults to checked. You cannot uncheck it for the <i>SystemAdmin</i> role—SystemAdmins are always Global administrators.</p> <p>For all other roles, you can leave the check box checked to configure the new administrator as a Global administrator. Or you can uncheck the check box to configure the administrator as a Department Administrator and then:</p> <ul style="list-style-type: none"> Click Add to open the List of Allowed Departments pop-up window. Click one or more departments to select them; then close the popup window. The administrator is now a Department administrator who is associated with those departments. Click the x icon to remove a department. <p>Note Department Administrator will have read-only access to non-departmental entities such as SIP Server Group, Media Routing Domain, Routing Pattern, and so on, even if the associated role grants full access.</p>

Step 4 Click **Save** to return to the list, where a message confirms the successful creation of the administrator.

Related Topics

[Important Considerations Regarding User Accounts](#)

[Administrators and System Access](#), on page 33

[Departments](#), on page 37

[Roles](#), on page 35

Administrators and System Access

Administrators' access to the system can be restricted by their roles, the departments to which they are assigned, and whether they have full or read-only permission.

An administrator must have a role, which specifies which menus and tools an administrator sees .

Packaged CCE offers the option to create departments. A contact center for a university might have a department for each academic area, a department for admissions, a department for alumni, and so forth. An administrator can be associated with one or more departments or can be a global administrator who is assigned to no departments and who therefore has access to all departments. Departmental administrators can add and edit objects only for the departments they administer.

An administrator's role and department associations are configured when the administrator is created. A SystemAdmin can change them.



Note If user's Use logon name (pre-Windows 2000) changes in Active Directory, you must update the same in Packaged CCE. Choose **Unified CCE Administration > System > Administrator**. Select the user to open the details and click **Save**.

Related Topics

[Roles](#), on page 35

[Departments](#), on page 37

Limit Administrator Access

Limit Administrator Access by Departments

Packaged CCE allows you to create departments and to associate an object with one department. For example, a university might have department for Admissions, Billing, and each academic area.

The add/edit pages for those objects have a Department field. If you do not want an object to have a department association, you have two options:

- Do not create departments.
- Create departments, but select *Global* from the Department drop-down menu to give the object “global” status.

In the table below, Skill Group One is associated with the Admissions department. Skill Group Two is associated with the History department. Skill Group Three is global and belongs to no department.

Table 1: Object and Departments

Department	Object
Admissions	Skill Group One
History	Skill Group Two
Global	Skill Group Three

When you create or edit an administrator, you can either check **Access to All Departments**, which gives an administrator “global” access to all departments, or associate the administrator with one or more departments. To establish a department association for an administrator, click **Add** next to the **List of Allowed Departments** and select one or multiple departments.



Note An administrator with the SystemAdmin role cannot be a departmental administrator.

In the following table, Administrator One can work with objects in the Admissions department. Administrator Two can work with objects in the History department. Administrator Three is a global administrator and can work with all objects in all departments.

Table 2: Administrators and Departments

Department	Administrator
Admissions	Administrator One
History	Administrator Two
Global	Administrator Three

Limit Administrator Access by Role and Permissions

An administrator must be assigned a role to be allowed to sign in to the Unified CCE Administration.

These roles specify which menus and tools an administrator sees. Every administrator has a **Read only** check box. This means that two administrators could have a role that allows them to see the tools under **Manage > Agents**, but with different permissions. One could have that role with **Read only** checked; this administrator could see the lists in each tool, unless restricted by departmental association. The other administrator could have that role with **Read only** unchecked; this administrator could see the lists in each tool and could also add, edit, and delete objects on those lists, unless restricted by departmental association.

Table 3: Impact of Role and Permissions

Role	Permissions	Administrator
Agent Tools	Read-only	Administrator One
Agent Tools	Full	Administrator Two
Script and Call Tools only	Full	Administrator Three

Administrator One, whose role and administrator settings allow Read-Only access to Agent tools and who is associated with the Admissions department, can see Skill Group One and Skill Group Three.

Administrator Two, whose role and administrator settings allow full access to Agent tools and who is associated with the History department, can see, edit, and delete Skill Group Two. This administrator can add History Department agents to Skill Group Two, add global agents to Skill Group Two, and see Skill Group Three but cannot edit or delete it.

Administrator Three, who is not associated with any department, cannot access the **Manage > Agents** menu and cannot work with any of the skill groups—this administrator's role allows access to Script and Call tools only.

Roles

Roles specify which menus and tools an administrator can see and use. An administrator can be assigned to a built-in role or to a custom role. (An administrator who has no role cannot sign in.)

Every administrator has a **read-only** check box. If read-only is checked, the administrator has read-only access to the tools available in their role.

Features access for roles are defined by check boxes. You cannot alter the features access for built-in roles (all allowed features are checked). But, you can create custom roles to define customized sets of features access.



Note Role changes can take up to 30 minutes to take effect.

Built-In Roles

Administrators with this role	Can access
AgentAdmin	Agent Tools only: <ul style="list-style-type: none">• Agents• Attributes• Desk Settings• Precision Queues• Reason Codes• Skill Groups• Teams

Administrators with this role	Can access
ScriptAdmin	<p>All Agent Tools, plus these Script and Call Tools:</p> <ul style="list-style-type: none"> • Bucket Intervals • Bulk Jobs • Call Types • Dialed Numbers • Expanded Call Variables • Multichannel tools. These include Media Routing Domains, and these Configuration Manager tools: Application Instance, Application Path, Media Class List, Media Routing Domain List. • Network VRU Scripts • Outbound Campaigns (Configuration Manager) • Script Editor
ConfigAdmin	<p>All the Tools for the roles listed previously, plus these System Tools:</p> <ul style="list-style-type: none"> • Agent Targeting (Configuration Manager) • Agent Trace • Context Service • Deleted Objects (Configuration Manager) • Deployment • Log Collection • Outbound Dialer (Configuration Manager) • Single Sign-On • System Information • System Settings
SystemAdmin	<p>All the Tools for the roles listed previously, plus these Access Tools:</p> <ul style="list-style-type: none"> • Administrators • Departments • Roles

Add and Maintain Custom Roles

To add, edit, or delete custom roles, an administrator must have the SystemAdmin role.

This procedure explains how to add a role. For information on maintaining roles, see [Update Objects, on page 5](#) and [Delete Objects, on page 7](#).

Procedure

Step 1 Navigate to **Unified CCE Administration > System > Roles**.

This opens a **List of Roles** that shows all roles currently configured.

Step 2 Click **New** to open the **New Role** page.

Step 3 Complete the fields on the **General** tab:

Field	Required?	Description
Name	Yes	Enter a unique name for the role, using a maximum of 32 characters.
Description	No	Enter a maximum of 255 characters to describe the role. See Native Character Sets, on page 313 .
Access fields	No	When you create a new (custom) role, check the tools that you want administrators with that role to be able to see and use. Checking a category of tools checks all tools in that category. You can uncheck individual tools. For example, you can select Agent Tools and then uncheck Precision Queues and Skill Groups. Note You cannot add Access tools (Administrators, Departments, Roles) to a custom role.

Step 4 Continue to the **Administrators** tab to add administrators to the role.

Step 5 Click **Add** to open the **Add Administrators** pop-up window.

The row for each administrator has three columns: a column that is either blank or that shows an "i" icon, a column with the administrator's username, and a column with the administrator's domain.

If an administrator already has an "i" icon indicating that the administrator has a role, hover over the icon to see the name of that role. Clicking an administrator who already has a role removes that role and reassigns this role.

Step 6 Click **Save** to return to the list of roles, where a message confirms the successful creation of the role.

Departments

You have the option to create departments to facilitate contact center operation and maintenance. A contact center for a hospital might create departments for Surgery, Radiology, Obstetrics, and other operational units. A contact center for a university might create departments for Admissions, Alumni, and Registration. Departments are not required, and there are no built-in departments.

If you do not create departments, all administrators and objects are *global*, meaning that they are not associated with a department.

If you create departments, you have the option to associate a department with each administrator and object. These are called *departmental* administrators and objects. Your Packaged CCE configuration can include a mix of global and departmental administrators and objects.

You can create routing scripts for a department by referencing objects from that department in the scripts.

You can also create custom reporting collections in Cisco Unified Intelligence Center to report on departmental objects. See the *Cisco Unified Intelligence Center Report Customization Guide* at <https://www.cisco.com/c/en/us/support/customer-collaboration/unified-intelligence-center/products-user-guide-list.html> for directions on customizing reports.

Departmental Objects

The following objects can be associated with a single department. If departments are configured, the List screens for these objects have a Department column. The New and Edit windows for these objects have a Department field.

- Agents
- Attributes
- Bucket intervals
- Call types
- Desk settings
- Dialed numbers
- Network VRU scripts
- Precision queues
- Skill groups
- Teams

Relationships Between Global and Departmental Objects

You can create relationships between objects in your configuration. For example, you can associate an agent with skill groups, a call type with a dialed number, and so on. An object's department assignment controls the relationships it can have to other objects.

The rules for creating relationships between objects are as follows:

- A **global** object can be associated with any global or departmental objects. For example, when you are assigning skill groups to a global agent, the skill group selection list includes global skill groups and skill groups in all departments to which you have access.
- A **departmental** object can be associated with global objects or with objects in the same department. For example, when you are assigning skill groups to an agent in Department A, the skill group selection list includes global skill groups and skill groups in Department A.

These rules are summarized in the following table.

Table 4: Rules for Relationships Between Global and Departmental Objects

Object Type	Can be associated with Global object?	Can be associated with Departmental object?
Global	yes	yes, with objects from any department
Departmental	yes	yes, with objects from same department only

The only exceptions to these rules are for the relationships between the following objects:

- **Teams and agent:** A global agent can belong only to a global team. A departmental agent can belong either to a global team or to a team that is associated with the same department.
- **Teams and supervisors:** Global supervisors can supervise both global and departmental teams. Departmental supervisors can supervise only teams that are associated with the same department.

These exceptions prevent departmental supervisors from modifying global agents, and are summarized in the following table.

Table 5: Rules for Relationships Between Teams and Agents and Teams and Supervisors

	Agent - Global	Agent - Departmental	Supervisor - Global	Supervisor - Departmental
Team - Global	yes	yes	yes	no
Team - Departmental	no	yes (same department only)	yes	yes (same department only)

Change Departments for an Object

When you change the department for an object, relationships with objects in the original department are cleared; relationships with global objects and objects in the new department remain intact. For example, if you change an agent from Department A to Department B, any skill groups in Department A that had been associated with the agent are cleared.

For some objects, such as call type, the Edit window does not show all related objects. If you try to change the department for those objects, you see an error indicating that you cannot change the department because a related object is in the original department. For example, you see this error if you try to change a call type from Department A to Department B and it is related to a dialed number in Department A. You must change the department of the dialed number before you can change the department of the call type.

System-wide Settings and Global Objects

Only global objects can be selected for system-wide settings in the **System > Settings** tool.

Global and Departmental Administrators

When you create administrators, you can configure them as global administrators or associate them with departments. See [Add and Maintain Administrators, on page 31](#).

Global administrators

Global administrators:

- Have read and write access to departmental objects and global objects on all tools and menus that are allowed for their role. Administrators configured as **read-only** have read-only access to those objects.
- Can use Script Editor or Internet Script Editor to modify routing scripts.

Departmental administrators

Departmental administrators:

- Can be associated with multiple departments. They have read and write access to objects in their departments on all tools and menus that are allowed for their role. Administrators configured as **read-only** have read-only access to those objects.
- Have read-only access to global objects.
- A departmental administrator with the ConfigAdmin role has read-only access to the General tools on the System menu: Information, Settings, Deployment, and Agent Trace.
- Can use Internet Script Editor to modify scripts that reference objects associated with their departments. Departmental administrators cannot log into Script Editor.

Add and Maintain Departments

To add, edit, or delete departments, an administrator must have the SystemAdmin role.

This procedure explains how to add a department. For information on maintaining departments, see [Update Objects, on page 5](#) and [Delete Objects, on page 7](#).

Procedure

Step 1 Navigate to **Unified CCE Administration > System > Departments**.

A **List of Departments** window opens.

Step 2 Click **New** to open the **New Department** window.

Step 3 Complete the fields on the **General** tab:

- Name** (Required) Enter a unique name for the department, using a maximum of 32 characters.
- Description** (Optional) Enter a maximum of 255 characters to describe the department. See [Native Character Sets, on page 313](#) for details on valid characters for this field.

Step 4 Click the **Administrators** tab.

This tab shows the Username and Domain of the administrators who currently serve as department administrators and allows you to add or remove administrators.

- Click **Add** to open the **Add Administrators** popup window.
- Click one or more rows to select administrators; then close the popup window. The administrators are now on the List of Administrators.
- Click the **x** icon to remove an administrator from the list.

Step 5 Click **Save** to return to the list window, where a message confirms the successful creation of the department.



PART II

Manage Contact Center Operations

- [Manage Queues, on page 45](#)
- [Manage Calls, on page 59](#)
- [Manage Bulk Jobs, on page 81](#)



CHAPTER 5

Manage Queues

Calls are queued to agents based on their membership in skill groups or their qualification in precision queues.

Administrators have access to all tools documented in this chapter .

Supervisors have limited access to Skill Groups and display-only access to Attributes and Precision Queues.

- [Attributes, on page 45](#)
- [Skill Groups or Precision Queues?, on page 46](#)
- [Precision Queues, on page 47](#)
- [Skill Groups, on page 55](#)

Attributes

Attributes identify a call routing requirement, such as language, location, or agent expertise. You can create two types of attributes: Boolean or Proficiency.

- Use Boolean attributes to identify an agent attribute value as true or false. For example, you can create a Boston attribute that specifies that the agent assigned to this attribute must be located in Boston. An agent in Boston would have *Boston = True* as the term for that attribute.
- Use Proficiency attributes to establish a level of expertise in a range from 1 to 10, with 10 being the highest level of expertise. For a Spanish language attribute, for example, a native speaker would have the attribute *Proficiency = 10*.

When you create a precision queue, you identify which attributes are part of that queue and then implement the queue in a script. When you assign a new attribute to an agent and the attribute value matches the precision queue criteria, the agent is automatically associated with the precision queue.

An attribute can be associated with more than one precision queue, from multiple Media Routing Domains.

Navigate to **Unified CCE Administration > Organization > Skills > Attributes** to configure attributes.

Administrators can see and manage attributes. Supervisors can configure attributes for their supervised agents on the Attributes tab of the Agents tool.

Related Topics

- [Add and Maintain Attributes, on page 46](#)
- [Precision Queues, on page 47](#)

Add and Maintain Attributes

Procedure

- Step 1** Navigate to **Unified CCE Administration > Manage > Attributes**.
- Step 2** In the **List of Attributes** window, click **New**. The **New Attributes** window has two tabs: General and Member.
- Step 3** Complete the following fields on the **General** tab:

Field	Required?	Description
Name	yes	Type a unique attribute name. For example, to create an attribute for mortgage insurance, type <i>mortgage</i> .
Description	no	Enter a maximum of 255 characters to describe the attribute. See Native Character Sets, on page 313 .
Type	no	Select the type: Boolean or Proficiency.
Default	no	Select the default (True or False for Boolean, or a number from 1 to 10 for Proficiency).

- Step 4** To associate one or more agents to this attribute, click on the **Agents** tab, and then click **New**.
- Step 5** Click **Add**.
- Step 6** In the **Add Agents** window, click on one or more of the agents listed to add them to the **List of Agents** window. Once you are finished, close the window.
- Step 7** Set the attribute value as appropriate for each agent using the **Attribute Value** drop-down menus.
- Step 8** Click **Save**.

Skill Groups or Precision Queues?

Should you use skill groups or precision queues for the routing needs of your organization? This section distinguishes the two methods.

Use a Skill Group

A skill group represents a competency or responsibility. For example, it could be a predefined collection of traits, such as salespeople who are in charge of selling to England. The skill group could be called “English sales”. If you wanted to divide the agents in this group into two types of proficiencies (perhaps based on experience), you would need to set up two separate skill groups; for example, English Sales 1 and English Sales 2. You would then associate an agent with one of them, based on the agent's proficiency. Do this by accessing the skill group and locating the agent that you want to add to it (or add that skill group to the agent). To summarize, creating a skill group involves first building a concept of what combinations of traits you want for each agent, like English Sales 2.

Use a Precision Queue

In contrast to skill groups, a precision queue breaks down attribute definitions to form a collection of agents at an *attribute* level. The agents that match the attribute level of the precision queue become associated with that precision queue.

With precision queues, the preceding English sales example involves defining the attributes English and Sales, and associating agents that have those traits to them. The precision queue English Sales would dynamically map all those agents that had those traits to the precision queue. In addition, you can define more complex proficiency attributes to associate with those agents. This would allow you to build, in a single precision queue, multiple proficiency searches like English language proficiency 10 and sales proficiency 5.

To break down the precision queue example into skill groups, you would need to set up two separate skill groups: English language proficiency 10 and sales proficiency 5. With precision queues, you can refine agents by attributes. With skill groups, you define a skill group and then assign agents to it.

Decide on Skill Groups or a Precision Queue

Precision routing enhances and can replace traditional routing. Traditional routing looks at all of the skill groups to which an agent belongs and defines the hierarchy of skills to map business needs. However, traditional routing is restricted by its single-dimensional nature.

Precision routing provides multidimensional routing with simple configuration, scripting, and reporting. Agents are represented through multiple attributes with proficiencies so that the capabilities of each agent are accurately exposed, bringing more value to the business.

If your routing needs are not too complex, consider using one or two skill groups. However, if you want to conduct a search involving as many as ten different proficiency levels in one easily managed queue, use precision queues.

Precision Queues

Precision routing offers a multidimensional alternative to skill group routing: using Unified CCE scripting, you can dynamically map the precision queues to direct a call to the agent who best matches the caller's precise needs. Precision queues are the key components of precision routing.

To configure Precision Routing, you must do the following:

1. Create attributes. Attributes are characteristics that can be assigned a True | False value or a Proficiency rating from 1 to 10.
2. Assign attributes to agents.
3. Create precision queues.
4. Create routing scripts.

There is no need to add an agent to a precision queue; agents become members of precision queues automatically based on their attributes. If a precision queue requires an agent who lives in Boston, who speaks fluent Spanish, and who is proficient in troubleshooting a specific piece of equipment, an agent with the attributes *Boston = True*, *Spanish = True*, and *Repair = 10* is automatically part of the precision queue. A Spanish caller in Boston who needs help with equipment is routed to that agent.

A precision queue includes:

- **Terms:** A term compares an attribute against a value. For example, you can create the following term: Spanish == 10. The term of the attribute is the highest proficiency in Spanish.

Each precision queue can have multiple attributes, and these attributes can be used in multiple terms. For example, to select an agent with a Spanish proficiency value between 5 and 10, you would create one term for Spanish > 5 and another for Spanish < 10.

- **Expressions:** An expression is a collection of one or more terms. The terms in an expression must share the same operator—they must all be AND or must all be OR relationships.

- **Steps:** A precision queue step is a time-based routing point within the precision queue. A step is a collection of one or more expressions.

A step may also include wait time and a Consider If formula. Use wait time to assign a maximum amount of time to wait for an available agent. Use a Consider If formula to evaluate the step against predefined criteria, for example, another queue.

Steps	
Name	Criteria
Step 1	[(Spanish == 10) and (Boston == true)] OR [(ServerXYZ >= 6) and (Spanish >= 6)]

Administrators have full permission to configure precision queues. Supervisors have display-only access to the Precision Queues tool.

When you add or modify precision queues associated with a large number of agents, the system avoids potential overload conditions by updating the agent associations as system resources allow. Precision queue updates may be rejected if the system is too busy.

Add and Maintain Precision Queues

Before you begin

Before you can create precision queues, you must create attributes (see [Add and Maintain Attributes](#), on page 46).

Procedure

- Step 1** Navigate to **Unified CCE Administration > Organization > Skills > Precision Queues**.
This opens a **List of Precision Queues** window showing all precision queues that are currently configured.
- Step 2** Click **New** to open the **New Precision Queue** window. Complete the fields.

Name	Required?	Description
Name	yes	Enter up to 32 alphanumeric characters.
Description	no	Enter up to 255 characters to describe the precision queue. See Native Character Sets, on page 313 .
Media Routing Domain	no	MRDs organize how requests for media are routed. The system routes calls to skill groups or precision queues that are associated with a particular communication medium; for example, voice or email. This field defaults to <i>Cisco_Voice</i> . To select a different Media Routing Domain: a. Click the magnifying glass icon to display Select Media Routing Domain . b. Click a row to make a selection and close the list.

Name	Required?	Description
Service Level Type	yes	<p>Select the service level type used for reporting on your service level agreement.</p> <p>Service level type indicates how calls that are abandoned before the service level threshold affect the service level calculation.</p> <ul style="list-style-type: none"> • Ignore Abandoned Calls (the default): Select this option if you want to exclude abandoned calls from the service level calculation. • Abandoned Calls have Negative Impact: Select this option if you want only those calls that are answered within the service level threshold time to be counted as treated calls. The service level is negatively affected by calls that abandon within the service level threshold time. • Abandoned Calls have Positive Impact: Select this option if you consider a call that is abandoned within the service level threshold time as a treated call. With this configuration, abandoned calls have a positive impact on the service level.
Service Level Threshold	yes	<p>Enter the time in seconds that calls are to be answered based on your service level agreement, from 0 to 2,147,483,647.</p> <p>The time that you enter in this field is used to report on service level agreements and does not affect how long a call remains in a precision queue. The length of time a call remains in a step is determined by the wait time for each individual step.</p>

Name	Required?	Description
Agent Order	yes	<p>Select an option to determine which agents receive calls from this queue.</p> <p>The ordering of agents does not dictate the agents who are selected into a Precision Queue step. Agents are included or excluded based on the conditions specified for the step.</p> <ul style="list-style-type: none"> • Longest Available Agent (the default): The default method of agent ordering for a precision queue. The call is delivered to the agent who has been in the available (or ready) state the longest. • Most Skilled Agent: The call is delivered to the agent who has the highest competency sum from all the attributes pertinent to the Precision Queue step. In an agent-rich environment, this can mean that more competent agents would be utilized more than less competent agents. • Least Skilled Agent: The call is delivered to the agent who has the lowest competency sum from all the attributes pertinent to the Precision Queue step.
Bucket Intervals	no	<p>Select the bucket interval whose bounds are to be used to measure the time slot in which calls are answered. The field defaults to the system default (see System Settings for Global, on page 96).</p> <p>To select a different bucket interval:</p> <ol style="list-style-type: none"> Click the magnifying glass icon to display Select Bucket Intervals. Click a row to make a selection and close the list.

Step 3 Click the numbered Step Builder link (Step 1, Step 2, and so on) to build a precision queue step in the **Step Builder** popup window.

Step 4 When you have finished adding, click **Save**.

Build Precision Queue Steps

Every precision queue must have a step, and every step must have an Expression. An Expression is a collection of attribute terms.

Procedure

- Step 1** Click the numbered step link in the **Steps** panel (Step 1, Step 2, and so on).
The step number popup window opens.
- Step 2** Build the first step as follows.
- Click the **magnifying glass** icon to the right of the Select Attribute field in the Expression 1 panel.
 - Select an attribute from the list.
 - Use the two **Select** fields to establish the terms of the attribute. Click the first **Select** field to choose an operator.
 - For Boolean attributes, choices are the operators for Equal and Not Equal.
 - For Proficiency attributes, choices are the operators for True, False, Less Than, Less Than or Equal To, Greater Than, and Greater Than or Equal To.
 - Click the second **Select** field to choose a value.
 - For Boolean attributes, values are True and False.
 - For Proficiency attributes, values are numbers from 1 to 10.
- Your selection creates an attribute term for the Expression.
- Step 3** To add a second attribute to the first Expression, click **Add Attribute** in the **Expression 1** row.
- Select **AND** or **OR** to establish the relationship between the first and second attributes.
 - Repeat steps 2b, 2c, and 2d.
- Step 4** Continue to add attributes to Expression 1.
All attributes within an expression must be joined by the same logical operator. They must all be ANDs, or they must all be ORs.
- Step 5** To add a second Expression, click the **Add Attribute** drop-down in the **Expression 1** row and select **Add Expression**.
- Step 6** Select **AND** or **OR** to establish the relationship between the first and second Expressions.
- Step 7** Add attributes to Expression 2.
- Step 8** Continue to add Expressions as needed.

In this example, a Spanish caller located in the Boston area needs an onsite visit from a technician to repair his ServerXYZ. An ideal agent should be fluent in Spanish and have the highest proficiency in ServerXYZ. This can be seen in Expression 1. Expression 2 allows us to specify that the selected agent must also be from either Boston or the New England area.

Step 9 When you have completed the step, click **OK** to add it to the precision queue.

Step 10 To build the next step, click **Add Step**.

Each successive step is prepopulated with the Expressions and attributes of its predecessor. Decrease the attribute qualifications and competencies in successive steps to lower the bar such that the pool of acceptable agents increases.

Step 11 When you have created all steps, you can open any step *except the last* and enter values in the **Consider if** and **Wait for** fields.

- **Consider if** is a formula that evaluates a call within a step against additional criteria. (See [Consider If Formula for Precision Queue, on page 53](#) for more information about Consider If.)
- **Wait for** is a value in seconds to wait for an available agent. A call will queue at a particular step and wait for an available agent matching that step criteria until the number of seconds specified. A blank wait time indicates that the call will proceed immediately to the next step if no available agents match the step criteria. Wait time defaults to 0 and can take a value up to 2147483647.

Consider If Formula for Precision Queue

If you are not on the last step of the precision queue, then you can enter a *Consider If* formula for that step. A Consider If formula evaluates a call (within a step) against additional criteria. Each time a call reaches a step with a Consider If expression, the expression is evaluated. If the value for the expression returns as true, the call is considered for the step. If the value returns as false, the call moves to the next step. If no expression is provided for a step, the step is always considered for calls.

To add a Consider If formula, type the formula into the **Consider If** box. Alternatively, you can use the Script Editor to build the formula and then copy and paste it into the **Consider If** box. Objects used in Consider If

formulas are case-sensitive. All Consider If formulas that you add to a precision queue must be valid. If you add an invalid formula, you cannot save the precision queue. To ensure that the formula is valid, use Script Editor to build and validate the formula.

Only the following scripting objects are valid in a Consider If formula:

- Call
- PQ
- Skillgroup
- ECC
- PQ Step
- Call Type
- Custom Functions (You can create custom functions in Script Editor.)

It is possible that a valid Consider If formula can become invalid. For example, if you delete an object used in the formula after you create or update the precision queue, the formula is no longer valid.

Consider If Formula Examples

- **PQ.PQ1.LoggedOn > 1**--Evaluates whether there is more than one agent logged in to this queue.
- **CallType.CallType1.CallsRoutedToday > 100**--Evaluates whether more than 100 calls of this call type were routed today.
- **PQStep.PQ1.1.RouterAgentsLoggedIn > 1**--Evaluates whether there is more than one router agent logged in to this queue for Step 1.
- **CustomFunction(Call.PeripheralVariable1) > 10**--Evaluates whether this formula using a custom function returns a value greater than 10.

Precision Queue Call Flow Example

At a high level, consider a 5-step precision queue with a Consider If formula for *Caller is Premium Member* attached to the Step 1:

- Step 1 - Attribute: Skill > 8 - Consider If: Caller is Premium Member
- Step 2 - Attribute: Skill > 6
- Step 3 - Attribute: Skill > 4
- Step 4 - Attribute: Skill > 3
- Step 5 - Attribute: Skill >= 1

Caller John, who is not a premium customer, calls 1-800-repairs. John's call is routed to this precision queue.

- Since John is not a premium customer, he is immediately routed out of Step 1 (because of the Consider If on Step 1) and into Step 2 where he waits for his call to be answered.
- After the Step 2 wait time has expired, John's call moves to Step 3 to wait for an agent.
- After the Step 3 wait time has expired, John's call moves to Step 4 to wait for an agent.

- When it arrives at Step 5, John's call will wait indefinitely for an available agent. This step cannot be avoided by any call because there is no routing logic past this.

The overarching idea is that customer will use each successive step to expand the pool of available agents. Eventually, when you reach the "last" step (the step with the highest number), the call is waiting in a potentially very large pool of agents. With each extra step, the chances of the call being handled increase. This also puts the most valuable and skilled agents in the earlier precision queue steps. Calls come to them first before moving on the less appropriate agents in later steps.



Note When two or more agents have the same proficiently level for the attributes the PQ step leverages the Longest Available Agent (LLA).

Skill Groups

A skill group is a collection of agents who share a common set of competencies that equip them to handle the same types of requests. Some examples of skill groups are a collection of agents who speak a specific language or who can assist callers with billing questions.

An agent can be a member of multiple skill groups. Each skill group is associated with a specific media routing domain (MRD) such as voice, chat, or email.

An agent's skill group membership can determine the types of contacts that are routed to that agent. For example, if an agent is a member of a skill group that is set up for the Cisco_Voice routing domain only, then that agent is a voice agent for that skill group. If an agent is a member of a skill group that is set up for a nonvoice routing domain, then that agent is a multichannel agent for that skill group.

Use Cisco Unified Intelligence Center reports to view agent activity in skill groups, to monitor call distribution among skill groups, or to see how one skill group is performing compared with others.

Navigate to **Unified CCE Administration > Manage > Skill Groups** to configure skill groups.

Administrators have full permission to configure skill groups. Supervisors have permission to add and remove their supervised agents on the Skill Groups Members tab.

Related Topics

[Search for Skill Groups](#)

[Add and Maintain Skill Groups](#), on page 55

[Agents](#), on page 13

[Skill Groups or Precision Queues?](#), on page 46

[Manage Supervisors](#), on page 27

Add and Maintain Skill Groups

Procedure

-
- | | |
|---------------|---|
| Step 1 | Navigate to Unified CCE Administration > Manage > Skill Groups . |
| Step 2 | |

Step 3 Click **New** to open the **New Skill Group** window.

Step 4 Complete the fields on the **General** tab:

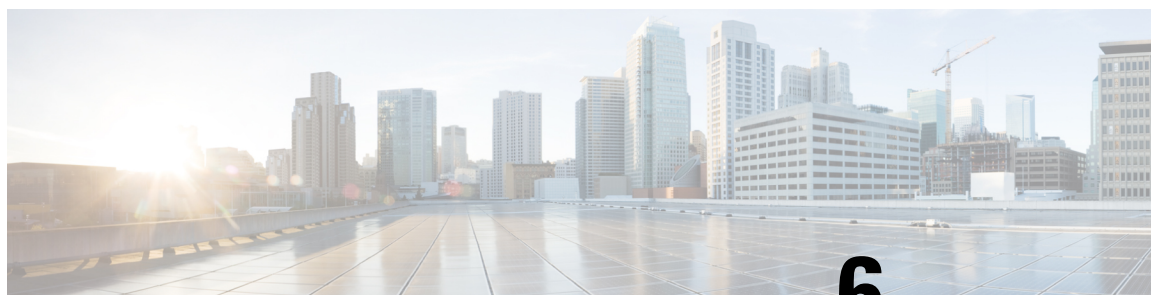
Field	Required	Description
Name	yes	Enter a name using up to 32 alphanumeric characters.
Description	no	Enter up to 255 characters to describe the skill group. See Native Character Sets, on page 313 .
Site	-	<p>The Site field displays Main by default .</p> <p>To add a different site:</p> <ol style="list-style-type: none"> Click the magnifying glass icon to display the list of sites with Agent PG configured. Select the required site.
Media Routing Domain	no	<p>MRDs organize how requests for media are routed. The system routes calls to skill groups or precision queues that are associated with a particular communication medium; for example, voice or email. This field defaults to <i>Cisco_Voice</i>.</p> <p>To select a different Media Routing Domain:</p> <ol style="list-style-type: none"> Click the magnifying glass icon to display Select Media Routing Domain . Click a row to make a selection and close the list.
Bucket Interval	no	<p>Select the bucket interval whose bounds are to be used to measure the time slot in which calls are answered. The field defaults to the system default.</p> <p>To select a different bucket interval:</p> <ol style="list-style-type: none"> Click the magnifying glass icon to display Select Bucket Intervals. Click a row to make a selection and close the list. <p>Click the x icon to clear the selection.</p>

Field	Required	Description
Service Level Threshold	no	<p>Enter a value in seconds that you set as a goal for connecting a call with an agent.</p> <p>The field defaults to the threshold configured for this Media Routing Domain.</p> <p>Leave this field blank to use the service level threshold value for the Media Routing Domain.</p> <p>Enter a value of 0 seconds if you do not want a service level event to be set for the calls. These calls are not treated as service-level calls.</p>
Service Level Type	no	<p>Select a service level type.</p> <p>Service level type indicates how calls that are abandoned before the service level threshold affect the service level calculation.</p> <ul style="list-style-type: none"> • Use Media Routing Domain Value (the default): Select this option to use the value that is currently defined for the MRD. • Ignore Abandoned Calls: Select this option if you want abandoned calls to be excluded from the service level calculation. • Abandoned Calls have Negative Impact: Select this if you want only calls that are answered within the service level threshold time as to be counted as treated calls. The service level is negatively affected by calls that abandon within the service level time. • Abandoned Calls have Positive Impact: Select this if you consider a call abandoned within the service level threshold time as a treated call. With this configuration, abandoned calls have a positive impact on the service level.

Step 5 Complete the **Members** tab:

This tab shows the list of agents for this skill group.

- Click the + icon to open **Add Agents**. The agents associated to the selected site display.
- Click the agents you want to add to this skill group.
- Close the window. The agents you chose appear on the **List of Agents**.
- Click **Save** on this tab to return to the List window, where a message confirms the successful creation of the skill group.



CHAPTER 6

Manage Calls

Unless constrained by their role and department, administrators have full access to all tools under **Unified CCE Administration > Manage > Call**. Supervisors do not have access to these tools.

- [Bucket Intervals, on page 59](#)
- [Call Type, on page 60](#)
- [Dialed Number, on page 62](#)
- [Expanded Call Variables, on page 68](#)
- [Media Routing Domains, on page 70](#)
- [Network VRU Scripts, on page 72](#)

Bucket Intervals

Configure bucket intervals to report on how many calls are handled or abandoned during specific, incremental time slots. Each bucket interval has a maximum of nine configurable time slots, called *Upper Bounds*. Upper Bounds are ranges measured in seconds to segment and capture call-handling activity. You can run reports that show calls answered and calls abandoned for these intervals.

For example, if your goal is to have calls handled within 1 minute, you might set up Upper Bounds for intervals that show how many calls are handled in less than or more than 1 minute. Intervals might be for 30 seconds, 60 seconds, 80 seconds, 120 seconds, 150 seconds, 180 seconds, and 240 seconds. Using these intervals, you can see if calls are being answered within 1 minute or if callers are waiting longer. The intervals also give you insight into how long callers are willing to wait before abandoning a call. Perhaps many callers do not abandon a call until they have waited for two minutes. This might indicate that you can modify your goal.

You can associate bucket intervals with call types, skill groups, and precision queues.

The system automatically creates a built-in bucket interval, which you cannot edit or delete.

Add and Maintain Bucket Intervals

Procedure

- | | |
|---------------|---|
| Step 1 | Navigate to Unified CCE Administration > Manage > Bucket Intervals . |
| Step 2 | Click New to open the New Bucket Interval window. |
| Step 3 | Complete the following fields: |

Field	Required?	Description
Name	yes	Enter a name for the call type using a maximum of 32 characters.
Upper Bound 1	yes	Enter a value in the Upper Bound 1 field, using a number greater than 0 and less than 2147483647. This value is interpreted as seconds. For example, your entry of 10 in this field creates an Upper Bound 1 interval with a time slot of 0 to 10 seconds.
Upper Bound 2 - 9	no	<p>The value for each Upper Bound must be higher than the value of the previous Upper Bound. If you leave an Upper Bound field blank, all remaining fields must be blank.</p> <p>For example: To configure three intervals that span 10 seconds each and then have all other calls grouped into an interval that extends beyond your third defined interval, enter the following values:</p> <ul style="list-style-type: none"> • Upper Bound 1 interval: 10 This time slot is 0 to 10 seconds. Reports will show the total number of calls answered and calls abandoned from 0 to 10 seconds. • Upper Bound 2 interval: 20 This time slot is any time greater than 10 seconds and less than 20 seconds. Reports will show the total number of calls answered and calls abandoned between 10 and 20 seconds. • Upper Bound 3 interval: 30 This time slot is any time greater than 20 seconds and less than 30 seconds. Reports will show the total number of calls answered and calls abandoned between 20 and 30 seconds. • All other Upper Bound fields blank. Reports will show the total number of calls answered and calls abandoned after 30 seconds.

Step 4

Click **Save** to return to the List screen, where a message confirms the successful creation of the bucket interval.

Call Type

Call types categorize calls. Based on call type, the system maps a dialed number to a routing script that ultimately sends the call to the appropriate destination. Consider the call types you need to create to meet your reporting needs, and configure a separate call type for each type of call treatment that you want to offer.

For example, you might create call types for the following:

- Calls answered by agents
- Calls abandoned at the VRU

- Calls that reroute when the agent does not answer
- Calls that are transferred and conferenced
- Outbound Option calls
- Calls that require supervisor assistance

Add and Maintain Call Types

Procedure

- Step 1** Navigate to **Unified CCE Administration > Manage > Call Types**.
- Step 2** Click **New** to open the **New Call Type** window.
- Step 3** Complete the following fields:

Field	Required?	Description
Name	yes	Enter a name for the call type using a maximum of 32 characters. This name must be unique among call types in the system.
Description	no	Enter a maximum of 255 characters to describe the call type. See Native Character Sets, on page 313 .
Service Level Threshold	no	This value is used in reports to identify the percentage of calls that are answered within that time threshold, enabling you to see whether agents are meeting the target goal. The field defaults to the System Default . To select a different service level threshold, enter a value in seconds, from 0 to 2,147,483,647.

Field	Required?	Description
Service Level Type	no	<p>Indicates how the system software calculates the service level. The field defaults to the system default To override the system default for this call type, select one of these other options from the drop-down menu:</p> <ul style="list-style-type: none"> • Ignore Abandoned Calls: This selection excludes abandoned calls from the service level calculation. • Abandoned Calls have Negative Impact: Select this if you want only calls that are answered within the service level threshold time to be counted as treated calls. The service level will be negatively affected by calls that abandon within the service level time. • Abandoned Calls have Positive Impact: Select this if you consider a call abandoned within the service level threshold time as a treated call. Abandoned calls will have a positive impact on the service level.
Bucket Interval	no	<p>Bucket intervals appear in call type reports and display the number of calls answered and abandoned for different time intervals.</p> <p>Configure the bucket interval associated with this call type.</p> <p>The field defaults to the System Default .</p> <p>To select a different bucket interval:</p> <ul style="list-style-type: none"> • Click the magnifying glass icon to display Select Bucket Interval. • Click the row to select a bucket interval and close the List.

Step 4 Click **Save** to return to the List window, where a message confirms the successful creation.

Dialed Number

Dialed numbers are string values used to select the appropriate routing script so that a voice call or a nonvoice task (such as an email or a request for a web chat) can be delivered to an agent. Each dialed number string is configured with a routing type and a Media Routing Domain and can be mapped to a call type.

A typical call center requires multiple dialed number strings. In addition to creating dialed number strings for each telephone number that customers can use to reach you, you must set up dialed number strings for the following reasons:

- So that an agent can transfer to, or conference in, another agent
- For requery on no answer (RONA)
- For supervisor/emergency assist calls

Related Topics

[Add and Maintain Dialed Numbers](#), on page 63

[Call Type](#), on page 60

Add and Maintain Dialed Numbers

This procedure explains how to add a dialed number.

Procedure

- Step 1** Navigate to **Unified CCE Administration > Manage > Dialed Numbers**.
- Step 2** Click **New** to open the **New Dialed Numbers** window.
- Step 3** Complete the following fields:

Field	Required?	Description
Dialed Number String	yes	The value used to route the call or direct the nonvoice task. Enter a string value that is unique for the routing type, maximum of 25 characters.
Description	no	Enter a maximum of 255 characters to describe the dialed number string.
Department	yes (for departmental administrators)	<p>A departmental administrator must select one department from the popup list to associate with this dialed number. The list shows all this administrator's departments.</p> <p>When a departmental administrator selects a department for the dialed number, the popup list for call type includes global call types and call types in the same department as the dialed number.</p> <p>A global administrator can leave this field as Global (the default), which sets the dialed number as global (belonging to no departments). A global administrator can also select a department for this Dialed Number.</p> <p>When an administrator changes the department, selections for call type are cleared if the selections do not belong to the new department or the global department.</p>

Field	Required?	Description
Site	yes	<p>The Site field displays Main by default.</p> <p>To add a different site:</p> <ol style="list-style-type: none">Click the magnifying glass icon to display the list of sites.Select the required site.

Field	Required?	Description
Routing Type	yes	

Field	Required?	Description
		<p>From the drop-down menu, select one of the following options: (Options may vary depending on the PG types configured on the selected site.)</p> <ul style="list-style-type: none"> • External Voice: This option is available if the remote site is configured to VRU PG. Select this option for dialed number strings that apply to voice calls coming from Cisco Unified Customer Voice Portal (CVP). These calls are referred to as external because they typically come from outside of the enterprise through a gateway. External Voice is the selection for calls that come in from customers and must be answered by agents or sent to the VRU. • Internal Voice: This option is available if the remote site is configured to Agent PG. Select this option for dialed number strings that can be called from a Cisco Unified Communications Manager phone. These calls must have a route point on Unified Communications Manager that corresponds to the internally dialed number. They are referred to as internal because they can be accessed only by Unified Communications Manager. <p>Internal Voice is used for dialed numbers that agents use to transfer calls to other agents, to enable the system to redirect calls internally when the agent does not answer, and to direct a call from an agent to a supervisor for assistance.</p> <p>Dialed numbers with the routing type Internal Voice appear on the Supervisor Script Dialed Number list when you create or edit a team.</p> <ul style="list-style-type: none"> • Outbound Voice: This option is available if the remote site is configured to Multichannel PG. Select this option for dialed number strings that are used by the Cisco Outbound Option Dialer. These dialed number strings are referenced and used to route calls to agents or to VRU scripts in the Campaign Skill Group Selection. <p>The following multichannel routing types are available if you have configured the peripherals for the multichannel machines using Peripheral Gateway Setup tool, and added external multichannel machines to the System Inventory:</p> <ul style="list-style-type: none"> • SocialMiner: Select this option for dialed number strings that originate from SocialMiner and are routed to an agent who interacts with a customer by Agent Request. • Enterprise Chat and Email: Select this option for dialed number strings that originate from Enterprise

Field	Required?	Description
		<p>Chat and Email and are routed to an agent who interacts with a customer by email or by web chat.</p> <ul style="list-style-type: none"> • 3rd Party Multichannel: Select this option for dialed number strings that originate from a third-party application and are routed to an agent who interacts with a customer by email or by web chat. <p>See the <i>Cisco Packaged Contact Center Enterprise Features Guide</i> at https://www.cisco.com/c/en/us/support/customer-collaboration/packaged-contact-center-enterprise/tsd-products-support-series-home.html for information about configuring the peripherals using Peripheral Gateway Setup.</p>
Media Routing Domain	no	<p>The Media Routing Domain associated with the dialed number. Media Routing Domains (MRDs) organize how requests for media are routed. The system routes calls to agents who are associated with a particular communication medium; for example, voice or email. The selection of Routing Type determines what appears in this field.</p> <ul style="list-style-type: none"> • If the Routing Type is External Voice, Internal Voice, or Outbound Voice, the Media Routing Domain is Cisco_Voice and you cannot change it. • If the Routing Type is Multichannel, click the magnifying glass icon to display the Select Media Routing Domain popup window.
Call Type	no	<p>Use the drop-down menu to select a valid call type to map to this dialed number strings. Associating a dialed number with a call type ensures appropriate routing and affects reporting. The default is the system default set in System > Settings</p> <p>To select a different call type:</p> <ul style="list-style-type: none"> • Click the magnifying glass icon to display the Select Call Type popup window. • Click a row to make a selection and close the list.

Step 4 Click **Save** to return to the List screen, where a message confirms the successful creation.

Related Topics

[Update Objects](#), on page 5

[Delete Objects](#), on page 7

[Departments](#), on page 37

[Native Character Sets](#), on page 313

[System Inventory for Packaged CCE 2000 Agents Deployment](#), on page 100

[System Settings for Call Reporting](#)
[Add and Maintain Teams](#), on page 22

Expanded Call Variables

Calls can carry data with them as they move through the system. This data, called expanded call variable data, is embedded within the call and is visible to the agent on the agent desktop. Expanded call variable data can assist the agent in working with the caller.

The expanded call variable can be set or updated by Cisco Unified Customer Voice Portal (CVP), by Unified CCE scripting, or by an agent who is transferring the call.

- If the call is at Unified CVP for VRU treatment, the call context is exchanged between Unified CVP and Unified CCE.
- If the call is at an agent, the call context is exchanged between the desktop and Unified CCE.

Note that this is a two-way exchange: in some cases the expanded call variable data is sent to Unified CCE from Unified CVP or the agent desktop, and in some cases the data is sent by Unified CCE based on script configuration to Unified CVP or the agent desktop.

Built-in expanded call variables are identified by the **BuiltIn** check box on the Edit Expanded Call Variable window. You cannot delete these expanded call variables. You can create new expanded call variables subject to certain sizing constraints.

Add and Maintain Expanded Call Variables

Procedure

- Step 1** Navigate to **Unified CCE Administration > Manage > Expanded Call Variables** to open the **List of Expanded Call Variables**.

The window tracks the number of bytes used by the expanded call variables, measured against the system total and the CTI Server total.

- Step 2** Click **New** to open the **New Expanded Call Variable** page.

- Step 3** Complete the following fields:

Field	Required?	Description
Name	yes	The name of the expanded call variable, prepended by user. This field allows a maximum of 32 characters. (This maximum includes the four characters in user.)
Description	no	Enter up to 255 characters to describe the expanded call variable. There is no restriction of characters. See Native Character Sets , on page 313.

Field	Required?	Description
Max Length	yes	Specifies the maximum number of characters allowed in the value that will be stored in the expanded call variable value. The range is from 1 to 210 characters.
Array	no	This check box is unchecked by default to indicate that the expanded call variable is scalar. Check the check box to configure the expanded call variable as an array, not a scalar.
Maximum Array Size	no	This field appears when Array is checked. Use it to indicate the maximum number of elements (1-255) in the array.
Enabled	no	Checking this check box indicates that the expanded call variable is currently enabled—it can be used in scripts and appears on the agent desktop.
Persistent	no	Checking this check box indicates that data for this expanded call variable will be written to the historical database; specifically to the Termination Call Detail (TCD) and Route Call Detail (RCD) tables. Note that storing excessive call variable data can degrade historical database performance. Only persistent call variables are written to the historical database. Nonpersistent variables can be used in routing scripts, but are not written to the database.
Cisco Provided	—	This check box is display-only, and appears when editing existing built-in or custom expanded call variables. The New Expanded Call Variable window does not include this check box.
Bytes Required (if enabled)	—	This display-only field indicates the number of bytes required to store the expanded call variable in the system.
Bytes Required in CTI Server (if enabled)	—	This display-only field is similar to Bytes Required, above, but applies to the CTI Server. In CTI Server, the number of bytes required includes the length of the expanded call variable name.
Total Bytes Required for Enabled Variables: # of maximum 2000 bytes (# bytes remaining)	—	This display-only field keeps a running total of the number of bytes used by all expanded call variables.

Field	Required?	Description
Total Bytes Required for Enabled Variables in CTI Server: # of maximum 2500 bytes (# bytes remaining)	—	This display-only field keeps a running total of the number of bytes used by all expanded call variables in CTI Server.

Step 4 Save the expanded call variable and return to the List window, where a message confirms the successful creation.

What to do next

If you change the configuration of any ECC variable, restart the Unified CVP Call Server or VRU PIM to force a renegotiation of the ECC variables.

Sizing Expanded Call Variables

Expanded call variable usage impacts PG, Router, and Logger bandwidth. The Expanded Call Variables List, Add, and Edit windows track the space that your expanded call variables are consuming, as compared with the system maximums.

The maximum amount of space that all expanded call variables can take up in Unified Contact Center cannot exceed 2000 bytes.

Each expanded call variable in Unified CCE is calculated using the following formula:

- For scalar: $5 + \text{Maximum_Length}$
- For array: $5 + (1 + \text{Maximum_Length}) * (\text{Maximum_Array_Size})$

The maximum amount of space that all expanded call variables can take up in CTI Server cannot exceed 2500 bytes. Each expanded call variable in CTI Server is calculated using the following formula:

- For a scalar variable, the size is $\text{length of Name} + \text{Maximum Length} + 4$.
- For an array variable, the size is $(\text{length of Name} + \text{Maximum Length} + 5) * \text{Maximum Array Size}$.

Media Routing Domains

Media Routing Domains (MRDs) organize how requests for each communication medium, such as voice and email, are routed to agents.

An agent can handle requests from multiple MRDs. For example, an agent can belong to a skill group in an MRD for email and to a skill group in an MRD for voice calls.

Configure at least one MRD for each communication medium your system supports. You do not need to configure an MRD for voice; the Cisco_Voice MRD is built in.

You can add and update only Cisco_Task MRDs using the Unified CCE Administration Media Routing Domain tool.



Note To add or update Multichannel MRDs for Enterprise Chat and Email, use the Configuration Manager Media Routing Domain List tool.

Add and Maintain Media Routing Domains

This procedure explains how to add a Multichannel Media Routing Domain (MRD). For information on maintaining MRDs, see [Update Objects](#) and [Delete Objects](#).

Procedure

- Step 1** Navigate to **Unified CCE Administration > Manage > Media Routing Domains**.
- Step 2** Click **New**.
- Step 3** Complete the following fields:

Field	Description
Type	The read-only type of the Media Routing Domain.
Name	Enter a unique name for the Media Routing Domain.
Description	Enter a description for the Media Routing Domain. See Native Character Sets, on page 313 .
Service Level Threshold	Enter the maximum time, in seconds, that a customer should wait before being connected with an agent.
Interruptible	Select whether tasks assigned from another MRD can interrupt an agent. Note If you change the MRD from interruptible to non-interruptible or vice versa, the change takes effect once the agent logs out and then logs back in on that MRD.
Life	Enter the amount of time, in seconds, that the system waits before ending all tasks if the connection goes down.
Start Timeout	Enter the amount of time, in seconds, that the system waits for an agent to accept a task. When this time is reached, the system makes the agent Not Routable and re-queues the task.
Max Duration	Enter the maximum duration for a task, in seconds.
Max in Queue	Enter the maximum number of tasks allowed to be queued at one time.
Max Time in Queue	Enter the maximum amount of time, in seconds, a task can be queued.

- Step 4** Click **Save**.

Network VRU Scripts

Not all calls are delivered directly to agents. Some are sent to a Voice Response Unit (VRU) instead of, or before, they are sent to an agent. In the Packaged CCE deployment, the VRU is Cisco Unified Customer Voice Portal (Unified CVP). You must configure network VRU scripts to direct Unified CVP on how to handle the treatment of individual calls, using Unified CVP microapplication functions.

There are six Unified CVP microapplication types:

- **Play Media (PM):** Retrieves and plays a media file such as a welcome.wav or an agent greeting.
- **Play Data (PD):** Retrieves and plays data of various types, such as numbers, characters, time of day, or currency.
- **Get Digits (GD):** Plays a media file and retrieves digits from the caller.
- **Menu (M):** Plays media menu file and retrieves a single telephone keypad entry from the caller.
- **Get Speech (GS):** A "GS,Server,V" script is provided with Packaged CCE and appears in the List of Network VRU Scripts.
- **Capture:** Allows you to trigger the storage of current call data at various points.

Related Topics

[Access to VRU Scripts in Packaged CCE Routing Scripts](#), on page 167

Add and Maintain Network VRU Scripts

Procedure

Step 1 Navigate to **Unified CCE Administration > Manage > Network VRU Scripts** to open the **List of Network VRU Scripts**.

Step 2 Click **New** to open the **New Network VRU Script** window. Complete the following fields:

Field	Required?	Description
Name	yes	Enter a unique name to identify the script, using a maximum of 32 alphanumeric characters.
Description	no	Enter additional information about the script. See Native Character Sets , on page 313.
Routing Type	yes	Retain the default (Voice) or select Multichannel from the drop-down menu. Voice routes the script to Unified CVP. Multichannel routes the script to Enterprise Chat and Email (ECE).

Field	Required?	Description
VRU Script Name	yes	Enter the name of the script as it is known on the Unified CVP. See VRU Script Name Parameters , on page 73.
Configuration Param	no	A string used by Unified CVP to pass additional parameters to the IVR Service. The content of the string depends on the microapplication to be accessed.
RNA Timeout	yes	Enter a number to indicate the number of seconds for the system to wait for a response from the routing client after directing it to run the script. The default value is 180 seconds. Valid values are 1 to 2147483647. The destination phone rings until it exceeds the ring-no-answer (RNA) timeout setting.
Interruptible	no	Checked by default, this check box indicates whether or not the script can be interrupted; for example, when an agent becomes available to handle the call.

Step 3 Click **Save** to return to the List window, where a message confirms the successful creation.

Related Topics

- [VRU Script Name Parameters](#), on page 73
- [Sample VRU Script Names](#), on page 75
- [Configuration Parameters](#), on page 75
- [Sample Configuration Values](#), on page 79

VRU Script Name Parameters

VRU Script Name parameters have a “positional” sequence format-- the format is Micro_app acronym,parameter,parameter.

- The microapplication acronym is case-insensitive (enter PM or pm).
- Use double commas (,,) to skip a parameter; Unified CVP will supply the default.

The Play Media position sequence is PM,media file name,media library type,Uniqueness value.

The Play Data position sequence is PD,Data Playback Type,Uniqueness value.

The Get Digits position sequence is GD,media file name,media library type,Uniqueness value.

The Menu position sequence is M,media file name, media library type,Uniqueness value.

Parameter Name	Used For	Notes
<p>Media File Name options are as follows:</p> <ul style="list-style-type: none"> • A filename--(for instance, a .wav file) • (number 1-10)--Unified CVP plays the file in the corresponding Call.PeripheralVariable file. <p>For example, a value of 2 instructs Unified CVP to look at Call.PeripheralVariable2.</p> <p>If you use the (number 1-10) option and set the Media Library Type to "V," Unified CVP plays the external VoiceXML file specified in the corresponding Call.PeripheralVariable.</p> <p>If you set the value to (no value) and set the Media Library Type to "A" or "S", the IVR Service creates VoiceXML without a media prompt.</p> <ul style="list-style-type: none"> • a--Unified CVP automatically generates the media file name for agent greeting when this option is specified. The filename is based on GED-125 parameters received from Unified ICM. This option is only valid if the Media Library Type is not set to V. 	Play Media Get Digits Menu	<p>a is used for PlayMedia only</p>
<p>Data Playback Type options are as follows:</p> <ul style="list-style-type: none"> • Number • Char (Character) • Date • Etime (Elapsed time) • TOD (Time of Day) • 24TOD (24-hour Time of Day) • DOW (Day of Week) • Currency (USD only) 	Play Data	
<p>Media Library Type Flag indicates the location of the media files to be played. Options are as follows:</p> <ul style="list-style-type: none"> • A--(Default) Application • S--System • V--External VoiceXML 	Play Media Get Digits Menu	<p>V is an option for PlayMedia only.</p>

Parameter Name	Used For	Notes
Uniqueness value (optional) A string identifying a VRU Script Name as unique.	Play Media Play Data Get Digits Menu	

Sample VRU Script Names

This VRU Script Name	Instructs Unified CVP
PM,July,S	To use the Play Media (PM) microapplication to play the "July.wav" Media file, using the System (S) Media library.
PM,WebSite,,1	To use the Play Media (PM) microapplication to play the "Website.wav" media file, using the default Media Type (Application library), and setting 1 as the Uniqueness value.
GD>Password,A,O	To use the Get Digits microapplication to play the media file named password.wav, using the Application (A) media library and setting 0 as the Uniqueness value.
M,Main_Menu	To use the Menu microapplication to play the media file named Main_Menu.wav.

Configuration Parameters

Configuration parameters have a “positional” sequence format-- the format parameter,parameter,parameter.

Use double commas (,,) to skip a parameter; Unified CVP supplies the default.

The Play Media position sequence is *Barge-in allowed,RTSP Timeout,Type-ahead Buffer Flush*.

The Play Data position sequence is *Location of files to be played,Barge-in allowed,Time Format,Type-ahead Buffer Flush*.

The Get Digits position sequence is *Minimum Field Length,Minimum Field Length,Barge-in allowed,Inter-digit Timeout,No Entry Timeout,Number of Invalid Tries,Timeout Message Override,Invalid Entry Message Override,Dtmf Termination Key,IncompleteTimeout*.

The Menu position sequence is *List of Menu Choices,Barge-in allowed,No Entry Timeout,Number of No Entry Tries,Number of Invalid Tries,Timeout Message Override,Invalid Entry Message Override*.

Parameter Name	Used For	Notes
<p>Barge-in Allowed Valid options are as follows:</p> <ul style="list-style-type: none"> • Y--Barge-in is allowed. <p>Note that DTMF barge-in is supported. Voice barge-in is not.</p> <ul style="list-style-type: none"> • N --(Default) Barge-in is not allowed 	Play Media Play Data Get Digits Menu	<p>Unified CVP handles barge-in as follows:</p> <ul style="list-style-type: none"> • If barge-in is not allowed, the SIP/H.323 Service/Gateway continues prompt play when a caller starts entering digits, and the entered digits are discarded. • If barge-in is allowed, the H.323Service/Gateway discontinues prompt play when the caller starts entering digits.
<p>DTMF Termination Key A single character that, when entered by the caller, indicates digit entry is complete. Valid options are as follows:</p> <ul style="list-style-type: none"> • 0 to 9 • * (asterisk) • # (pound sign, the default) • N (no termination key) 	Get Digits	
<p>Incomplete Timeout The amount of time after a caller stops speaking to generate an invalid entry error because the caller input does not match the defined grammar. The valid options are 0 to 99. The default is 3.</p>	Get Digits	V is an option for Play Media only.
<p>Inter-digit Timeout The number of seconds the caller is allowed between entering digits. If exceeded, the system times out.</p> <p>The valid options are 1 to 99. The default is 3.</p>	Get Digits	
<p>Invalid Entry Message Override The valid options are:</p> <ul style="list-style-type: none"> • Y--Override the system default with a pre-recorded Application Media Library file • N-- (Default) Do not override the system default 	Get Digits Menu	

Parameter Name	Used For	Notes
List of Menu Choices Valid options are as follows: <ul style="list-style-type: none"> • 0 to 9 • * (asterisk) • # (pound sign) 	Menu	Formats allowed are: <ul style="list-style-type: none"> • Individual options delimited by a / (forward slash) • Ranges delimited by a - (hyphen) with no space
Location of the data to be played Valid options are as follows: <ul style="list-style-type: none"> • Null--(Default) If you leave this option empty, the system uses the expanded call variable named user.microapp.play_data. • A number representing a Call Peripheral Variable number (for example, a 1 to represent Call.PeripheralVariable1). 	Play Data	
Maximum Field Length Maximum number of digits entered by the caller. The valid options are 1 to 32. The default is 1.	Get Digits	
Minimum Field Length Minimum number of digits entered by the caller. The valid options are 1 to 32. The default is 1.	Get Digits	
No Entry Timeout The number of seconds a caller is allowed to begin entering digits. If exceeded, the system times out. The valid options are 0 to 99. The default is 5.	Get Digits Menu	
Number of Invalid Tries Unified CVP repeats the "Get digits" cycle when the caller enters invalid data. (Total includes the first cycle.) The valid options are 1 to 9. The default is 3.	Get Digits Menu	
Number of No Entry Tries Unified CVP repeats the "Get Digits" cycle when the caller does not enter any data after the prompt has been played. (Total includes the first cycle.) The valid options are 1 to 9. (The default is 3.)	Get Digits Menu	
RTSP Timeout Specifies the Real-time Streaming Protocol (RTSP) timeout—in seconds—when RTSP is used. The valid range is 0 to 43200 seconds. The default is 10 seconds. If the value is set to 0 or a timeout value is not provided, the stream will not end.	Play Media	

Parameter Name	Used For	Notes
<p>Time format Valid only for the time Data Playback types Etime, TOD, and 24TOD.</p> <p>The available formats are as follows:</p> <ul style="list-style-type: none"> • Null--Leave this option empty for non-time formats • HHMM--Default for time formats • HHMMSS • HHMMAP--Includes a.m. or p.m.; valid only for TOD 	Play Data	
<p>Timeout Message Override. The valid options are as follows:</p> <ul style="list-style-type: none"> • Y--Override the system default with a pre-recorded Application Media Library file • N--(Default) Do not override the system default 	Get Digits Menu	
<p>Type-ahead buffer flush The Cisco VoiceXML implementation includes a type-ahead buffer that holds DTMF digits collected from the caller. When the VoiceXML form-interpretation algorithm collects user DTMF input, it uses the digits from this buffer before waiting for further input. This parameter controls whether the type-ahead buffer is flushed after the prompt plays out. A False value (default) means that the type-ahead buffer is not flushed after the prompt plays out. If the prompt allows barge-in, the digit that barges in is not flushed. Valid options are as follows:</p> <ul style="list-style-type: none"> • Y—Flush the type-ahead buffer • N—(Default) Do not flush the type-ahead buffer 	Play Media Play Data	

Sample Configuration Values

This Configuration sequence	Instructs Unified CVP
(for a Menu microapplication) 0-2/9,,4,2,2	To accept numbers 0, 1, 2, and 9. , (Skipped parameter) To accept the default barge-insetting (Y). To set the no entry timeout value to 4 seconds. To allow 2 no entry tries. To allow 2 invalid tries. To accept all other defaults.
(for a Get Digits microapplication) GD>Password,A,O	To use the Get Digits micro-application to play the media file named password.wav, using the Application (A) media library and setting 0 as the Uniqueness value.
(for a Menu microapplication) M,Main_Menu	To use the Menu micro-application to play the media file named Main-Menu.wav.



CHAPTER 7

Manage Bulk Jobs

- [Manage Bulk Jobs, on page 81](#)
- [Download Bulk Job Content File Template, on page 81](#)
- [Add and Maintain Bulk Jobs, on page 90](#)
- [Review Bulk Job Details, on page 90](#)

Manage Bulk Jobs

Bulk jobs are a fast and efficient way to enter data at initial setup and to incorporate large-scale changes, such as changing agent skill groups between shifts and incorporating a new contact center with multiple new agents.

Changes to an individual record are made directly to that record, using the appropriate tool (Agent, Dialed Number, and so on).

Although bulk job content files create records explicitly, they also implicitly create related records, as follows:

- An agent bulk job content file contains cells for agent team, skill groups, and attributes. Entering content in those cells creates those objects if they do not exist.
- A dialed number bulk job content file contains cells for call type. Entering content in those cells creates those objects if they do not exist.



Important

Run bulk jobs:

- Only during off-peak hours. Do not run bulk jobs during heavy call load.

Supervisors have no access to the Bulk Jobs tool.

Download Bulk Job Content File Template

Bulk jobs apply changes entered in content file templates. Content file templates are in .csv format.

The content file is syntactically validated before the bulk job is created. Database-related errors and conflicts are reported during execution of the job.



Note If you are using the Packaged CCE Lab deployment, you can download the Inventory content file. Use this file to enable the System Inventory and certain features, by providing machine information and credentials.

Procedure

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- Step 1** Navigate to **Unified CCE Administration > Manage > Bulk Jobs** to open the **List of Bulk Jobs** page.
- Step 2** Click **Templates**.
The **Download Templates** popup window opens.
- Step 3** Click the **Download** icon for the template you want to use.
- Step 4** Click **OK** to close the **Download Templates** popup window.
- Step 5** Open the template in Microsoft Excel.
- Step 6** Populate the file.
- Step 7** Save the populated file locally.

Related Topics

[Inventory Content File](#) , on page 318

Content File Rules



Note The rules in this section do not apply to the SSO Migration content file.

For more information about using the SSO Migration content file, see the *Cisco Packaged Contact Center Enterprise Features Guide* at <https://www.cisco.com/c/en/us/support/customer-collaboration/packaged-contact-center-enterprise/products-maintenance-guides-list.html>.

Content File Create Operations

The content file spreadsheets follow these CREATE rules:

- All columns in the spreadsheet must be present, but the cells for optional fields can be left blank.
- Rows in the file are processed sequentially. It is possible for a content file to fail at any point (at any row), in which case objects up to but not including that row are added or updated.
If a row fails, all additions or updates before that row succeed, but all subsequent create and update operations fail.
- **Agent:** Creating an agent with the following cells populated implicitly creates the objects if they do not exist: agent team, skill group, attributes, supervisor team, and department.
- **Dialed number:** Creating a dialed number with the call type and department populated implicitly creates those objects, if they do not already exist.

Content File Update Operations

The Content file spreadsheets follow these UPDATE rules:

- Enter a value in a field to change the existing value.
- Leave a field blank to keep the existing value.
- Enter ~ in a field to clear the value in the existing value.

Bulk Agent Content File

The content file for the agent bulk job contains the fields detailed in the table below.

Field	Required?	Description
operation	yes	Enter one of the following (case-insensitive): <ul style="list-style-type: none"> • CREATE • UPDATE
agentID	no	Enter a unique string of up to 11 digits. AgentID is automatically generated if you leave the field blank. In an UPDATE operation: <ul style="list-style-type: none"> • You cannot change agentID • If you leave the field blank, the userName must reference an existing agent
userName	yes	Enter up to 255 ASCII characters. The login name supports the use of all characters from 33 to 126 in the ASCII character set, except for the following: double quotation mark ("), forward slash (/), backward slash (\), square brackets ([]), colon (:), semicolon (;), pipe (), equal to (=), comma (,), plus sign (+), asterisk (*), question mark (?), angle brackets (< >), hash (#), percent (%), and SPACE. For supervisors and for agents with single sign-on (SSO) enabled, the username is the user's Active Directory or SSO account username. For supervisors who are not enabled for single sign-on (SSO), the Active Directory username must be in the user@domain format.
firstName	yes	Enter a maximum of 32 characters.
lastName	yes	Enter a maximum of 32 characters.
password	no	Enter a maximum of 256 ASCII characters. Password is case-sensitive. If SSO is enabled, the password is not saved.
loginEnabled	no	Indicates whether the agent is able to log in to the agent desktop. If not specified, defaults to True.

Field	Required?	Description
ssoEnabled	no	Indicates whether single-sign on is supported at the agent level. This field takes effect only when the global level of SSO is mixed.
description	no	Enter up to 255 characters to describe the agent. If description is left blank during a CREATE operation, it is set to the ID of the bulk job performing the CREATE operation.
agentStateTrace	no	Indicates whether agent state trace is enabled for this agent. Defaults to False.
agentDeskSettingsName	no	Enter the desk settings associated with this agent. In a CREATE operation, your entry of agentDeskSettingsName generates an error when there is no desk settings with that name. Leaving this blank applies the System Default Desk Settings.
agentTeamName	no	Enter the team in which this agent is a member. In a CREATE operation, your entry of agentTeamName creates that team if it does not already exist. It appears in the List of Teams with the description BulkJob ID ####, where #### is the number of the bulk job.
skillgroup(s)	no	Enter the skill groups with which this agent is associated, delimited by the ";" character. For example: sales;billing;support. In a CREATE operation, your entry of skillgroup creates that skill group if it does not already exist. It appears in the List of Skill Groups with the description BulkJob ID ####, where #### is the number of the bulk job.
defaultSkillGroup	no	Enter the default skill group associated with this agent. If the field is specified, it must reference a skill group defined for the agent. In an UPDATE operation, an error is generated if the value is no longer one of the agent's skill groups.

Field	Required?	Description
attributes	no	<p>These fields are name = value pairs delimited by the ";" character, where = value is optional for existing attributes. For example, english=true;sales=7.</p> <p>Adding an attribute with a data type (Boolean or Proficiency) and a value (true or 9), either directly in the Attributes tool or with a bulk job, defines and protects the data type and establishes that value as the default.</p> <p>If an attribute does not yet exist in the Attributes tool, entering an attribute name without a value generates an error. For example if english is not yet an attribute, then english returns an error.</p> <p>You cannot change the data type, but you can change the value. If english was created as True, entering english retains the True value in a bulk update. You can also enter english=false, which sets the agent attribute value to False, leaving the attribute default value at True. You cannot enter english=10.</p> <p>To clear an agent's attribute value and reestablish the attribute default on a bulk update, just specify the attribute name, for example, english.</p> <p>In a CREATE operation, your entry of attribute creates that attribute if it does not already exist. It appears in the List of Attributes with the description BulkJob ID ####, where #### is the number of the bulk job.</p>
supervisor	no	Indicates whether the agent is a supervisor. Defaults to False.
supervisorTeams	no	<p>Enter names of teams that will be supervised by this supervisor, delimited by the ";" character. For example: team1;team2;team3. Populating this field but leaving supervisorUserName blank generates an error.</p> <p>In a CREATE operation, your entry of supervisorTeams creates that team if it does not already exist. It appears in the List of Teams with the description Bulk Job ID: ####, showing the number of the bulk job.</p>
siteName	no	<p>The site name for this dialed number.</p> <p>If specified, the value must match an existing site name.</p> <p>If not specified, this field is set to default Main site.</p>

Related Topics

[Content File Rules](#), on page 82

Bulk Dialed Number Content File for 2000 Agent Deployments

The content file for the dialed number bulk job contains these fields:

Field	Required?	Description
operation	yes	<p>Enter one of the following (case-insensitive):</p> <ul style="list-style-type: none"> • CREATE • UPDATE • DELETE
dialedNumberString	yes	<p>The dialedNumberString for this dialed number.</p> <p>Enter a string value that is unique for the routing type, maximum of 25 characters.</p> <p>Valid values are alphanumeric, +, and @.</p> <p>Note You cannot update dialedNumberString.</p>
routingType	yes	<p>The routing type for this dialed number. Values are 1 to 7.</p> <ul style="list-style-type: none"> • 1 (External Voice): Dialed number strings that apply to voice calls coming from Cisco Unified Customer Voice Portal (CVP). • 2 (Internal Voice): Dialed number strings that can be called from a Cisco Unified Communications Manager phone. • 3 (Outbound Voice): Dialed number strings that are used by the Cisco Outbound Option Dialer. • 4 (Multichannel 1). Requests that come from Enterprise Chat and Email, SocialMiner, or third party. • 5 (Multichannel 2). Requests that come from Enterprise Chat and Email, SocialMiner, or third party. • 6 (Multichannel 3). Requests that come from Enterprise Chat and Email, SocialMiner, or third party. <p>Multichannel routing types are available only if you have configured the peripherals for Enterprise Chat and Email, SocialMiner, and/or Third Party Multichannel using Peripheral Gateway Setup tool, and added external multichannel machines to the System Inventory.</p> <p>The order in which the peripherals for these machines appear on the System Information > Peripheral Gateway tab determines the routingType number (4, 5, or 6) for the machine. For example, if the SocialMiner peripheral appears first on the tab, it is routingType 4.</p> <p>See the <i>Cisco Packaged Contact Center Enterprise Features Guide</i> at https://www.cisco.com/c/en/us/support/customer-collaboration/packaged-contact-center-enterprise/tsd-products-support-series-home.html for information about configuring the peripherals using Peripheral Gateway Setup.</p>

Field	Required?	Description
description	no	The description for this dialedNumberString. Enter a maximum of 255 characters. If the description field is left blank in a CREATE operation, it is set to the ID of the bulk job performing the CREATE operation.
callTypeName	no	<p>Enter a name for the call type using a maximum of 32 characters. Valid characters are period(.), underscore(_), and alphanumeric. The first character must be alphanumeric.</p> <p>In a CREATE operation, your entry of callTypeName creates that call type if it does not already exist. It appears in the List of Call Types with the description BulkJob ID #####, where ##### is the number of the bulk job.</p>
mediaRoutingDomainName	yes, for routingType 4, 5, and 6	<p>Optional for routingTypes 1, 2, and 3. If supplied, must be Cisco_Voice.</p> <p>Required for routingTypes 4, 5, and 6. The value must be Cisco_Voice or match an existing Media Routing Domain name.</p>
departmentName	no	<p>The department for this dialed number.</p> <p>A global administrator's entry of department creates that department if it does not already exist. It appears in the List of Departments with the description BulkJob ID #####, where ##### is the number of the bulk job.</p> <p>If the department already exists, then that department can be entered by a global administrator or by an administrator who administers that department.</p>
siteName	no	<p>The site name for this dialed number.</p> <p>If specified, the value must match an existing site name.</p> <p>If not specified, this field is set to default Main site.</p>

Related Topics

[Content File Rules](#), on page 82

[System Inventory for Packaged CCE 2000 Agents Deployment](#), on page 100

Bulk Call Type Content File

The content file for the call type bulk job contains these fields:

Field	Required?	Description
operation	yes	<p>Enter one of the following (case-insensitive):</p> <ul style="list-style-type: none"> • CREATE • UPDATE • DELETE

Field	Required?	Description
name	yes	Enter a name for the call type using a maximum of 32 characters. Valid characters are period(.), underscore (_), and alphanumeric. The first character must be alphanumeric.
description	no	The description for this call type. Enter a maximum of 255 characters. There is no restriction on characters. If the description field is left blank in a CREATE operation, it is set to the ID of the bulk job performing the CREATE operation.
serviceLevelThreshold	no	Maximum time in seconds that a caller should wait before being connected with an agent. Enter a value in seconds, using positive 32-bit integers only.
serviceLevelType	no	Indicates how the system calculates the service level: <ul style="list-style-type: none"> • 1 = Ignore Abandoned Calls • 2 = Abandoned Calls have Negative Impact • 3= Abandoned Calls have Positive Impact If not specified, this field is set to the system default.
bucketIntervalName	no	Identifier of the bucket interval, used for reporting. If specified, the value must match an existing bucket interval. If not specified, this field is set to the system default.
departmentName	no	The department for this call type. A global administrator's entry of department creates that department if it does not already exist. It appears in the List of Departments with the description BulkJob ID #####, where ##### is the number of the bulk job. If the department already exists, then that department can be entered by a global administrator or by an administrator who administers that department.

Related Topics

[Content File Rules](#), on page 82

Bulk Skill Group Content File

The content file for the skill group bulk job contains these fields:

Field	Required?	Description
operation	yes	Enter one of the following (case-insensitive): <ul style="list-style-type: none"> • CREATE • UPDATE • DELETE
name	yes	Enter a name for the skill group using a maximum of 32 characters. Valid characters are period(.), underscore (_), and alphanumeric. The first character must be alphanumeric.
description	no	The description for this skill group. Enter a maximum of 255 characters. There is no restriction on characters. If the description field is left blank in a CREATE operation, it is set to the ID of the bulk job performing the CREATE operation.
serviceLevelThreshold	no	Maximum time in seconds that a caller should wait before being connected with an agent. Enter a value in seconds, using positive 32-bit integers only.
serviceLevelType	no	Indicates how the system calculates the service level: <ul style="list-style-type: none"> • 1 = Ignore Abandoned Calls • 2 = Abandoned Calls have Negative Impact • 3= Abandoned Calls have Positive Impact If not specified, this field is set to the system default.
bucketIntervalName	no	Identifier of the bucket interval, used for reporting. If specified, the value must match an existing bucket interval. If not specified, this field is set to the system default.
mediaRoutingDomainName	no	Enter a name for the Media Routing Domain using a maximum of 32 characters. Valid characters are period(.), underscore (_), and alphanumeric. The first character must be alphanumeric. If specified, the value must match an existing Media Routing Domain name. If not specified, this field is set to Cisco_Voice. You cannot change the mediaRoutingDomainName in an UPDATE operation. You must either leave this field blank or enter the existing mediaRoutingDomainName value.

Field	Required?	Description
departmentName	no	<p>The department for this skill group.</p> <p>A global administrator's entry of department creates that department if it does not already exist. It appears in the List of Departments with the description BulkJob ID ####, where #### is the number of the bulk job.</p> <p>If the department already exists, then that department can be entered by a global administrator or by an administrator who administers that department.</p>
siteName	no	<p>The site name for this dialed number.</p> <p>If specified, the value must match an existing site name.</p> <p>If not specified, this field is set to default Main site.</p>

Related Topics

[Content File Rules](#), on page 82

Add and Maintain Bulk Jobs

Procedure

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- Step 1** Navigate to the **Unified CCE Administration > Manage > Bulk Jobs** to maintain (Add, Review, and Delete) bulk jobs.
- Step 2** Click **New** to open the **New Bulk Job** window.
- Step 3** In the optional **Description** fields, enter up to 255 characters to describe the bulk job. See [Native Character Sets, on page 313](#).
- Step 4** In the required **Content File** field, browse to the content file you have completed for this bulk job. The content file is validated before the bulk job is created.
- Step 5** Click **Save**.
-

Review Bulk Job Details

To review the details for a bulk job, click the bulk job row on the **List of Bulk Jobs** page. Fields on the page are display-only.

Field	Description
ID, Description, and Type	Show the ID, description entered and type of bulk job selected when the bulk job was created.

Field	Description
State	<p>Shows one of:</p> <ul style="list-style-type: none"> • Queued: The bulk job has been queued and will process when any jobs submitted ahead of it have completed. When multiple bulk jobs are submitted, they are run in the order they are created. • Processing: The bulk job is being processed. To view the progress, click Log File Download to monitor the log file. • Succeeded: All operations in the bulk job were successful. • Partially Succeeded: Some operations were successful, and some were unsuccessful. • Failed: All operations were unsuccessful. • Cancelled: A bulk job is canceled when the preceding bulk job is terminated due to unrecoverable error while this job was in the queued state.
Host	The hostname of the AW server where the bulk job was initiated and will be stored. When deleted, bulk job content files and log files will be deleted from this host.
Created	The time the bulk job was submitted.
Started	The time the bulk job entered the processing state.
Finished	The time the bulk job completed or failed (left the processing state).
Total Time	The time the bulk job spent in the processing state. This is calculated as Finished - Started.
Content File	Click Download to open the Content .csv file that was submitted for this bulk job. You must authenticate to open or save this file. If your deployment includes two AW hosts, this button is disabled if the bulk job was created using Unified Web Administration on a host that is different from the host on which the job is being viewed.

Field	Description
Log File	<p>Click Download to open the log file for this bulk job. If the job is still processing, click Download again to the review updates the job progresses. You must authenticate to open or save this file. If your deployment includes two AW server hosts, this button is disabled if the bulk job was created using Unified CCE Administration on a host that is different from the host on which the job is being viewed.</p> <p>A log file is generated for each bulk job. The log file is retained until the bulk job is deleted and contains detail of each operation that was executed, as well as a summary indicating if the bulk job completed successfully or had failures.</p>



PART III

Manage System

- [Manage General Settings, on page 95](#)
- [Manage Remote Sites, on page 113](#)



CHAPTER 8

Manage General Settings

For Packaged CCE, Manage > Settings has two tabs: *General* and *Access*.

This chapter explains the tools on the *General* tab, which you use to manage general system settings: System Information, System Settings, System Deployment, and Agent Trace.

The tools on the *Access* tab are explained in [Manage Administrators, on page 31](#).

System Administrators have access to tools on the System menu. Unless a custom role gives them access, other administrators cannot use the System menu, and supervisors do not see this menu.

- [System Information, on page 95](#)
- [Peripheral Gateways, on page 96](#)
- [Settings, on page 96](#)
- [System Inventory for Packaged CCE 2000 Agents Deployment, on page 100](#)
- [Agent Trace, on page 110](#)
- [Log Collection, on page 111](#)

System Information

The System Information tool for Packaged CCE contains the General and Capacity Info tabs.

General

The General tab provides the following information:

- The deployment type.
- The software version of Unified CCE that is currently deployed.

Capacity Info

Open the Capacity Info tab to see a table that provides following capacity information:

Column	Description
Status	The status column shows where your system stands with respect to the capacity limit. The status icons are: <ul style="list-style-type: none"> • Green for 0-75% of capacity. • Yellow for 76-95%. • Orange for 96-99%. • Red for when you are at 100%.
Number of Configured	Shows the name of the object.
At Most	Shows the maximum capacity of each configurable object that is allowed.
Actual	Shows the number of objects currently configured on your system.
% Used	Shows the percentage of the maximum capacity represented by your configuration.

The **arrow** icon at the right of each row opens the tool where you can view, add, edit, and delete the objects to maintain the capacity, if you have access to that tool.

Peripheral Gateways

This display-only tool shows details about the peripheral gateways and peripherals in your deployment.

Click the **Site** tab to view the details of peripheral gateways and peripherals configured for that site.

Settings

The **Unified CCE Administration > System > Settings** tool has various tabs such as Global, Main Site, and the configured remote sites. Navigate to the required tab to configure the settings.

System Settings for Global

This tab contains the following sections:

- Congestion Control
- Agent
- Call Reporting
- Script

Congestion Control

You can review congestion control fields in this section. This section contains the following fields:

Field	Description
Congestion Control fields	<ul style="list-style-type: none"> • Treatment Mode This display-only field shows Treat call with DN default label. • System Default Label This display-only field is blank for Packaged CCE and Packaged CCE Lab Mode deployments. If your system was changed from another deployment type, this field retains the system default label for that deployment. • Maximum Calls Per Second This display-only field displays the current value for maximum calls per second for the deployment.

Agent

Enter values in this section to define system-level values for agents. This section contains the following fields:

Field	Required?	Description
Minimum Password Length	yes	Enter a value between 0 and 32 to set the minimum required length for passwords. Changing this value affects new passwords only and does not apply to existing ones.
Username Case Sensitivity	no	Check this check box to indicate that all usernames are case-sensitive. Leave it unchecked to indicate that case does not matter.

Call Reporting

Enter values in this section to define system-level values for calls. This section contains the following fields:

Field	Required?	Description
Bucket Interval	yes	<p>Click the magnifying glass icon to display the popup list of configured bucket intervals.</p> <p>Select a bucket interval to use as the system default. You can change the bucket interval for individual call types, skill groups, and precision queues. (See Call Type, on page 60, Skill Groups, on page 55, and Precision Queues, on page 47.)</p>
Call Type	yes	<p>Click the magnifying glass icon to display the popup list of configured call types.</p> <p>Select a call type to use as the system default. You can change the call type for individual Dialed Number, on page 62.</p>

Field	Required?	Description
Service Level Type	yes	<p>From the drop-down menu, select an option to configure the default method by which the system software calculates the service level type. You can change the service level type for individual call types and precision queues. You have the following service level options:</p> <ul style="list-style-type: none"> • Ignore Abandoned Calls: This selection excludes abandoned calls from the service level calculation. • Abandoned Calls have Negative Impact: Select this if you want only calls that are answered within the service level threshold time to be counted as treated calls. The service level is negatively affected by calls that abandon within the service level time. • Abandoned Calls have Positive Impact: Select this if you consider a call abandoned within the service level threshold time as a treated call. Abandoned calls have a positive impact on the service level.
Service Level Threshold	yes	<p>Enter a value in seconds, from 0 to 2,147,483,647, for the maximum time that a caller spends in a queue before being connected to an agent. This value is used in reports to identify the percentage of calls that are answered within that time threshold, enabling you to see whether agents are meeting the target goal. Set the value to 0 seconds if you do not want a service level threshold to be set for calls. The value here sets the system default for service level threshold. You can change the value for individual call types and precision queues. (See Call Type, on page 60 and Precision Queues, on page 47.)</p>
Abandon Call Wait Time	yes	<p>Enter a value in seconds (between 1 and 14400) to configure the minimum time an incoming call must be queued before the call is considered abandoned if the caller hangs up.</p>
Answered Short Call Threshold	no	<p>Enter a value in seconds (between 0 and 14400) to configure the maximum duration for a short call. Calls with a duration below that value are considered short. Set the threshold to factor out short calls from handle times.</p>
Reporting Interval	yes	<p>From the drop-down menu, select 15 Minutes or 30 Minutes to configure the system to store historical information in 15-minute or half-hour summaries. The Unified CCE PG sends these records to the Logger, which in turn writes them to the Central Database. Note that the 15-minute interval requires a larger amount of database space than the 30-minute interval.</p>

Script

Use this section to set the number of retained script versions.

Field	Description
Script Versions to Retain	Enter a value from 1 to 100 to define the maximum number of versions of each routing script you want to maintain in the database. When you select a number, the system automatically deletes the oldest version when the limit is exceeded.

System Settings for Main Site

This tab contains the following sections:

- Agent
- Labels

Agent

Enter values in this section to define system-level values for agents. This section contains the following fields:

Field	Required?	Description
Desk Settings	yes	Click the magnifying glass icon to display the popup list of configured desk settings. This list shows only global desk settings. The desk settings you select will be the system default for all agents. You can change the desk settings for individual agents. (See Add and Maintain Agents, on page 14.)
Agent Phone Line Control	yes	<p>Select Single Line or All Lines to indicate whether all agents supported on the agent peripheral can have one or more than one line configured.</p> <p>Important</p> <ul style="list-style-type: none"> • If you select All Lines, you must access Cisco Unified Communications Manager to set Busy Trigger to 1 and Max Number of Calls to 2 for each phone. Use the Unified Communications Manager Bulk Administration tool to change these settings for all agent devices. • If you change the Agent Phone Line Control setting, you must restart the peripheral gateways for the change to take effect. To restart the PGs, access the Unified CCE PG on Side A and Side B. Open Service Control and restart all PG services on Side A and Side B.

Labels

Use this section to view and edit labels for Unified CM, Outbound, and Unified CVP. This section contains the following fields:

Field	Description
Unified CM Label	This field contains a 10 digit string that matches the Unified CM route pattern.
Outbound Label	This field contains a 10 digit string that matches the IOS Voice Gateway dial-peer.

Field	Description
Unified CVP Label	<p>This field contains a 10 digit string that matches the CVP dialed number pattern.</p> <p>When this label is used for all Unified CVP routing clients, the Same Label for All Unified CVPs check box is checked.</p> <p>To use a different label for each Unified CVP routing client, uncheck the Same Label for All Unified CVPs check box, and enter a 10 digit string in each routing client field.</p>

System Settings for Remote Site

The system settings vary based on the type of peripheral gateways configured for a particular remote site.

PGs Configured	Settings
Agent	Agents, Unified CM Label
VRU	Unified CVP Label
Multichannel	Outbound Label

If a remote site has all the PGs configured, the settings options are same as that of Main Site. If it has a combination of two PGs configured, the respective combination of settings appears.

System Inventory for Packaged CCE 2000 Agents Deployment



Note The System Inventory shows IPv4 addresses only.

The System Inventory is a visual display of the machines in your deployment, including: Virtual Machine Hosts (ESXi servers), Virtual Machines (VMs) on Side A, VMs on Side B, External Machines, Gateways, and Cisco Virtualized Voice Browsers (VVB). You can access the System Inventory after you have completed the change to a Packaged CCE deployment.

Access the System Inventory by navigating to **Unified CCE Administration > System > Deployment**.

System Inventory contents are updated when you select or change the deployment type and after regular system scans. If a system scan detects VMs that do not conform to Packaged CCE requirements, the **Configure your deployment** pop-up window opens automatically, detailing the errors. You can access the System Inventory again after you have corrected the errors and completed the **Configure your deployment** pop-up window.

For more details about the Packaged CCE requirements, see **Server Status** pop-up window, see [Monitor Server Status Rules](#) , on page 109.



Restriction Departmental administrators cannot add, edit, or delete information in the System Inventory. Global administrators who are configured as "read-only" cannot add, edit, or delete information in the System Inventory.

Table 6: System Inventory Layout and Actions

Item	Notes	Actions
Validate	If a system scan detects an error or warning for validation rules, the Validate button appears above the Solution Inventory. After you have corrected the errors or warnings, click Validate to run an immediate scan and verify that you corrected the problem.	Click Validate .

Item	Notes	Actions
Side A	This panel shows all VMs on Side A.	<p>The System Inventory displays read-only information for the following VMs:</p> <ul style="list-style-type: none"> • Unified CCE Rogger • Unified CCE PG • Unified CVP • Unified CM Subscriber 1(if on-box) <p>The following VMs are editable. Click the VM pencil icon to edit the following fields:</p> <ul style="list-style-type: none"> • Unified CCE AW-HDS-DDS—Diagnostic Framework Service Domain, Username, and Password. • Unified CM Publisher(if on-box)—AXL Username and Password. These are the credentials for connecting to the Unified CM Publisher. • CUIC-LD-IdS Publisher—Username and Password for Unified Intelligence Center Administration. Username and Password for Identity Service Administration. • Unified CVP Ops Console Server—Username and Password for the System CLI. <p>Note Updating the Unified CVP Operations Console Server initiates a scan for gateways. The pop-up window closes when the scan for gateways is finished.</p> <ul style="list-style-type: none"> • Finesse Primary—Username and Password for Cisco Finesse Administration. <p>You can launch the administration tool for these VMs by clicking the VM arrow icon:</p> <ul style="list-style-type: none"> • CUIC-LD-IdS Publisher • Unified CVP Ops Console Server • Finesse Primary

Item	Notes	Actions
Side B	This panel shows all VMs on Side B.	<p>The System Inventory displays read-only information for the following VMs:</p> <ul style="list-style-type: none">• Unified CCE Rogger• Unified CCE PG• Unified CCE AW-HDS-DDS• Unified CVP• Unified CM Subscriber 2(if on-box)• Unified CVP Reporting• CUIC-LD-IdS Subscriber• Finesse Secondary• Enterprise Chat and Email

Item	Notes	Actions
External Machines	<p>This section shows all external machines in the deployment, and can include any of the following:</p> <p>Note</p> <ul style="list-style-type: none">Unified CM Subscriber machines are dedicated to the contact center. When you configure an external Unified CM Publisher, its Unified CM Subscribers are added to the System Inventory automatically.	

Item	Notes	Actions
		<p>You can add, edit, or delete External Machines as follows: To add:</p> <ol style="list-style-type: none"> 1. Click Add External Machine. 2. Complete all required fields. <ul style="list-style-type: none"> • For all machines, enter the IP address, hostname, or fully qualified domain name (FQDN) of the machine in the Hostname field. <p>Note The system does not support IP address change. Use the hostname if you foresee a change in IP address. This is applicable for all the Hostname/ IP Address fields.</p> <p>The system attempts to convert the value you enter to FQDN.</p> <ul style="list-style-type: none"> • For SocialMiner, also enter the SocialMiner Administration Username and Password. <p>The system validates the credentials, and then automatically enables and configures the CCE Configuration for Multichannel settings in SocialMiner Administration. These settings are used for both Agent Request and Task Routing.</p> <p>The system also automatically creates a Task feed in SocialMiner for Task Routing, including the associated campaign and Connection to CCE notification. For more information, see the <i>Cisco Packaged Contact Center Enterprise Features Guide</i> at https://www.cisco.com/c/en/us/support/customer-collaboration/packaged-contact-center-enterprise/products-maintenance-guides-list.html.</p> <ul style="list-style-type: none"> • For the Unified CM Publisher, also enter the AXL Username and Password.

Item	Notes	Actions
		<p>The system validates the AXL information, connects to the Unified CM Publisher, and then automatically adds the Unified CM Subscribers to the System Inventory.</p> <p>3. Click Save.</p> <p>To edit:</p> <ol style="list-style-type: none"> 1. Click the machine pencil icon. 2. Edit fields as needed. Click Save. <p>Note If you edit the Unified CM Publisher, the Unified CM Subscribers associated with the publisher are updated automatically. You cannot edit Unified CM Subscribers from the System Inventory.</p> <p>To associate the external HDS with a default Cisco Identity Service (IdS) for single sign-on:</p> <ol style="list-style-type: none"> 1. Click the pencil icon on the external HDS. 2. Click the Search icon next to Default Identity Service. 3. Enter the machine name for the Cisco IdS in the Search field or choose the Cisco IdS from the list. 4. Click Save. <p>To delete, click the x on the machine. Confirm the deletion.</p> <p>Note If you delete the Unified CM Publisher, the Unified CM Subscribers are also deleted automatically, and the Configure Deployment pop-up window opens. Enter the name, IP address, AXL username, and AXL password for the Unified CM Publisher in your deployment.</p> <p>You can open the administration tool for these external machines by clicking the arrow icon in the machine box:</p>

Item	Notes	Actions		
		<ul style="list-style-type: none">• Unified CM Publisher• SocialMiner• MediaSense		
		Gateways		The System Inventory displays the read-only name and address for each gateway.

Item	Notes	Actions		
			<p>The system scans for gateways every time you edit fields in the Unified CVP Ops Console Server pop-up window.</p> <p>It is common practice to add inbound gateway information (hostname, IP Address) in the CVP OAMP, but not to configure outbound gateway information. If both inbound and outbound gateways are configured in the CVP OAMP, the System Inventory displays gateway information used for inbound and outbound calls.</p>	

Item	Notes	Actions
Cisco Virtualized Voice Browsers (VVB)	The system scans for Cisco VVBs every time you edit fields in the Unified CVP Ops Console Server pop-up window.	The System Inventory displays the read-only address and version for each Cisco VVB.



Note If you change the password of any of the Packaged CCE components, you must update the password in the respective VM in the system inventory.

Monitor Server Status Rules

In Packaged CCE 2000 Agents deployment, the Inventory displays the total number of alerts for machines with validation rules. Click the alert count to open the **Server Status** popup window, which lists all of the rules for that machine and indicates which have warnings and errors. Rules are grouped by these categories:

Server Status Category	Description	Example Rules
Configuration	Rules for installation and configuration of a component. These rules identify problems with mismatched configuration between components, missing services, and incorrectly configured services.	Unified CCE Rogger: The trace level must be set to normal to ensure performance. Unified CVP: The names of the SIP Server Groups on CVP containing Communications Manager addresses must match the Communications Manager Cluster Fully Qualified Domain Name.
Operations	Rules for the runtime status of a component. These rules identify services and processes that cannot be reached, are not running, or are not in the expected state.	Unified CCE Rogger: The central controller agent process (ccagent.exe) must be in service for both PGs. Unified CVP: The Diagnostic Portal, AXL, REST or SOAP service on this machine must be in service. Note Webex Experience Management and Call Transcript should be reachable on Network.

Server Status Category	Description	Example Rules
System Health	Metrics to monitor the CPU, memory, and disk usage of a component's Virtual Machine (VM) as reported by ESXi over the last 10 minutes. The memory and CPU usage may differ slightly from system tools reported by the VM itself. For VM Hosts, these metrics also include datastore performance information.	All: Memory usage as reported by ESXi - 17%
VM	VM requirements for a component.	All: VMware Tools must be up to date
System Validation	<p>Rules for Unified CCE database and configuration settings.</p> <p>These rules identify whether the configuration of objects in your deployment match the requirements and limits for Packaged Contact Center Enterprise.</p> <p>Note The System Validation category is available only for the Side A Unified CCE AW-HDS-DDS.</p>	<p>Side A Unified CCE AW-HDS-DDS: Agent Desk Settings: Ring No Answer Times must not be set.</p> <p>Side A Unified CCE AW-HDS-DDS: Application Gateway</p> <p>Side A Unified CCE AW-HDS-DDS: Application Instance: Exactly 1 Application Instance must be defined and its application type must be <Other>.</p>

Agent Trace

Enabling agent trace allows you to track and report on every state an agent passes through. You might enable agent trace if you have concerns about the productivity or performance of one or more agents.



Important

Enabling trace can affect system performance, as it requires additional network bandwidth and database space. Typically, you use this feature for short-term tracking of specific agents. The system imposes a configuration limit on the number of agents for whom you can enable trace.

Use this tool to view, add, and remove agents for whom agent trace is enabled.

To add trace to an agent:

1. Navigate to **Unified CCE Administration > System > Agent Trace**.
2. Click **Add** to open the **Add Agents with Trace Enabled** popup window. Use the sort and search features to navigate the list.
3. Click one or more agent usernames to give them the trace-enabled status.
4. Close **Add Agents with Trace Enabled** to return to the list.
5. Click **Save** on the List window to confirm the trace status for the agents you added. Click **Revert** before you save to remove an agent from the Trace Enabled list.

To remove trace from an agent:

1. On the **List of Agents with Trace Enabled** window, locate the agent whose trace status you want to remove.
2. Click the **x** icon to clear trace status for that agent.
3. Click **Save** on the List window to confirm the removal. To cancel, click **Revert**.

Log Collection



Important Only set trace level to detailed and run log collection during off-peak hours. Do not run log collection during heavy call load.

Use the Log Collection tool to collect logs for these components:

- Unified CCE
- Unified CVP
- Unified Communications Manager
- Finesse
- Unified Intelligence Center

Unless limited by their role, administrators have full access to Log Collection. Supervisors have no access to this tool.

You can select individual or multiple components for log collection, and specify the start and end time for the logs. The maximum duration for log collection is eight hours. The logs for all selected components are consolidated into a single downloadable zip file. You can run one log collection at a time.

For most components, you can specify whether normal or detailed logs are collected using the **Trace Levels** option. Click **Trace Levels** to view the current trace level for each component and, if necessary, change it for future log collection.

The **Current Trace Level** for each component can be Normal, Detailed, or Custom. Custom indicates that the level has been set outside of **Unified CCE Administration** and does not match the Normal or Detailed settings for that component.

System wide trace levels are gathered periodically. If a trace level is changed outside of **Unified CCE Administration**, it may several minutes before the new trace level appears in the **Log Collection** tool.

To use Log Collection to debug a problem:

1. Change trace level to detailed by clicking **Trace Levels**, and selecting **Detailed** from the pull-down menus for the relevant components. Click **Update Trace Levels** to apply the changes.
2. Recreate the problem in your deployment or wait until the problem occurs again.
3. Return to the Log Collection tool and collect logs for the appropriate date and time interval, during which detailed trace level was selected. For example, if you set the trace level to detailed on 01/27/2014 at 09:00, you can collect detailed logs for intervals after that date and time. (See directions below.)
4. When you have finished debugging the problem, return the trace level to **Normal**.

To collect log files:

1. Navigate to **Unified CCE Administration > System > Log Collection**.
2. Check each component for which you want to collect logs, or check **All Components**.
3. Select a **Start Time** and **End Time** for log collection by clicking the **calendar** icon. Pick a date and time from the popup window, and then click anywhere outside the popup window to save your selection.
4. Click **Collect Logs**.

The new log collection appears in the list with an **in progress** icon in the Status column. When the log collection is complete, its **download** and **trash can** icons are enabled automatically.



Note If errors are encountered during log collection, the Status column shows an **error** icon. Hover over the icon to view the tooltip which explains the error. If the Unified CCE Administration service restarts during log collection, a **cancelled** icon appears in the status column. You can delete log collections that have errors or have been cancelled; you cannot download these collections.

5. Click the **download** icon to download the log zip file.

To delete a stored log collection, click the **trash can** icon for that collection in the list.



CHAPTER 9

Manage Remote Sites

- [Add Remote Site, on page 113](#)
- [Reconfigure Remote Site, on page 115](#)
- [Add External Machines, on page 116](#)
- [Edit External Machines, on page 116](#)
- [Delete Remote Site, on page 117](#)

Add Remote Site

Procedure

Step 1 Navigate to **Unified CCE Administration > System > Deployment**.

Step 2 Click the + icon to open the **Add Remote Site** page.

Step 3 On the **CCE PG** screen, enter the remote site information in the following fields:

Field	Description
Site Name	Enter a name for the site. Maximum length is ten characters. Valid characters are alphanumeric, period (.), and underscore (_). The first character must be alphanumeric. Note You cannot use the system reserved terms like core, main, and site.
Side A PG Hostname/ IP Address	Enter the hostname, IP address, or fully qualified domain name (FQDN) for Side A.
Side B PG Hostname/ IP Address	Enter the hostname, IP address, or fully qualified domain name (FQDN) for Side B.
Select PG Client Types to Configure	Select the required peripheral gateway client types. The subsequent screens appear as per the selected options. <ul style="list-style-type: none">• If you select Agent, the Unified CM and Finesse screens appear.• If you select VRU, the CVP screen appears.

Field	Description
	<ul style="list-style-type: none"> If you select Multichannel, the Configure screen appears.

Note The system does not support IP address change. Use the hostname if you foresee a change in IP address. This is applicable for all the **Hostname/ IP Address** fields.

Step 4 Click **Next**. The subsequent screens appear as per the selected PG client types.

Step 5 On the **Unified CM** page, you can either select an existing publisher or add a new one. If you select a publisher, the associated subscribers appear and you can select the subscriber details. To add a new publisher,

- Select **Add a new CM Publisher**.
- Enter the Hostname, Username, and Password.
- Click **Save**.

Note You can add only one CM Publisher while creating a remote site.

Step 6 On the **Subscribers** section, select the following connection settings for the agent peripheral:

- Side A Connection
- Side B Connection
- Mobile Agent Codec

Step 7 Click **Next**.

Step 8 On the **Finesse** page, enter the Hostname, Username, and Password for the Finesse primary server.

Step 9 Click **Next**.

Step 10 On the **CVP** page, enter the Hostname/IP Address for CVP 1 and CVP 2.

Step 11 Click **Next**.

The system performs the following Configuration tasks.

Component	Automated Configuration Tasks
Unified CCE PG	<p>Agent</p> <ul style="list-style-type: none"> Downloads JTAPI from the Unified Communications Manager, and installs it on the Unified CCE PG. Creates the CUCM Peripheral Gateway (PG) with the CUCM PIM. Creates the CTI Server. <p>VRU - Creates the VRU PG with two VRU PIMs.</p> <p>Multichannel - Creates the Multichannel PG.</p>
Unified CCE Rogger	Updates the router configuration with the new PGs that are created as a part of the site.
Unified Communications Manager	<ul style="list-style-type: none"> Creates the Application User that is used to configure the Agent PG.
Finesse	<ul style="list-style-type: none"> Configures the CTI Server settings. Configures the connection to the AW database.

Component	Automated Configuration Tasks
Unified Customer Voice Portal	<ul style="list-style-type: none">• Configures the Unified CVP Call Server components and adds them to the Main site Reporting Server.• Configures the Unified CVP VXML Server components.• Configures the Unified CVP Media Server components.

Note If one of the automated initialization tasks fail, the system reverts all the completed tasks.

Step 12 Click **Done** when all the tasks are complete. If there are configuration errors, you can click **Back** to edit the previous pages.

Step 13 For the configuration to take effect, do the following:

- Restart the router service.
- If you have selected the PG client type as VRU, restart the two newly configured CVP Call Servers and the Main site Reporting Server.
- If you have selected the PG client type as VRU, restart the two newly configured CVP Call Servers and the Main site Reporting Server.

What to do next

Related Topics

[Import VOS Components Certificate](#)

Reconfigure Remote Site

Procedure

Step 1 Navigate to **Unified CCE Administration > System > Deployment**.

Step 2 Click the site you want to reconfigure.

Step 3 Click **Reconfigure** to open the **CCE PG** page.

Note You can only add PG client types.

Step 4 Click **Next** and proceed the same way as you add a new remote site.
Refer to [Add Remote Site, on page 113](#) for more information.

Add External Machines

You can add the following external machines based on the PG client type configured in the main site and remote sites:

- Agent: None
- VRU: Unified CVP Reporting Server
- Multichannel: Third-Party Multichannel, Enterprise Chat and Email, and SocialMiner

If you are using any Multichannel applications (SocialMiner, Enterprise Chat and Email, and Third-Party Multichannel), add them to the System Inventory external machines.

Procedure

-
- Step 1** On the **System Deployment** page, select the remote site and click **Add Machine**.
- Step 2** Choose the machine type from the **Type** drop-down list.
- Step 3** In the **Host Name** field, enter the hostname, IP address, or fully qualified domain name (FQDN) for the selected machine type.
- Step 4** In the machine's **Administration** section, enter the administration username and password for the selected machine type.
- Note** The system attempts to convert the value you enter to FQDN.
- Step 5** Click **Save**.
- Note** You must restart the external Reporting Server and the two CVP Call Servers in remote site.
-

Edit External Machines

The external machines that are associated to main site or remote sites are editable. On the **System Deployment** page, select a remote site and click the pencil icon to edit the following machines:

Machine	Editable Field
Unified CM Publisher	AXL Username and Password
Finesse Primary	Username and Password for Finesse Administration
SocialMiner	Username and Password for SocialMiner Administration
Enterprise Chat and Email, 3rd Party Multichannel, Unified CVP Reporting	Host Name

To delete an external machine on the main site or a remote site, click the **x** on the machine. Confirm the deletion.



Note If you delete the Unified CM Publisher, the Unified CM Subscribers are also deleted automatically, and the Configure Deployment pop-up window opens. Enter the name, IP address, AXL username, and AXL password for the Unified CM Publisher in your deployment.

Delete Remote Site

You can delete a remote site if the following are not associated to the remote site:

- Agents
- Teams
- Dialed Numbers
- Skill groups
- Script
- Dialer



Note Before deleting a remote site, you must stop all the services and processes running on the Cisco Finesse server of the remote site manually.

Procedure

Step 1 Navigate to **Unified CCE Administration > System > Deployment**.

Step 2 Click the remote site you want to delete.

Step 3 Click **Delete**.

A message appears asking if you are sure to delete the remote site.

Step 4 Click **Yes** to confirm.

The remote site disappears from the **Inventory** page.

Note The delete operation does not remove the remote site objects permanently from the database. If you want to recreate a site with same name, you must permanently delete these objects from **Configuration Manager > Tools > Miscellaneous Tools > Deleted Objects**.



PART **IV**

Using Configuration Manager

- [Configuration Manager, on page 121](#)



CHAPTER 10

Configuration Manager

You perform most Packaged CCE configuration with the Unified CCE Administration gadgets. Limited configuration is performed in the legacy Configuration Manager toolset. This section describes the tools in Configuration Manager and explains how and why to access them for Packaged CCE.

- [Permanent Deletion, on page 121](#)

Permanent Deletion

Some objects are “marked for deletion” only in Unified CCE Administration. They remain in the system for reporting and record-keeping purposes. Follow this procedure to delete them permanently:

Procedure

- | | |
|---------------|--|
| Step 1 | Open Configuration Manager. |
| Step 2 | Select Tools > Miscellaneous Tools > Deleted Objects . |
| Step 3 | Click the table name for the object you want to delete. This action opens a panel showing all records for that table that have been marked for deletion. |
| Step 4 | Select one, several, or all records. |
| Step 5 | Click Delete Permanently . |
-



PART **V**

Routing and Scripting

- [Script Editor and Internet Script Editor, on page 125](#)
- [Common Tasks, on page 129](#)
- [Call Types, Contact Data, and Scripting, on page 139](#)
- [Contact Categorization, on page 143](#)
- [Routing Target Selection, on page 159](#)
- [Network VRUs, on page 167](#)
- [Multichannel Routing, on page 181](#)
- [Use of Formulas, on page 197](#)
- [Scripting Specifics in a Packaged CCE Environment, on page 215](#)
- [Utility Nodes, on page 221](#)
- [Unified CVP Scripting, on page 225](#)
- [Outbound Option Scripting, on page 285](#)
- [Application Gateway, on page 287](#)



CHAPTER 11

Script Editor and Internet Script Editor

- [Script Editor and Internet Script Editor](#), on page 125
- [Administrator Privileges in Internet Script Editor](#) , on page 125
- [Install Internet Script Editor](#), on page 126
- [Start Internet Script Editor](#), on page 126
- [Upgrade Internet Script Editor](#), on page 127

Script Editor and Internet Script Editor

In a Packaged CCE deployment, two tools are available for creating routing and administration scripts—Script Editor and Internet Script Editor. You can use either or both of these two tools. They provide the same functionality, and that functionality is documented in this section. This table lists some considerations:

Script Editor	Internet Script Editor
Is automatically deployed as part of the Unified CCE AW-HDS-DDS installation.	Must be enabled during the installation of the Unified CCE AW-HDS-DDS Server by selecting it in Web Setup, then downloaded and installed.
Requires a full Administration and Data server. You must run it from the Unified CCE AW-HDS-DDS Server, based on your deployment.	Can be run on a local machine.
Can be used by global administrators.	Can be used by global administrators and departmental administrators.
Imposes no scripting access restrictions for global administrators.	Imposes scripting access restrictions for departmental administrators.

Administrator Privileges in Internet Script Editor

In a Packaged CCE deployment, global administrators and departmental administrators have different access permissions in Internet Script Editor.

Global administrators have access as follows:

- Full access to scripts and can reference all global and all departments objects when they create scripts.

- Full access to dynamic scripting nodes.

Departmental administrators have access as follows:

- Full access to scripts that reference global objects and objects in their departments.
- Read-only access to scripts that reference Dynamic Scripting Nodes such as formulas.
- No access to scripts that reference objects that are associated with departments they do not administer.

Install Internet Script Editor

You cannot install Internet Script Editor directly on a VM.

For Packaged CCE, this means that you cannot install Internet Script Editor on the Unified CCE AW-HDS-DDS or on an external HDS.

Procedure

-
- Step 1** Point your browser to `server-name/install/iscripteditor.htm`, where *server-name* is the name of the computer on which you installed the distributor with the Internet Script Editor client package.
- Step 2** Click **Download Internet Script Editor**.
- Note** You can also open the `iscripteditor.exe` file directly from the web page.
- Step 3** Navigate to the directory where you want to save `iscripteditor.exe`.
- Step 4** Click **Save** to begin the download.
- Step 5** After the download is complete, close the browser.
- Step 6** On your desktop, navigate to `iscripteditor.exe` and execute the file.
- Step 7** When the InstallShield Wizard for Internet Script Editor starts, click **Next** to continue.
- Step 8** Select the default Destination Folder by clicking **Next**; or click **Browse** to navigate to the desired Destination Folder, and then click **Next**.
- Step 9** After the InstallShield Wizard indicates that the installation is complete, click **Finish**.
-

A shortcut for Internet Script Editor (IScriptEditor) appears on the desktop, and in the Start menu in the Programs/Cisco Systems Inc. program group.

Start Internet Script Editor

Procedure

-
- Step 1** Double-click the desktop shortcut for Internet Script Editor (IScriptEditor).
- Step 2** Click **Connection**.

- Step 3** Enter the correct **Address**, **Port**, and **ICM Instance** information.
 - Step 4** Click **OK**.
 - Step 5** Enter your **User Name** and **Password**. Be sure to use a Security Account Manager (SAM) username, as the name must not exceed 20 characters in length.
 - Step 6** Enter the **Domain** of Unified ICM system.
 - Step 7** Click **OK**.
 - Step 8** Upgrade Internet Script Editor as necessary.
-

Upgrade Internet Script Editor

After you start Internet Script Editor, if there is a newer version, you receive a message informing you that you can upgrade Internet Script Editor.



Note Some upgrades are optional; these upgrades typically contain GUI enhancements. Other upgrades, typically involving protocol or database changes, are mandatory. You cannot use Internet Script Editor until you accept mandatory upgrades.

Procedure

- Step 1** Accept a software upgrade.
A web page opens from which you can download the new Internet Script Editor.
 - Step 2** Click **Download Internet Script Editor**.
 - Note** You cannot use Internet Script Editor during the upgrade.
You can also open the `iscripteditor.exe` file directly from the web page.
 - Step 3** Navigate to the directory where you want to save `iscripteditor.exe`.
 - Step 4** Click **Save** to begin the download.
 - Step 5** After the download is complete, close the browser.
 - Step 6** On your desktop, navigate to `iscripteditor.exe` and execute the file.
 - Step 7** When the InstallShield Wizard for Internet Script Editor starts, click **Next** to continue.
 - Step 8** Select the default Destination Folder by clicking **Next**; or click **Browse** to navigate to the desired Destination Folder, and then click **Next**.
 - Step 9** After the InstallShield Wizard indicates that the installation is complete, click **Finish**.
-



CHAPTER 12

Common Tasks

- [Common Tasks, on page 129](#)
- [The Palette, on page 130](#)
- [General Tab, on page 130](#)
- [Routing Tab, on page 130](#)
- [Targets Tab, on page 130](#)
- [Queue Tab, on page 131](#)
- [Create Routing Script, on page 131](#)
- [Add Comments to a Node, on page 132](#)
- [Specify a Connection Label Location for a Node, on page 132](#)
- [Validate Scripts, on page 133](#)
- [Open Script Explorer, on page 133](#)
- [Schedule Routing Script, on page 134](#)
- [Viewing Modes, on page 136](#)
- [Making Packaged CCE Work with Unified CVP, on page 136](#)

Common Tasks

This section contains information about common tasks you perform in Script Editor. This section does not contain information about every possible task you can perform. For more information on Script Editor, see the Script Editor online help.



Note

If you are a department administrator for Packaged CCE deployments (Packaged CCE: CCE-PAC-M1 and Packaged CCE: CCE-PAC-M1 Lab Only), then you will not have access to the Script Editor. Instead, you have to use the Internet Script Editor client, unless restricted by the feature control of the client or by your role.

The Palette

Figure 1: Palette Icon



You can display the Palette by clicking the **Palette** icon in the Main toolbar or by selecting **Palette** from the **View** menu. The Palette contains the icons that represent the nodes used in scripts.

Related Topics

- [General Tab](#), on page 130
- [Routing Tab](#), on page 130
- [Targets Tab](#), on page 130
- [Queue Tab](#), on page 131

General Tab

The General tab contains icons for the following scripting activities:

Related Topics

- [Comment Node](#), on page 221
- [Categorization by Time and Date](#), on page 148
- [Nodes Used to Stop Script Processing](#), on page 161
- [Categorize by External Applications](#), on page 155
- [Line Connector Node](#), on page 222
- [Formula Usage](#), on page 197
- [Start Node](#), on page 221

Routing Tab

The Routing tab contains icons for the following scripting activities:

Related Topics

- [Categorization and Call Type](#), on page 143
- [Media Routing Domains](#), on page 183

Targets Tab

The Targets tab contains icons for the following scripting activities:

Related Topics

- [Agent Routing Nodes](#), on page 159
- [Transfer Calls from Agents to Agents](#), on page 159
- [Nodes Used to Stop Script Processing](#), on page 161

Queue Tab

The Queue tab contains icons for the following scripting activities:

Related Topics

[Remove Call from a Queue](#), on page 178

[Place a Call in Queue](#)

[Adjust Priority of a Call in a Queue](#), on page 177

[Queue to Agent Node](#), on page 185

[Run External Scripts](#), on page 168

[Send Call to a VRU with Send to VRU Node](#), on page 167

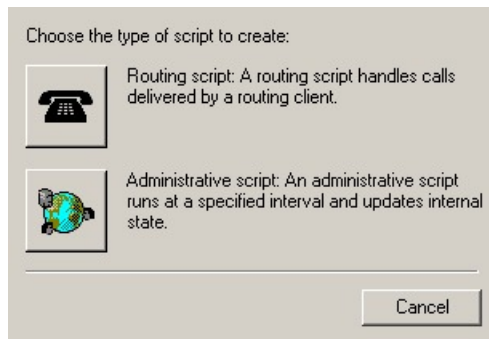
[Temporarily Halt Script Execution](#), on page 179

Create Routing Script

Procedure

- Step 1** In Script Editor, choose **File > New** or click **New**. You are prompted to select a Routing Script or an Administrative Script:

Figure 2: New Dialog Box



- Step 2** Click the following icon.

Figure 3: Routing Script



The new script opens in the Edit window, with a Start node. (See [Start Node](#), on page 221.

- Step 3** Build the script.

- Step 4** To save the script, choose **File > Save** or click **Save**. You are prompted for a script name.

Add Comments to a Node

Figure 4: Comment icon



Most nodes have a Comment tab :

Figure 5: Comment Tab

Procedure

-
- Step 1** To add a comment, type in the **Enter text** field.
- Step 2** To select the location where you want your comment to appear in the node, select a radio button in the **Text justification** area.
-

Specify a Connection Label Location for a Node

Most nodes have a **Connection Labels** tab.

Procedure

-
- Step 1** When viewing a script in monitor mode, you can specify the location of connection labels by moving the slider in the Label position area to one of the following locations:
- a) **Origin**, displays the connection label close to the node you are editing.
 - b) **Destination**, displays the connection label close to the targeted node.
 - c) **Center**, displays the connection label between the nodes.

- Step 2** You can remove the connection label by clearing the **Display monitor labels** check box.
-

Validate Scripts

Procedure



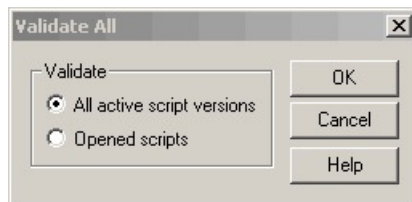
- Step 1** To validate a single script, with the script open in the active window, choose **Script > Validate** or click the **Validate** Icon on the toolbar.
- 
- Step 2** To validate multiple scripts, choose **Script > Validate All**  or on the toolbar, click the **Validate All** Icon. You are prompted to choose between validating active versions of all scripts or all the opened scripts.


Figure 6: Validate All Query Dialog



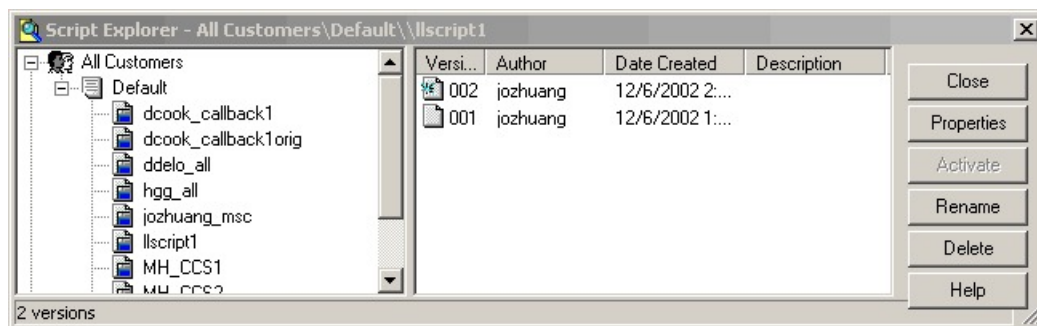
- Step 3** Make the appropriate selection and click **OK**.
- If a script is valid, a dialog box opens stating that script is valid.
 - If the script is not valid, the Validate Script dialog box opens with a list of the errors and warnings. When you select an error, the node where the error occurs is highlighted in the Edit window.
-

Open Script Explorer

Procedure

In Script Editor, choose **File > Script Explorer** or on the toolbar, click the **Explorer** Icon. 

The Script Explorer dialog box opens, listing scripts by customer and business entity:



You can then set the active version of the script, view its properties, rename it, or delete it. For more information, see the *Script Editor Online Help*.

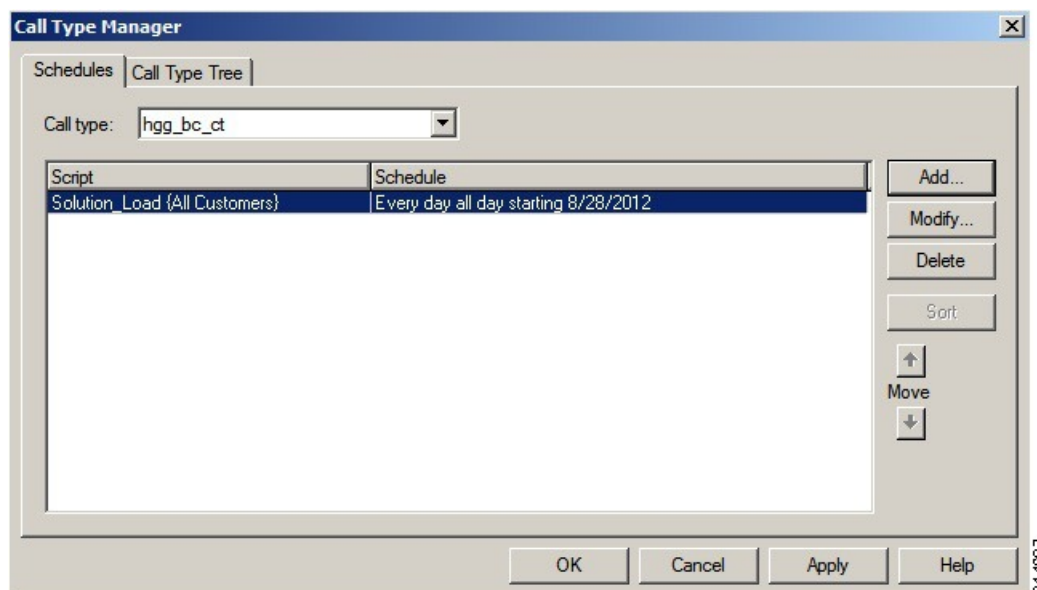
Schedule Routing Script

You schedule a script by associating it with a call type as follows:

Procedure

Step 1 Choose **Script > Call Type Manager**. The Call Type Manager dialog box opens.

Figure 7: Call Type Manager Dialog Box—Schedules Tab

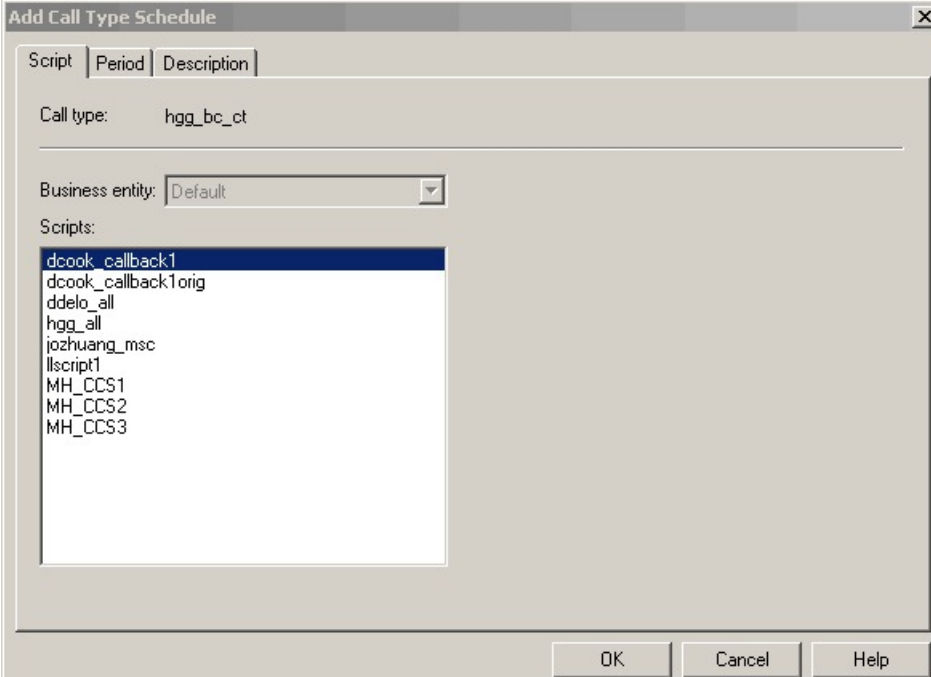


Step 2 Select the call type to associate with the script.

Step 3 Click **Add**. The Add Call Type Schedule dialog box opens.

Step 4 In the Script tab, select the script to schedule:

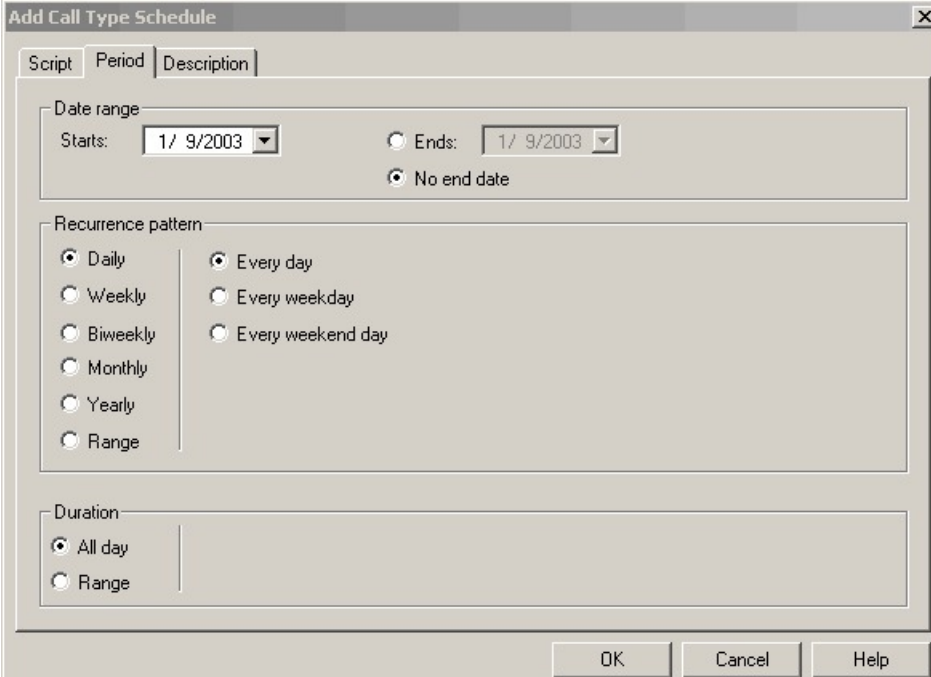
Figure 8: Add Call Type Dialog Box - Script Tab



The dialog box titled "Add Call Type Schedule" has three tabs: "Script", "Period", and "Description". The "Script" tab is active. It contains a "Call type:" field with the value "hgg_bc_ct". Below it is a "Business entity:" dropdown menu set to "Default". A list box labeled "Scripts:" contains the following items: dcook_callback1 (selected), dcook_callback1orig, ddelo_all, hgg_all, jozhuang_msc, llscript1, MH_CCS1, MH_CCS2, and MH_CCS3. At the bottom are "OK", "Cancel", and "Help" buttons.

Step 5 In the **Period** tab, choose the information to define the period for which the schedule will be effective.

Figure 9: Add Call Type Schedule Dialog Box - Period Tab



The dialog box titled "Add Call Type Schedule" has three tabs: "Script", "Period", and "Description". The "Period" tab is active. It contains a "Date range" section with "Starts:" and "Ends:" dropdown menus both set to "1/ 9/2003". There are radio buttons for "Ends:" and "No end date", with "No end date" selected. Below is a "Recurrence pattern" section with radio buttons for "Daily", "Weekly", "Biweekly", "Monthly", "Yearly", "Range", "Every day", "Every weekday", and "Every weekend day". The "Duration" section at the bottom has radio buttons for "All day" (selected) and "Range". At the bottom are "OK", "Cancel", and "Help" buttons.

Step 6 Optionally, in the **Description** tab, enter a description of the schedule.

Step 7 Click **OK** in the Add Call Type Schedule dialog box.

Step 8 Click **OK** in the Call Type Manager dialog box.

Note The schedule is not saved until you click **OK** in the Call Type Manager dialog box.

Viewing Modes

You can view a script in four different modes:

- **Browse** - Allows you to view the script.
- **Edit** - Allows you to edit the script.
- **Monitor** - Allows you to monitor the script
- **Quick Edit** - Allows you to make certain modifications to a script, with the following guidelines:
 - In Quick Edit mode, you cannot add or delete a node.
 - In Quick Edit mode, you can adjust most of the properties of the script nodes you select in the Node Control table of your assigned feature control set. However, in Quick Edit mode you cannot edit any properties of the selected nodes that change the structure of a script or that reset previous reporting data.
- As a Quick Edit Only User:
 - You can only edit scripts through Quick Edit mode.
 - You cannot create or delete a script.
 - You can access the Properties of any script node in any mode by either right-clicking the node and selecting Properties, or by double-clicking the node.
 - You cannot edit the Call Type Manager dialog box (Script > Call Type Manager).
 - You cannot edit the Administrative Manager dialog box (Script > Administrative Manager).
 - You cannot edit the Custom Functions dialog box (Script > Custom Functions).
 - You can choose the viewing mode from the Scripting toolbar, or from the Script menu.

Making Packaged CCE Work with Unified CVP

The following sections describe the differences between Packaged Contact Center Enterprise (Packaged CCE) and Unified Customer Voice Portal (Unified CVP) scripting and show how they work together in common tasks.

Difference Between Unified CCE and Unified CVP Scripting

Packaged CCE scripting offers call control such as how a call should be treated based on time of day, call type, and so on. It also handles queuing for an agent based on skill group or service. It determines when to

send the call to Unified CVP (for example, to play prompts, collect call entered digits, and get or put information in a database), or for queuing the call while waiting for an agent.

Unified CVP scripting offers IVR interaction, like playing a prompt based on an audio file or text-to-speech or collecting caller-entered digits via touch tone or speech. It also offers advanced features such as accessing an external database or web service for information used in creating a dynamic caller interaction experience. Examples include accessing current balance or storing collected customer information in a database.

Packaged CCE scripting is used for routing the call; but when the call needs to go to the Unified CVP, a self-service component is enlisted with Unified CVP scripts that have been created in Call Studio. For example, if a customer calls a credit card company and gets a voice recorded message, the Packaged CCE component makes the decision which script to run, whether the interaction is treated as a sales call or a service call and then selects which VRU (voice response unit) scripts get run. The call is then sent to a VRU, which connects the call to the Unified CVP "self-service engine". It accomplishes these tasks without the customer talking to an agent, such as getting the account balance with touch tone activation or speech. Once the information is collected control is then returned to the Packaged CCE script. The Packaged CCE script queues the customer for an agent, and connects her to an agent.

How Packaged CCE and Unified CVP Work Together

To summarize, Packaged CCE and Unified CVP work together to perform such tasks as:

- Playing media, such as a recording stating office hours, to a caller.
- Playing streaming audio, such as a radio broadcast, to a caller.
- Retrieving caller-entered data, DTMF, or speech.
- Playing back different types of data, such as an account number or balance, to a caller.
- Moving calls to other destinations. For example, forwarding calls to an agent.

Packaged CCE uses Unified CVP messaging technology to direct Unified CVP and to receive the responses from Unified CVP.

For more information about Packaged CCE working with Unified CVP, proceed to [Before You Begin, on page 225](#).



CHAPTER 13

Call Types, Contact Data, and Scripting

- [Call Types, on page 139](#)
- [Default Call Types, on page 139](#)
- [Relation Between Call Types and Scripts, on page 139](#)
- [Call Type Qualifiers, on page 140](#)
- [Association of Contacts with Call Types, on page 140](#)
- [Determination of Call Type for Voice Contact, on page 140](#)
- [Determination of Call Type for ECE Web Request, on page 141](#)
- [Determination of Call Type for a Task Routing Task, on page 141](#)

Call Types

When writing scripts to route contacts, you must understand call types and contact data.

A call type is the first-level category of a contact and is determined by data associated with the contact. You associate a script with a call type. When a contact of a certain call type is received, the associated script runs on that contact.

You create call types through the Call Type tool in Unified CCE Administration. See the section on call types for more information.

Default Call Types

A default call type is the call type used when a contact does not map to a defined call type.

You specify the system default call type in the Settings tool of Unified CCE Administration. For more information, see the section on system settings for call reporting.

Relation Between Call Types and Scripts

Scripts are scheduled by **call type**. In other words, when the system receives a request to route a contact, it determines the call type of that contact, then runs the associated script.

Call types provide the first level of **categorization of contacts**, enabling you to write scripts to route contacts differently depending on their call type. While other types of categorization take place within a script, call

types enable you to provide contacts with different treatment by running different scripts to begin with. Call types enable categorization before a script begins to execute.

Call Type Qualifiers

The following data determine the call type. This data is referred to as the call type qualifier.

The call type qualifiers described in this section apply to contacts from all media. The terminology used is applicable to voice contacts; where the terminology differs for other media, the differences are explained in this section.



Note You can also use the call type qualifiers for categorization within a script.

Dialed Number (DN)

A Dialed number (DN) is a string that represents the telephone number dialed by the caller, preceded by the name of the routing client and a period. For example, "ucm.18005551212" might be a dialed number.

Typically, a dialed number is associated with one or more call types.

Association of Contacts with Call Types

Following is the general process of how the system attempts to associate a contact with a call type:

1. If the dialed number of the contact maps to a defined call type, the system uses that call type.
2. If no call type matches the contact, the system uses the default call type.
3. If no default call type is defined, the system returns an error to the routing client.

Determination of Call Type for Voice Contact

The following example demonstrates how the system determines the call type for a voice contact and runs the appropriate script:

1. When configuring Packaged CCE , you create a call type called "MASSACHUSETTS_SALES". This call type is defined as:
 - Having a dialed number of "ucm.8005551234".
2. You create a script called "MASSACHUSETTS_SALES_SCRIPT," which finds the longest available agent in the "NORTHEAST_SALES" skill group.
3. You schedule the script to run for the "MASSACHUSETTS_SALES" call type.
4. Packaged CCE determines that the call type is "MASSACHUSETTS_SALES" and executes the "MASSACHUSETTS_SALES_SCRIPT" script.

5. Packaged CCE assigns the task to a particular agent.

Determination of Call Type for ECE Web Request

The following basic example demonstrates how the system determines the call type for a Enterprise Chat and Email chat web request:

1. When configuring the Packaged CCE, you create a call type called "SSC_CT". This call type is defined as having a Script Selector (Dialed Number) of "SSC_DN".
2. When configuring ECE, set the value of the Script Selector for Media Routing Domain to "SSC_DN".
3. You create a script called "SSC_SCRIPT," which finds the longest available agent in the "COLLABORATION_SALES" skill group.
4. You schedule the script to run for the "SSC_CT" call type.
5. An e-mail is sent or a web user requests a chat session.
6. A route request is sent to Packaged CCE.
7. Packaged CCE determines that the Call Type is "SSC_CT" and executes the "SSC_SCRIPT" script.
8. Packaged CCE instructs ECE to assign the task to a particular agent.

Determination of Call Type for a Task Routing Task

This example is for a multichannel task from a third-party multichannel application that uses the Task Routing APIs. It demonstrates how the system determines the call type for the task and runs the appropriate script. In this example, the task is a chat task.

1. When configuring CCE, you create a multichannel MRD called "Chat_Task_MRD". You create a call type called "Chat". You create a dialed number/script selector "Chat_DN", and associate it with "Chat_Task_MRD" and the "Chat" call type.
2. You create a SocialMiner Chat application from which a user can request to chat with an agent. You set the value of the script selector in the chat form to the "Chat_DN" dialed number.
3. You create a script called "Universal_Queue_script" that finds the longest available agent in the "Sales" skill group in the "Chat" MRD.
4. You schedule the script to run for the "Chat" call type.
5. A user requests a chat session from the SocialMiner Chat application, using the SocialMiner Task API.
6. SocialMiner submits the task request to CCE, including the dialed number/script selector.
7. CCE uses the script selector to determine the call type, and runs the "Universal_Queue_script".
8. CCE assigns the task to an agent who is logged into the "Sales" skill group in the "Chat" MRD.



CHAPTER 14

Contact Categorization

- [Contact Categorization, on page 143](#)
- [Categorization and Call Type, on page 143](#)
- [Categorization by Call Type Qualifiers, on page 147](#)
- [Categorization by Time and Date, on page 148](#)
- [Categorization by Branching, on page 151](#)
- [Categorize by External Applications, on page 155](#)

Contact Categorization

When you create a routing script, you typically use the nodes available in Script Editor to define how the script is to categorize contacts. By categorizing contacts, a script can provide unique solution for different customer needs.

Categorization and Call Type

Categorization is the process of classifying a contact based on certain data associated with the contact. Through categorization, a script can determine the best way to process a contact.

When you create a routing script, you typically use the nodes available in Script Editor to define how the script is to categorize contacts. By categorizing contacts, a script can provide unique solutions for different customer's needs.

Categorization Through Scheduling Scripts by Call Type

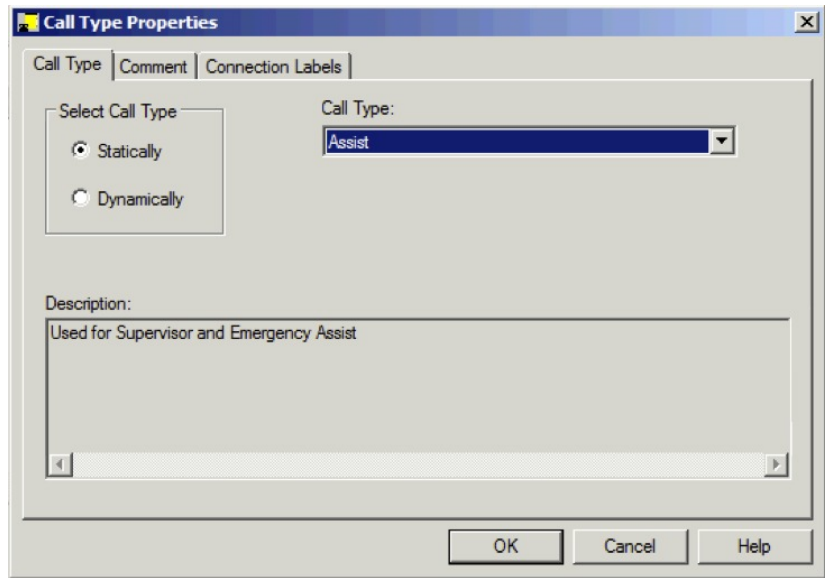
Call types provide the first level of categorization for routing scripts. You schedule scripts by call type; therefore, the call type of a contact determines which script is executed, enabling you to create different scripts for different types of contacts.

Change Call Type to Static

You can change the call type of a contact to static by using the Call Type node in a script. The Call Type node is in the Routing tab of the Palette.

Figure 10: The Call Type Icon

The following figure is the Call Type Properties dialog box of the Static Call Type node:

Figure 11: Call Type Properties Dialog Box - Static Call Type

To define a static call type node, complete the following steps.

Procedure

-
- Step 1** In the Call Type tab, click the **Statically** radio button.
- Step 2** From the Call Type list, click the call type to assign to the contact.
-

What to do next



Warning

The Call Type node changes the call type and continues the current script execution. The Requalify Call node terminates the current script execution and executes a new script associated with that call type.

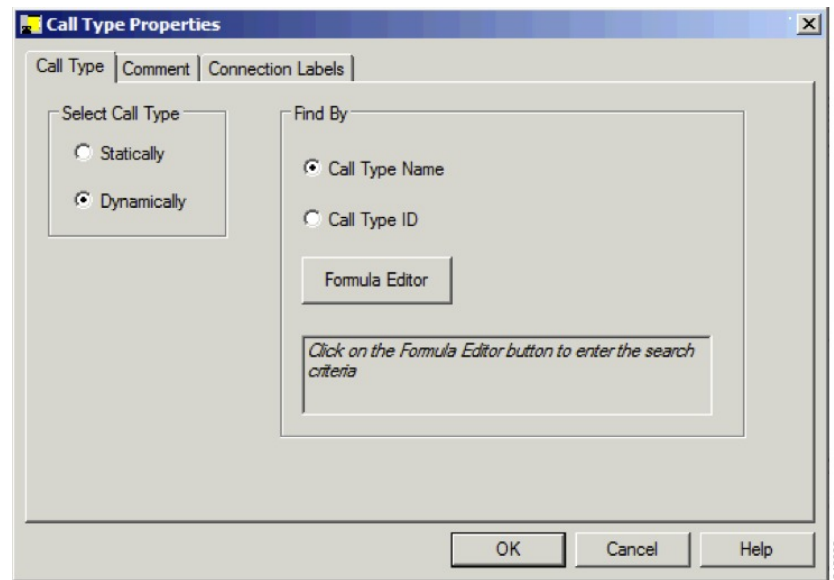
Change Call Type to Dynamic

You can change the call type of a contact to dynamic by using the Call Type node in a script. The Call Type is on the Routing tab of the Palette.

Figure 12: Call Type Icon

Note The dynamic call type option is enabled only for System Administrators. For other users, this option is disabled.

The following figure is the Call Type Properties dialog box of a dynamic call type node:

Figure 13: Call Type Properties Dialog Box - Dynamic Call Type

To define a dynamic call type node, complete the following steps.

Procedure

-
- Step 1** On the call type tab, select the **Dynamically** radio button.
 - Step 2** To dynamically change the call type of a contact by call type name, In the Find By section, select the **Call Type Name** radio button.
 - Step 3** To dynamically change the call type of a contact by call type ID, In the Find By section, select the **Call Type ID** radio button.
 - Step 4** To determine which call type name or ID to use to change the call type of a contact, click the Formula Editor button to create a formula.
-

Change Call Type and Execute a New Script

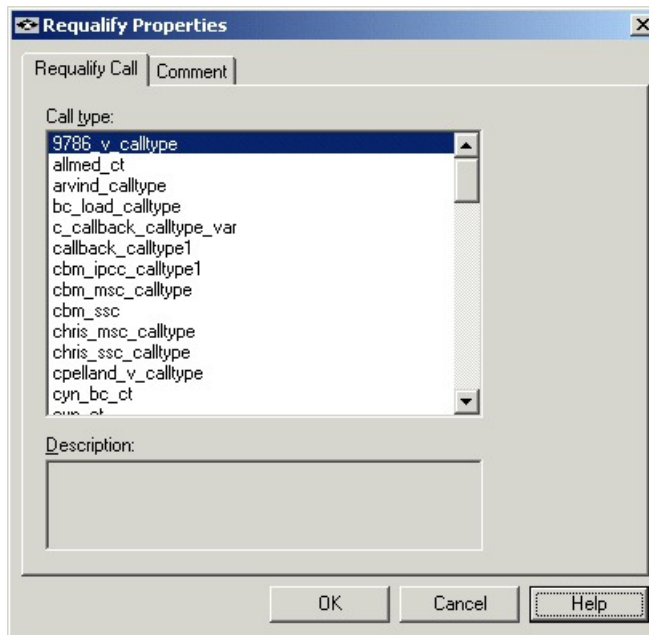
You can change the call type of a contact from within a script and execute a new script associated with the call type by using the Requalify Call node (in the Routing tab of the Palette).

Figure 14: The Requalify Call Icon



Following is the Requalify Properties dialog box of the Requalify Call node:

Figure 15: The Requalify Properties - Requalify Call Tab



Define Requalify node properties as follows:

Procedure

-
- Step 1** In the Requalify Call Tab, select the Call type to assign to the contact.
- Step 2** Optionally, add comments.
-

What to do next



Warning

The Call Type node changes the call type and continues the current script execution. The Requalify Call node terminates the current script execution and executes a new script associated with that call type.

Categorization by Call Type Qualifiers

A contact's call type is determined by the dialed number qualifier.

When the system determines a contact's call type based on these qualifiers, it executes the associated script.

However, after the script executes, you can further categorize the contact based on the values of the call type qualifiers.

Categorize Contact by Dialed Number

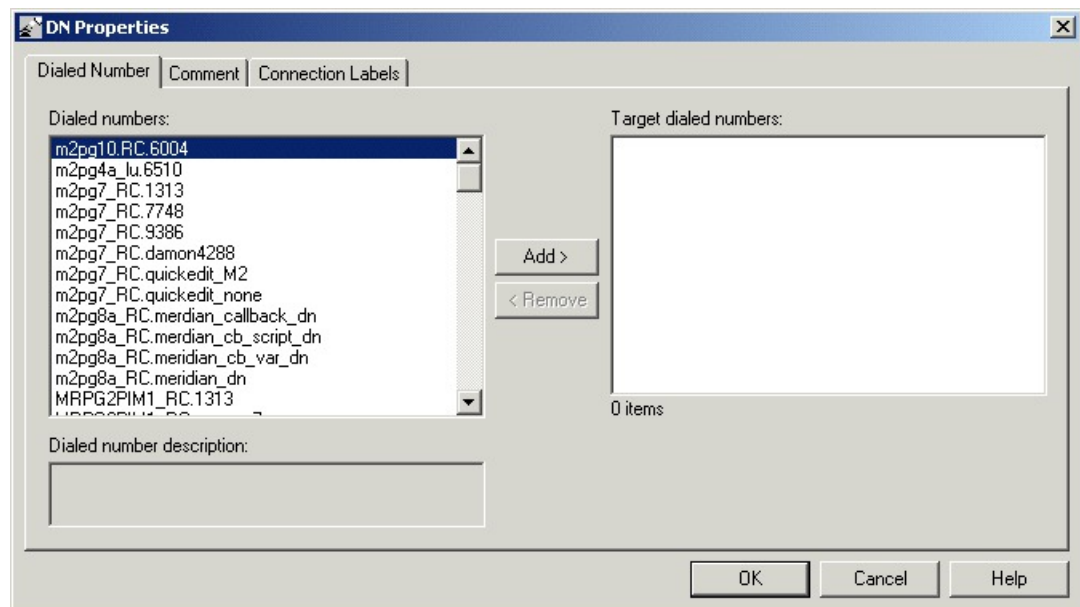
You can categorize a contact based on its dialed number by using the Dialed Number (DN) node (in the Routing tab of the Palette).

Figure 16: The Dialed Number Icon



Following is the DN Properties dialog box of the Dialed Number node:

Figure 17: DN Properties - Dialed numbers Tab



You can define the Dialed Number node properties as follows:

Procedure

- Step 1** Select one or more dialed numbers or Script Selectors from the Dialed numbers list and click **Add>** to move them to the Target dialed numbers list. If the current contact matches one of the selections in the Target dialed

numbers list, processing continues on the node's success branch; otherwise, processing continues on the failure branch.

Step 2 Optionally, add comments and connection labels.

Categorization by Time and Date

You schedule a script by associating it with a call type. When a contact of a certain call type is received, the associated script runs for that contact.

However, after the script executes, you can further categorize the contact based on the time and day of week. This categorization refines the schedule.



Note The time and day of the week are determined by the settings on the CallServer virtual machine.

For example, a call type named "CHAT_CT" may be defined to include all chat web requests. A script named "CHAT_SCRIPT" executes every time a contact with the call type "CHAT_CT" is received. Typically, this script instructs Enterprise Chat and Email to assign the request to the longest available agent in the "Chat" skill group. However, the contact center is staffed differently over the weekend and the supervisor wants to report to improved weekend activity. Therefore, for chat web requests received on Saturday or Sunday, the script branches differently and instructs Enterprise Chat and Email to assign the request to the longest available agent in the "WKEND_SUPPORT" skill group.

As another example, for a contact center where no phone support is available during night hours or weekends, you may choose to design a script that routes a phone call to an announcement instead to an agent, during the off hours.

Categorize Contact by Date and Time

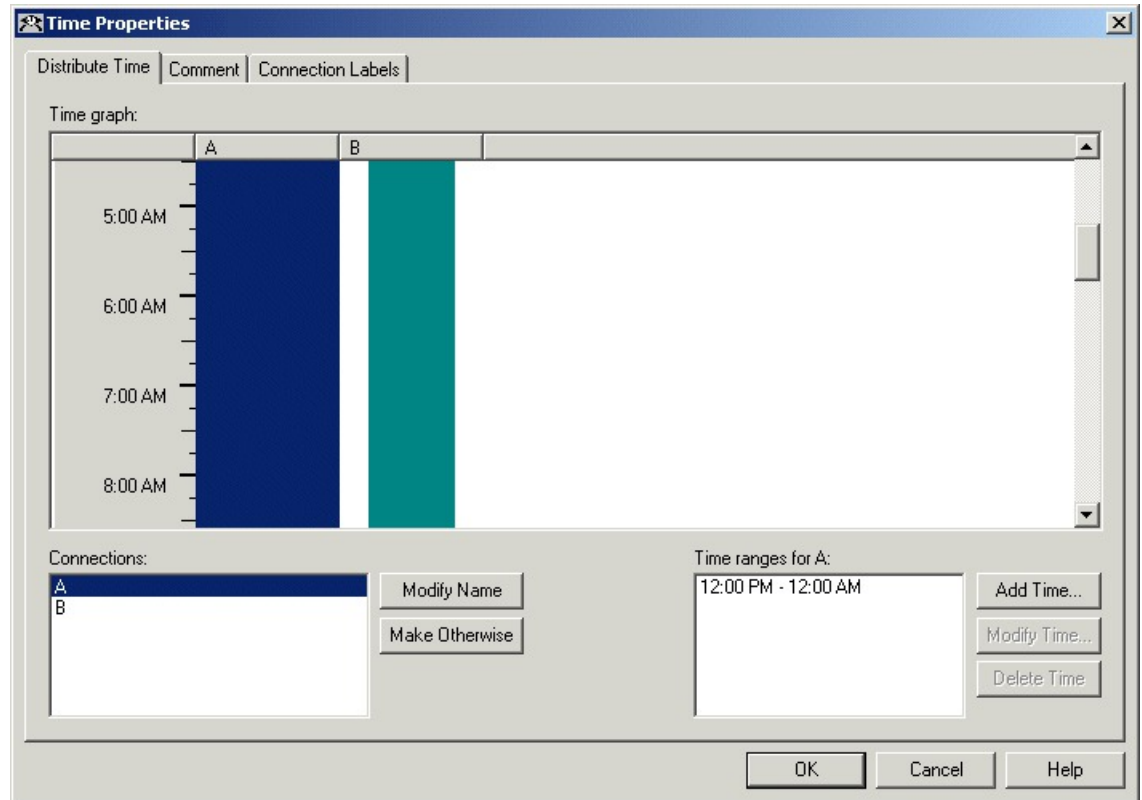
You use the Time node (in the General tab of the Palette) to choose from among several paths within the script based on the current time at Packaged CCE Central Controller. Following is the Time Properties dialog box of the Time node.

Figure 18: Time Icon



Following is the Properties dialog box of the Time node:

Figure 19: Time Properties

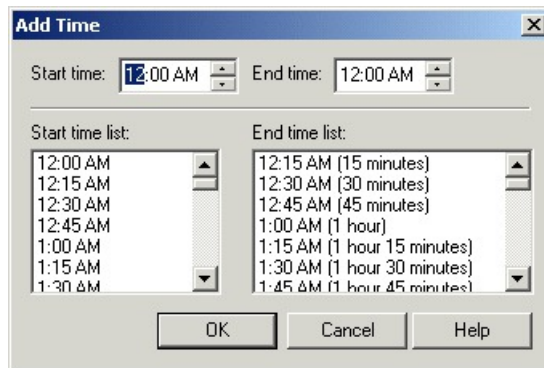


You must insert targets and connections from the Time node before you can define the node's properties. Then define Time node properties as follows:

Procedure

- Step 1** For each branch listed in the Connections list, define a Time Range. You can define multiple time ranges for a single branch. Click **Add Time** to add a new time range to the branch, or select a time range listed and click **Modify Time** to modify it. A dialog box opens in which you can define the time range (the Add Time dialog box is shown below; the Modify Time dialog box looks and functions similarly):

Figure 20: Add Time Dialog



- Step 2** To delete a time associated with the branch, select the time and click **Delete Time**.
- Step 3** You can define a branch as Otherwise by selecting the branch and clicking **Make Otherwise**. Execution follows this branch if none of the specified time ranges apply. You can specify only one Otherwise branch for the node. If you do not want to define the branch as **Otherwise**, select the branch and click **Delete Otherwise**.
- Step 4** Optionally, add comments and connection labels.

What to do next



Note If you delete a connection, the time-range information you specified in the Properties dialog box is also deleted.

Categorize Contact by the Day of Week

You use the Day of Week node (in the General tab of the Palette) to transfer control to one of several branches depending on the current day of week (Sunday, Monday, etc.).

Figure 21: Day of Week Icon



Following is the Properties dialog box of the Day of Week node:

Figure 22: Day of Week Properties

Connection	Mon	Tue	Wed	Thu	Fri	Sat	Sun
A	✓	✓	✓	✓			
B					✓	✓	✓

You can define multiple output connections from the Day of Week node and associate each with one or more days of the week.

You must insert targets and connections from the Day of Week node before you can define the node's properties.

Define Day of Week node properties as follows:

Procedure

-
- Step 1** For each branch listed in the Connection list, check the days of the week in which processing should continue on that branch. To check the day for that connection, left-click in a spot in the grid corresponding to that connection and day. A check mark appears in the grid. You can associate each day of week with one connection. However, you can associate each connection with one or more days of the week.
- Step 2** Optionally, add comments and connection labels.
-

Categorization by Branching

Within a script, you can create multiple branches to direct script processing based on certain conditions. Branching allows you to use a single script that processes contacts differently, depending on data associated with the contact, or on conditions at the contact center.

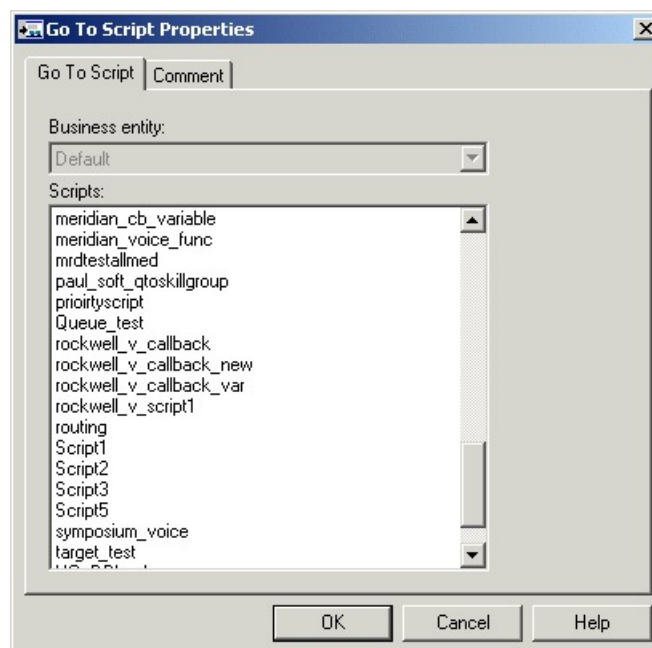
Execute a Different Script

You use the **Go To Script** node (in the General tab of the Palette) to direct contact processing to another script without changing the call type. When Packaged CCE encounters a Go To Script node, it stops executing the current script and starts the script indicated in the node.

Figure 23: Go To Script Icon

For example, you might have several scripts that check for exception conditions and, if none are found, execute a standard subroutine. Instead of including that subroutine as a branch from the failure output terminal of each of the exception conditions, you could use a Go To Script node pointing to a separate script containing the subroutine.

Following is the Properties dialog box of the Go To Script node:

Figure 24: Go To Script Properties

Define "Go to Script" node properties as follows:

Procedure

-
- Step 1** Select the Business entity that owns the script that the node should execute. By default, Packaged CCE consists of one business entity.
 - Step 2** Select a script from the Scripts list. From within an administrative script, you can only go to another administrative script. Within a routing script, you can only go to another routing script.
 - Step 3** Optionally, add comments and connection labels.
-

Direct Script Execution to Different Branches by Percentage

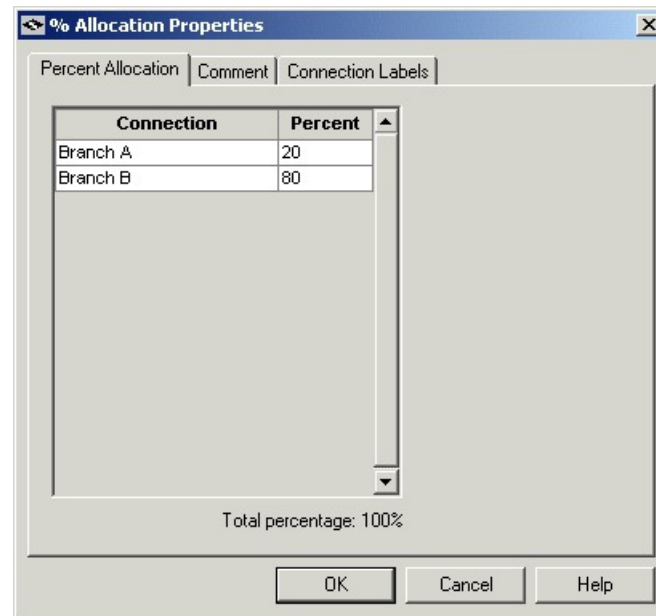
You can direct specific percentages of contacts to different branches in a script by using the Percent Allocation node (in the General tab of the Palette).

Figure 25: Percent Allocation Icon

Each branch may lead directly to a target, or may include additional processing. Because contacts are distributed by percentage and without tests of the targets' data, distributing by percentage never fails.

For example, in a geographically diverse environment, you can create a script that sends 10% of contacts to Boston, 5% to Chicago, and distributes the remaining 85% to another set of targets.

Following is the Properties dialog box of the Percent Allocation node:

Figure 26: % Allocation Properties

Define Percent Allocation node properties as follows:

Procedure

-
- Step 1** In the Percent column for each connection, enter a percent number for the percentage of contacts to process on that branch.
- Note** The percent total for all rows must equal 100.
- Step 2** Optionally, modify the Connection name. Changes appear in the connector labels when you save the properties and view the script.
- Step 3** Optionally, add comments and connection labels.
-

Categorize Contact Based on a Condition

You use the **If** node (in the General tab in the Palette) to direct script execution to one of two branches based on the result of an evaluation. You can use formulas to define the If node.

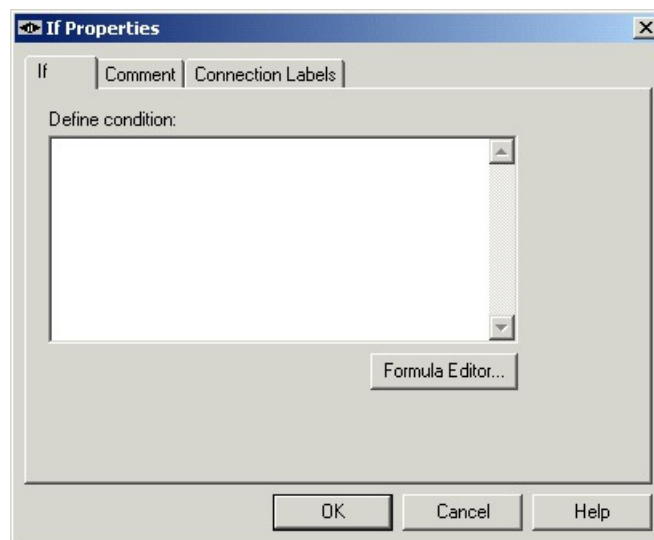
Figure 27: If Icon



When the system executes an If node, it first evaluates the condition specified in the node Properties dialog box Define condition field. If the system determines that the condition is true, control flows through the success output terminal; if it determines the condition is false, control flows through the failure output terminal.

Following is the Properties dialog box of the If node:

Figure 28: If Properties



Define If node properties as follows:

Procedure

-
- Step 1** In the Define condition field, enter a condition or use the Formula Editor to create a formula.
 - Step 2** Optionally, add comments and connection labels.
-

Categorize a Contact Based on Its Media Routing Domain

You use the Media Routing Domain node to categorize contacts based on their media routing domains. This node is described in the Universal Queue section of this document.

Categorize by External Applications

You can categorize a contact based on data returned from an application external to Unified ICM by using the Application Gateway node (in the General tab of the Palette).

Figure 29: Gateway Icon



For example, a script that processes incoming phone calls can send the caller's account number to an external application, which returns to the script the caller's account balance. The script can then branch on the value of the account balance, providing premium service to callers with higher account balances.



Note You must use Unified ICM Configuration Manager to define the external application. For more information, see the *Configuration Guide for Cisco Unified ICM/Contact Center Enterprise*.

Define the Application Gateway properties as follows:

Procedure

Step 1 In the Send tab:

Figure 30: App Gateway Properties - Send

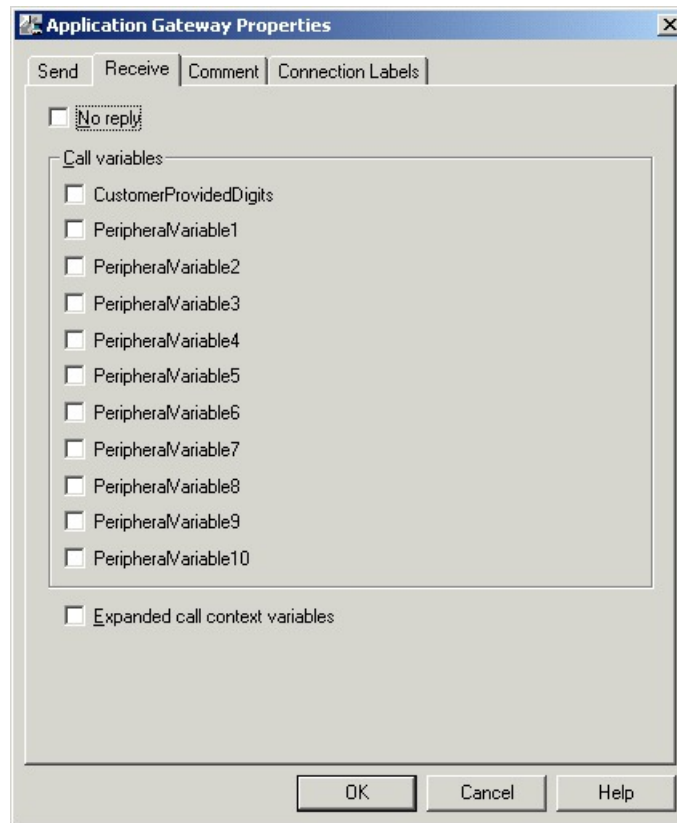
The screenshot shows the 'Application Gateway Properties' dialog box with the 'Send' tab selected. The 'Application gateway' dropdown is set to 'appgateway_test'. The 'Subtype' field is empty, and the 'Formula Editor...' button is visible. The 'Call variables' section contains a list of variables with checkboxes: CallerEnteredDigits, CallingLineID, CustomerProvidedDigits, DialedNumberString, RoutingClient, PeripheralVariable1 through PeripheralVariable10. The 'Expanded call context variables' checkbox is also present. At the bottom are 'OK', 'Cancel', and 'Help' buttons.

Call variables	
<input type="checkbox"/> CallerEnteredDigits	<input type="checkbox"/> PeripheralVariable1
<input type="checkbox"/> CallingLineID	<input type="checkbox"/> PeripheralVariable2
<input type="checkbox"/> CustomerProvidedDigits	<input type="checkbox"/> PeripheralVariable3
<input type="checkbox"/> DialedNumberString	<input type="checkbox"/> PeripheralVariable4
<input type="checkbox"/> RoutingClient	<input type="checkbox"/> PeripheralVariable5
	<input type="checkbox"/> PeripheralVariable6
	<input type="checkbox"/> PeripheralVariable7
	<input type="checkbox"/> PeripheralVariable8
	<input type="checkbox"/> PeripheralVariable9
	<input type="checkbox"/> PeripheralVariable10

☐ Expanded call context variables

- Choose the gateway from the Application Gateway drop-down list.
- In the Subtype field, enter the string that is to be sent to the external application, or use the Formula Editor to write an expression that evaluates to a string.
- In the Call variables list, check the call variables to send to the external application.
- To send expanded call variables to the external application, check **Expanded call context variables**.

Step 2 In the Receive tab:

Figure 31: App Gateway Properties - Receive

- a) Select **No Reply** if the external application is not to return data to the script.

Note If you select this option, Unified ICM cannot retrieve any data from the external application.

- b) In the Call variables list, check variables that the external application may modify.
- c) Select Expanded call context variables if the external application modifies and returns values for the expanded call variables.

Step 3 Optionally, add comments and connection labels.



CHAPTER 15

Routing Target Selection

- [Routing Targets, on page 159](#)
- [Agent Routing Nodes, on page 159](#)
- [Transfer Calls from Agents to Agents, on page 159](#)
- [Nodes Used to Stop Script Processing, on page 161](#)
- [Service Requested, on page 162](#)
- [Target Requery, on page 162](#)

Routing Targets

After defining how a script is used to categorize contacts, you typically use the nodes available in Script Editor to specify how the contact is to be routed to a target destination. A routing target is an entity to which the system can route a contact, including agents and skill groups. The routing target receives the contact and processes it accordingly.

Agent Routing Nodes

The following nodes available for agent routing:

1. Queue to Agent Node. For more information, see [Specify an Agent Directly, on page 186](#)
2. Agent to Agent Node. For more information, see [Transfer Calls from Agents to Agents, on page 159](#)

Transfer Calls from Agents to Agents

You can transfer a call from an agent to an agent by using the Agent to Agent node in the Targets tab of the Palette.

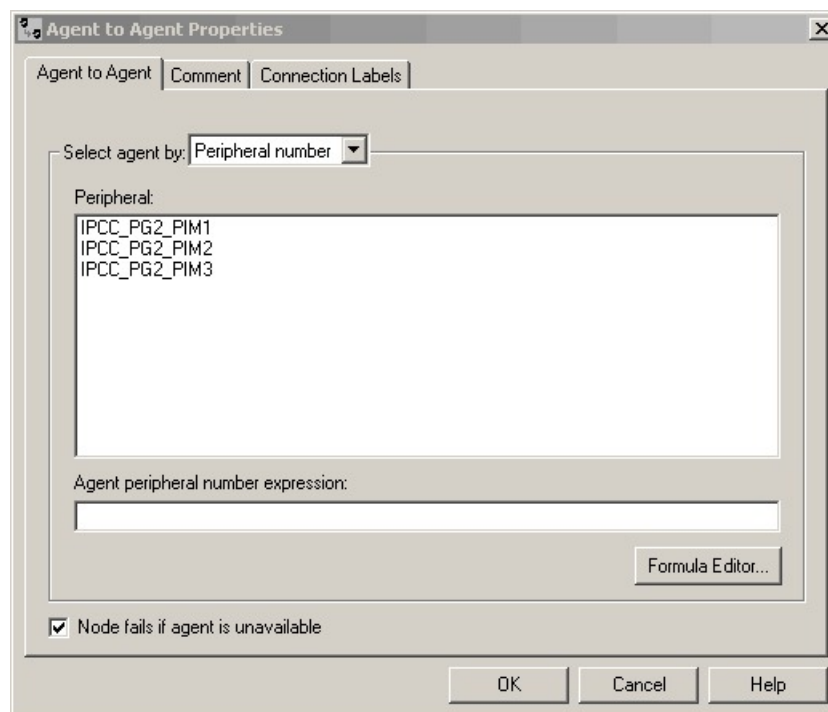
Figure 32: Agent to Agent Icon



The Agent to Agent node routes the call to the specified agent. You define the agent either by directly selecting the agent from the database or by providing an expression using a formula. The expression must translate to agent peripheral number or SkillTargetID. The router then finds a valid label for the agent. If there are no labels configured for the specified agent, the failure node of the Agent to Agent node is executed.

Following is the Properties dialog box for the Agent to Agent node:

Figure 33: Agent to Agent Properties



Define Agent to Agent node properties as follows:

Procedure

-
- Step 1** Choose an option from the **Select agent by** drop-down list:
- Peripheral number - To select a peripheral and provide formula that translates to the agent's peripheral number.
 - Enterprise Name - To select the agent from the list of configured agents.
 - Skill target ID - To select the agent by providing an expression that translates into the agent's SkillTargetID. In the supervisory case, the expression should use the call's PreferredAgentID.
- Step 2** Based on your selection in Step 1, select the peripheral or agent, or enter an expression, as necessary.
- Step 3** Optionally, check or uncheck **Fail node** if agent is unavailable:
- When checked, the success branch of the Agent to Agent node is executed and the router sends the call if the router finds a valid label for the agent, the agent is available, and the agent state is Ready.
 - The failure branch of the Agent to Agent node is executed if the router does not find a valid label for the agent, or the agent is not available or the agent is in TempUnavailable mode (the router has just send a call to the agent).

- c) When not checked, the success branch of the Agent to Agent node is executed and the router sends the call if the router finds a valid label for the agent. The failure branch of the Agent to Agent node is executed if the Router does not find a valid label for the agent.

Step 4 Optionally, add comments and connection labels.

Nodes Used to Stop Script Processing

You can use the following nodes to stop script processing:

- End Node
- Termination Node
- Release Call Node

End Node

You can terminate the script by using the End node in the General tab of the Palette.

Figure 34: End Icon



If the script reaches the End node, it has failed to find a target for the contact. Packaged CCE then uses the default route for the Dialed Number.

Several End nodes can appear in the same script. The End node is never required; a script can terminate with any node.

You do not define any properties for the End node. You can optionally add comments.

Release Call Node

You can terminate the script and disconnect the caller by using the Release Call node in the Targets tab of the Palette.

Figure 35: Release Call Icon



You can use a Release Call node in situations where the caller needs no further service after executing several Unified CVP scripts.

You do not define any properties for the Release Call node. You can optionally add comments.

Service Requested

ServiceRequested is a call variable available in Script Editor. It provides more details regarding the routing request. The field is currently only set for multichannel routing (Task Routing), voice callback (Agent Request) and Pick/ Pull routing, otherwise it is set to 0. Based on the value of this field, the script can take different actions.

ServiceRequested Variable

Service Requested Variable	Description
0 = ROUTE_SERVICE_REQUEST_NONE	No service requested.
1 = ROUTE_SERVICE_REQUEST_VOICE_CALLBACK	Caller is requesting a voice callback.
2 = ROUTE_SERVICE_REQUEST_TRANSFER	Transfer a task that is already assigned to an agent back to a queue.
3 = ROUTE_SERVICE_REQUEST_RONA	A task is being rerouted on no answer (RONA).

Target Requery

Target Requery is a script node feature that you can use to handle routing failures, for example due to No Answer or Busy responses, or for unreachable targets caused by transient failures in the network (such as network congestion). If the determined destination for a contact is available but not reachable, Target Requery attempts to find a different valid destination.

You need Target Requery to address the following failures:

- Failure to deliver a call to an agent.
- Failure of the outbound leg of a blind-mode Network Transfer.
- Target Requery works on a per call basis; that is, the routing information for one call does not affect the state for other calls. If the first target selected for the contact was not reachable, the target is not eliminated from the potential routing destinations for other contacts.

**Note**

You can enable the Target Requery feature for CVP, ICM to ICM gateway, and a subset of the supported carrier NICs. You cannot use the requery feature with any of the multimedia requests because the MR PG does not support requery mechanism.

Target Requery Functionality

In the system, when queried, the CallRouter returns a label to the routing client. The routing client then routes the call to the destination specified by the label. If the destination is not reachable (for example, because of a busy signal or no answer), the call is routed to the default destination.

With Target Requery in a Label, Route Select, or Select node, if the router fails to route to a target node, a second attempt is made. If the failure occurs a second time, then the router continues from the failure path in the node.



Note In a Queue node, just one target is used. If the router fails to route to the target node, the failure path of the node is taken immediately. To implement requery in a Queue node, you can create a script that increases the priority and requeries the call from the failure path to the same queue.

In the event of a failure, you can handle requerying in the scripting environment, as you deem appropriate.

Target Requery does not require different definitions for different failure cases. However, you can choose to handle different failures differently.

Test of the RequeryStatus Variable

You can test the error path of these script nodes using Target Requery to determine the specific network cause of failure and conditionally retry the attempt as necessary. You can accomplish this using an If node to check the value of the call variable RequeryStatus. The decision path for the script is then determined by the value of the RequeryStatus variable.

The following are possible values for the RequeryStatus variable:

Table 7: RequeryStatus Variables

Requery Status Variable	Description
REQUERY_ANSWER (0)	Script ends. The call was successfully sent to the chosen target. Note This variable is used internally by the CallRouter. You cannot test for this variable in an IF node.
REQUERY_ROUTE_SELECT_FAILURE (1)	Routing client generated an error code from ReRouteReq msg indicating a Route Select failure.
REQUERY_CALLED_PARTY_BUSY (2)	Routing client generated error code from ReRouteReq msg indicating the called party is busy.
REQUERY_NO_ANSWER (3)	Routing client generated an error code from ReRouteReq msg indicating no answer.
REQUERY_ERROR (4)	CallRouter generated an error code. The attempt to send the call to target failed because the target was not reachable (i.e., busy, ring no answer).

Requery Status Variable	Description
REQUERY_ABORTED (5)	<p>The attempt to send the call to a target failed because the caller abandoned before the call could be delivered to its destination. In the case of ABANDON and DISCONNECT, the CallRouter assumes the call has ended and ends the script. The RequeryStatus value is set to 5, indicating REQUERY_ABORTED.</p> <p>Note This variable is used internally by the CallRouter. You cannot test this variable in an IF node.</p>
REQUERY_TIMED_OUT (6)	<p>The call attempt failed because the routing client did not respond to the router within the DivertOnBusyCallTimeout period (180 seconds by default). If the target node has Router Requery enabled, when DivertOnBusyCallTimeout period expires, the Router closes the Router Requery with REQUERY_TIMED_OUT .</p> <p>Note This variable is used internally by the CallRouter. You cannot test this variable in an IF node.</p>

Nodes That Support Target Requery

The following nodes support Target Requery:

- Label
- Queue
- Queue to Agent
- Precision Queue
- Route Select
- Select

Use Target Requery

You define nodes to enable Target Requery. For the Queue, Queue to Agent, and Route Select nodes:

Procedure

-
- Step 1** Open the node properties.
 - Step 2** Click **Change**. A dialog box opens.
 - Step 3** Check **Enable target requery**.
 - Step 4** Click **OK** to close the dialog box.
 - Step 5** Click **OK** to close the properties dialog box.
 - Step 6** For the Label, Select and Precision Queue nodes:

For Select nodes:

- a) Open the node properties.
 - b) Check **Enable Target Requery**.
 - c) Click **OK** to close the properties dialog box.
-



CHAPTER 16

Network VRUs

- [VRU Functionality, on page 167](#)
- [Access to VRU Scripts in Packaged CCE Routing Scripts, on page 167](#)
- [Send Call to a VRU with Send to VRU Node, on page 167](#)
- [Run External Scripts, on page 168](#)
- [VRU Errors, on page 170](#)
- [Call Queuing at VRUs, on page 171](#)
- [Place a Call in Queue, on page 172](#)
- [Precision Queue Script Node, on page 174](#)
- [Adjust Priority of a Call in a Queue, on page 177](#)
- [Remove Call from a Queue, on page 178](#)
- [Temporarily Halt Script Execution, on page 179](#)

VRU Functionality

You can use routing scripts to divert a call to a Network VRU for additional call processing.

A VRU, or Voice Response Unit, is a telecommunications device, also called an Interactive Voice Response Unit (IVR), that plays recorded announcements and responds to caller-entered touch-tone digits. Cisco Unified Customer Voice Portal (CVP) is the supported VRU for Packaged CCE. A VRU can also be equipped with Automatic Speech Recognition (ASR) or Text-to-Speech (TTS) capabilities.

Access to VRU Scripts in Packaged CCE Routing Scripts

You can write routing scripts that send calls to the VRU, queue the call, and invoke specific VRU scripts. VRU scripts are configured using the Network VRU Scripts tool in the Unified CCE Administration tool.

Related Topics

[Add and Maintain Network VRU Scripts, on page 72](#)

Send Call to a VRU with Send to VRU Node

You can send a call to Unified CVP for further processing by using the Send to VRU node (in the Queue tab of the Palette).

Figure 36: The Send to VRU Icon



When Packaged CCE executes a Send to VRU Node, it looks up the call's Dialed Number, the Dialed Number's Customer, and the Customer's Network VRU. If that fails to retrieve a Network VRU, the router uses the system default Network VRU.

There are two failure cases:

- If the label does not exist, script execution continues with control flowing through the nodes failure output terminal.
- If Packaged CCE does not receive confirmation, execution continues with control flowing through the nodes failure output terminal.

In all other cases script execution continues with control flowing through the nodes success output terminal.

Notes:

- If the Run External Script, Play, Menu, Collect Data, or Queue node is used in a script before a Send To VRU node, an implicit Send To VRU node is assumed. You do not have to use the Send To VRU node. However, include the node in routing scripts as a visual aid if you ever need to troubleshoot the script.
- If the call is delivered to the Unified CVP but then abandoned, script execution ends. In monitor mode, a special label on the Send To VRU node accounts for these cases.

You do not need to set properties for the Send to VRU node. However, you can optionally add comments or connection labels.

Run External Scripts

You can instruct a Unified CVP to run a specific script by using the Run External Script node (in the Queue tab of the Palette).

Figure 37: The Run External Script icon



You can use multiple Run External Script nodes to execute a series of scripts on the Unified CVP.

The execution of Packaged CCE routing script waits for the external script to finish:

- If the external script runs successfully, control then passes through the success branch of the Run External Script node.
- If the external script does not run successfully for any reason, then control passes through the failure branch of the Run External Script node.

**Note**

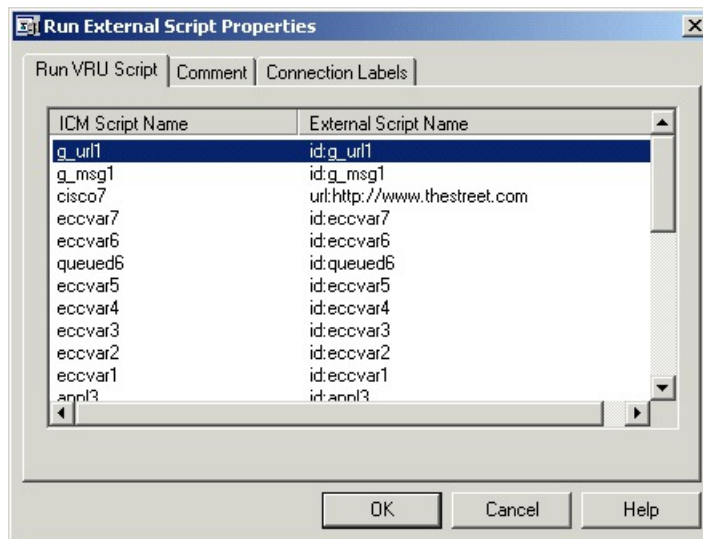
- If the current call is not at a Unified CVP when the Run External Script node executes, Packaged CCE sends the call to the associated Network VRU, as executing a Send to VRU node.
- Design scripts so that the Failure branch of a Run External Script Node contains a test for the Call.VRUStatus variable. If the value is 2, the VRU is likely to be not functioning properly. Therefore, the script avoids executing any subsequent Run External Script nodes on this Failure branch.

**Note**

When an uninterruptible script is used in a Run External Script node, the CallRouter waits for the script result from the VRU. It then executes the next node. Calls can only be routed when they reach an interruptible node. The Wait node and interruptible Run External Script node (micro apps) are interruptible. Every other node is uninterruptible.

Following is the Properties dialog box for the Run External Script node:

Figure 38: Run External Script Properties



Define Run External Script node properties as follows:

Procedure

- Step 1** Select the Packaged CCE Script/External Script Name you want to execute.
- Step 2** Optionally, add comments and connection labels.

VRU Errors

The following table lists the possible values for the VruStatus variable:

Table 8: VruStatus Variable Codes

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 failed because the routing client did not respond within 20 seconds or the last Run External 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 Packaged CCE configuration.
6	STATUS_MAX_QUEUE_LIMIT_EXCEEDED	The last node failed because the maximum call queuing limit was exceeded.
7	STATUS_NO_VALID_EXPRESSION	The last node failed because no valid expression was found.
8	STATUS_NO_VALID_TARGET	The last node failed because no valid target was found.
10	STATUS_NO_MRD_MATCH	The last node failed because no targets matched with the Media Routing Domain on the call.

Value	Meaning	Description
11	STATUS_CONSIDER_IF_FAILED	The last node failed because the Consider If expression failed on all targets.
12	STATUS_NO_VALID_PERIPHERAL	The last node failed because none of the targets were configured on the supported peripheral.
13	STATUS_NO_ONLINE_PERIPHERAL	The last node failed because all targets are on peripherals that are offline.

Call Queuing at VRUs

You can queue a call at a Network VRU until a specific resource becomes available. A call can be queued for one or more skill groups, or a precision queue. As soon as an agent becomes available at one of the specified targets, the call is removed from the queue and sent to the target.

Specifically, you can:

- Place a call in a precision queue.
- Place the call in one or more skill groups.
- Adjust the priority of call in a queue for one or more skill groups.
- Remove the current call from any queues to which it is assigned.

Call Flow:

1. The call is first sent to the Network VRU. This step is required before you queue the call.
2. The call is queued for three skill groups.
3. If the call is successfully queued, the script cycles between a Wait node and a Run External Script node so that the caller hears an announcement every 30 seconds.

If an agent in one of the skill groups becomes available, the call is removed from queue and taken back from the Unified CVP. Routing script execution ends and the call is delivered to the target.

You could use other nodes like Queue to Skill Group or Queue to Precision Queue to queue the calls to different targets.



Caution

Do not use the nodes like Route Select to queue the calls when the script cycles between a Wait node and a Run External Script node.



Note

In this scenario, you would likely make the VRU script interruptible so that the routing script can retrieve the call immediately when the resource becomes available.

Place a Call in Queue

You can place a call in queue at a Unified CVP for one or more skill groups using the Queue node (in the **Queue** tab of the Palette).

Figure 39: The Queue Icon



If an agent becomes available in one of the skill groups, the call is routed to that resource.



Note If the current call is not at a Unified CVP when the Queue node executes, Packaged CCE sends the call to the associated Network VRU. (This does not apply to Type 2 VRUs, which are VRUs at customer premises.)

The Queue node includes a **Priority** field, which sets the initial queuing priority for the calls processed through this node versus other calls queued for the same target. The priority is expressed as an integer from 1 (top priority) to 20 (least priority). The default value is 5.

If more than one call is queued to a group when an agent becomes available, the queued call with the lowest priority number is routed to the target first. For example, assume an agent in a skill group becomes available and two calls are queued to that skill group. If one call has priority 3 and the other has priority 5, the call with priority 3, the lower value, is routed to the skill group while the other call continues to wait.



Note The Queue node does not actually result in instructions being sent to the VRU. When queuing occurs the Queue node exits immediately through the success branch and the call is assumed to be at the VRU; the script should then continue with a Run External Script node to instruct the VRU what to do while holding the call until an agent becomes available. Typically this would invoke a Network VRU script that plays music-on-hold, possibly interrupted on a regular basis with an announcement.

Following is the **Properties** dialog box for the Queue node:

Figure 40: Queue to Skill Group Properties

Queue to Skill Group Properties (Read Only)

Queue | Connection Labels

Queue type
Priority 5
Using Skill Groups

	Skill Group	Consider If	Route	Translation
1	CCM_PG_1.Cisco_Voice.SG5	1	SVC_RT	
2	CCM_PG_1.Cisco_Voice.SG4	0	SVC_RT	
3	CCM_PG_1.Cisco_Voice.SG3	1	SVC_RT	
4	CCM_PG_1.Cisco_Voice.SG2	0	SVC_RT	
5	CCM_PG_1.Cisco_Voice.SG1	1	SVC_RT	
6				
7				
8				
9				
10				
11				
12				
13				
14				

Buttons: Add Targets..., Delete Row, Validate, Formula Editor..., Move (up/down arrows), OK, Cancel, Help

Define Queue node properties as follows:

Procedure

Step 1

To change the queue type:

- Click **Change**. The **Queue Type** dialog box opens.
- Select a **Target Type** (Skill Group). You cannot reference more than one type of target within a single Queue node. To queue a call to more than one target type, execute multiple Queue nodes sequentially.
- Optionally, select a Priority to set the initial queuing priority for calls processed through this node versus other calls queued for the same target: 1 for top priority to 20 for least priority. (The default is 5.)
- Optionally, check **Enable Target Requery**.

Note When Target Requery is enabled in a Queue node and a Requery happens, for example because the call is presented to an available agent, but the agent does not answer, the script continues through the failure terminal. The script can then inspect the call variable RequeryStatus to determine what to do next. The typical action in case of a No Answer would be to Queue the call again, possibly to other skill groups, and possibly increase the priority so that it is taken out of the queue before regular queued calls.

- Click **OK** to close the **Queue Type** dialog box.

Step 2

To add targets:

- Click **Add Targets**. The **Add Targets** dialog box opens, listing available targets of the type you specified.
- Use the **Available Targets** list and the **Add** button to select targets.

- c) Click **OK** to close the **Add Targets** dialog box. The target members you selected appear in the **Properties** dialog box.

Step 3 Optionally, continue defining Target Type information for the Route (Drop-down list) member. This is the route to send the call to when an agent in the target type becomes available. (The drop-down list includes all routes associated with the target.)

Step 4 Optionally, add connection labels.

What to do next



Note When processing a Queue node, the router first checks for an available target, if there is none available then the router attempts to queue the call. The call does not move to the VRU if there is an available agent.

Precision Queue Script Node

You can use the Precision Queue script node to queue a call or task based on caller requirements until agents with desired proficiency become available. This node contains multiple agent selection criterion which are separated into steps.

Figure 41: Precision Queue Script Node



A single call can be queued on multiple precision queues. If an agent becomes available in one of the precision queues, the call is routed to that resource. You cannot reference multiple precision queues with a single Precision Queue node. However, you can execute multiple Precision Queue nodes sequentially to achieve this.

The Precision Queue node includes a **Priority** field, which sets the initial queuing priority for the calls processed through this node versus other calls queued to the other targets using different nodes. The priority is expressed as an integer from 1 (top priority) to 20 (least priority). The default value is 5.

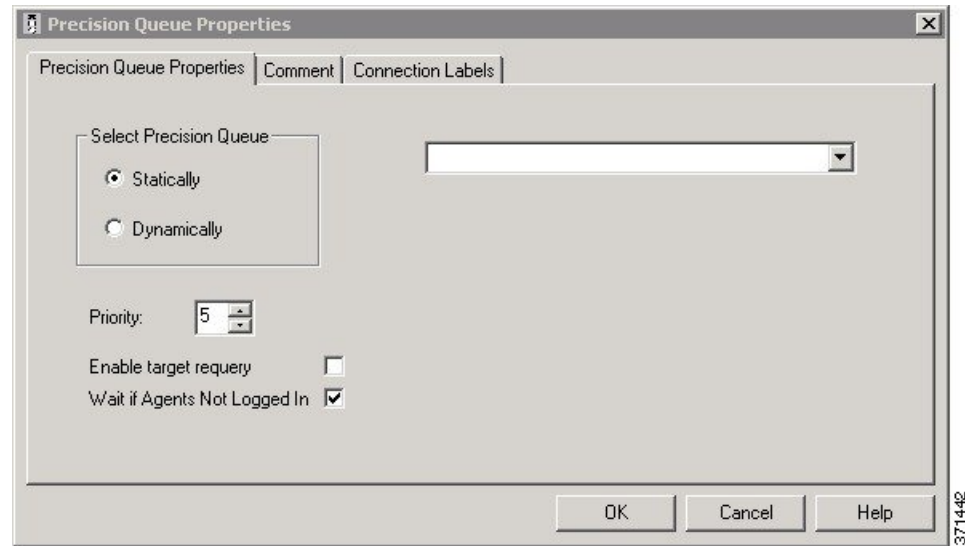
If more than one call is queued to a precision queue when an agent becomes available, the queued call with the lowest priority number is routed to the target first. For example, assume an agent in a precision queue becomes available and two calls are queued to that precision queue. If one call has priority 3 and the other has priority 5, the call with priority 3, the lower value, is routed to the precision queue while the other call continues to wait. If the priorities of the two calls are same, then the call queued first is routed first.

VRU script instructions are not sent to the VRU. If a call enters the Precision Queue node and no resource is available, the call is queued to the precision queue and the node transfers the call to the default VRU, if the call is not already on a VRU. The script flow then exits immediately through the success branch and continues to a Run External Script node to instruct the VRU what to do while holding the call until an agent becomes available. Typically, this invokes a Network VRU script that plays music-on-hold, possibly interrupted on a regular basis with an announcement. The script flow can also use other queuing nodes to queue the same call to other targets, for example, Queue to Skill Group and Queue to Agent.

Precision Queue Properties Dialog Box - Static Precision Queue

The following list describes the **Precision Queue Properties** dialog box for a static precision queue script node.

Figure 42: Precision Queue Properties Dialog Box—Static Precision Queue



The following property is unique to static precision queues:

- **Drop-down list**—To route calls that enter this node to a static precision queue, you must select a precision queue from the list.

The following properties are common to static and dynamic precision queues:

- **Select Precision Queue** radio buttons—You can select one of the following options for each a precision queue:
 - **Statically**—Select this option to choose a single precision queue to be selected for all the calls that enter this node.
 - **Dynamically**—Select this option to select a precision queue on a call-by-call basis based on a formula.



Note The dynamic precision queue option is enabled only for System Administrators. For other users, this option is disabled.

- **Priority selection**—To select the initial queuing priority for calls processed through this node, you can select from 1 to 20. The default is 5.
- **Enable target requery check box**—To enable the requery feature for calls processed through this node, select this check box. When a requery occurs, for example if a call is presented to an available agent and the agent does not answer, the script continues through the failure terminal. The script can then inspect the call variable RequeryStatus to determine what to do next. The typical action in case of a No Answer

is to queue the call again to other precision queues, and increase the priority so that it is taken out of the queue before regular queued calls.

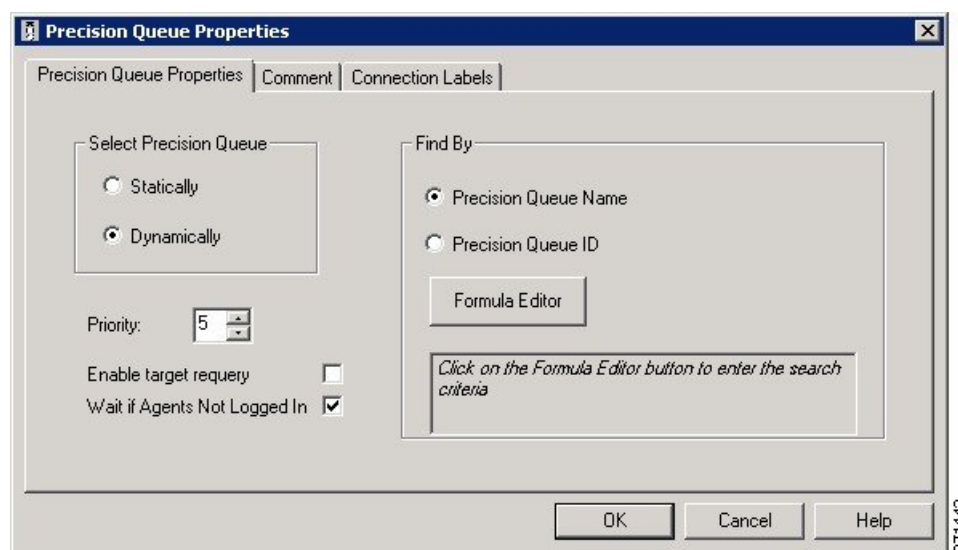
- **Wait if Agents Not Logged In check box** — When this check box is selected and the agents who are associated with a step are not logged in, then the router will wait for the time that is configured for that step. When this check box is not selected, the router will not wait on any step. However, on the last step, the router will wait indefinitely irrespective of the selection.

Precision Queue Properties Dialog Box - Dynamic Precision Queue

The following list describes the Precision Queue Properties dialog box for a dynamic precision queue script node.

Use dynamic precision queues when you want a single routing script for multiple precision queues (for example, when the overall call treatment does not vary from one precision queue to another). Dynamic precision queues can simplify and reduce the overall number of routing scripts in the system.

Figure 43: Precision Queue Properties Dialog Box—Dynamic Precision Queue



Note The dynamic precision queue option is enabled only for System Administrators. For other users, this option is disabled.

The following properties are unique to dynamic precision queues:

- **Find By radio buttons**—To dynamically route calls that enter this node to a Precision Queue name or ID, use the Find By radio buttons.
 - **Precision Queue Name radio**—Select this option to dynamically route calls that enter this node to a Precision Queue name.
 - **Precision Queue ID**—Select this option to dynamically route calls that enter this node to a Precision Queue ID.

- **Formula Editor button**—To determine to which Precision Queue name or ID to route calls that enter this node, click the Formula Editor button to create a formula. The formula is then evaluated at run time to select a precision queue by either name or by database ID. For example, you can use the formula "Call.PeripheralVariable4" to look up the Precision Queue if call variable 4 contained the Precision Queue name, as a result of a database lookup or from Unified CVP call processing.



Note The section on static precision queues describes the properties that are common to static and dynamic precision queues.

Queuing Behavior of the Precision Queue Node

Precision queues internally are configured with one or more time-based steps, each with a configured wait time. After a call is queued, the first step begins and the timer starts. This occurs although the execution path of the script exited the success node and a new node may be targeted (for example, Run Ext. Script).

If the timer for the first step expires, control moves to the second step (assuming one exists), and so on. As long as the call remains in queue and there are steps left to execute, the call internally continues to move between steps regardless of the path the call takes after it leaves the precision queue node. If a call is queued to two or more precision queues, the call internally walks through the steps for each precision queue in parallel. After the call reaches the last step on a precision queue, it remains queued on that step until the call is routed, abandoned, or ended.

If there is an update to the precision queue definition, then all queued calls in the precision queue are re-evaluated and the execution begins again from the first step.

For example, consider the wait time for an ongoing call at step 1 to be 1080 seconds, of which 1000 seconds has already elapsed. Now, suppose the wait time is changed to 900 seconds, then the wait time for this call is also reset to 900 seconds, even though only 80 more seconds are left to move to the next step.

Adjust Priority of a Call in a Queue

You can override the priority of a call in queue set by the Queue node by using the Queue Priority node (in the Queue tab of the Palette).

Figure 44: The Queue Priority Icon



For example:

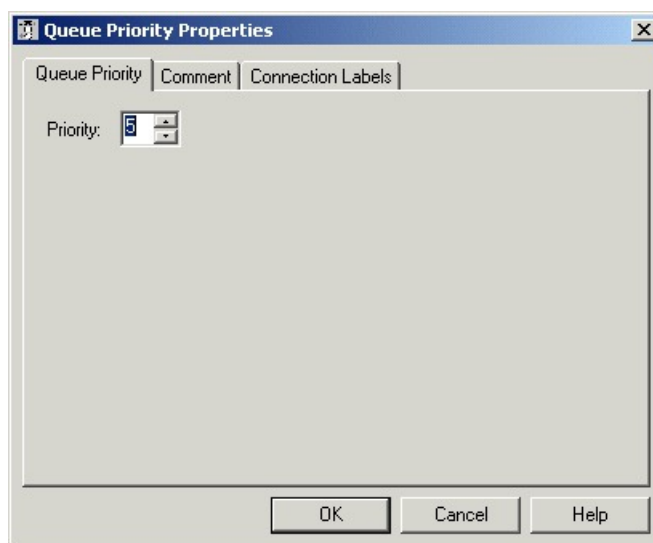
1. The original priority of the call in queue is set by the Queue to Skill Group node or the Precision Queue node.
2. The call waits in queue for 20 seconds while the caller listens to an announcement.
3. Call control passes to a second Wait node.
4. If 20 more seconds pass without an agent becoming available, the Queue Priority node executes and raises the call's priority in queue.

Notes:

- Only use the Queue Priority node after a Queue to Skill Group node or a Precision Queue node. Any subsequent use of the Queue to Skill Group node or the Precision Queue node results in setting the queue priority back to the original setting for that node.
- The Queue Priority node sets the priority for a call within all queues that the call is placed in. If a call requires the priority to be raised in one queue only, you should use a subsequent Queue to Skill Group or Precision Queue node for only that skill group/queue (with the new priority).
- Queuing priorities should be handled very carefully. Just increasing Queue priority does not get a call handled sooner. The effect depends on the other call in the queue. For example, if all calls are treated using the example above, the priority increase has no net effect. If the script above is only used for the Platinum customers while the Standard customers script leaves them at the default priority level, the effect is that all Platinum customers that have been in queue for more than 20 seconds are handled first regardless of other customers in queue. As the delay for Platinum customers is greater than 20 seconds, no Standard customers are handled ever. The solution is to increase the priority level for Standard customers as well, but only after they have been in queue for a longer period, for example 3 minutes.

Following is the Properties dialog box for the Queue Priority node:

Figure 45: Queue Priority Properties



Remove Call from a Queue

You can remove a call from any queues by using the Cancel Queuing node (in the Queue tab of the Palette).

Figure 46: The Cancel Queuing Icon



You do not have to define properties for the Cancel Queuing node. You can optionally add comments or connection labels.

Temporarily Halt Script Execution

You can halt script execution for a specified number of seconds by using the Wait node (in the Queue tab of the Palette).

Figure 47: The Wait Icon



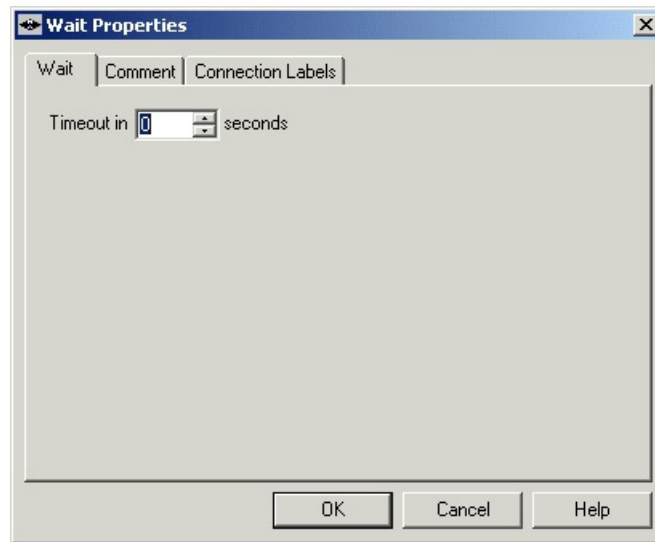
The Wait node simply stops script executing for the specified number of seconds. In the meantime, the Network VRU is waiting for instructions.

**Warning**

You must set protocol time-out variables in Unified CVP to a value greater than the longest wait node used in the script.

Following is the Properties dialog box for the Wait node:

Figure 48: Wait Properties



Define Wait node properties as follows:

Procedure

-
- Step 1** In the Timeout in field, specify an interval to wait, in seconds.
- Step 2** Optionally, add comments or connection labels.
-



CHAPTER 17

Multichannel Routing

- [Overview of Multichannel Services, on page 181](#)
- [Enterprise Chat and Email, on page 181](#)
- [Task Routing, on page 182](#)
- [Media Routing Domains, on page 183](#)
- [Skill Group and Precision Queue Routing for Nonvoice Tasks, on page 184](#)
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- [Estimated Wait Time Scripting for Task Routing, on page 189](#)
- [Example Universal Queue Scripts, on page 190](#)
- [Example Enterprise Chat and Email Scripts, on page 196](#)

Overview of Multichannel Services

When your system is integrated with multichannel features, you write routing scripts to route contacts that these features handle. Multichannel features include Enterprise Chat and Email, and third-party multichannel applications that use the Task Routing APIs.

Enterprise Chat and Email

You can configure CCE deployments with Enterprise Chat and Email to use independent media queues, in which an agent can handle tasks for a single media channel. You can also use Task Routing, in which an agent can handle tasks for several media channels.

Supported Route Requests for Enterprise Chat and Email

CCE supports the following types of multichannel route requests when integrated with Enterprise Chat and Email:

- **Web callback** - A web callback request is one that does not involve Enterprise Chat and Email. A customer clicks a button on a website that says, "Call me back." Then the caller and agent simply talk on the phone.
- **Text chat** - The caller and agent can conduct a text chat session when a telephone call is not desired or not possible. They can both chat and collaborate on the web.
- **E-mail message** - The customer and agent communicate using electronic mail.

Application Request Routing with Enterprise Chat and Email

Enterprise Chat and Email routes requests to the Media Routing Peripheral gateway (MR-PG). The Media Routing Peripheral Interface Manager (MR-PIM) on the MR-PG provides a generic interface to queue and route requests. The MR-PIM communicates with the CallRouter, which runs a routing script to determine how best to handle the request.

CCE uses a media class ID to identify the type of media or channel. A media class is a communication channel that is correlated to an application. Cisco_Voice is a predefined media class that is used for web and delayed callbacks requests and Packaged CCE inbound and outbound voice calls.

Each media class has at least one Media Routing Domain (MRD), which is a collection of skill groups associated with a medium. CCE uses the MRD to route a task to an agent who is associated with a skill group and a particular medium. Each MRD requires a Packaged CCE script, but it is possible to route requests from different MRDs using one script.

Synchronized Agents and Skill Groups for ECE

Agents are common across the multichannel software, but skill groups are application-specific. You can create agents using ECE or in contact center enterprise solutions and share the agents across applications. When agents or skill groups are created in ECE, they are simultaneously created in contact center enterprise solutions. If an agent is created in contact center enterprise solutions, you must enable the agent in ECE before the agent can work on those applications.

Only create, modify, or delete ECE skill groups in ECE. Skill groups are application-specific. When you create a skill group in ECE, the skill group is simultaneously created in the contact center enterprise solutions. But, you cannot enable that skill group in the core contact center enterprise applications.

Independent Media Queues for ECE

You can configure the multichannel software to route all media through independent queues that are defined by media class. You can configure agents to log in to only one media type to take either email, text chat, or voice. In this configuration, requests are queued only to agents who have signed in to the corresponding media application.

Task Routing

Task Routing describes the system's ability to route requests from different media channels to agents who work with customer contacts in multiple media. Routing scripts can send requests to agents based on business rules regardless of the media channel from which the request came. For example, based on an agent's skills

and current tasks, Unified CCE can route phone, chat, and email message requests to an agent who works with all these media. The agent can switch media on a task-by-task basis.

You can set up routing scripts so that multichannel tasks are assigned to the longest available agent in a skill group or precision queue in same Media Routing Domain as the task. You can also prioritize multichannel tasks using skill group and precision queue routing, as you would voice calls.

Media Routing Domains

Media Routing Domains (MRDs) organize how requests for each communication medium, such as voice and email, are routed to agents. For example, the Enterprise Chat and Email uses a Packaged CCE MRD to route a task to an agent who is associated with a skill group or precision queue and a particular channel.

For Enterprise Chat and Email, configure MRDs in Configuration Manager. For custom multichannel applications that use the Task Routing APIs, configure MRDs in Unified CCE Administration.

Media Routing Domains and Interruptibility

When you configure MRDs, you indicate whether tasks for the MRD are interruptible. If the MRD is not interruptible, an agent working on tasks for that MRD is not assigned tasks from other MRDs. If the MRD is interruptible, the agent may be assigned tasks from another MRD.

Typically, tasks in which the agent and customer interact synchronously, such as voice calls and chats, are not interruptible. Email messages are typically interruptible because contact with the customer is asynchronous. Therefore, an agent responding to an email message may be interrupted by a phone call or chat session.

Use Media Routing Domains to Categorize Contacts

You can categorize contacts based on the MRD of the route request.

For example, you can have different MRDs for email and chat. You can have a single script for both types of requests that branches so that it routes email messages and chats to different targets.



Note For multichannel tasks submitted by applications using the Task Routing APIs, Unified CCE determines the MRD based on the dialed number/script selector in the task request.

Use the **Media Routing Domain** node (in the Routing tab of the Palette).

Figure 49: MRD Domain Icon



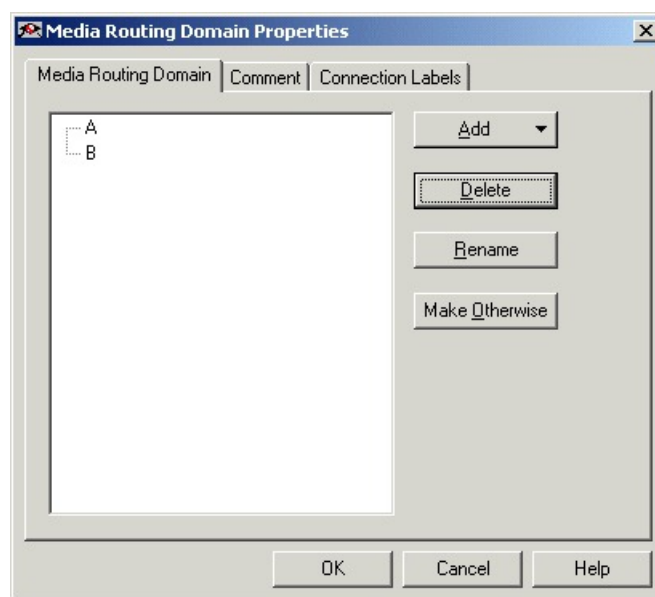
Insert targets and connections from the MRD node before you define the node's properties.



Note A branch can include multiple MRDs, but you can associate a single MRD with only one branch.

Following is the properties dialog box for the Media Routing Domain node:

Figure 50: Media Routing Domain Properties



Define Media Routing Domain node properties as follows:

Procedure

-
- Step 1** To associate an MRD with a branch, select the branch:
- Click **Add**.
 - Choose an MRD from the drop-down list.
- Step 2** To delete a branch, select it and click **Delete**.
- Step 3** To rename a branch, select it, click **Rename**, and type the new name.
- Step 4** You can define a branch as Otherwise by selecting the branch and clicking **Make Otherwise**. Execution follows this branch if none of the specified time ranges apply. You can specify only one Otherwise branch for the node.
-

Skill Group and Precision Queue Routing for Nonvoice Tasks

Routing to skill groups and precision queues is largely the same for voice calls and nonvoice tasks. However, the way that contact center enterprise distributes tasks has the following implications for agents who can handle multiple concurrent tasks:

- **Precision queues**—In precision queue routing, Unified CCE assigns tasks to agents in order of the precision queue steps. Unified CCE assigns tasks to agents who match the attributes for step one, up to their task limit, until all those agents are busy. Unified CCE then assigns tasks to agents who match attributes for step two, and so on. If you configure agents to handle three concurrent tasks, Unified CCE

assigns three tasks to each agent in the first step. It then moves on to the second step and assigns any remaining tasks to those agents.

- **Overflow skill groups**—Routing scripts can specify a preferred skill group and an overflow skill group. Unified CCE assigns tasks to all agents in the preferred skill group, up to their task limit, before assigning any tasks in the overflow skill group. If you configure agents to handle three concurrent tasks, Unified CCE assigns three tasks to each agent in the preferred skill group. It then moves on to the overflow skill group and assigns any remaining tasks to those agents.



Note The number of available slots is an important factor in the Longest Available Agent (LAA) calculation.

The number of available slots = The maximum concurrent task limit for the MRD that an Agent has logged into - Current tasks being handled by the Agent or routed to the Agent.

If there are multiple skill groups that are part of the queue node, then the skill group that has the higher LAA is picked. Then, the agents within the picked skill group (or the Precision Queue) who have the highest number of available slots for non-voice tasks get prioritised.

Agents with the same number of available slots get prioritized based on the time in the available state or the LAA mechanism.

Related Topics

[Scripts for Precision Queues](#), on page 215

[Selection of Agents from Skill Groups](#), on page 190

[Categorization by Media Routing Domain with Skill Groups](#), on page 191

[Categorization by Media Routing Domain with Precision Queues](#), on page 192

Queue to Agent Node

You can queue a contact directly to an agent by using the **Queue to Agent** node (in the Queue tab of the Palette).



You can change the **Queue to Agent** type to:

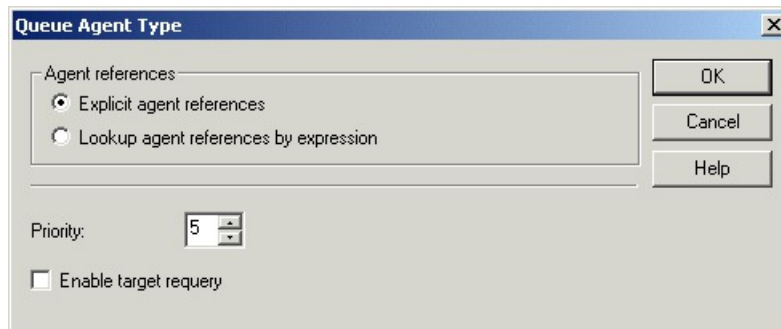
- Specify an agent directly
- Select an agent by expression

Change Queue to Agent Type

Procedure

- Step 1** In the **Queue to Agent** properties dialog box, click **Change**. The **Queue Agent Type** dialog box opens:

Figure 51: Queue Agent Type



- Step 2** To select a specific agent, select **Explicit agent references**.
- Step 3** To select and agent by an expression, select **Lookup agent references by expression**.
- Step 4** Select a **Priority** between 1 (the highest) and 20 (the lowest).
- Step 5** Optionally, select **Enable target requery**.

Specify an Agent Directly

Following is the properties dialog box of the **Queue to Agent** node when you select to specify agents directly:

Figure 52: Agent Direct Properties

Queue to Agent Properties

Queue to Agent | Connection Labels

Queue to Agent type
Select using direct references. Change...

	Agent	Media Routing Do	Skill Group	Route
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				

☐ Queue if agent not logged in

Add Target...
Delete Row
Validate
Formula Editor...
Move
OK Cancel Help

To specify agents directly:

Procedure

-
- Step 1** If necessary, change the Queue to Agent type to **Explicit agent references**.
 - Step 2** In the **Agent** column, select an agent.
 - Step 3** In the **Media Routing Domain** column, select the media routing domain for the selected agent.
 - Step 4** In the **Skill Group** column, select the skill group for the selected agent and media routing domain.
 - Step 5** In the **Route** column, select the route for the selected agent and media routing domain.
 - Step 6** Optionally, select **Queue if agent not logged in**, to have the contact queued to the agent even if the agent is not currently logged in.
 - Step 7** To test the data you entered, click **Validate**.
 - Step 8** Optionally, modify **Connection Labels**.
-

Select an Agent by an Expression

Following is the properties dialog box of the **Queue to Agent** node when you select to use an expression:

Figure 53: Queue to Agent Properties

Queue to Agent Properties

Queue to Agent | Connection Labels

Queue to Agent type
Select using indirect references. Change...

Target Requery Disabled

	Peripheral	Agent Expression	Consider If	Enterprise Skill Group	Enterprise Route	Route
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						

☐ Queue if agent not logged in

Add Target...
Delete Row
Validate
Formula Editor...
Move
OK Cancel Help

To specify agents by expression:

Procedure

- Step 1** If necessary, change the **Queue to Agent** type to **Lookup agent references by expression**.
- Step 2** In the **Peripheral** column, to choose an agent by Peripheral number, choose a peripheral and provide a formula in the Agent Expression that translates to the Agent's Peripheral number. If no peripheral is chosen, the agent expression should translate to the SkillTargetID or Enterprise Name of the agent.
- Step 3** In the **Agent Expression** column, provide a formula using the formula editor that translates to the agent's Peripheral number or SkillTargetID or agent Enterprise Name. To choose a peripheral (in Peripheral) and provide a formula that translates to an agent's Peripheral number.

Note The Peripheral column controls how the AgentExpression column is evaluated as an ICM ID. However, if you select a Peripheral from the Peripheral column, then the Agent Expression column is evaluated as an Agent Peripheral number.
- Step 4** Optionally, in the **Consider if** column, enter the formula that evaluates to true for the target when the ICM system executes the Queue to Agent node, or that target will not be selected. For help in creating a formula, put the cursor in this field and then click the **Formula Editor** button.
- Step 5** Optionally, select the **Enterprise Skill Group** that includes the appropriate skill groups to cover all media routing domain cases for the selected Agent.
- Step 6** Optionally, select the **Enterprise Route** that has an appropriate collection of routes, or the **Route**, matching the agent and media routing domain.

- Step 7** Optionally, select **Queue if agent not logged in**, to have the contact queued to the agent even if the agent is not currently logged in.
- Step 8** To test the data you entered, click **Validate**.
- Step 9** Optionally, modify connection labels.
-

RONA and Transfer Scripting for Task Routing



Note This section applies to tasks submitted by third-party multichannel applications that use the Task Routing APIs.

The *ServiceRequested* call variable is set when tasks are transferred or RONA. You can determine the value of the *ServiceRequested* call variable in an **If** node in the routing script. Based on the value of this field, the script can take different actions. For example, the script can raise the priority of the task so that it goes to the front of the queue.

The relevant *ServiceRequested* values are:

- 2: This value identifies a transferred task.
- 3: This value identifies a RONA task.

Related Topics

[RONA and Transfer Script](#), on page 193

Estimated Wait Time Scripting for Task Routing



Note This section applies to tasks submitted by third-party multichannel applications that use the Task Routing APIs.

Customers submitting a task request might want to know approximately how long they will wait for an agent. You can configure the routing script to provide the customer with an estimate of the wait time. The estimated wait time is calculated once, when the task enters the queue. The time is not updated as the position in the queue changes.

The default estimated wait time algorithm is based on a running five minute window of the rate of tasks leaving the queue. Any tasks that are routed or abandoned during the previous 5 minutes are considered as part of the rate leaving queue. For Precision Queues, the rate leaving the queue represents the rate at which tasks are delivered or abandoned from the entire precision queue, not any individual Precision Queue steps. The algorithm computes the wait time for each of the queues against which the task is queued (Skill Groups or Precision Queues) and then returns the minimum estimated wait time.



Note Queue to Agent is not supported.

While the queue builds, the small number of tasks in the queue makes the estimated wait time less accurate and the value fluctuates rapidly. As the queue operates with more tasks over time, the estimated wait time is more accurate and consistent.

Scripts for estimated wait time include:

- A **Set Variable** node to set the estimated wait time.
- A **Run External Script** node to apply a Network VRU script that returns the estimated wait time to the customer.

Related Topics

[Estimated Wait Time Script](#), on page 194

Example Universal Queue Scripts

You can design scripts to route contacts from different media in a Universal Queue environment.

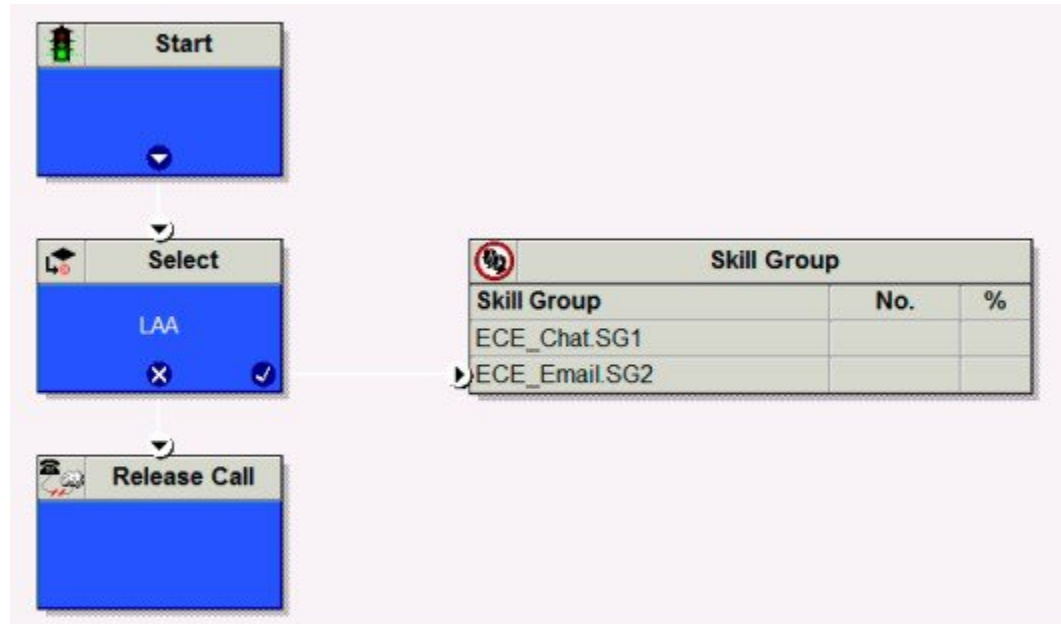
These scripts are only examples; your company's needs may differ.

For more information about Task Routing with third-party multichannel applications or Enterprise Chat and Email, see the *Cisco Packaged Contact Center Enterprise Features Guide* at <https://www.cisco.com/c/en/us/support/customer-collaboration/packaged-contact-center-enterprise/products-maintenance-guides-list.html>.

Selection of Agents from Skill Groups

The following script example shows how contacts from different channels can be routed to the Longest Available Agents in skill groups that are specific to the different channels:

Figure 54: Selecting Agents from Skill Groups

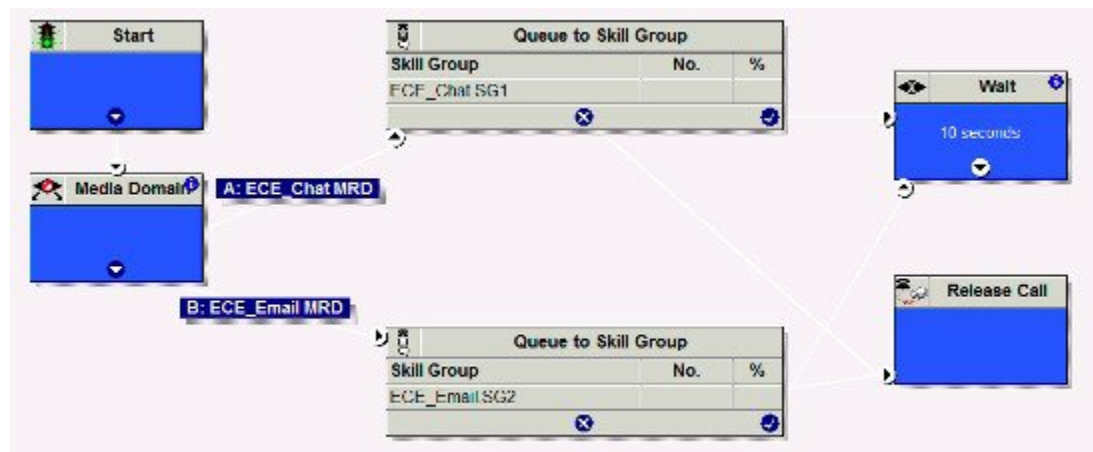


You schedule this script to run for Call Types associated with contacts from the different channels. The script then selects the Longest Available Agent from the skill group in the Media Routing Domain for that channel. The agents may be logged in to different Media Routing Domains and working with contacts from different channels; the Router determines an agent's availability across channels.

Categorization by Media Routing Domain with Skill Groups

The following script example shows how contacts can be categorized by Media Routing Domain, then queued to skill groups specific to that Media Routing Domain:

Figure 55: Categorizing by MRD with Skill Groups

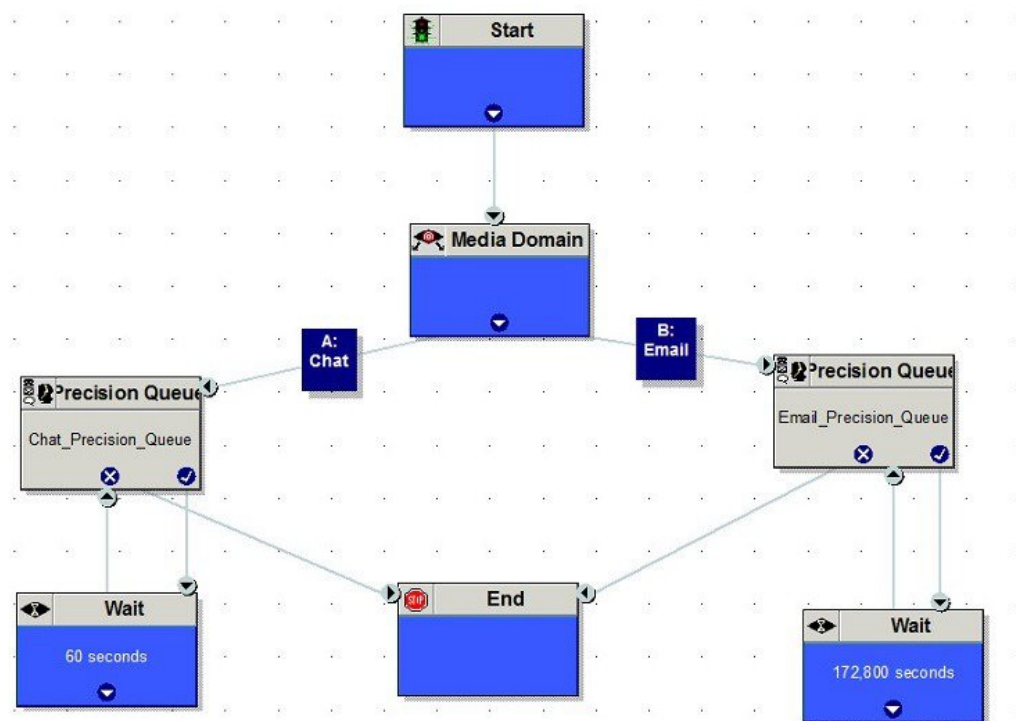


You would schedule this script to run for Call Types associated with contacts from the different channels. The script then uses the Media Routing Domain node to detect the MRD of the contact and branches to a Queue to Skill Group node that specifies skill groups specific to that MRD.

Categorization by Media Routing Domain with Precision Queues

The following script example shows how contacts can be categorized by Media Routing Domain, then queued to precision queues specific to that Media Routing Domain:

Figure 56: Categorizing by MRD with Precision Queues

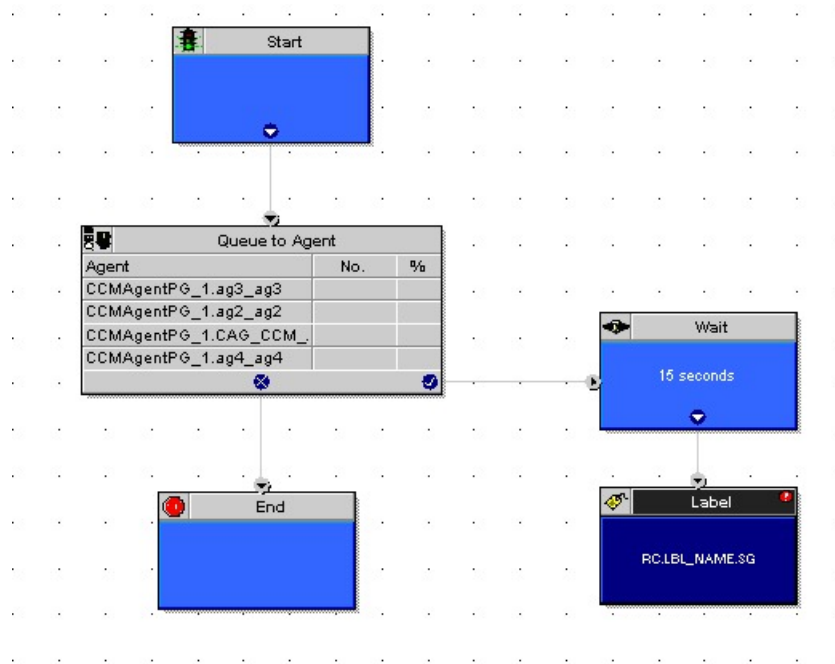


You would schedule this script to run for Call Types associated with contacts from the different channels. The script then uses the Media Routing Domain node to detect the MRD of the contact and branches to a Queue to Precision Queue node that a precision queue specific to that MRD.

Script That Queues to Agents

The following script example shows how contacts from different channels can be queued to agents:

Figure 57: Queuing to Agents

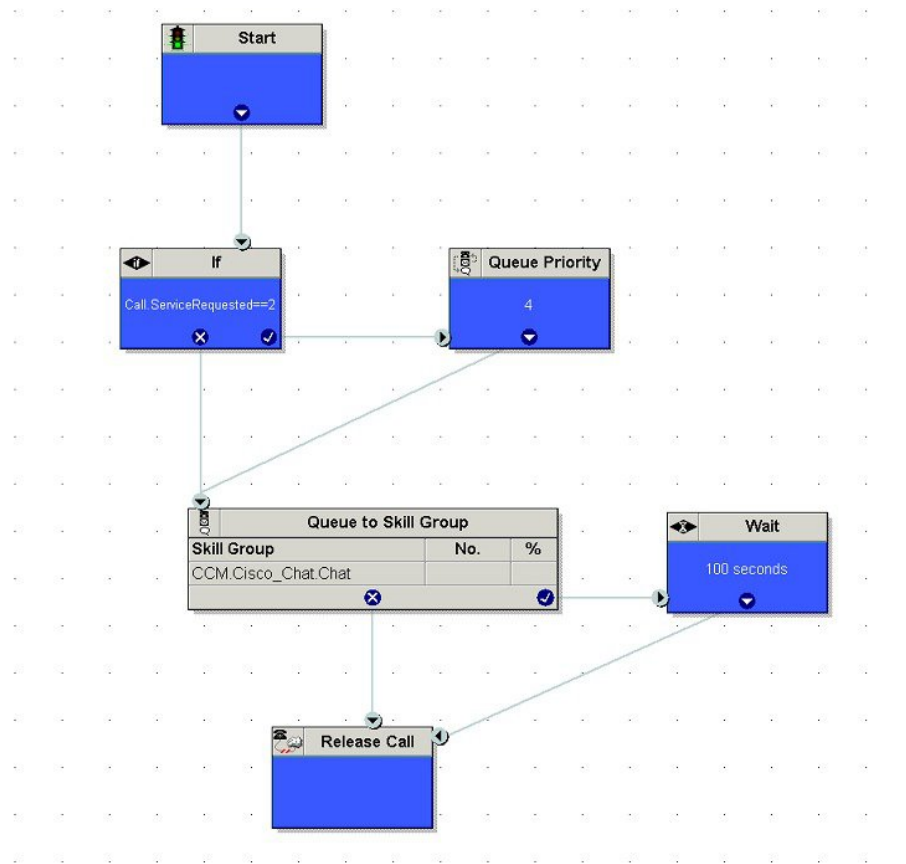


You would schedule this script to run for Call Types associated with contacts from the different channels. In the Queue to Agent node, each row defined for an agent also contains a Media Routing Domain selection. The script queues the contact to the agent with the selected MRD that matches the MRD of the contact.

RONA and Transfer Script

This example only applies to tasks submitted by third-party multichannel applications that use the Task Routing APIs. This example script shows the call priority increase if the service requested is 2 (TRANSFER).

Figure 58: Example RONA and Transfer Script



If the Call ServiceRequested call variable is set to 2 (TRANSFER) the call enters the Queue Priority node. The Queue Priority of the call is increased so that it is handled before any other calls in the queue. The Queue Priority node sends the call to the Queue to Skill Group node. If the Call ServiceRequested call variable is not set to 2 (TRANSFER), the call enters the Queue to Skill Group node.

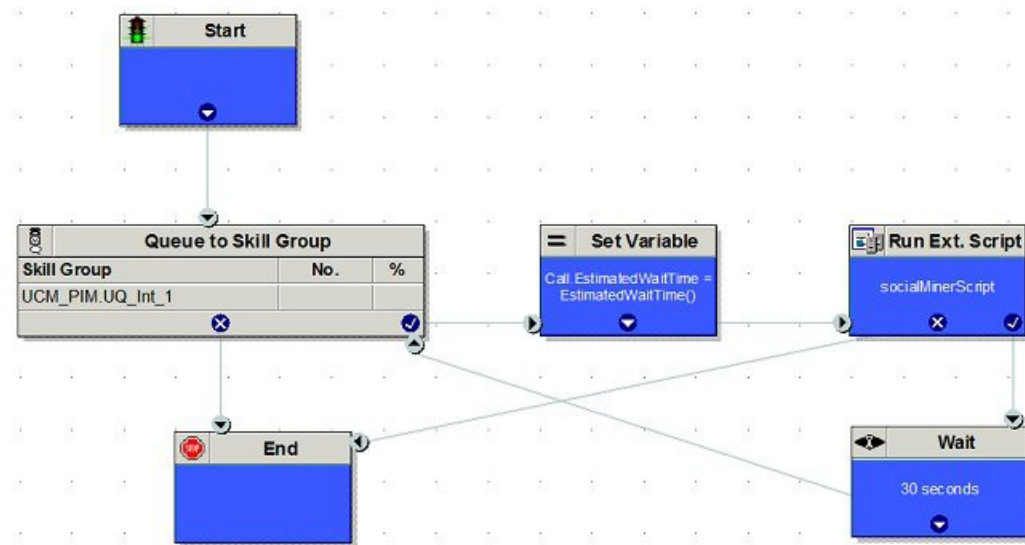
Estimated Wait Time Script

This example only applies to tasks submitted by third-party multichannel applications that use the Task Routing APIs.

Scripts for estimated wait time include:

- A Set Variable Node to set the estimated wait time.
- A Run External Script node to apply a Network VRU script that returns the estimated wait time to the customer.

Figure 59: Example Estimated Wait Time Script



Set Variable (Call.Estimated Wait Time) node: Set the estimated wait time as follows:

1. From the Set Variable node, select **Call** from the Object type drop-down menu.
2. From the Variable drop-down menu, choose **Estimated Wait Time()**.

You can then work with the Formula Editor to use the default estimated wait value or create a formula and use your own value.

3. Click **Formula Editor**, and do either of the following:
 - To use the default estimated wait value, click the Built-In Functions tab and choose EstimatedWaitTime()
 - To create a formula and use your own value, click the Variables tab and choose an entry in the Object type list and an entry in the Object list. Then double-click a variable in the Variable list.

Run Ext Script node: Apply the Network VRU script as follows:

1. Click the Queue tab.
2. Click **Run External Script**.
3. Click inside the script. A Run External Script node appears.
4. Double-click the node and choose the Network VRU script from the list; then click **OK**.

The call variable Estimated Wait Time now contains a value in the EstimatedWaitTime field and can be passed to peripherals.

Note that a Run External Script node is required to send the EstimatedWaitTime to SocialMiner.

Example Enterprise Chat and Email Scripts

For example Enterprise Chat and Email scripts, see the *Scripting and Media Routing Guide for Cisco Unified ICM/Contact Center Enterprise* at <https://www.cisco.com/c/en/us/support/customer-collaboration/unified-contact-center-enterprise/products-user-guide-list.html>.



CHAPTER 18

Use of Formulas

- [Formula Usage, on page 197](#)
- [Formula Example, on page 197](#)
- [Variables, on page 197](#)
- [Operators, on page 204](#)
- [Built-in Functions, on page 207](#)
- [Custom Functions, on page 211](#)

Formula Usage

You can use formulas in many routing nodes to both categorize contacts and select routing targets.

A formula consists of one or more expressions that Packaged CCE evaluates to produce a value that it can use for subsequent script processing. You define expressions—made up of variables, constants, operators, and functions—as part of custom selection rules or distribution criteria in scripts.

Formula Example

This is an example of a simple formula:

```
CallerEnteredDigits == 1
```

In this example:

- The left value, *CallerEnteredDigits*, is a variable. More specifically, it is a call control variable.
- The operator is the "Equal To" equality operator.
- The right value is the number 1.

If the value of *CallerEnteredDigits* is 1, the formula returns true; otherwise, the formula returns false.

Variables

A variable is a named object that holds a value. You use variables in formulas to select targets and help in call tracking.

Variable Syntax

Following is the syntax for using a variable in a formula:

object-type.object-name.variable-name

Where:

- The object-type is an object category, such as SkillGroup.
- The object-name is the name of an object contained in Packaged CCE database, such as the name of a skill group (for example, BosSales).
- The variable-name is the name of an object that can hold a value, such as call information for the skill group; for example, (CallsInProgress).
- Each component in the variable is separated by a period (.).



Note

Passing of internationalized characters through Media Routing interface is not supported. The application that interacts with ICM through the Media Routing interface must send any call related data in English only.

Single-Target Variables

A single-target variable examines data for one specified routing target. For example, the variable:

SkillGroup.BosSales.CallsInProgress: Examines the number of calls in progress for the BosSales skill group.

Multiple-Target Variables

A multiple-target variable examines data across multiple routing targets. For example, the function:

Max(SkillGroup..LongestAvailable)*: Finds the skill group, from all skill groups defined in the target set for the script node that calls the function, with the longest available agent.

You use an asterisk (*) as the object-name value to indicate that the variable is to examine data across multiple targets.

Call Control Variables

Call control variables provide information about the current contact that is being routed by the script. Call control variables include information about where the route request came from, contact classification data, and data to be passed to the peripheral that receives the contact.

Variable	Data Type	Description	Can be Set by the User
CallerEnteredDigits	String	Digits caller entered in response to prompts.	Yes
CallingLineID	String	Billing telephone number of the caller.	No

Variable	Data Type	Description	Can be Set by the User
DialedNumberString	String	Telephone number dialed by the caller.	No
ExpCallVarName	String	Expanded Call Context (ECC) variable value assigned in scripts and passed with contact.	Yes
PeripheralVariable1-PeripheralVariable10	String	Values passed to and from the peripheral.	Yes
RequeryStatus	Integer	Provides the ability to test the error path of the Label, Queue, RouteSelect, and Select nodes to determine the specific network cause of failure and conditionally retry the attempt as necessary.	No
RouterCallDay	Integer	An encoded value that indicates the date on which Packaged CCE processes the call.	No
RouterCallKey	Integer	A value that is unique among all calls Packaged CCE has processed since midnight. RouterCallDay and RouterCallKey combine to form a unique call identifier.	No
RoutingClient	String	The name of the routing client that made the route request.	No
TimeInQueue	Integer	Number of seconds a call has been queued.	No
UserToUserInfo	String	ISDN private network User to User information	Yes
VruStatus	Integer	Indicates the result of a previous VRU node.	No
CallGUID	varchar (32)	Globally unique call identifier.	No
LocationParamName	varchar(50)	Location name.	No
PstnTrunkGroupID	varchar(32)	The Trunk Group ID on which the call arrived on IOS Gateway.	No
PstnTrunkGroupChannelNumber	Integer	The Trunk Group Channel Number on which the call arrived on IOS Gateway.	No

**Note**

The Call Variables can be used in a "SET" node in an Admin Script as temporary placeholders for complex calculation. However, because any call context is only existent as long as the call itself, the Variables cease to exist after the Route Request (a.k.a Call) is complete (be it by virtue of a successful Routing Script Execute Completion or an Administrative Script Execute Completion). They cannot be used to store values, so as to be re-used in Routing Scripts, as the Routing Scripts themselves will have a new set of CallVariables created for the Route Request.



Note When comparing two Call Variables of Numeric string, you must use the Built-In Function "value()" in the IF Node to perform Numeric comparison, otherwise there is a String comparison. Example: `value(Call.PeripheralVariable1)>=value(Call.PeripheralVariable2)` where Call.PeripheralVariable1 and Call.PeripheralVariable2 are given as Numeric string.

Expanded Call Variables

Expanded call variables store values associated with the contact.

Expanded call values are written to Termination Call Detail records only if, and when, an ECC value is explicitly set. You can set the variables in several ways, such as using a script, a Unified CVP, CTI, and so on. This applies to null values as well as non-null values.

If an expanded call variable is defined, but never assigned a value, it does not have a row in the Termination Call Variable table when a Termination Call Detail record is written.

The Latin 1 Character set for expanded call context variables and peripheral call variables is supported when used with Unified CVP, Cisco Finesse, and Cisco SocialMiner, among others.

The use of multi-byte character sets in limited usage for ECC and peripheral call variables is also supported, when:

- Setting them in the Script Editor using double quotes.
- Stored in Termination Call Variables with an appropriate SQL collation.
- Setting and receiving them through agent desktops.

Expanded call values are generally passed from leg to leg on the call. After a value is assigned, the value is recorded in the Termination Call Variable for every Termination Call Detail Segment. However, this depends on how each new call segment is created.

The solution comes with some predefined expanded call variables. You can create others through the Unified CCE Administration tool.

Persistent vs. Non-persistent Call Variables

When Packaged CCE writes call data records to its historical database, it can store the values of all call variables. Storing excessive call variable data can degrade historical database performance. When you define a call variable (using the Expanded Call Variables gadget in the Unified CCE Administration web tool), you can tag it as either *persistent* or *non-persistent*. Only persistent call variables are written to the historical database. You can use non-persistent variables in routing scripts, but they are not written to the database.

User Variables

User variables are variables you create to serve as temporary storage for values you can test with an **If** node. For example, you could create a user variable called `usertemp` to serve as a temporary storage area for a string value used by an If node.

You create user variables through the Unified CCE Administration tool.

Each user variable must:

- Have a name that begins with user.
- Be associated with an object type, for example, skill group. (This enables the Packaged CCE to maintain an instance of that variable for each object of that type in the system.)
- Store a value up to 40 characters long.

After you have define a variable, you can use the Formula Editor to access the variable and reference it in expressions, just as you would with a built-in variable.

Set Variable Node Usage

Figure 60: Set Properties Window

You can set the value of a variable with the Set Variable node:

- Object type - Choose the type of object the variable is associated with.
- Object - Choose the specific object the variable is associated with.



Note If you choose Call as the Object Type, this field does not apply.

- Variable - The specific variable you want to set.



Note The variables that are available are determined by the value you choose in the Object Type field.



Note Define all integer fields in tables accessed by a Set Variables node as NOT NULL.

- Array index - Enter an integer or an expression that evaluates to an integer. For example, if the Array Index expression evaluates to 2, then the Set Variable node sets the second element of the variable array.



Note This field is only available if you select an array variable in the Variable field.

- Value - Enter the value to assign to the variable. The value can be:
 - A constant
 - A reference to another variable
 - An expression

SkillGroup.Avail and SkillGroup.ICMAvailable Variables

When the Packaged CCE system includes only the voice channel, the value of the SkillGroup.Avail variable is the number of agents in the available state, meaning that the agents are able to accept new calls.

However, when the web or e-mail channel is used with non-voice Media Routing Domains and agents log in to multiple domains, the value of the SkillGroup.Avail variable is calculated differently. There is also a SkillGroup.ICMAvail variable.

The following table describes the difference between the SkillGroup.Avail and the SkillGroup.ICMAvail variables:

Case	SkillGroup.Avail	SkillGroup.ICMAvailable
Only voice domain is used	Number of agents in the Available state.	Same
Multiple Domains are used	Number of agents in the Available state, regardless of what they may be doing in this or other domains.	Number of agents who can actually handle an additional task or call in the domain.

SkillGroup.ICMAvailable Variable

The value of the SkillGroup.ICMAvailable variable is the actual number of agents logged in to the skill group who can take new calls or tasks. Such agents must meet all the following criteria:

1. They are routable in the domain.
2. The agent's state in the domain is something other than "Not-Ready".
3. The agent is below the maximum task limit.



Note For most domains (that is, if the agent is not a Enterprise Chat and Email Multi-session agent), the maximum task limit is 1, and an agent is below the maximum only when the agent is not working on any call or task.

4. The agent is not working on another task in a non-interruptible domain.

SkillGroup.Avail Variable

SkillGroup.Avail is the number of agents in the skill group who are not doing anything in the domain. An agent who is logged in to two domains can be counted as Avail in one domain even though that agent is handling a task in another non-interruptible domain. An agent in a domain that handles multiple tasks (such as chat) is not counted as Avail if that agent is handling a task, even though the agent has additional capacity for more tasks.

The following table shows some possible values for these variables. Assume three agents are logged in to a voice skill group, and the same three agents are also logged in to another non-interruptible domain, such as a chat domain. This table shows the voice skill group states and the number of agents available in that state.

Case	SkillGroup.Avail	SkillGroup.ICMAvailable
Initial state	3	3
First agent handles a call	2	2
Second agent handles a chat session	2 (because there are two agents doing nothing in the domain)	1 (because there is only one agent left to handle voice calls)
Voice call ends	3	2
Chat ends	3	3

If a routing script needs to check the number of available agents, using SkillGroup.Avail produces effective results as it uses an extrapolation mechanism in determining the available agent.

Following is another example showing agents handling non-interruptible chat tasks. Assume three agents are logged in to a chat skill group, each allowed to handle two chats. This table shows states for the chat skill group.

Case	SkillGroup.Avail	SkillGroup.TalkingIn	SkillGroup.ICMAvailable
Initial state	3	0	3
First agent handles a chat session	2 (because the agent is now in the talking state)	1	3 (because all three agents can still handle additional chats)
Second agent handles a chat session	1	2	3
Third agent handles a chat session	0	3	3

Case	SkillGroup.Avail	SkillGroup.TalkingIn	SkillGroup.ICMAvailable
First agent handles second chat session	0	3 (even though a total of 4 chats are in progress, only 3 agents are doing the work)	2 (because only the second and third agents can handle an additional chat)

By default, Script Editor shows the ICMAvailable value instead of Avail value when displaying skill group real-time data.

Closed Variables

Closed variables are available for use for skill groups, peripherals, and Media Routing Domains. Closed variables allow administration scripts to turn dequeuing to these objects on and off. The Closed variables default to 0, meaning that the object is open. A script (usually an administration script) can change the state of the Closed variables.

If a Closed flag is set to a non-zero integer, then calls are not dequeued to affected agents, regardless of their state.

When closed variables are set to zero, the queued calls do not go to the available agents immediately, and continue to be in the queue. When the agent state changes from "Not Ready" to "Ready" state, the new calls are sent to the available agents (agents in the "Ready" state) only, and not the queued calls.

Operators

Operator Precedence

The following table shows the order in which operators are evaluated.



Note The operators with priority 1 are evaluated first, then those with priority 2, and so on. The order of evaluation within each priority level can also be important. Prefix operators are evaluated from right-to-left in an expression. Assignment operators are also evaluated from right-to-left. In all other cases where operators have equal priority, they are evaluated left-to-right.

Priority	Operator type	Operators
1	Prefix (unary)	+ - ! ~
2	Multiplication and division	* /
3	Addition and subtraction	+ -
4	Shift right and shift left	>> <<
5	Relational	< > <= >=

Priority	Operator type	Operators
6	Equality	== !=
7	Bitwise And	&
8	Bitwise exclusive Or	^
9	Bitwise inclusive Or	
10	And	&&
11	Or	
12	Conditional	?
13	Sequential	,

Prefix Operators

The Prefix Operators in the following table take a single operand:

Operator	Meaning	Comments/Examples
+	Positive	Numeric values are positive by default, so the positive operator (+) is optional. Example: 2 and +2 represent the same value.
-	Negative	The negative operator (-) changes the sign of a value. Example: 2 represents a positive value; -2 represents a negative value.
!	Logical negation	A logical expression is any expression that evaluates to true or false. The logical negation operator (!) changes the value of a logical expression. Note: Numerically, a false value equates to 0 and a true value equates to a non-zero value. Example: If the current value of SkillGroup.Sales.Avail is 3, then SkillGroup.Sales.Avail > 0 is true and (SkillGroup.Sales.Avail > 0) is false.
~	One's complement	Operates on a bit value, changing each 1 bit to 0 and each 0 bit to 1. Note: This operator is rarely used.

Arithmetic Operators

The Arithmetic Operators in the following table take two operands:

Operator	Meaning	Comments/Examples
*	Multiplication	Arithmetic operators perform the basic operations of addition, subtraction, multiplication and division. You can use them in making calculations for a skill group, service, or route. Note: Multiplication (*) and division (/) operators are evaluated before addition (+) and subtraction (-) operators.
/	Division	
+	Addition	
-	Subtraction	

Equality Operators

The Equality Operators in the following table take two operands:

Operator	Meaning	Comments/Examples
==	Equal to	Equality operators allow you to determine whether two values are equivalent or not.
!=	Not Equal To	

Relational Operators

The Relational Operators in the following table take two operands:

Operator	Meaning	Comments/Examples
>	Greater than	Relational operators allow you to perform a more sophisticated comparison than the equality operators.
<	Less than	
>=	Greater Than or Equal To	
<=	Less Than or Equal To	

Logical Operators

The Logical Operators in the following table take two operands. Logical operators examine the values of different logical expressions:

Operator	Meaning	Comments/Examples
&&	And	The expression is true if both of the operands are true. If either is false, the overall expression is false.
	Or	The expression is true if either or both of the operands is true. If both are false, the overall expression is false.



Note

The equality (==) and relational (>) operators are evaluated before the logical operators (&& and ||).

Bitwise Operators

The Bitwise Operators in the following table take two operands.

Operator	Meaning	Comments/Examples
&	And	The & Bitwise Operator turns specific bits in a value on or off.

Operator	Meaning	Comments/Examples
	Inclusive Or	Inclusive Or and Exclusive Or differ in the way they handle the case where bits in both values are 1: Inclusive Or evaluates the result as true and sets a 1 bit in the result. Exclusive Or evaluates the result as false and sets a 0 bit in the result. (An Exclusive Or applies the rule "one or the other, but not both").
^	Exclusive Or	

Miscellaneous Operators

The following table lists miscellaneous operators:

Operator	Meaning	Comments/Examples
?	Conditional	The conditional operator (?) takes three operands and its syntax is as follows: The Packaged CCE evaluates the expression by first examining the logical expression condition and then tests the following condition: If the result is true, then the overall expression evaluates to the value of the expression true-result. If the result is false, then the overall expression evaluates to the expression false-result.
&	Concatenation	The concatenation operator (&) joins two strings end-to-end. returns the value.
,	Sequential	The sequential or comma operator (,) takes two operands, each of which is an expression. Packaged CCE evaluates the left expression first and then the right expression. The value of the overall expression is the value of the right expression. The first expression typically affects the valuation of the second.
<< >>	Shift left Shift right	The shift left (<<) and shift right (>>) operators shift the bits within a value.

Built-in Functions

Date and Time Functions

The following table lists the built-in date and time functions:

Function	Data Type	Return Value/Example
date [(date)]	Integer	Returns the current system date or the date portion of a given date-time value. The given date can be a floating point value (as returned by the now function), a string of the form mm/dd/yy, or three integers: yyyy, mm, dd. date (with no arguments) returns the current date. For example, = date (2001, 7, 15) tests whether the current date is July 15, 2001. Note Do not use the slash (/) character in defining a date function. Because it is the division operator, the function would not return the results you are looking for. You can enclose the argument within a string.
day [(date)]	Integer	Returns the day of month (1-31) for the current date or a given date. The given date must be an integer or a floating-point value, as returned by the date or now function.
hour [(time)]	Integer	Returns the hour (0-23) of the current time or a given time. The given time must be a floating-point value, as returned by the now function.
minute [(time)]	Integer	Returns the minutes (0-59) of the current time or a given time. The given time must be a floating-point value as returned by the time function.
month [(date)]	Integer	Returns the month (1-12) of the current month or a given date. The given date must be a floating-point value, as returned by the date or now function.
now	Float	Returns the current date and time, with the date represented as an integer and the time represented as a fraction. Note: You can use the date or time functions without any arguments to return just the current date or time. This function is useful for comparing the current date and time to a specific point in time.
second [(time)]	Integer	Returns the seconds (0-59) of the current time or a given time. The given time must be a floating-point value, as returned by the time function.
time [(time)]	Float	Returns the current system time or the time portion of a date-time value. The given time can be a floating point value, a string of the form hh:mm:ss, or two or three numeric values: hh, mm [, ss]. (with no arguments) returns the current time. For example, = time (20:05:00) tests whether the current time is 08:05:00
weekday [(date)]	Integer	Returns the current day of week (Sunday=1, Monday=2, etc.) of the current date or given date. The given date must be an integer or floating-point value, as returned by the date or now function.
year [(date)]	And	Returns the year of the current year or given date. The given date must be a floating-point value, as returned by the date or now function.

Mathematical Functions

The following table lists the built-in mathematical functions:

Function	Data Type	Return Value/Example
abs(n)	Floating Point or Integer	Returns the absolute value of n (the number with no sign).
max(n1, n2 [,n3] . . .)	Floating Point or Integer	Returns the largest of the operands. Each operand must be numeric.
min(n1, n2 [,n3] . . .)	Integer	Returns the smallest of the operands. Each operand must be numeric.
mod(n1,n2)	Floating Point or Integer	Returns the integer remainder of n1 divided by n2.
random()	Floating Point or Integer	Returns a random value between 0 and 1.
sqrt(n)	Floating Point or Integer	Returns the square root of n. (The operand n must be numeric and non-negative).
trunc(n)	Floating Point or Integer	Returns the value of n truncated to an integer.

Miscellaneous Functions

The following table lists the built-in miscellaneous functions:

Function	Data Type	Return Value/Example
after(string1,string2)	String	That portion of string2 following the first occurrence of string1. If string1 does not occur in string2, the null string is returned. If string1 is the null string, string2 is returned.
before(string1,string2)	String	That portion of string2 that precedes the first occurrence of string1. If string1 does not occur in string2, string2 is returned. If string1 is the null string, the null string is returned.
CallTypeSurvey	String	Returns the format required for CVP to run the post call survey.
ClidInRegion	Logical	Indicates whether the CLID for the current contact is in the geographical region specified by string. The value string must be the name of a defined region. You can use the Name variable of a region to avoid entering a literal value.
concatenate(string1,string2, . . .)	String	Returns the concatenation of the arguments. The function takes up to eight arguments.

Function	Data Type	Return Value/Example
EstimatedWaitTime	Integer	<p>Returns the minimum estimated wait time for each of the queues against which the call is queued (skill group(s) or precision queue(s)). Queue to Agent(s) is not supported. If no data is available, returns -1. The estimated wait time is calculated once, when the call enters the queue.</p> <p>The default estimated wait time algorithm is based on a running five minute window of the rate of calls leaving the queue. Any calls which are routed or abandoned during the previous 5 minutes are taken into account as part of the rate leaving queue. For precision queues, the rate leaving queue represents the rate at which calls are delivered or abandoned from the entire precision queue, not any individual precision queue steps.</p>
find(string1, string2 [,index])	Integer	Returns the starting location of string1 within string2. If you specify an index value, searching starts with the specified character of string2.
iff(condition,true-value,false-value)	Logical	Returns a value of true-value if the condition is true; false-value if the condition is false. Returns the current hour in 12-hour format rather than 24-hour format.
left(string,n)	String	Returns the left-most n characters of the string.
len(string)	Integer	Returns the number of characters in the string.
mid(string,start,length)	String	Returns a substring of the string, beginning with the specified start character and continuing for the specified number of characters.
result	Floating Point or Integer	Returns the result of the current Select node. (This function is valid only in a Select node.) If you are using the LAA rule in the Select node, the result function returns the number of seconds the selected agent has been available.
right(string,n)	String	Returns the right-most n characters of the string.
substr(string,start [, length])	String	Returns a substring of the string, beginning with the specified start character and continuing for the specified number of characters.
text(n)	String	Converts a numeric value into a string.
valid(variable)	Logical	Returns whether the variable has a valid value.
ValidValue(variable,value)	String	If the variable has a valid value, returns that value; otherwise, returns "value". Returns either a name from the database or the string value None.

Function	Data Type	Return Value/Example
value(string)	Floating Point or Integer	Converts a string into a numeric value.

Custom Functions

Custom functions are those functions you create for use within scripts, as opposed to built-in functions.

Add Custom Functions

Procedure

-
- Step 1** In Script Editor, from the **Script** menu, choose **Custom Functions**. The Custom Functions dialog box opens, listing all the custom functions currently defined.
- Step 2** Click **Add** to open the Add Custom Function dialog box.
- Step 3** Specify the following:
- a) Function name. All custom function names must begin with user.
 - b) Number of Parameters. The number of parameters to be passed to the function. A function may take 0, 1, or more parameters.
 - c) Function definition. The expression to be evaluated when the function is called. When entering the function definition, keep the following in mind:

The parameters to a function are numbered beginning with 1. To reference a parameter within the expression, surround it with percent signs (%). For example, %3% is a reference to the third parameter.

The lower portion of the dialog box is just like the Formula Editor. You can use it to help build the expression.
- Note** When you import the custom functions, the pattern #[0-9]+# is replaced with corresponding object name. The digits between "#" characters represent object ID. The # characters which are not the part of this pattern are not removed or replaced.
- Step 4** When finished, click **Test**. The Test Function dialog box opens.
- Step 5** Test the function by entering an example of how you might reference the function. Include a specific value for each parameter.
- Step 6** Click **Evaluate** to see how the Script Editor interprets the function call and click **Close** to return to the Add Custom Function dialog box.
- Step 7** Use one of the Validate buttons to validate the scripts that reference a selection function. (The Validate All button lets you validate all the scripts that reference any custom function.)
- Step 8** When finished, click **OK** to apply changes and to close the dialog box.
-

Import Custom Functions

Procedure

-
- Step 1** In Script Editor, from the **Script** menu, choose **Custom Functions**. The Custom Functions dialog box opens, listing all the custom functions currently defined.
- Step 2** Click **Import**. The Import Custom Function dialog box opens.
- Step 3** Choose a file name with an ICMF extension (.ICMF) and click **Open**. The Script Editor examines the file for naming conflicts. If a conflict is found, a dialog box appears listing options for resolving the conflict.
- Step 4** Choose one of the options and click **OK**.

Note If you choose to rename the function, the new name must begin with user.

The Script Editor performs automapping and the following happens:

- If all imported objects were successfully auto-mapped, a message window appears prompting you to review the mappings. Click **OK** to access the Object Mapping dialog box.
- If some imported objects were not successfully auto-mapped, the Object Mapping dialog box appears, with all unmapped objects labeled Unmapped.

The Object Mapping dialog box contains three columns:

- Object Types. The type of imported objects.
 - Imported Object. Name of imported object.
 - Mapped To. What this imported object will be mapped to.
- (Optional.) Click an Imported Object value. The Mapped To column displays all the valid objects on the target system.
- (Optional.) Choose an object from the Mapped To columns drop-down list on the target system that you want to map the imported object to.



Note Multiple objects may be mapped to the same target. Objects may be left unmapped; however, the resulting custom function are not valid until all objects are mapped.

When the mapping is complete, click **Apply** and **Finish**.

Export Custom Functions

Procedure

- Step 1** In Script Editor, from the **Script** menu, choose **Custom Functions**. The Custom Functions dialog box opens, listing all the custom functions currently defined.
- Step 2** Choose the custom function(s) from the list and click **Export**. The Export Custom Function dialog box opens.
- Note** If you selected a single function, that functions name appears in the File Name field. If you selected more than one function, the File Name field is blank.
- Step 3** (Optional.) Change the File Name.
- Note** You cannot change the file type; you can save the script only in .ICMF format.
- Step 4** Click **Save**. If the file name already exists, the system prompts you to confirm the save.
- Step 5** If prompted, click **OK**. The custom function(s) are saved to the specified file in text format.
-



CHAPTER 19

Scripting Specifics in a Packaged CCE Environment

- [Call Priority, on page 215](#)
- [Check for Available Agents, on page 215](#)
- [Scripts for Precision Queues, on page 215](#)
- [Cancel Queuing Node, on page 218](#)
- [End Node, on page 218](#)
- [Agent to Agent Node, on page 218](#)
- [Unified CVP as a queue point, on page 218](#)

Call Priority

When a call is queued to a skill group because there are no agents available, the Queue to Skill Group node sets the call's priority. The Queue Priority node can then promote the call's priority based on time the caller has waited. The call can be queued to multiple skill groups with the same or different priorities.

If there are calls in the agent's skill group queues when an agent becomes available, the agent is presented with the highest priority (1-20 with 1 being the highest priority) call that has waited the longest within the skill group(s) that the agent is assigned to.

Check for Available Agents

A script that routes to Packaged CCE agents needs to check for an available agent within a skill group. If an agent is not available, then the script should use a Queue to Skill Group node. The script execution ends when an agent becomes available or when the caller disconnects.

Scripts for Precision Queues

To implement Precision Routing in your contact center, you must create scripts.

You can create and use configured (static) and dynamic precision queue nodes in your scripts.

- Static precision queue nodes target a single, configured precision queue. When the script utilizes a single precision queue, use static precision queues.

- Dynamic precision queue nodes are used to target one or more previously configured precision queues. Use dynamic precision queues when you want a single routing script for multiple precision queues (for example, when the overall call treatment does not vary from one precision queue to another). Dynamic precision queues can simplify and reduce the overall number of routing scripts in the system.

Precision Queue Script Node

Use the Precision Queue script node to queue a call based on caller requirements until an agent with desired proficiency become available. This node contains multiple agent selection criteria which are separated into steps.

A single call can be queued on multiple precision queues. If an agent becomes available in one of the precision queues, the call is routed to that resource. You cannot reference multiple precision queues with a single Precision Queue node. However, you can execute multiple Precision Queue nodes sequentially to achieve this.

The Precision Queue node includes a Priority field, which sets the initial queuing priority for the calls processed through this node versus other calls queued to the other targets using different nodes. The priority is expressed as an integer from 1 (top priority) to 10 (least priority). The default value is 5.

If more than one call is queued to a precision queue when an agent becomes available, the queued call with the lowest priority number is routed to the target first. For example, assume an agent in a precision queue becomes available and two calls are queued to that precision queue. If one call has priority 3 and the other has priority 5, the call with priority 3, the lower value, is routed to the precision queue while the other call continues to wait. If the priorities of the two calls are same, then the call queued first is routed first.

VRU (voice response unit) script instructions are not sent to the VRU. If a call enters the precision queue node and no resource is available, the call is queued to the precision queue and the node transfers the call to the default VRU, if the call is not already on a VRU. The script flow then exits immediately through the success branch. The script should then continue with a run external script node to instruct the VRU what to do while holding the call until an agent becomes available. Typically, this invokes a network VRU script that plays music-on-hold, possibly interrupted on a regular basis with an announcement. The script flow can also use other queuing nodes to queue the same call to other targets, for example, Queue to Skill Group and Queue to Agent.

Configure a Static Precision Queue

Procedure

-
- | | |
|---------------|--|
| Step 1 | In the Precision Queue Properties dialog box, select the Statically option. |
| Step 2 | From the list, select a precision queue to which to route all calls that enter this node. |
| Step 3 | In the Priority selection box, select the initial queuing priority for calls processed through this node. You can select from 1 - 10. The default is 5. |
| Step 4 | Check the Enable target requery check box to enable the requery feature for calls processed through this node. |
| Step 5 | Check the Wait if Agents Not Logged In check box. |
- If this check box is selected and the agents associated with this step are not logged in, then the router waits for the time that is configured for that step. Whereas, if this check box is not selected, the router does not wait on any step.

Note The router waits indefinitely on the last step, irrespective of the selection of this check box.

Step 6 To edit a precision queue, select a precision queue from the list, and then click **Edit Precision Queue**.

Configure a Dynamic Precision Queue

Procedure

- Step 1** In the **Precision Queue Properties** dialog box, select the **Dynamically** option.
- Step 2** In the **Priority selection** section, select the initial queuing priority for calls processed through this node. You can select from 1 - 10. The default is 5.
- Step 3** Check the **Enable target requery** check box to enable the requery feature for calls processed through this node.
- Step 4** Check the **Wait if Agents Not Logged In** check box.
If this check box is selected and the agents associated with this step are not logged in, then the router waits for the time that is configured for that step. Whereas, if this check box is not selected, the router does not wait on any step.
- Note** The router waits indefinitely on the last step, irrespective of the selection of this check box.
- Step 5** Select a queue option:
- To dynamically route calls that enter this node to a precision queue name, select the **Precision Queue Name** option.
 - To dynamically route calls that enter this node to a precision queue ID, select the **Precision Queue ID** option.
- Step 6** Click **Formula Editor** to create a formula that determines the precision queue name or ID to which to route calls.
-

Queuing Behavior of the Precision Queue Node

Precision queues internally are configured with one or more time-based steps, each with a configured wait time. After a call is queued, the first step begins and the timer starts. This occurs although the execution path of the script exited the success node and a new node may be targeted (for example, Run Ext. Script).

If the timer for the first step expires, control moves to the second step (assuming one exists), and so on. As long as the call remains in queue and there are steps left to execute, the call internally continues to move between steps regardless of the path the call takes after it leaves the precision queue node. If a call is queued to two or more precision queues, the call internally walks through the steps for each precision queue in parallel. After the call reaches the last step on a precision queue, it remains queued on that step until the call is routed, abandoned, or ended.

If there is an update to the precision queue definition, then all queued calls in the precision queue are re-evaluated and the execution begins again from the first step.

For example, consider the wait time for an ongoing call at step 1 to be 1080 seconds, of which 1000 seconds has already elapsed. Now, suppose the wait time is changed to 900 seconds, then the wait time for this call is also reset to 900 seconds, even though only 80 more seconds are left to move to the next step.

Cancel Queuing Node

If the call needs to be taken out of a skill group, then use the Cancel Queuing node. The Cancel Queuing node takes the call out of all the skill groups it is queued to.

End Node

The End node either tries default routing, or if there is no default label, it sends an error (dialog fail) to the routing client.

Agent to Agent Node

You can use the Agent to Agent node for agent to agent transfers; the router checks agent availability before sending the call to the agent. If the agent is not available, the script queues the call to a skill group. You can also use the Agent to Agent node to send a call to the agent: the "caller" is not required to be an agent.

For a transfer to a specific target agent, the initiating agent enters the target agent ID. The DNP entry matching the dialed number (agent ID) must have a DNP type of PBX. For this DNP type, the PIM enters the dialed number (agent ID) into the Caller-Entered Digits (CED) field while sending the route request to the Router. To have the Router handle the call properly, specify the CED field as the location of the agent ID in the Agent to Agent node.

Agent IDs must not match any of the extensions on the Unified Communications Manager cluster. If you make all agent IDs of the same length and begin with the same number, a generic wildcard string can match all agent IDs. With that wildcard string, you need only one entry in the DNP for agent-to-agent routing.

The agent-to-agent node requires that you specify the PIM. If your environment has multiple PIMs, use an agent ID number plan to determine which PIM contains an agent. Agent IDs are associated with a specific PIM and are not unique by themselves. You can set up a consistent agent ID assignment plan (such as, all agent IDs on PIM 1 begin with 1, and so on). That pattern enables you not to repeat agent IDs across the enterprise. Then, you can parse the CED field in the script editor to determine which PIM contains a specific agent.

Unified CVP as a queue point

Packaged CCE relies on the Unified CVP to queue the call while it is waiting for an available agent.

The Packaged CCE sends the call to the Unified CVP port for queuing:

- To provide the call with a termination point that allows the VoIP Gateway to return the correct signals or messages back to the PSTN.

- Provide announcements or music or expected wait time or initial position in queue to the caller while they are waiting for an agent. Allow the caller an option to leave a message if the caller does not want to wait for an agent.
- To obtain further information from the caller that is not sent from the network

The Unified CVP lets Packaged CCE know when the caller disconnects through the Event Report Message with an Event Type of either DISCONNECT or ABANDON. When an agent becomes available, Packaged CCE automatically instructs Unified CVP to route the call to the agent through the Connect message.

Interruptible vs. Non-interruptible

If the VRU script is collecting digits from the customer to ascertain information regarding the caller that is crucial for a screen pop or call routing, put the VRU script in a non-interruptible mode.

If a call was queued to a skill group through a Queue to Skill Group node and then sent to VRU to hear a non-interruptible VRU script, if during the time that the caller is interacting and listening to the non-interruptible VRU script, an agent becomes available, the call will not be connected to the agent. The Packaged CCE only looks for available agents for that call when the VRU script is finished and the call executes an interruptible node such as a Wait node or a Run External Script node for a VRU script that is interruptible. The call does, however, maintain its place in the queue so when the call does become available for an agent, it is answered before calls that came in afterward it (assuming the same priority).

For announcement and music type of treatments, put the VRU Scripts in interruptible mode. This allows the call to be connected to the first available agent even while the caller is listening to a VRU script.

You set the interruptibility of a VRU script through the Network VRU Scripts gadget in the Unified CCE Administration Web tool. Neither the VRU or the Packaged CCE script can overwrite this setting.



CHAPTER 20

Utility Nodes

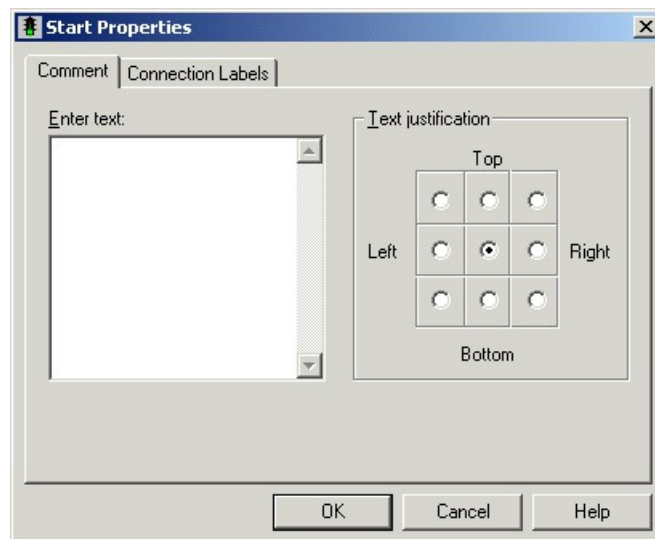
- [Start Node, on page 221](#)
- [Comment Node, on page 221](#)
- [Line Connector Node, on page 222](#)

Start Node

The Start node marks the beginning of a script. The Script Editor automatically inserts the Start node when you create a new script; a script must have one and only one Start node.

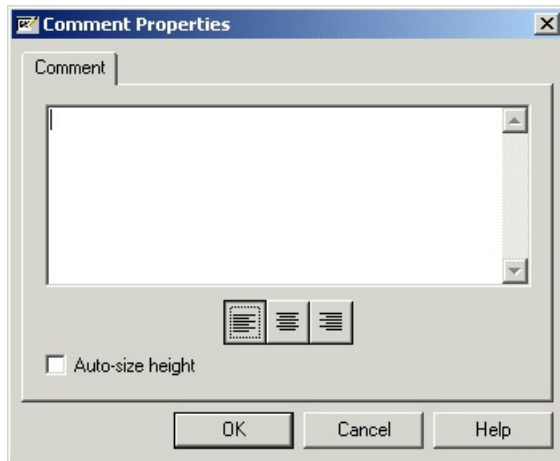
You do not define any properties for the Start node. However, you can add comments and connection labels:

Figure 61: Start Properties



Comment Node

Use the Comment node (in the General tab of the Palette) to include a block comment in a script. A block comment provides general documentation for a script or section of a script:

Figure 62: The Comment Icon**Figure 63: Comment Properties**

For example, you might add a comment describing the purpose of the script.

You can move and resize the comment box within the script.



Note If you choose the Auto-Size Height option, you cannot adjust the height of the comment.

Line Connector Node

Use the Line Connector node (in the General tab of the Palette) to make routing and administrative scripts clear and understandable.

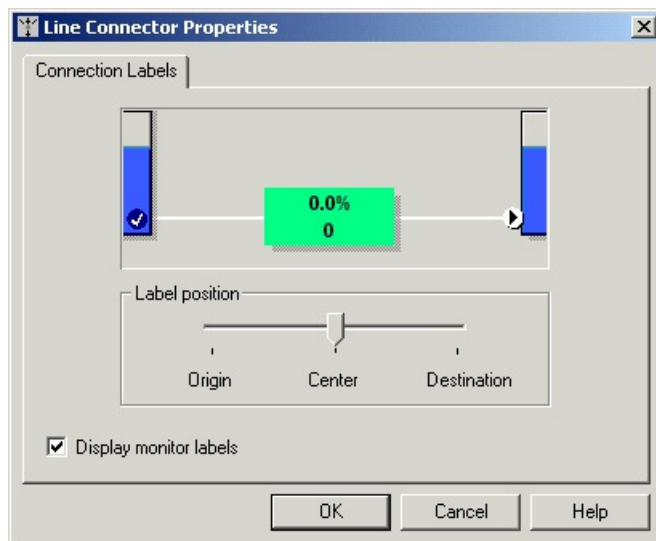
Figure 64: The Line Connector Icon

A script can be difficult to understand and the call flow hard to follow if:

- The connecting lines between nodes are too long.
- The connecting lines go in different directions.
- The connecting lines run over other nodes and other connection lines.

The Line Connector node allows you to break and reconnect lines using one or more of its multiple input connections and single output connection. Any request coming into this node (on any one of the multiple inputs) goes to the single output connection of the line connector node.

For the Line Connector node, you define the connection labels:

Figure 65: Line Connector Properties



CHAPTER 21

Unified CVP Scripting

- [Writing Scripts for Unified CVP, on page 225](#)
- [Before You Begin, on page 225](#)
- [Scripts to Access Unified CVP from Packaged CCE, on page 226](#)
- [Invoke Unified CVP Micro-applications Through Routing Scripts, on page 226](#)
- [Unified CVP Call Studio Scripting, on page 226](#)
- [Scripting for Unified CVP with Packaged CCE, on page 227](#)
- [Writing Packaged CCE Applications for Unified CVP, on page 236](#)
- [Unified CVP Micro-applications, on page 237](#)
- [Scripting for Unified CVP with Call Studio, on page 278](#)

Writing Scripts for Unified CVP

This section discusses using Packaged CCE configuration and script editing to access the Unified CVP solution.

It includes information about how to:

- Set up Packaged CCE to interact with Unified CVP
- Write applications for Unified CVP



Note

This section contains important information for Unified CVP application developers. It also may be of interest to Call Center Managers, Unified CVP System Managers, and Packaged CCE system managers.

Before You Begin

This chapter makes the following assumptions:

- The information in this chapter assumes that you are already familiar with using the Unified CCE Administration and Script Editor tools for call center operations and management.
- When creating Script Editor applications that interact with Unified CVP, only use alphanumeric characters for application, element, and field names; *do not* use special characters such as periods, asterisks or brackets. Following this practice will avoid potential issues with data transfer between different systems.

Scripts to Access Unified CVP from Packaged CCE

Both Packaged CCE and Unified CVP use scripts to invoke their features. In fact, Packaged CCE references Unified CVP scripts from *within* its own scripts. This method of invoking Unified CVP from within Packaged CCE enables Packaged CCE to take advantage of the features of Unified CVP.

Packaged CCE and Unified CVP provide two service creation (scripting) environments. Each environment is used for different purposes:

- **Script Editor.** Use this scripting tool to develop agent routing scripts and to invoke the Unified CVP **micro-applications**: Play Media, Get Speech, Get Digits, Menu, Play Data, and Capture. These applications are the basic building blocks of a voice interaction design.
- **Call Studio.** Use Call Studio to develop sophisticated Unified CVP applications.



Note For more information, refer to [Scripting for Unified CVP with Call Studio](#), on page 278.

Invoke Unified CVP Micro-applications Through Routing Scripts

The Script Editor is used to develop agent routing scripts, and to invoke Unified CVP micro-applications - basic building blocks of a voice interaction design. The Unified CVP micro-applications are: Play Media, Get Speech, Get Digits, Menu, Play Data, and Capture. These applications are combined and customized in the Packaged CCE routing script to produce a viable voice interaction with the caller.

Instead of developing full scale Unified CVP applications using micro-applications, use Unified CVP scripts developed using Call Studio to create the Unified CVP applications. Micro-application-based scripts are primarily used for initial prompt and collection operations, as well as for directing the playing of .wav files while calls are in queue.

In an environment where routing script works with Call Studio script (the 2-script implementation for Unified CCE-integrated models described here), the routing script remains in control (and receives control back), even while it *delegates* the more complex self-service activity to the Call Studio script. Data can be passed from one script to the other and back through ECC variables.

Unified CVP Call Studio Scripting

Sophisticated Unified CVP applications can be developed using Call Studio which is an Eclipse-based service creation environment whose output is an intermediary file describing the application flow. That file gets loaded onto the VXML Server for execution. To invoke a VXML Server application, the script writer includes a Get Speech (GS) micro-application via the Run External Script node in the Packaged CCE routing script. This micro-application instructs the VoiceXML Gateway to interact with the VXML Server directly to execute the application. The final results are passed back to Packaged CCE.

Some of the Call Studio scripting environment features include:

- A drag-and-drop interface with a palette of Unified CVP functions

- The ability to do database queries
- Extensibility with Java code written to perform any task a Java application can perform



Note Packaged CCE does not support using the *MicroApp* nodes that are available in the Script Editor. All MicroApp implementation must be done using the *Run External Script* node in Script Editor. Refer to [Writing Packaged CCE Applications for Unified CVP, on page 236](#) for detailed information about setting Unified CVP-specific parameters in this node for each Unified CVP micro-application.



Note For more information about creating scripts, refer to [Writing Packaged CCE Applications for Unified CVP, on page 236](#).

Scripting for Unified CVP with Packaged CCE

The sections that follow include:

- A discussion of micro-applications.
- A sample Packaged CCE script.
- A discussion of how Packaged CCE and Unified CVP exchange information.

Micro-applications

Micro-applications are a set of specific Unified CVP functions that can be invoked by Packaged CCE, enabling communication with the caller.

There are six Unified CVP micro-applications:

- **Play Media.** Plays a message to the caller.
- **Play Data .** Retrieves data from a storage area and plays it to the caller in a specific format called a data play back type.
- **Get Digits.** Plays a media file and retrieves digits from the caller.
- **Menu.** Plays a media menu file and retrieves a single telephone keypad entry from the caller.
- **Get Speech.** Executes a Call Studio script on VXML Server.
- **Capture.** The Capture (CAP) micro-application enables you to trigger the storage of current call data at multiple points in the Packaged CCE routing script.

Micro-applications are interpreted by the Unified CVP Service, which resides on the Unified CVP Call Server. The Unified CVP Service sends VoiceXML code to the VoiceXML Gateway Voice Browser.



Note Using ASR/TTS(speech) through micro-applications is not supported. You have to use Call Studio scripts for any caller interaction that requires use of ASR/TTS (speech).

Simple Example Script: Welcome to XYZ Corporation

Suppose you want to create a script that has an example call flow as follows.

This simple script performs the following functions:

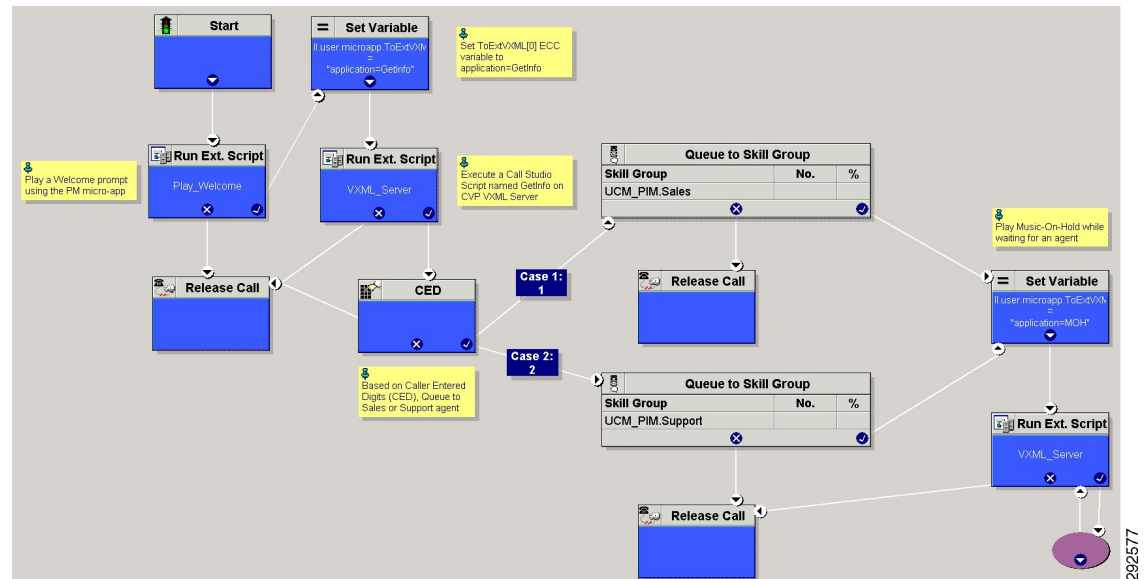
- Executes the GetInfo Call Studio script on the VXML Server to collect some caller input based on the example callflow.
- Based on caller input, queues for a sales or support agent .
- If an agent is not available, executes the MOH Call Studio script which will play music-on-hold to the caller until an agent becomes available.

Procedure

- Step 1** A call arrives at Packaged CCE and executes a Packaged CCE script.
- Step 2** The caller hears a welcome prompt.
- Step 3** The script sends the call to Unified CVP for collecting some information from the caller before queuing the call for an agent. For example, a menu is offered such as "press 1 for sales and 2 for support," as well as entering an account number.
- Step 4** If the caller is an existing customer, the caller-entered account number is used to retrieve additional information about the caller from an external database.
- Step 5** Caller-entered digits and the additional information about the caller are returned back to the Packaged CCE script to be shown a screen pop to the agent, when an agent becomes available.
- Step 6** The call is then queued waiting for an agent in a particular skill group, based on the caller selection of the type of service.
- Step 7** If an agent is available, the caller is connected to that agent. The agent desktop displays the caller information collected via caller input as well as database lookup.
- Step 8** If an agent is not available, the call is sent back to Unified CVP for playing music-on-hold while the caller waits for an agent to become available.
- Step 9** The information collected from the caller is preserved as call context on the call until the agent becomes available.

You can create a script such as the one shown in the following figure.

Figure 66: Packaged CCE Script with Call Flow



This simple script performs the following functions:

- Executes the GetInfo Call Studio script on the VXML Server to collect some caller input based on the example callflow.
- Based on caller input, queues for a sales or support agent.
- If an agent is not available, executes the MOH Call Studio script which will play music-on-hold to the caller until an agent becomes available.

Note In a “real life” application, any Packaged CCE script you create would include error checking to ensure that micro-applications instructions are properly executed.

Packaged CCE Unified CVP Micro-app Connection

Before the Unified CVP can be accessible through the Script Editor’s Run External Script node, you must first set up Packaged CCE with special Unified CVP parameters using the Unified CCE Administration tool.

Begin by using the Unified CCE Administration Network VRU Script tool to define Unified CVP parameters.

Figure 67: Network VRU Script Example

The screenshot shows the 'Unified CCE Administration' web interface. The top navigation bar includes 'Home', 'Manage', and 'Settings'. The user is logged in as 'boston@BOSTON.COM - Administrator'. The main content area is titled 'Manage Network VRU Scripts' and 'New Network VRU Script'. The form contains the following fields:

- Name:** Play_Welcome
- VRU Script Name:** PM, Welcome
- Configuration Param:** N
- Timeout:** 180 seconds
- Interruptible:** ☒
- Description:** Play the prompt "Welcome"

At the bottom of the form are 'Save' and 'Cancel' buttons. A small Cisco logo is visible in the top right corner of the interface.

In the figure above:

- **PM,Welcome.** (VRU Script Name field.) This means: "Use the instructions in the Play Media micro-application to play the Welcome.wav media file."
- **N.** (Configuration Param field.) This means: "Do not allow barge-in." (Barge-in is when the caller can interrupt message play by entering a digit, causing the script to move to the next prompt.)
- You *must* check the **Interruptible** checkbox as shown in the figure above. This specification allows the script to be interrupted by the Unified CVP script functions.



Note As shown in the two columns of the following table, certain entries for the VRU Script Name and Configuration Param fields are case-sensitive.

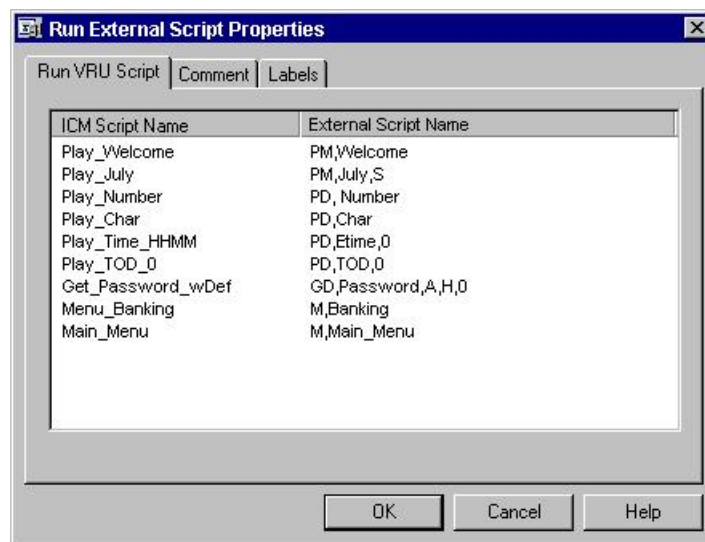
Attribute	Allowed Values	Applies to	Case-Sensitive?
Attribute: VRU Script Name (for example, PM, GD).	PM, GD	All micro-applications	N
Attribute: Media Library Type (A, S, V)	A, S, V	All micro-applications	N
Barge-in Allowed	Y/N	All micro-applications	N
Data playback type	Number, Char	PlayData (PD)	N
Time Format	HHMM, HHMMSS, HHMMAP	PlayData (PD)	N

Attribute	Allowed Values	Applies to	Case-Sensitive?
Timeout Message Override	Y/N	Get Digits (GD), Get Speech (GS), Menu (M)	N
Invalid Entry Message Override	Y/N	Get Digits (GD), Get Speech (GS), Menu (M)	N
DTMF Termination Key	N	All micro-applications	N
Media File Name		All micro-applications	Y

Once the network VRU script configuration settings have been saved, the information is available to the Script Editor. When you place a Run External Script node in the Script Editor workspace and open the Properties dialog box, it displays all the script names defined in the system.

The Run External Script node below shows that the ICM Script Name Play_Welcome was selected.

Figure 68: Run External Script Node



Information Exchange Between Packaged CCE and Unified CVP

When Packaged CCE processes a Run External Script node, parameters are sent to Unified CVP.

These parameters contain instructions about how to interact with a caller, such as:

- What micro-application to use.
- The location of the media files to be played to the caller.
- Timeout settings to be used during caller digit entry.

Some Unified CVP parameters are passed to Unified CVP through Expanded Call Context (ECC) variables and/or Call.Peripheral variables. Other parameters are sent in the normal VRU messaging interface (Packaged CCE /Unified CVP Service Control Interface).

Packaged CCE Data Handling

In defining scripts, you might specify strings, numbers, or formulas to be sent to Unified CVP. When passing numbers to Unified CVP, always enclose them in quotes so that they will be processed as a string.

This is especially important if:

- Leading 0's are significant to the data type (times, character), enter the number as a quoted string (example: "031524").
- Trailing 0's after a decimal point are significant to the data type (number, character, currency), enter the number as a quoted string (examples: "42.00" or "42.10").
- The number is very large (example: a number normally expressed through exponential notation).

Unified CVP Script Error Checking

Unified CVP uses the **user.microapp.error_code** ECC variable to return information regarding problems encountered while running a script.

Unified CVP software tests for the following conditions when processing Packaged CCE scripts:

ASR error

Failure of an Advanced Speech Recognition component.

General error

General error occurred.

Invalid configuration param

Data passed from Packaged CCE to the Unified CVP Service is not consistent with what the micro-application requires for processing.

Invalid variable data

The variable data passed was not valid for the script type being processed.

Invalid VRU script name format

VRU Script Name data passed from Packaged CCE to the Unified CVP Service does not contain the expected components (micro-application name, media file name, media file type, uniqueness value).

Locale

Locale was not supported. (Only applies to Play Data micro-applications that use .wav files. Does not apply to Play Data micro-applications that use TTS, or to Play Media, Get Digits, Menu, Get Speech, or Capture micro-applications.)

Misconfigured ECC variable

An ECC variable was set to a value the Unified CVP Service did not recognize. ECC variable definitions must be the same in Packaged CCE and Unified CVP.

Network error

Failure of an IP network connection.

Reached maximum invalid tries

Caller was unsuccessful in entering digits during each of the tries allowed by the micro-application.
(Only applies to Get Digits, Menu, and Get Speech micro-applications.)

Reached maximum number entry tries

Caller did not enter digits in response to the prompt for each of the tries allowed by the micro-application.
(Only applies to Get Digits and Get Speech micro-applications.)

Semantic-runtime

Semantic error occurred while running a micro-application.

System error

Unexpected failure of a Unified CVP component.

Timed out

Caller did not enter digits in response to the prompt in the time allowed by the micro-application.

TTS error

Failure of a Text-to-Speech component.

Unavailable media file

Media file name passed from Packaged CCE to the Unified CVP Service did not exist on the Media Server.

Unknown micro-application

Micro-application name passed from Packaged CCE to the Unified CVP Service did not exist on the Unified CVP Service.

Unsupported locale

The VoiceXML Interpreter (that is, gateway) did not recognize the locale passed from the Unified CVP Service.

Unsupported VoiceXML element

The VoiceXML Interpreter (that is, gateway) did not recognize a VoiceXML element passed from the Unified CVP Service, VXML Server, or media server.

Unsupported VoiceXML format

The VoiceXML Interpreter (that is, gateway) did not recognize a VoiceXML format passed from the Unified CVP Service, VXML Server, or media server.

Each Unified CVP micro-application has individualized settings for **user.microapp.error_code**, as shown in the following table.

Table 9: Possible user.microapp.error_code ECC Variable Settings for Non-Video

Error Code	Play Media	Play Data	Get Digits	Menu	Get Speech	Capture
0	No error	No error	No error	No error	No error	No error
1	Caller Hangup	Caller Hangup	Caller Hangup	Caller Hangup	Caller Hangup	N/A
2	Network Error	Network Error	Network Error	Network Error	Network Error	N/A

Error Code	Play Media	Play Data	Get Digits	Menu	Get Speech	Capture
3	System Error	System Error	System Error	System Error	System Error	System Error
5	Unknown micro-application	Unknown micro-application	Unknown micro-application	Unknown micro-application	Unknown micro-application	Unknown micro-application
6	Invalid VRU Script Name format	Invalid VRU Script Name format	Invalid VRU Script Name format	Invalid VRU Script Name format	Invalid VRU Script Name format	N/A
7	Invalid Configuration Param	Invalid Configuration Param	Invalid Configuration Param	Invalid Configuration Param	Invalid Configuration Param	N/A
8	Misconfigured ECC variable	Misconfigured ECC variable	Misconfigured ECC variable	Misconfigured ECC variable	Misconfigured ECC variable	N/A
9	One of the following: <ul style="list-style-type: none"> Media file does not exist. Invalid URL for Media file. 	One of the following: <ul style="list-style-type: none"> Media file does not exist Invalid URL for Media L file 	One of the following: <ul style="list-style-type: none"> Media file does not exist Invalid URL for Media L file 	One of the following: <ul style="list-style-type: none"> Media file does not exist Invalid URL for Media L file 	One of the following: <ul style="list-style-type: none"> Media file does not exist Invalid URL for Media file 	N/A
10	Semantic-Runtime Error	Semantic-Runtime Error	Semantic-Runtime Error	Semantic-Runtime Error	Semantic-Runtime Error	N/A
11	Unsupported VoiceXML format	Unsupported VoiceXML format	Unsupported VoiceXML format	Unsupported VoiceXML format	Unsupported VoiceXML format	N/A
12	Unsupported VoiceXML element	Unsupported VoiceXML element	Unsupported VoiceXML element	Unsupported VoiceXML element	Unsupported VoiceXML element	N/A
13	N/A	Variable data is invalid	N/A	N/A	N/A	N/A
14	N/A	Location of variable data is empty	N/A	N/A	N/A	N/A
15	N/A	Time format is invalid	N/A	N/A	N/A	N/A
16	N/A	N/A	Reached Maximum Invalid Tries	Reached Maximum Invalid Tries	Reached Maximum Invalid Tries	N/A

Error Code	Play Media	Play Data	Get Digits	Menu	Get Speech	Capture
17	N/A	N/A	Reached Maximum No Entry Tries	Reached Maximum No Entry Tries	Reached Maximum No Entry Tries	N/A
20	N/A	Data value out of range	N/A	N/A	N/A	N/A
23	No answer	No answer	No answer	No answer	No answer	N/A
24	Busy	Busy	Busy	Busy	Busy	N/A
25	General transfer error	General transfer error	General transfer error	General transfer error	General transfer error	N/A
26	Invalid extension	Invalid extension	Invalid extension	Invalid extension	Invalid extension	N/A
27	Called party hung up	Called party hung up	Called party hung up	Called party hung up	Called party hung up	N/A
28	Error after transfer established	Error after transfer established	Error after transfer established	Error after transfer established	Error after transfer established	N/A
30	Unsupported locale	Unsupported locale	Unsupported locale	Unsupported locale	Unsupported locale	N/A
31	ASR error	ASR error	ASR error	ASR error	ASR error	N/A
32	TTS error	TTS error	TTS error	TTS error	TTS error	N/A
33	General ASR/TTS error	General ASR/TTS error	General ASR/TTS error	General ASR/TTS error	General ASR/TTS error	N/A
34	Unknown error	Unknown error	Unknown error	Unknown error	Unknown error	N/A
40	VXML Server system unavailable	N/A	N/A	N/A	VXML Server system unavailable	N/A
41	VXML Server application error	N/A	N/A	N/A	VXML Server application error	N/A
42	VXML Server application used hangup element instead of subdialog return element	N/A	N/A	N/A	VXML Server application used hangup element instead of subdialog return element	N/A
43	VXML Server application is suspended	N/A	N/A	N/A	VXML Server application is suspended	N/A

Error Code	Play Media	Play Data	Get Digits	Menu	Get Speech	Capture
44	VXML Server session error (for example, application has not yet been loaded)	N/A	N/A	N/A	VXML Server session error (for example, application has not yet been loaded)	N/A
45	VXML Server encounters a bad fetch error (for example, media or grammar file not found)	N/A	N/A	N/A	VXML Server encounters a bad fetch error (for example, media or grammar file not found)	N/A
46	Audio streaming error	N/A	N/A	N/A	N/A	N/A



Note **user.microapp.error_code** is always zero, indicating success, if control proceeds out the Checkmark (success) branch of the Run External Script node. Usually, if control proceeds out the X (failure) branch, Unified CVP sets this variable to one of the codes listed here. (Set up your routing script to always test the error code after an X branch is taken.)



Note However, if a configuration error, or a network or component failure of some sort, prevents the micro-application from being executed at all, then Unified CVP does not get a chance to set this variable at all. Such cases can be identified by using a Set node to pre-set **user.microapp.error_code** to some known invalid value such as -1, and then to test for that value using an If node, following the X branch of the Run External Script node.

Writing Packaged CCE Applications for Unified CVP

Once Packaged CCE-to-Unified CVP initial setup is complete, you can create Packaged CCE applications to access Unified CVP micro-applications.

You do this using two Packaged CCE software tools:

- Unified CCE Administration
- Packaged CCE Script Editor

Use Unified CCE Administration to configure Unified CVP Network VRU scripts. The following section describes using the Script Editor to access Unified CVP micro-applications.

Related Topics

[Add and Maintain Network VRU Scripts](#), on page 72

Run External Script Node That Accesses a Unified CVP Micro-application

Procedure

-
- Step 1** Within Script Editor, place the Run External Script object in the workspace, right-click, and open the Properties dialog box.
- The Run External Script Properties dialog box lists all Network VRU scripts currently configured
- Note** The ICM Script Name column reflects the values defined through the Name field in ICM Configuration Manager's Scripts tool.
- Step 2** Select the **ICM Script/VRU Script Name** you want to execute.
- Step 3** Modify the Comments tab as needed.
- Step 4** Modify the Labels tab as needed.
- Step 5** When finished, click **OK** to submit the changes and close the dialog box.
-

Unified CVP Micro-applications

The sections that follow describe the parameters that can be defined through Unified CCE Administration for each of the six Unified CVP micro-applications.

Keep the following in mind as you configure each Network VRU Script to be used with Unified CVP:

- Each micro-application parameter in fields of the Network VRU Script's Attributes tab must be separated by a comma.
- If a parameter value is not specified, the micro-application uses its default.

Dynamic Audio File Support for Micro-applications

Unified CVP lets you use a single micro-application and specify the prompt using call variables and the Packaged CCE formula editor.

To provide dynamic audio file capability, set the second VRU script parameter to a numeric value, 1-10, prefixed by a dash. You then set the Media Library to either "A", "S", or "V". Unified CVP looks in the corresponding Call.PeripheralVariable for the name of the audio file to play.

When you set the Media Library to "A" or "S", Unified CVP plays the audio file specified by the Call Variable after the "-(number)". For example, if the second VRU Script Parameter is set to "-4", it plays the audio file specified in Call.PeripheralVariable4. This functionality is added for Play Media, Menu, and Get Digits micro-applications.



-
- Note** When A is specified as the Media Library, it means Unified CVP looks for the media file under the C:\inetpub\wwwroot\en-us\app folder by default and when S is specified, it looks under the C:\inetpub\wwwroot\en-us\sys folder by default.
-

Second VRU Script Parameter	Corresponding Call Variable
-1 to -10	Call.PeripheralVariable (1 to 10)

For an example of how to use a dynamic audio file, see the following table.

VRU Script Parameter Example	Definition
PM, -3,A	<p>PM - Uses the Play Media micro-application.</p> <p>-3 - Plays the file specified in Call.PeripheralVariable3.</p> <p>A - Acquires the file from the application media files folder (for example, C:\inetpub\wwwroot\en-us\app).</p>

Notes

- If you do not specify a file extension for the file name in the Call.PeripheralVariable, the default media file extension is applied (for example, .wav for audio files).
- If you set the second VRU script parameter to a value prefixed with a dash and don't specify a file name in the corresponding Call.PeripheralVariable, the Unified CVP Service creates a VoiceXML that does not contain a media prompt.
- You can only specify the name of a single file in the Peripheral Variable. You cannot set this value to a name/value pair.

For more information, refer to the sections on individual micro-applications in this chapter.

Default Media Server for Micro-applications

You can specify a media server for a micro-application was to use the ECC variable `user.microapp.media_server`. You also can use the Operations Console to designate a default media server for the entire deployment.

The global default media server can be specified in the Operations Console by selecting **Device Management > Media Server**. The default media server is used by the micro-applications if the ECC variable `user.microapp.media_server` is missing or empty in the Packaged CCE script.

The following list specifies the order in which the micro-application tries to resolve which media server to use:

1. Media server is specified by the ECC variable: `user.microapp.media_server`
2. Global default media server is specified

The first non-empty media server value encountered in the above order is used by the micro-application. This applies to all micro-applications including

- Play Media (PM)
- Play Data (PD)
- Get Digits (PD)
- Menu (M)

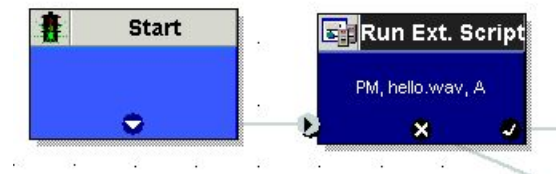
The following screen shot shows the Packaged CCE script where Play Media micro-application plays a media file using the ECC variable `user.microapp.media_server`.

Figure 69: Packaged CCE Script with Play Media Using ECC Variable



The following screen shot shows the Packaged CCE script where Play Media micro-application plays a media file using a default media server configured in the Operations Console.

Figure 70: Packaged CCE Script with Play Media Using Default Media Server



Capture Micro-application

The Capture (CAP) micro-application allows you to trigger the storage of current call data at multiple points in the Packaged CCE routing script. The CAP micro-application must be configured as a VRU script, and it is executed using a RunExternalScript node, just as with any other Unified CVP micro-application. The VRU Script Name value is "CAP" or "CAP,xxx," where "xxx" is any arbitrary string to be used if necessary for uniqueness purposes. There is no VRU Script Config string.

Executing a Capture micro-application causes the Packaged CCE PG to produce an intermediate termination record. Specifically, it writes a record in the Termination_Call_Detail (TCD) table which includes all current call variables (not the VRUProgress variable), router call keys, date and time, and caller entered digits. Together with the TCD record, the Capture micro-application writes a set of records to the Termination_Call_Variable (TCV) table which includes the current values of all ECC variables.

Packaged CCE provides no standard reporting templates for TCD and TCV records. These tables are large and minimally indexed, and are optimized for writing rather than querying, to minimally impact call handling throughput. If you plan to report on this data, create off-hours extract processes which copy rows in their raw format into a database which is external to Packaged CCE. From there you can organize the tables in the way that best supports your querying requirements.

Information you need about these records includes:

- TCD records for a given call may be identified because they contain the same RouterCallKeyDay and RouterCallKey. Successive TCD records are ordered by incrementing RouterCallKeySequenceNumber.
- Intermediate TCD records may be identified because they contain a CallDisposition of 53, "PartialCall". Only the last TCD record for the call contains the actual disposition.

- TCV records corresponding to a particular TCD record may be obtained by joining on TCV.TCDRecoveryKey. This key matches the RecoveryKey value in the TCD record.
- The TCD record's CallTypeId is also populated for VRU peripherals. This means you can determine the call's current CallType at each Capture micro-application invocation, and at the end of the call.
- In Unified CVP Comprehensive call flow models, these records are associated with the VRU leg peripheral. If you are doing VRU application reporting, you can filter for TCD records which contain the PeripheralID of the Unified CVP VRU leg.

The Capture micro-application places a heavy demand on Packaged CCE resources. Each time you use it, Packaged CCE writes one TCD record and multiple TCV records. Though it can conveniently capture the information you need, it can also capture extra information which you do not require. If you overuse this micro-application, it can place a heavy load on Packaged CCE in terms of processing time and disk space, which despite the minimal indexing, may impact Packaged CCE's ability to handle the expected call load. Carefully choose where you need to capture information in your scripts. Spread data items into as many call variables as possible to maximize the usefulness of each invocation.

Play Media Micro-application

The Play Media (PM) micro-application can be configured to play a message that is contained in a media file or streaming audio file.

Configure Network VRU Script for Play Media

Use Packaged CCE Administration's Network VRU Scripts tool to specify parameters.

Procedure

Step 1 Configure VRU Script field parameters:

- **Micro-application type.** For Play Media, valid options are: **PM** or **pm**.
- **Media File Name.** Name of the media file to be played (that is, the prompt file) or the name of the external VoiceXML file.

The valid options are:

- A file name (for instance, a .wav file).
- **null** - (default) If this field is empty, no prompt is played.
- **-(number 1-10)** - Unified CVP plays the file in the corresponding Call.PeripheralVariable file. For example, a value of 2 instructs Unified CVP to look at Call.PeripheralVariable2.
- **-a** - Unified CVP automatically generates the media file name for agent greeting when this option is specified. The file name is based on GED-125 parameters received from Packaged CCE .
- **Media Library Type.** Flag indicating the location of the media files to be played.

The valid options are:

- **A** - (default) Application
- **S** - System

- **Uniqueness value.** Optional. A string identifying a VRU Script Name as unique.

Step 2 Configure the Configuration Param field parameters:

- **Barge-in Allowed.** Specifies whether barge-in (digit entry to interrupt media playback) is allowed.

The valid options are:

- **Y** - (default) barge-in allowed
- **N** - barge-in not allowed

Note Voice barge-in is not supported by Play Media and Play Data micro-applications. However, Dual Tone Multifrequency (DTMF) barge-in is supported for these micro-applications.

For more information about barge-in, see [How Unified CVP Handles Barge-In, on page 241](#).

- **RTSP Timeout.** Specifies the Real-time Streaming Protocol (RTSP) timeout - in seconds - when RTSP is used.

The valid range is 0 - 43200 seconds (default is 10 seconds). If the value is set to 0 or a timeout value is not provided, the stream does not end.

See [Configure Play Media Micro-application to Use Streaming Audio, on page 242](#) for more details.

- **Type-ahead Buffer Flush.** The Cisco VoiceXML implementation includes a type-ahead buffer that holds DTMF digits collected from the caller. When the VoiceXML form interpretation algorithm collects user DTMF input, it uses the digits from this buffer before waiting for further input. This parameter controls whether the type-ahead buffer is flushed after the prompt plays out. A false value (default) means that the type-ahead buffer is not flushed after the prompt plays out. If the prompt allows barge-in, the digit that barges in is not flushed.

The valid options are

- **Y** - flush the type-ahead buffer
- **N** - (default) do not flush the type-ahead buffer

Note This parameter is normally used when two or more PM and/or PD microapps are used in a loop in the Packaged CCE script (such as while in queue for an agent). If the PM and/or PD microapps are enabled for barge-in, one would set this parameter to **Y** to prevent an uncontrolled looping in the Packaged CCE script when the user barges in.

How Unified CVP Handles Barge-In

Unified CVP deals with barge-in as follows:

- If barge-in is not allowed, the gateway continues prompt play when a caller starts entering digits.
- If barge-in is allowed, the gateway discontinues prompt play when the caller starts entering digits. See [Get Speech and External VoiceXML, on page 271](#)

Configure Play Media Micro-application to Use Streaming Audio

Use the Script Editor to configure Play Media (PM) micro-application to play .wav files from a streaming audio server.

Cisco does not sell, OEM, or support any Media Servers. The IOS gateway only supports μ -law wav files in 8-bit format. Media Servers such as RealNetwork's Helix™ Server will serve RTSP broadcast audio streams in the μ -Law format.



Note The IOS gateway only supports μ -law wav files in 8-bit format.
You must enclose the stream URL and stream name values in quotation marks.

Procedure

Step 1 Add a Set Node in the script to configure the media_server ECC variable.

- On the Set Variable tab of the Set Properties dialog box, select **Call** from the Object Type drop down and then set the Variable to user.microapp.media.server.

- In the Value field, specify the URL up to, but not including, the stream name.

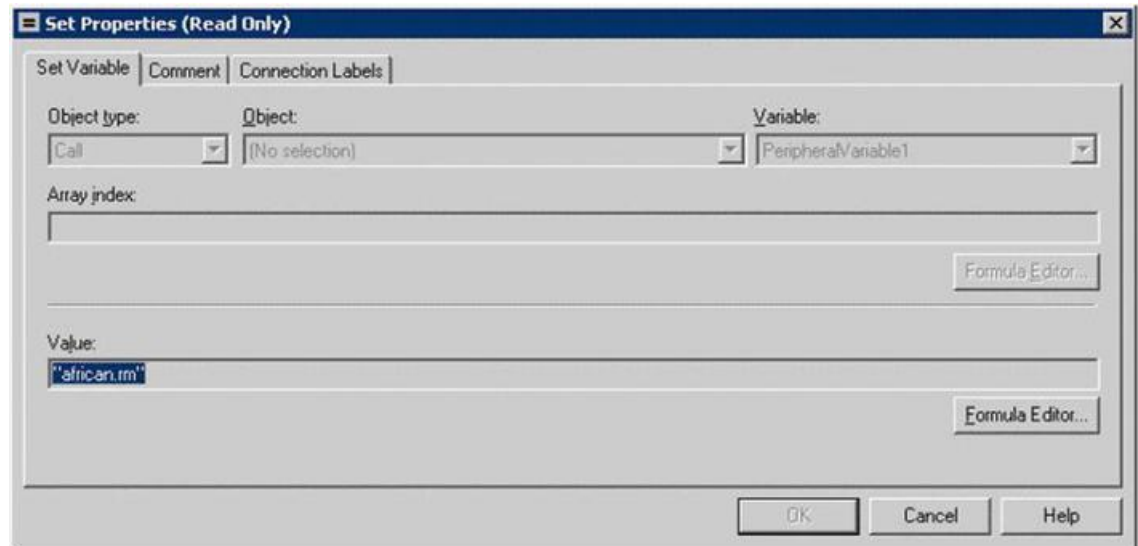
Note The URL must begin with an *rtsp://* prefix (Real-time Streaming Protocol) to stream audio over the network. A trailing forward slash is not permitted in the URL.

- Click **OK**.

Step 2 Add another Set Node in the script to configure the stream name.

- On the Set Variable tab of the Set Properties dialog box, select Call from the Object Type drop down and set the Variable to **PeripheralVariable<1>**.

The range for standard Peripheral Variables is PeripheralVariable1 through PeripheralVariables10.

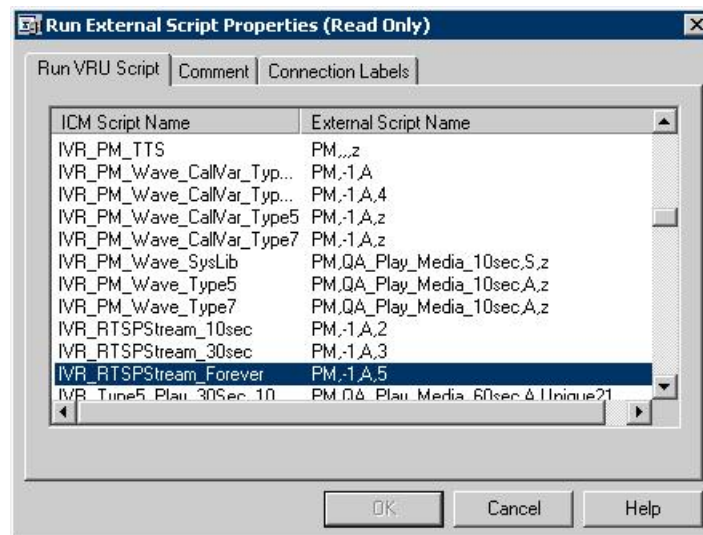


- In the Value field, specify the stream name and click **OK**.

Note Stream names are case-sensitive.

Step 3 Add a Run External Script node to the workspace and double-click Run External Script.

The Run External Script Properties dialog box lists all of the Network VRU scripts that are currently configured.



Note In the example above, the Unified CVP_RTSPStream_Forever script's external script name contains four parameters: PM, -1, A, 5. The second parameter, **-1**, instructs Unified CVP to play the stream name declared in **PeripheralVariable1** (shown in Step 2). Configure streaming audio following the steps outlined so that you may easily change the stream name within the Script Editor, if necessary.

You can also use the Run External Script node in the CCE Script Editor to configure CCE to failover to a new streaming server. For example, if you want to point to an alternate streaming server (IP address), use the X-path out of the Run External Script node to redefine the media_server ECC variable. In a failover situation, the script executes and the stream plays from the targeted streaming server and proceeds normally.

Step 4 From the Run VRU Script tab, select the Script Name desired and click **OK**.

Step 5 Optionally, you can use the Packaged CCE Administration's Network VRU Scripts tool to configure the timeout value for the stream.

Configure the Configuration Param field parameter:

- In the RTSP Timeout field, enter a timeout value (in seconds).
 - The valid range is 0 - 43200 seconds.
 - If the value is set to 0 or a timeout value is not provided the stream does not end.

Step 6 Access the IOS device in global configuration mode and use the **rtsp client timeout connect** command to set the number of seconds the router waits before it reports an error to the Real-time Streaming Protocol (RTSP) server.

The range is 1 to 20. The standard value is 10 seconds.

If the SIP Call with Unified CVP Service is Terminated with **Reason Code: Q.850;Cause=38** then be sure that the network interface configuration is as follows:

```
ip route-cache same-interface
ip route-cache cef
ip route-cache
ip mroute-cache
no cdp enable
```

If specified, remove the following line from the network interface:

```
keepalive 1800
```

This issue arises if the Unified CVP loses network connectivity, then the VXML Server Gateway is not able to get information from the CVP Service, and as a result a code 38 rejection is generated in the Gateway logs.

Related Topics

[Configure Custom Streaming Ringtones](#), on page 244

Configure Custom Streaming Ringtones

You can configure custom ringtone patterns that enable you to play an audio stream to a caller in place of the usual ringtone. Customized streaming ringtones are based on the dialed number destination and, when configured, play an in-progress broadcast stream to the caller while the call is transferred an agent.

Play Media Examples: Play Welcome Message

The following table shows some Network VRU Script configuration examples for Play Media.

Table 10: Network VRU Script Configuration Examples

Example	Field Name	Field Contents	Tells Unified CVP...
1	VRU Script Name	PM,Welcome	To use the Play Media (PM) micro-application to play the "Welcome.wav" Media file and accept the defaults for remaining settings. Note If no file extension is specified, .wav is assumed.
	Configuration Param	N	That Barge-in <i>is not</i> allowed.
2	VRU Script Name	pm,July,S	To use the Play Media (PM) micro-application to play the "July.wav" Media file, using the System (S) Media library.
	Configuration Param	Null (Accept default.)	That Barge-in <i>is</i> allowed.
3	VRU Script Name	PM,WebSite,,0	To use the Play Media (PM) micro-application to play the "Website.wav" Media file, using the default Media Type (Application library), and setting 0 as the Uniqueness value. Note A , (comma) indicates a skipped parameter. When a parameter is skipped, Unified CVP applies its default.
	Configuration Param	Null (Accept default.)	That Barge-in <i>is</i> allowed.
4	VRU Script Name	PM,WebSite,,1	To use the Play Media (PM) micro-application to play the "Website.wav" Media file, using the default Media Type (Application library), and setting 1 as the Uniqueness value.
	Configuration Param	N	That Barge-in <i>is not</i> allowed.
5	VRU Script Name	PM, -3, A	To use the Play Media (PM) micro-application, using the file listed in Call.PeripheralVariable3, acquiring the file from the Application (A) media library.
	Configuration Param	N	That Barge-in <i>is not</i> allowed.

Example	Field Name	Field Contents	Tells Unified CVP...
6	VRU Script Name	PM, stream.rm	To use the Play Media (PM) micro-application to play "stream.rm" from a streaming audio server and accept the defaults for remaining settings.
	Configuration Param	N, 30	That Barge-in <i>is not</i> allowed, and the stream is configured to stop playing in 30 seconds.



Note Play Media sets the ECC variable `user.microapp.error_code` to zero, indicating success, if control proceeds out the Checkmark (success) branch of the Run External Script node. If control proceeds out the X (failure) branch, Play Media typically sets this variable to one of the codes listed in [Unified CVP Script Error Checking, on page 232](#).

Play Data Micro-application

The Play Data micro-application retrieves data from a storage area and plays it to the caller in a specific format, called a data play back type.

Some possible sources of the data to be played back:

- Information retrieved from a database look-up
- Information entered by the caller

Play Data and Data Storage

Before this micro-application can be called, you must specify the location of the play back data. You do this with a Script Editor Set node that points to one of the following storage areas:

- One of the standard Packaged CCE Peripheral Variables (PeripheralVariable1 through PeripheralVariables10).
- The `user.microapp.play_data` elements.

Configure Network VRU Script Settings for Play Data Micro-application

Use the Unified CCE Administration Network VRU Script tool's Attributes tab to specify parameters.



Note Voice barge-in is not supported by Play Media and Play Data micro-applications. However, DTMF barge-in is supported for these micro-applications.

If you are using integers that are larger than nine digits, enclose the value in quotation marks, so it will be treated as a string.

Before you begin

Procedure

Step 1 Configure VRU Script field parameters:

- **Micro-application type.** For Play Data, valid options are: **PD** or **pd**.
- **Data Playback Type.** The type of the data to be returned (“played”) to the caller. The valid options are:
 - **Number**
 - **Char** (character)
 - **Date**
 - **Etime** (elapsed time)
 - **TOD** (Time of Day)
 - **24TOD** (24-hour Time of Day)
 - **DOW** (Day of Week)
 - **Currency**

Note 24TOD and DOW data play back types are not supported when using TTS. Currency other than US dollar (USD) is not supported.

For more information about each of these playback types, including input format and output examples, see [Play Back Types for Voice Data, on page 248](#).

- **Uniqueness value.** Optional. A string identifying a VRU Script Name as unique.

Step 2 Configure the Configuration Param field parameters:

- **Location of the data to be played .** The valid options are:
 - *null* (default) - If you leave this option empty, uses the ECC variable **user.microapp.play_data**.
 - A **number** representing a Call Peripheral Variable number (for example, a 1 to represent Call.PeripheralVariable1).

Note For more information on data location, see [Play Data and Data Storage, on page 246](#).

- **Barge-in Allowed.** Specifies whether barge-in (digit entry to interrupt media playback) is allowed.

The valid options are:

- **Y** - (default) barge-in allowed
- **N** - barge-in not allowed

Note Voice barge-in is not supported by Play Media and Play Data micro-applications. However, DTMF barge-in is supported for these micro-applications.

For more information about barge-in, see [Play Data and Data Storage, on page 246](#).

- **Time Format**

Valid only for the time Data Playback types (Etime, TOD, 24TOD).

The available formats are:

- *null* - leave this option empty for non-time formats
- **HHMM** - default for time formats
- **HHMMSS** - includes seconds
- **HHMMAP** - includes am or pm; valid only for TOD
- **Type-ahead Buffer Flush** . The Cisco VoiceXML implementation includes a type-ahead buffer that holds DTMF digits collected from the caller. When the VoiceXML form interpretation algorithm collects user DTMF input, it uses the digits from this buffer before waiting for further input. This parameter controls whether the type-ahead buffer is flushed after the prompt plays out. A false value (default) means that the type-ahead buffer is not flushed after the prompt plays out. If the prompt allows barge-in, the digit that barges in is not flushed.

The valid options are:

- **Y** - flush the type-ahead buffer
- **N** - (default) do not flush the type-ahead buffer

Note This parameter is only applicable when using the Cisco IOS gateway with DTMF barge-in. This parameter is normally used when two or more PM and/or PD microapps are used in a loop in the CCE script (such as while in queue for an agent). If the PM and/or PD microapps are enabled for barge-in, one would set this parameter to **Y** to prevent an uncontrolled looping in the CCE script when the user barges in.

Play Back Types for Voice Data

Configuring how voice data is presented to a caller is an important part of setting up your Unified CVP. The "Data Play Back Types" table below describes each type, along with sample valid values and formats for the supported locales when **not** using TTS:

- **en-us**. English (United States)
- **en-gb**. English (Great Britain)
- **es-mx**. Spanish (Mexico)
- **es-es**. Spanish (Spain)

Locale is selected by setting the **user.microapp.locale** variable.

Any string of characters typically used in the language may need to be spoken back character by character (this includes special keyboard symbols and numbers). If a particular symbol is not used by a particular language, a string containing that symbol may be spelled out with a Play Data with Char data type.

For example, assume that an Unified CVP application in the US (a locale of **en-us**) queries a database for an account owner's name and spells the name back to the caller. If the name pulled from the database was

“Hänschen Walther,” the media files that would need to be pulled from the Media Server would have been derived from a URL including the **en-us** locale. The symbol **ä** has a decimal value of 228, which is different than the symbol **a** which has a value of 97. It is the translator’s task to record the proper word(s) for each symbol to be supported. For detailed information on character translation, refer to [System Media Files, on page 251](#).

Table 11: Data Play Back Types

Data Play Back Type	Description	Input Format	Output Examples (When Not Using TTS)
Number	Play the stored data as a number.	<p>#####.#####</p> <p>The leading minus (-) is optional and is played as “minus.”</p> <p>The whole number portion of the string can contain a maximum of 15 digits (for a maximum value of 999 trillion, 999 billion and so on).</p> <p>The decimal point is represented as a period (.) and played as “point.” It is optional if there is no floating portion.</p> <p>The floating point portion of the number is optional and can contain a maximum of six digits.</p> <p>Trailing zeros are played.</p>	<p>en-us and en-gb typical spoken form:</p> <ul style="list-style-type: none"> • -123 = “minus one hundred twenty three” • 35.67 = “thirty five point six seven” • 1234.0 = “one thousand, two hundred, thirty four point zero” <p>es-mx and es-es typical spoken form:</p> <ul style="list-style-type: none"> • -120 = “menos ciento veinte” • 10.60 = “diez coma seis cero” • 1,100 = “mil cien”
Char	Play the stored data as individual characters.	<p>All printable American National Standards Institute (ANSI) characters are supported.</p> <p>Note Code Page 1252 is ANSI standard. It contains ASCII (characters 0-127) and extended characters from 128 to 255</p>	<p>en-us and en-gb typical spoken form:</p> <ul style="list-style-type: none"> • abc123= “A, B, C, one, two, three” <p>es-mx and es-es typical spoken form:</p> <ul style="list-style-type: none"> • abc123 = “A, B, C, uno, dos, tres”

Data Play Back Type	Description	Input Format	Output Examples (When Not Using TTS)
Date	Play the stored data as a date.	<p>YYYYMMDD, regardless of locale.</p> <p>YYYY options: the range of 1800 through 9999.</p> <p>MM options: the range of 01 through 12.</p> <p>DD options: the range of 01 through 31.</p> <p>Note The software does not validate the date (for example, 20000231 is valid and played accordingly). However, a failure occurs if any bounds are broken (for example, 34 for month).</p>	<p>en-us typical spoken form:</p> <ul style="list-style-type: none"> • MMDDYYYY format: 20000114 = “January fourteenth, two thousand” <p>en-gb typical spoken form:</p> <ul style="list-style-type: none"> • DDMMYYYY format: 20000114 = “Fourteenth of January, two thousand” <p>es-mx and es-es typical spoken form:</p> <ul style="list-style-type: none"> • DDMMYYYY format: 20001012 = “doce octubre dos mil” <p>Note All spoken forms use the proper grammar for the locale.</p>
Etime (elapsed time)	Play the stored data as an amount of elapsed time.	<p>HHMM or HHMMSS</p> <p>Maximum 99 hours, 59 minutes, 59 seconds</p> <p>Leading zeros are ignored.</p>	<p>en-us and en-gb typical spoken form:</p> <ul style="list-style-type: none"> • HHMM format: 0830 = “eight hours thirty minutes” • HHMMSS format: 083020 = “eight hours, thirty minutes, twenty seconds” <p>es-mx and es-es typical spoken form:</p> <ul style="list-style-type: none"> • HHMM format: 0205 = “dos horas cinco minutos” • HHMMSSS format: 020101 = “dos horas un minuto un segundo”

Data Play Back Type	Description	Input Format	Output Examples (When Not Using TTS)
TOD (Time of Day)	Play the stored data as a time of day.	HHMM or HHMMSS 24 hour time HH options: 00 - 24 MM options: 00 - 59 SS options: 00 - 59	en-us and en-gb typical spoken form: <ul style="list-style-type: none">• HHMM format: 0800 = “eight o’clock” 0830 = “eight thirty” 1430 = “two thirty”• HHMMSS format: 083020 = “eight thirty and twenty seconds”• HHMMAP format: 1430 = “two thirty p.m.” es-mx and es-es typical spoken form: <ul style="list-style-type: none">• HHMM format: 0100 = “una a.m.”• HHMMAP format: 1203 = “doce y tres p.m.”• HHMMSS format: 242124 = “doce veintiuno a.m.”
DOW (Day of Week)	Play the stored data as a day of week.	An integer from 1 through 7 (1 = Sunday, 2 = Monday, et cetera). Note The DOW data play back type is not supported when using TTS.	en-us and en-gb typical spoken form: <ul style="list-style-type: none">• 7 = “Saturday” es-mx and es-es typical spoken form: <ul style="list-style-type: none">• 7 = “Sabado”

System Media Files

The following tables describe the English System Media Files installed by Unified CVP. These system media files are intended as samples only. It is the Customer/Media Administrator’s responsibility to record all the system prompts for all the locales.

The table that follows lists the System Media File information for cardinal numbers.

Table 12: System Media Files, Cardinal Numbers

Symbol (where applicable)	Decimal Value	Media File Name	Media File Content	Data Play Back Types /When Media File Is Used
		point	point	Number

Symbol (where applicable)	Decimal Value	Media File Name	Media File Content	Data Play Back Types / When Media File Is Used
		minus	minus	Number
0	48	0	zero	All except DOW
1	49	1	one (masculine version), uno (es-mx and es-es)	All except DOW
2	50	2	two	All except DOW
3	51	3	three	All except DOW
4	52	4	four	All except DOW
5	53	5	five	All except DOW
6	54	6	six	All except DOW
7	55	7	seven	All except DOW
8	56	8	eight	All except DOW
9	57	9	nine	All except DOW
		10	ten	Same for the rest of all the numbers
		11	eleven	
		12	twelve	
		13	thirteen	
		14	fourteen	
		15	fifteen	
		16	sixteen	
		17	seventeen	
		18	eighteen	
		19	nineteen	
		20	twenty	
		21	twenty-one	
		22	twenty-two	
		23	twenty-three	

Symbol (where applicable)	Decimal Value	Media File Name	Media File Content	Data Play Back Types / When Media File Is Used
		24	twenty-four	
		25	twenty-five	
		26	twenty-six	
		27	twenty-seven	
		28	twenty-eight	
		29	twenty-nine	
		30	thirty	
		31	thirty-one	
		32	thirty-two	
		33	thirty-three	
		34	thirty-four	
		35	thirty-five	
		36	thirty-six	
		37	thirty-seven	
		38	thirty-eight	
		39	thirty-nine	
		40	forty	
		41	forty-one	
		42	forty-two	
		43	forty-three	
		44	forty-four	
		45	forty-five	
		46	forty-six	
		47	forty-seven	
		48	forty-eight	
		49	forty-nine	
		50	fifty	

Symbol (where applicable)	Decimal Value	Media File Name	Media File Content	Data Play Back Types / When Media File Is Used
		51	fifty-one	
		52	fifty-two	
		53	fifty-three	
		54	fifty-four	
		55	fifty-five	
		56	fifty-six	
		57	fifty-seven	
		58	fifty-eight	
		59	fifty-nine	
		60	sixty	
		61	sixty-one	
		62	sixty-two	
		63	sixty-three	
		64	sixty-four	
		65	sixty-five	
		66	sixty-six	
		67	sixty-seven	
		68	sixty-eight	
		69	sixty-nine	
		70	seventy	
		71	seventy-one	
		72	seventy-two	
		73	seventy-three	
		74	seventy-four	
		75	seventy-five	
		76	seventy-six	
		77	seventy-seven	

Symbol (where applicable)	Decimal Value	Media File Name	Media File Content	Data Play Back Types / When Media File Is Used
		78	seventy-eight	
		79	seventy-nine	
		80	eighty	
		81	eighty-one	
		82	eighty-two	
		83	eighty-three	
		84	eighty-four	
		85	eighty-five	
		86	eighty-six	
		87	eighty-seven	
		88	eighty-eight	
		89	eighty-nine	
		90	ninety	
		91	ninety-one	
		92	ninety-two	
		93	ninety-three	
		94	ninety-four	
		95	ninety-five	
		96	ninety-six	
		97	ninety-seven	
		98	ninety-eight	
		99	ninety-nine	
		oh	oh	24TOD, Date
		hundred	hundred	Number, 24TOD, Date, Currency
		thousand	thousand	Number, Date, Currency

Symbol (where applicable)	Decimal Value	Media File Name	Media File Content	Data Play Back Types / When Media File Is Used
		million	million	Number, Currency
		billion	billion	Number, Date, Currency
		trillion	trillion	Number, Currency

The table that follows lists the System Media File information for ordinal numbers.



Note If ordinal system prompts are to be used in a script for a purpose other than dates, they should be recorded as application prompts with the true ordinal values.

Table 13: System Media Files, Ordinal Numbers

Symbol (where applicable)	Decimal Value	Media File Name	Media File Content	Data Play Back Types / When Media File Is Used
		1ord	first	Date
		2ord	second	Date for all ordinal numbers
		3ord	third	
		4ord	fourth	
		5ord	fifth	
		6ord	sixth	
		7ord	seventh	
		8ord	eighth	
		9ord	ninth	
		10ord	tenth	
		11ord	eleventh	
		12ord	twelveth	
		13ord	thirteenth	
		14ord	fourteenth	
		15ord	fifteenth	

Symbol (where applicable)	Decimal Value	Media File Name	Media File Content	Data Play Back Types / When Media File Is Used
		16ord	sixteenth	
		17ord	seventeenth	
		18ord	eighteenth	
		19ord	nineteenth	
		20ord	twentieth	
		21ord	twenty-first	
		22ord	twenty-second	
		23ord	twenty-third	
		24ord	twenty-fourth	
		25ord	twenty-fifth	
		26ord	twenty-sixth	
		27ord	twenty-seventh	
		28ord	twenty-eighth	
		29ord	twenty-ninth	
		30ord	thirtieth	
		31ord	thirty-first	

The table that follows lists the System Media File information for measurements.

Table 14: System Media Files, Measurements

Symbol (where applicable)	Decimal Value	Media File Name	Media File Content	Data Play Back Types / When Media File Is Used
½	189	one_half	one half	Char
¼	188	one_quarter	one quarter	Char
¾	190	three_quarters	three quarters	Char
A, a	65,97	a	A	Char
B,b	66,98	b	B	Char
C, c	67,99	c	C	Char

Symbol (where applicable)	Decimal Value	Media File Name	Media File Content	Data Play Back Types / When Media File Is Used
D, d	68,100	d	D	Char
E, e	69,101	e	E	Char
F, f	70,102	f	F	Char
G, g	71,103	g	G	Char
H, h	72,104	h	H	Char
I, i	73,105	i	I	Char
J, j	74,106	j	J	Char
K, k	75,107	k	K	Char
L, l	76,108	l	L	Char
M, m	77,109	m	M	Char
N, n	78,110	n	N	Char
O, o	79,111	o	O	Char
P, p	80,112	p	P	Char
Q, q	81,113	q	Q	Char
R, r	82,114	r	R	Char
S, s	83,115	s	S	Char
T, t	84,116	t	T	Char
U, u	85,117	u	U	Char
V, v	86,118	v	V	Char
W, w	87,119	w	W	Char
X, x	88,120	x	X	Char
Y, y	89,121	y	Y	Char
Z, z	90,122	z	Z	Char
Œ, œ	140,156	oe_140_156	Ligature OE	Char
À,à	192,224	a_192_224	A grave	Char
Á,á	193,225	a_193_225	A acute	Char

Symbol (where applicable)	Decimal Value	Media File Name	Media File Content	Data Play Back Types / When Media File Is Used
Â,â	194,226	a_194_226	A circumflex	Char
Ã,ã	195,227	a_195_227	A tilde	Char
Ä,ä	196,228	a_196_228	A umlaut	Char
Å,å	197,229	a_197_229	A with ring above	Char
Æ,æ	198,230	ae_198_230	Ligature AE	Char
È,è	200,232	e_200_232	E grave	Char
É,é	201,233	e_201_233	E acute	Char
Ê,ê	202,234	e_202_234	E circumflex	Char
Ë,ë	203,235	e_203_235	E umlaut	
Ì,ì	204,236	i_204_236	I grave	Char
Í,í	205,237	i_205	I acute	Char
Î,î	206,238	i_206	I circumflex	Char
Ï,ï	207,239	i_207	I umlaut	Char
Ð	208	char_208	character 208	Char
ð	240	char_240	character 240	
Ò,ò	210,242	o_210_242	O grave	Char
Ó,ó	211,243	o_211_243	O acute	Char
Ô,ô	212,244	o_212_244	O circumflex	Char
Õ,õ	213,245	o_213_245	O tilde	Char
Ö,ö	214,246	o_214_246	O umlaut	Char
x	215	multiply	multiplication sign	Char
Ø,ø	216,248	o_216_248	oh stroke	Char
Ù,ù	217,249	u_217_249	U grave	Char
Ú,ú	218,250	u_218_250	U acute	Char
Û,û	219,251	u_219_251	U circumflex	Char
Ü,ü	220,252	u_220_252	U umlaut	Char
Ý,ý	221,253	y_221_253	Y acute	Char

Symbol (where applicable)	Decimal Value	Media File Name	Media File Content	Data Play Back Types / When Media File Is Used
ᵀ	222	char_222	character 222	Char
ß	223	ss	double s	Char
÷	247	divide	division sign	Char
ᵀ	254	char_254	character 254	Char
ÿ,ÿ	159,255	y_159_255	character 159 or 255	Char

The table that follows lists the System Media File information for month values.

Table 15: System Media Files, Months

Symbol (where applicable)	Decimal Value	Media File Name	Media File Content	Data Play Back Types / When Media File Is Used
		January	January	Date
		February	February	Date
		March	March	Date
		April	April	Date
		May	May	Date
		June	June	Date
		July	July	Date
		August	August	Date
		September	September	Date
		October	October	Date
		November	November	Date
		December	December	Date

The table that follows lists the System Media File information for month values.

Table 16: System Media Files, Days

Symbol (where applicable)	Decimal Value	Media File Name	Media File Content	Data Play Back Types / When Media File Is Used
		Sunday	Sunday	DOW

Symbol (where applicable)	Decimal Value	Media File Name	Media File Content	Data Play Back Types / When Media File Is Used
		Monday	Monday	DOW
		Tuesday	Tuesday	DOW
		Wednesday	Wednesday	DOW
		Thursday	Thursday	DOW
		Friday	Friday	DOW
		Saturday	Saturday	DOW

The table that follows lists the System Media File information for month values.

Table 17: System Media Files, Time

Symbol (where applicable)	Decimal Value	Media File Name	Media File Content	Data Play Back Types / When Media File Is Used
		hour	hour	Etime, 24TOD per locale, TOD per locale
		hours	hours	Etime,24TOD per locale,TOD per locale
		minute	minute	Etime
		minutes	minutes	Etime
		second	second	Etime,24TOD
		seconds	seconds	Etime,24TOD
		on	on	per locale(unused for en-us)
		at	at	per locale(unused for en-us)
		am	am	TOD
		pm	pm	TOD
		oclock	oclock	TOD

The table that follows lists the System Media File information for currency values.



Note The customer's Media Administrator may prefer to replace the contents of "currency_minus" (for the negative amount) and "currency_and" (the latter can even be changed to contain silence).

Table 18: System Media Files, Currency

Symbol (where applicable)	Decimal Value	Media File Name	Media File Content	Data Play Back Types / When Media File Is Used
		currency_minus	minus	Currency
		currency_and	and	Currency
\$	36	USD_dollar	dollar	Currency
		USD_dollars	dollars	Currency
		Note Unified CVP uses the USD_dollar.wav and USD_dollars.wav media files; the dollar.wav and dollars.wav used by ISN Version 1.0 are no longer installed.		
\$	36	CAD_dollar	dollar	Currency
		CAD_dollars	dollars	Currency
		HKD_dollar	dollar	Currency
		HKD_dollars	dollars	Currency
¢	162	cent	cent	Currency
		cents	cents	Currency
		euro	euro	Currency
£	163	GBP_pound	pound	Currency
		GBP_pounds	pounds	Currency
		penny	penny	Currency
		pence	pence	Currency
		MXN_peso	peso	Currency
		MXN_pesos	pesos	Currency
		centavo	centavo	Currency
		centavos	centavos	Currency

The table that follows lists the System Media File information for gaps of silence and miscellaneous phrases.

Table 19: System Media Files, Silence, and Miscellaneous Phrases

Symbol (where applicable)	Decimal Value	Media File Name	Media File Content	Data Play Back Types / When Media File Is Used
		silence_.1_sec	(.1 second of silence)	Used for pauses where needed
		silence_.25_sec	(.25 second of silence)	Used for pauses where needed
		silence_.5_sec	(.5 second of silence)	Used for pauses where needed
		silence_1_sec	(1 second of silence)	Used for pauses where needed
		and	and	Etime,TOD,25TOD

The table that follows lists the System Media File information for ANSI characters.

Table 20: System Media Files, ANSI Characters

Symbol (where applicable)	Decimal Value	Media File Name	Media File Content	Data Play Back Types / When Media File Is Used
	32	space	space	Char
!	33	exclamation_mark	exclamation mark	Char
"	34	double_quote	double quote	Char
#	35	pound	pound	Char
%	37	percent	percent	Char
&	38	ampersand	ampersand	Char
'	39	apostrophe	apostrophe	Char
(40	open_parenthesis	open parenthesis	Char
)	41	close_parenthesis	close parenthesis	Char
*	42	asterisk	asterisk	Char
+	43	plus	plus	Char
,	44	comma	comma	Char
-	45	hyphen	hyphen	Char
.	46	period	period	Char

Symbol (where applicable)	Decimal Value	Media File Name	Media File Content	Data Play Back Types / When Media File Is Used
/	47	slash	slash	Char
:	58	colon	colon	Char
;	59	semicolon	semicolon	Char
<	60	less_than	less than	Char
=	61	equal	equal	Char
	62	greater_than	greater than	Char
?	63	question_mark	question mark	Char
@	64	at_symbol	at	Char
[91	left_square_bracket	left square bracket	Char
\	92	backslash	backslash	Char
]	93	right_square_bracket	right square bracket	Char
^	94	caret	caret	Char
_	95	underscore	underscore	Char
`	96	single_quote	single quote	Char
{	123	open_brace	open brace	Char
	124	pipe	pipe	Char
}	125	close_brace	close brace	Char
~	126	tilde	tilde	Char
'	130	char_130	low single quote	Char
<i>f</i>	131	char_131	F with hook	Char
”	132	low_double_quote	low double quote	Char
...	133	ellipsis	ellipsis	Char
†	134	char_134	character 134	Char
‡	135	char_135	character 135	Char
^	136	char_136	character 136	Char
‰	137	per_mille	per mile	Char
Š	138	char_138	character 138	

Symbol (where applicable)	Decimal Value	Media File Name	Media File Content	Data Play Back Types / When Media File Is Used
<	139	left_pointing_angle	left pointing angle	Char
‘	145	left_single_quote	left single quote	Char
’	146	right_single_quote	right single quote	Char
“	147	left_double_quote	left double quote	Char
”	148	right_double_quote	right double quote	Char
•	149	bullet	bullet	Char
—	150	en_dash	en dash	Char
—	151	em_dash	em dash	
~	152	small_tilde	small tilde	Char
™	153	trade_mark	trade mark	Char
š	154	char_154	character 154	Char
›	155	char_155	character 155	Char
¡	161	exclamation_mark_inverted	inverted exclamation mark	Char
☒	164	char_164	character 164	Char
	166	broken_pipe	broken pipe	Char
§	167	section	section	Char
“	168	char_168	character 168	Char
©	169	copyright	copyright	Char
ª	170	char_170	character 170	Char
«	171	left_double_angle_quote	left double angle quote	Char
¬	172	not	not	Char
-	173	char_173	character 173	Char
®	174	registered	registered	Char
—	175	char_175	character 175	Char
°	176	degree	degree	Char
±	177	plus_minus	plus or minus	Char

Symbol (where applicable)	Decimal Value	Media File Name	Media File Content	Data Play Back Types / When Media File Is Used
²	178	superscript_2	superscript two	Char
³	179	superscript_3	superscript three	Char
´	180	acute_accent	acute accent	Char
μ	181	micro	micro	Char
¶	182	paragraph	paragraph	Char
·	183	middle_dot	middle dot	Char
¸	184	cedilla	cedilla	Char
¹	185	superscript_1	superscript one	Char
º	186	char_186	character 186	Char
»	187	right_double_angle_quote	right double angle quote	Char
¿	191	question_mark_inverted	inverted question mark	Char

Play Data Configuration Examples

The following table shows several configuration examples for Play Data.

Table 21: Play Data Configuration Examples

If the VRU Script Name field setting is...	It means...	If the Configuration Param field is...	It means...
PD, Number Note If you are using integers that are larger than nine digits, enclose the value in quotation marks, so it will be treated as a string.	PD - Use the Play Data micro-app. Number - Play back the data as a number.	empty	Play the data in the default ECC, user.microapp.play_data , as a number.
PD, Char	pd - Use the Play Data micro-app. Char - Play back the data as individual characters.	1	1 - Play the data in Call Peripheral Variable 1 as a character.

If the VRU Script Name field setting is...	It means...	If the Configuration Param field is...	It means...
PD,Etime,0 Note If you are using integers that are larger than 9 digits, enclose the value in quotation marks, so it will be treated as a string.	PD - Use the Play Data micro-app. Etime - Play back the data as a Time.	1,,HHMM	1 - Play the data in Call PeripheralVariable 1 as an elapsed time. , - (Skipped parameter) Accept default setting (Y) HHMM - Play the time in HHMM format (for example, 8 hours, 30 minutes).
PD,Date	PD - Use the Play Data micro-app. Date - Play back the data as a Date.	1,N	1 - Play the data in Call Variable 1 as a date. N - No barge-in allowed.
PD,Currency	PD - Use the Play Data micro-app. Currency - Play back the data as a Currency.	4,N	4 - Play the data in Call Variable 4 s currency. N - No barge-in allowed.



Note Play Data sets the ECC variable **user.microapp.error_code** to zero, indicating success, if control proceeds out the Checkmark (success) branch of the Run External Script node. If control proceeds out the X (failure) branch, Play Data typically sets this variable to one of the codes listed in [Unified CVP Script Error Checking, on page 232](#).

Get Digits Micro-application

The Get Digits (GD) micro-application plays a media file and retrieves digits. For example, you could use Get Digits in an application that prompts a caller to enter a password.

Unified Customer Voice Portal passes the retrieved digits back to Packaged CCE for further processing using the Caller-Entered Digits (CED) field in the CCE/Unified CVP Messaging interface. (This is available in the Packaged CCE script through the variable Call.CallerEnteredDigits).

Configure Network VRU Script Settings for Get Digits Micro-application

Use the Unified CCE Administration Network VRU Script tool to specify parameters.

Procedure

Step 1 Configure VRU Script field parameters:

- **Micro-application type.** For Get Digits, valid options are: **GD** or **gd**.

- **Media File Name.** Name of the media file to be played (that is, the prompt file). The valid options are:
 - A file name (for instance, a .wav file).

Note The file name is case-sensitive.

 - **null** - (default) If this field is empty, no prompt is played.
 - **-(number 1-10)** - Unified CVP plays the file in the corresponding Call.PeripheralVariable file. For example, entering -2 causes Unified CVP to look at Call.PeripheralVariable2.
- **Media Library Type** . Flag indicating the location of the media files to be played. The valid options are:
 - **A** - (default) Application
 - **S** - System
- **Uniqueness value.** Optional. A string identifying a VRU Script Name as unique.

Step 2 Configure the Configuration Param field parameters:

- **Minimum Field Length.** Minimum number of digits expected from the caller. The valid options are: **1-32** (the default is **1**)
 - **Maximum Field Length.** Maximum number of digits expected from the caller. The valid options are: **1-32** (the default is **1**).
- Note** For information about Maximum Field Length and the DTMF Termination Key, see [Get Digits and Digit Entry Completion, on page 271](#).
- **Barge-in Allowed** . Specifies whether barge-in (digit entry to interrupt media playback) is allowed. The valid options are:
 - **Y** - (default) barge-in allowed
 - **N** - barge-in not allowed

For more information about barge-in, see [How Unified CVP Handles Barge-In, on page 241](#).
- Note** Unified CVP deals with barge-in as follows: If barge-in *is* not allowed, the SIP/Gateway continues prompt play when a caller starts entering digits. If barge-in *is* allowed, the Gateway discontinues prompt play when the caller starts entering digits. See [Get Speech and External VoiceXML, on page 271](#).
- **Inter-digit Timeout** . The number of seconds the caller is allowed between entering digits. If exceeded, the system times-out. The valid options are: **1-99** (the default is **3**).
 - **No Entry Timeout** . The number of seconds a caller is allowed to begin entering digits. If exceeded, the system times-out. The valid options are: **0-99** (the default is **5**).
 - **Number of No Entry Tries.** Unified CVP repeats the “Get Digits” cycle when the caller does not enter any data after the prompt has been played. (Total includes the first cycle.) The valid options are: **1-9** (the default is **3**).

- **Number of Invalid Tries.** Unified CVP repeats the “Get digits” cycle when the caller enters invalid data (total includes the first cycle). The valid options are: **1-9** (default is **3**).
- **Timeout Message Override** . The valid options are:
 - **Y** - override the system default with a pre-recorded Application Media Library file
 - **N** - (default) do not override the system default
- **Invalid Entry Message Override.** The valid options are:
 - **Y** - override the system default with a pre-recorded Application Media Library file.
 - **N** - (default) do not override the system default

Note For more information about Timeout and Invalid Entry Messages, see [System Media Files, on page 251](#).

- **DTMF Termination Key.** A single character that, when entered by the caller, indicates that the digit entry is complete. The valid options are:
 - **0-9**
 - ***** (asterisk)
 - **#** (pound sign, the default)
 - **N** (No termination key)

Note For information about Maximum Field Length and the DTMF Termination Key, see [Get Digits and Digit Entry Completion, on page 271](#).

- **Incomplete Timeout.** The amount of time after a caller stops speaking to generate an invalid entry error because the caller input does not match the defined grammar. The valid options are: **0-99** (the default is **3**).

Note If the value is set to 0, the Unified CVP Service treats the NoEntry Timeout as NoError.

Get Digits Configuration Examples

The following table shows several configuration examples for Get Digits for an application that prompts using .wav files and retrieves input through DTMF.

Table 22: Get Digits Configuration Examples for .wav Files

If the VRU Script Name field setting is...	It means...	If the Configuration Param field setting is...	It means...
GD>Password,A,0	GD - Use the Get Digits micro-app. Password - Play the Media file named "Password.wav." A - Application Media Library. 0 - Uniqueness value.	6,12	6 - Minimum field length 12 - Maximum field length Accept defaults for all other settings.
GD>Password,A,1	gd - Use the Get Digits micro-app. Password - Play the Media file named "Password.wav." A - Application Media Library. 1 - Uniqueness value.	6,12,N,3,5,2,2,N,Y,#	6 - Minimum field length 12 - Maximum field length N - No barge-in allowed 3 - Inter-digit Timeout (seconds) 5 - No Entry Timeout (seconds) 2 - Number of no entry tries 2 - Number of invalid tries N - Timeout Msg Override Y - Invalid Entry Msg Override # - DTMF Termination key
Note The two examples above both play the Password.wav file ("Please enter your password followed by the pound sign.") and collect digits. They differ in that the first example accepts most of the default settings available through the Configuration Param field; the second field does not.			
GD,ssn	GD - Use the Get Digits micro-app. ssn - Play the Media file named "ssn.wav."	9,9,	9 - Minimum field length 9 - Maximum field length Accept defaults for all other settings.
Note Type-ahead can only be used with the Get Digits micro-application when user.microapp.input_type is set to D . See Get Speech and External VoiceXML, on page 271 .			
GD, -4, S	gd - Use the Get Digits micro-app -4 - Calls the file specified in Call.PeripheralVariable4 S - Acquires the file from the System media library	6,12,	6 - Minimum field length 12 - Maximum field length Accept defaults for all other settings

Get Speech and External VoiceXML

You can use the Get Speech micro-application to pass information to and from an external VoiceXML file. The following table describes how to set the Get Speech script to use external VoiceXML.

To set up the Get Speech micro-application to use external VoiceXML, set the Media Library Type to "V". The Unified CVP Service creates VoiceXML that calls the external VoiceXML that is specified in the external VoiceXML file name. The URL to the external VoiceXML is formed from a combination of the media_server, locale, App_Media_Lib and external VoiceXML file name. If the VoiceXML file name does not contain a file extension, the default "*.VoiceXML" is used.

If the external VoiceXML is used, the only GetSpeech VRU Script parameters that are used are:

- "Number of Invalid Entry" errors, and
- "Number of No Entry" errors.

The Unified CVP Service "NoEntry" and "InvalidEntry" retry logic are used if the external VoiceXML returns a <noinput> or <nomatch> event.

Error Handling

Error handling

The error handling for an external VoiceXML called from the Get Speech micro-application includes the following:

- If you set the "Media Library Type" to "V" and you do not set an "External VoiceXML Name" parameter, an "Invalid VRU Script Name" error is returned to Packaged CCE .

Get Digits and Digit Entry Completion

Unified CVP tests GD digit entry input against several conditions to determine whether digit entry is complete.

Unified CVP considers digit entry to be complete if the caller enters any of the following:

- The maximum allowable number of digits (when terminator key is not used).
- The maximum number of digits, excluding a terminator key.
- Less than the maximum number of digits, followed by the terminator key.
- Less than the maximum number of digits and exceeding the inter-digit timeout.
- Nothing and reaching the no entry timeout.



Caution It is important that you set up your Packaged CCE script to test for all the scenarios mentioned below.

If Digit Entry Input Is Complete

After digit-entry input is complete, Unified CVP validates the digit string to determine if it is >= (greater than or equal to) the minimum length and <= (less than or equal to) the maximum length.

In variable-length data entry, the Maximum Field Length value does not accommodate the termination key. For example, if a GD micro-application is configured to accept a password that is between 6 and 12 digits

long and digit-entry completion is indicated through a termination key (or a timeout), the Minimum Field Length setting would be 6, the Maximum Field Length setting would be 12, and the DTMF Termination Key is defined as a single character.

Before passing the result back to the Unified CVP Service, SIP Service discards the termination key (only the password digits are included in the CED returned to Packaged CCE).



Note In this example, if the 13th digit is entered without reaching the interdigit timeout and the 13th digit is not the terminator key, the extra digits are buffered by the gateway VXML browser and will be consumed by the next digit collecting node (for example: GD or Menu micro-app).

This type-ahead behavior is described online in the Type-ahead Support section of the [Cisco VoiceXML Programmer's Guide](#).

After validating the digit string, Unified CVP does the following:

- If the string is valid, Unified CVP stores the digit string (not including the terminator key) in the Call.CallerEnteredDigits variable, exits the node through the Checkmark (success) branch, and returns control to Packaged CCE software.
- If the string is not valid, Unified CVP considers it an invalid entry and does the following:
 - If the Number of Invalid Entry Tries value is not reached, Unified CVP plays an error message and re-plays the original prompt.
 - If the Number of Invalid Entry Tries value is reached, Unified CVP stores the last-entered digit string in the Call.CallerEnteredDigits variable, exits the node through the X (failure) branch, sets the **user.microapp.error_code** ECC variable to **16** (Reached Maximum Invalid Tries), and returns control to Packaged CCE .

If No Entry Timeout Occurs

If the caller does not enter input and No Entry Timeout period is exceeded, the following happens:

- If the Number of No Entry Tries value has not been reached, Unified CVP plays the “no entry” error message and re-plays the original prompt.
- If the Number of No Entry Tries value has been reached, Unified CVP exits the node through the X (failure) branch, sets the Call.CallerEnteredDigits variable to NULL, the **user.microapp.error_code** ECC variable to **17** (Reached Maximum No Entry Tries), and returns control to Packaged CCE .

Menu Micro-application

This micro-application plays a menu media file and retrieves a defined digit. (Menu is similar to the Get Digit micro-application except that it only accepts one digit, which it checks for validity.)

Unified CVP passes the retrieved digit back to Packaged CCE for further processing using the Caller-Entered Digits (CED) field in the Packaged CCE / Unified CVP Messaging interface.

Configure Network VRU Script Settings for the Menu Micro-application

Use the Packaged CCE Administration Network VRU Script tool to specify parameters.

Procedure

Step 1

Configure VRU Script field parameters:

- **Micro-application type** . For Menu, valid options are: **M** or **m**.
- **Media File Name**. Name of the media file to be played (that is, the prompt file). The valid options are
 - A file name (for instance, a .wav file)
Note The file name is case-sensitive.
 - **null** - (default) If this field is empty, Unified CVP examines the contents of the **user.microapp.inline_tts** ECC variable. If this ECC variable contains a value, Unified CVP prompts using TTS. If the ECC is empty, no prompt is played.
 - **-(number 1-10)** - Unified CVP plays the file in the corresponding Call.PeripheralVariable file. For example, entering -2 causes Unified CVP to look at Call.PeripheralVariable2.
- **Media Library Type** . Flag indicating the location of the media files to be played. The valid options are:
 - **A** - (default) Application
 - **S** - System
- **Uniqueness value**. Optional. A string identifying a VRU Script Name as unique.

Step 2

Configure the Configuration Param field parameters:

- A list of **menu choices** . The valid options are:
 - **0-9**
 - ***** (asterisk)
 - **#** (pound sign)

Formats allowed include:

- Individual options delimited by a / (forward slash)
- Ranges delimited by a - (hyphen) with no space
- **Barge-in Allowed** . Specifies whether barge-in (digit entry to interrupt media playback) is allowed.
The valid options are:
 - **Y** - (default) barge-in allowed
 - **N** - barge-in not allowed

For more information about barge-in, see [How Unified CVP Handles Barge-In, on page 241](#).

- **No Entry Timeout** . The number of seconds a caller is allowed to begin entering digits. If exceeded, the system times-out. The valid options are: **0-99** (the default is **5**).

- **Number of No Entry Tries.** Unified CVP repeats the "Menu" cycle when the caller does not enter any data after the prompt has been played. (Total includes the first cycle.) The valid options are: **1-9** (the default is **3**).
- **Number of Invalid Tries .** Unified CVP repeats the prompt cycle when the caller enters invalid data. (Total includes the first cycle.) The valid options are: **1-9** (the default is **3**).
- **Timeout Message Override.** The valid options are:
 - **Y** - override the system default with a pre-recorded Application Media Library file
 - **N** - (default) do not override the system default
- **Invalid Entry Message Override .** The valid options are:
 - **Y** - override the system default with a pre-recorded Application Media Library file
 - **N** - (default) do not override the system default

Note For more information about Timeout and Invalid Entry Messages, refer to [System Media Files, on page 251](#)

Menu Configuration Examples

The following table shows several configuration examples for Menu for use in an application where input type is DTMF.

Table 23: Menu Configuration Example - DTMF Application

If the VRU Script Name field setting is...	It means...	If the Config Param setting is...	It means...
M,Banking	<p>M - Use the Menu micro-app.</p> <p>Banking - Play the Media file named "Banking.wav."</p> <p>Note This file may contain a message such as: "For Checking, press 1. For Savings, press 2. For Money Market, press 3."</p>	1-3	1-3 - Accept numbers 1, 2, 3. Accept all other defaults (No Entry Timeout, Number of no entry tries, Number of invalid tries, Timeout Msg Override, Invalid Entry Msg Override).

If the VRU Script Name field setting is...	It means...	If the Config Param setting is...	It means...
M,Main_Menu	<p>M - Use the Menu micro-app.</p> <p>Main_Menu - Play the Media file called "Main_Menu.wav."</p> <p>Note This file may contain a message such as: "For information or transactions on checking, press 1. For savings or club accounts, press 2. For other information, press 0. If you know your party's extension, press 9."</p>	0-2/9,,4,2,2	<p>0-2/9 - Accept numbers 0, 1, 2, and 9.</p> <p>, (Skipped parameter) - Accept the default barge-in setting (Y).</p> <p>4 - No Entry Timeout value (in seconds).</p> <p>2 - Number of no entry tries allowed.</p> <p>2 - Number of invalid tries allowed.</p> <p>Accept all other defaults (Timeout Msg Override, Invalid Entry Msg Override).</p>
M,-2,S	<p>M - Use the Menu micro-app.</p> <p>-2 - Plays the file specified in Call.PeripheralVariable2.</p> <p>S - Acquires the file from the System media library.</p>	1-3	<p>1-3 - Accept numbers 1, 2, 3. Accept all other defaults (No Entry Timeout, Number of no entry tries, Number of invalid tries, Timeout Msg Override, Invalid Entry Msg Override).</p>



Note Menu sets the ECC variable **user.microapp.error_code** to zero, indicating success, if control proceeds out the Checkmark (success) branch of the Run External Script node. If control proceeds out the X (failure) branch, Menu typically sets this variable to one of the codes listed in [Unified CVP Script Error Checking, on page 232](#).

Menu and Digit Entry Completion

Unified CVP tests Menu digit entry input against two conditions to determine whether digit entry is complete:

- If a caller enters a digit, Unified CVP checks whether the digit is within the set of valid digits for this menu.
- If a caller does not enter a digit, Unified CVP checks whether the No Entry Timeout value has been reached.

**Caution**

It is important that you set up your Packaged CCE script to test for all the scenarios mentioned below.

Digit Entry Completion

After a caller enters a digit, Unified CVP validates the digit against the list of valid menu options that were defined through CCE Configuration Manager. Then Unified CVP does the following:

- If the digit is valid, Unified CVP stores the digit in the `Call.CallerEnteredDigits` variable, exits the node through the Checkmark (success) branch, and returns control to Packaged CCE .
- If the digit is not valid, Unified CVP considers it an invalid entry and does the following:
 - If the Number of Invalid Entry Tries value *has not* been reached, Unified CVP plays the "invalid message" file and re-plays the menu prompt.
 - If the Number of Invalid Entry Tries value has been reached, Unified CVP stores the last-entered invalid digit in the `user.microapp.caller_input` variable, exits the node through the X (failure) branch, sets the `user.microapp.error_code` ECC variable to **16** (Reached Maximum Invalid Tries), and returns control to Packaged CCE .

If No Entry Timeout Occurs

If the caller does not enter a digit within the No Entry Timeout period:

- If the Number of No Entry Tries value is reached, Unified CVP plays the "no entry" error message and re-plays the menu prompt.
- If the Number of No Entry Tries value has been reached, Unified CVP exits the node through the X (failure) branch, sets the `Call.CallerEnteredDigits` variable to NULL, the `user.microapp.error_code` ECC variable to **17** (Reached Maximum No Entry Tries), and returns control to Packaged CCE .

Get Speech Micro-application

The Get Speech (GS) micro-application is used to execute a Call Studio script on VXML Server.

Configure Network VRU Script Settings for the Get Speech Micro-application

Use the Packaged CCE Administration's Network VRU Script tool to specify parameters.

**Note**

By default a pre-configured network VRU script called `VXML_Server` has already been configured in Packaged CCE. This should be used in all Run External Script nodes that intend to execute a Call Studio script. When using an optional feature like Courtesy Callback, you must configure additional GS network VRU scripts.

Procedure

Step 1

Configure VRU Script field parameters:

- **Micro-application type.** For Get Speech, valid options are: **GS** or **gs**.
- **Media File Name.** Only the value **Server** is supported for this field for GS.
- **Media Library Type.** Only the value **V** is supported for this field for GS.
- **Uniqueness value.** Optional. A string identifying a VRU script name as unique.

Step 2

Configure the Configuration Param field parameters:

Note Configuration parameters 1-10 are only for non-Packaged CCE deployments with Unified CVP where GS is supported with external VXML. Only the Pass FTP Information parameter (parameter 11) is configurable when using the Agent Greeting recording feature.

- **Pass FTP Information** Specifies whether to pass FTP server information to the VXML Server. This option is only useful if the VXML Server application uses the FTP_Client Element and the FTP server information is already configured using the Operations Console. Valid options are:
 - **Y** - Pass FTP server information to the VXML Server as VXML Server session variables.
 - **N** - (default) Do not pass FTP server information.

If the **Pass FTP Information** parameter is set, the following information is passed:

- **ftpServer** - A space separated string of FTP servers. For example, ftp_host1|21|username|password ftp_host2. Everything is optional except the host name. See FTP_Client Element settings located in the *Elements Specifications for Cisco Unified CVP VXML Server and Cisco Unified Call Studio* guide for more information.
- **ftpPath** - A path on the FTP server. By default, this path is formed from the content of the ECC variable `user.microapp.locale` concatenated with path separator (/) and the content of the ECC variable `user.microapp.app_media_lib`. One exception is if the value of `user.microapp.app_media_lib` is `..`, then `app` is used instead. An example of a path is: `en-us/app`

Passing Information to the Call Studio Scripts Executing on VXML Server

You can pass up to 1050 characters to the Call Studio scripts executing on VXML server by using an ECC Variable array.

Table 24: To External VoiceXML ECC Variable Array

ECC Variable Name	Type	Max. Number of Elements	Max. Size of Each Element
user.microapp.ToExtVXML	Array	5	210

This variable array contains a list of semicolon delimited name/value pairs. The following is an example of the syntax:

Table 25: Sample Array Definition

Variable Name	Values
user.microapp.ToExtVXML[0]	"Company=Cisco;Job=technical writer"
user.microapp.ToExtVXML[1]	"Location=Boxborough;Street=Main"
user.microapp.ToExtVXML[2]	"FirstName=Gerrard;LastName=Thock"
user.microapp.ToExtVXML[3]	"Commute=1 hour;Car=Isuzu"

Unified CVP sends each name/value pair as a session variable on the call to VXML server (for example, a session variable named **Company** with a value of **Cisco**). The session variables are accessible in the Call Studio scripts.

Passing Data Back to Packaged CCE from the VXML Server

Unified CVP can return 840 characters from the VXML server.

The following ECC Variable array is added:

Table 26: From External VoiceXML ECC Variable Array

ECC Variable Name	Type	Max. Number of Elements	Max. Size of Each Element
user.microapp.FromExtVXML	Array	4	210

The Get Speech micro-app returns up to 840 characters by populating the **user.microapp.caller_input** variable and each element of the **user.microapp.FromExtVXML** array.



Note By default user.microapp.FromExtVXML ECC variable is pre-defined for Packaged CCE but not enabled. You can use the predefined ECC variable or update the length based on your needs.

Scripting for Unified CVP with Call Studio

You can use Call Studio to build sophisticated Unified CVP applications which can then be loaded onto a VXML Server machine for execution.

To invoke a VXML Server application, create a Packaged CCE routing script that

- Includes a user.microapp.ToExtVXML[0] ECC variable instructing the VoiceXML Gateway to interact with the VXML Server directly to execute the application
- Instructs the application to pass back results to Packaged CCE

This section describes

- Call Studio and how to use it to pass data to Packaged CCE
- How to integrate Call Studio scripts with Packaged CCE scripts

- How to deploy Call Studio Scripts in Unified CVP

High-Level Configuration Instructions

This chapter presents a set of high-level instructions for configuring many of the Unified CVP call flow models (deployment models).

Each set of call flow model instructions contains:

- A brief overview of that call flow model
- High-level instructions for configuring the components in that call flow model
- References to detailed instructions (elsewhere in this guide, in online help, or in other documents) for performing each high-level task

This chapter also includes information, or pointers to information, for configuring the Gateway, Packaged CCE VRU handling and Unified CVP Call Server (including the SIP Service, Packaged CCE service, and Unified CVP Service).

Call Studio ReqICMLLabel Element to Pass Data

The ReqICMLLabel element allows a Call Studio script to pass caller input, Call Peripheral variables, and Expanded Call Context (ECC) variables to a Packaged CCE script. The ReqICMLLabel must be inserted into a Call Studio script as a decision element. In Call Studio, the returned Packaged CCE label result can be used by other elements in the same application, such as the Transfer or Audio element. The Transfer element sends instructions to the IOS Voice Browser to transfer the caller to the desired location.

After the ReqICMLLabel exits its path, you can retrieve the values set by the Packaged CCE script by selecting the Element Data tab for the ReqICMLLabel element. The element data value is {Data.Element.ReqICMLLabelElement.result}. ReqICMLLabelElement is the name of the ReqICMLLabel element in the Call Studio script. The default name for this element is ReqICMLLabel_<n>. For example, if you changed ReqICMLLabel to GetICMLLabel, the value returned from Packaged CCE is {Data.Element.GetICMLLabel.result}, where *result* is the variable of the ReqICMLLabel element that contains the Packaged CCE label.

Table 27: Settings

Name (Label)	Type	Required	Single Setting Value	Substitution Allowed	Default	Notes
Call Peripheral Variables 1 - 10 (callvar1 - callvar10)	String	No	Yes	Yes		Call Peripheral variables passed by the Call Studio script to the Packaged CCE server. This setting can be a maximum of 40 characters. The Packaged CCE server returns a name-value pair for up to 10 Call Peripheral Variables in a result. Any value that is placed in callvar<n> from a Call Studio script is returned unchanged, if the Packaged CCE script does not change it.

Name (Label)	Type	Required	Single Setting Value	Substitution Allowed	Default	Notes
Call Peripheral Variables Return 1 - 10 (callvarReturn1 - callvarReturn10)	String	No	Yes	Yes		Call Peripheral variables created upon the return of the Packaged CCE Label request, regardless of whether or not these variables are filled by the Packaged CCE script. You need two sets of these variables to keep reporting to the Packaged CCE Call Peripheral Variables separate from what is returned from Packaged CCE.
FromExtVXML0 - 3 (External VXML 0 - External VXML 3)	String Array	No	Yes	Yes		Expanded Call Context (ECC) variables passed by the Call Studio script to the Packaged CCE Packaged CCE server. Each variable is a string of name-value pairs, separated by semicolons, for up to four external VoiceXML variables. This setting can be a maximum of 210 characters.
ToExtVXML0 - 4 (External VXML 0 - External VXML 4)	String Array	No	Yes	Yes		Expanded Call Context (ECC) variables received from the Packaged CCE script. The Packaged CCE server returns a string of name-value pairs, separated by semicolons, for up to five external VoiceXML variables.
Timeout	Integer	Yes	Yes	Yes	3000 (ms)	The number of milliseconds that the transfer request waits for a response from the Packaged CCE server before timing out. Note This value is increased or decreased by increments of 500 ms.
caller_input (Caller Input)	String	No	Yes	Yes		This setting can be a maximum of 210 characters. The caller_input is only passed to Packaged CCE from Call Studio.

Table 28: Element Data

Name	Type	Notes
result	String	Packaged CCE label returned from a Packaged CCE server. You can use this result as input to other Call Studio elements, such as Transfer or Audio. The element data value is {Data.Element.ReqICMLLabelElement.result}.

Name	Type	Notes
callvar<n>	String	Call Peripheral variables that the Call Studio scripts passes to the Packaged CCE server. Valid Call Peripheral Variables are callvar1 - callvar10.
callvarReturn<n>	String	<p>Call Peripheral variables that the Packaged CCE script returns to the VXML Server. Valid Call Peripheral Variables are callvarReturn1 - callvarReturn10.</p> <p>For example, if a Packaged CCE script contains Call Peripheral variable 3 with the string value "CompanyName=Cisco Systems, Inc", you can access the value of CompanyName that is returned by the Packaged CCE script by using</p> <p>Data.Element.ReqICMLabelElement.callvarReturn3</p> <p>The returned value is "Cisco Systems, Inc."</p>

Table 29: Session Data

Name	Type	Notes
name	String	<p>Value for a name-value pair contained in a ToExtVXML variable returned in the Packaged CCE label. You must know which name-value pairs are set in the Packaged CCE script to retrieve the correct value from the Call Studio script.</p> <p>For example, if a Packaged CCE script contains a user.microapp.ToExtVXML0 variable with the string value "CustomerName=Mantle", specify Data.Session.CustomerName. If the same Packaged CCE script contains a user.microapp.ToExtVXML0 variable with the string value "BusinessType=Manufacturing", you can access the customer business type returned by the Packaged CCE script by using Data.Session.BusinessType.</p>

Table 30: Exit States

Name	Notes
done	The element execution is complete and the value is successfully retrieved.
error	The element failed to retrieve the value.

Studio Element Folder is "Cisco."

Integrate Call Studio Scripts with Unified CCE Scripts - Traditional Method

This section describes how to integrate the VXML Server into the Unified CVP solution in the traditional way. This process involves

- Creating a Unified CCE script with ECC variables configured for VXML Server
- Creating a VRU Script to run in the Packaged CCE script

Integrate Call Studio Scripts with Packaged CCE Scripts

The following steps describe how to integrate Call Studio scripts with Packaged CCE :

Procedure

Step 1 Set the user.microapp.ToExtVXML[0] ECC variable to application=HelloWorld.

Note This example indicates that the VXML Server executes the “HelloWorld” application. To execute a different application, change the value of user.microapp.ToExtVXML[0] accordingly.

Step 2 Create a Run External Script node within the Packaged CCE script with a VRU Script Name value of GS,Server,V.

- Configure the timeout setting in the Network VRU Script to a value greater than the timeout value in the VXML Server application. (This timeout is only used for recovery from a failed VXML Server.)
- Always leave the **Interruptible** checkbox in the Network VRU Script Attributes checked. Otherwise, calls queued to a VXML Server application may stay in the queue when an agent becomes available.

Step 3 After you configure the Packaged CCE script, configure a corresponding VXML Server script with Call Studio. The VXML Server script must

- Begin with a Unified CVP Subdialog_Start element (immediately after the Call Start element)
 - Contain a Unified CVP Subdialog_Return element on all return points (script must end with a Subdialog_Return element)
 - Must include a value for the call input for the Unified CVP Subdialog_Return element
 - Must add Data Feed/SNMP loggers to enable reporting
-

Call Studio Scripts in Unified CVP

Call Studio scripts can be deployed in one of the following ways:

- In Call Studio, create and deploy the Call Studio scripts to the local machine using the **Archive** option.
- In Call Studio, use the **Deploy Remotely** option to deploy the scripts to an FTP Server.
- In the Operations Console, upload the archived Call Studio script file from the local machine to the Operations Server and deploy it to other VXML Server machines.

Deploy Call Studio Scripts Using Call Studio

Procedure

Step 1 Create or modify one or more VoiceXML application scripts.

Step 2 Use Call Studio to set up the loggers using the ActivityLogger, ErrorLogger, and Admin Logger tools. Set up the Unified CVP Datafeed logger for each application.

Note Call Studio also includes CVPDatafeedLogger and CVPSNMPLLogger. Call Studio lets you change other parameters for these loggers, such as log file size, log lever, et cetera.

See the Call Studio documentation for more information.

Step 3 Deploy one or more VoiceXML application scripts to the local machine using the archive option. The archived scripts are saved as a zipped file under a user-specified directory, for example:

C:\Program Files\Cisco\CallStudio

Note The sample folder is C:\Cisco\CallStudio, which is also the default folder.

Deploy Call Studio Scripts Using the Operations Console

Procedure

Step 1 From the web browser, enter the following URL:

<https://ServerIP:9443/oamp> or <http://ServerIP:9000/oamp>

Step 2 Enter your user ID in the User Name field.

Note The first time you log in after installing Unified CVP, enter Administrator, the default user account.

Step 3 In the Password field, enter your password, as follows:

- If you are logging in to the default Administrator account, enter the password that was set for this account during installation.
- If the user ID or password is invalid, the Operations server displays the message, "Invalid Username or password." Click the link, enter your user ID and password again, and click **OK**.

The Operations Console Welcome window appears.

Step 4 Select **Bulk Administration > File Transfer > Scripts and Media**.

Step 5 From the Device Association drop-down menu, select **Gateway**.

Step 6 In the Available pane, select one or more archived script files to deploy.

Step 7 Click the **arrow icon** to move the file from *Available* to **Selected**.

Step 8 Click **Transfer** to transfer the selected archived scripts file(s) to the selected device.



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Outbound Option Scripting

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Outbound Option Scripting

Detailed scripting information for Outbound Option is available in the *Cisco Packaged Contact Center Enterprise Features Guide* at https://www.cisco.com/en/US/products/ps12586/tsd_products_support_series_home.html.



CHAPTER 23

Application Gateway

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Application Gateway

Detailed information for Application Gateway is available in the *Cisco Packaged Contact Center Enterprise Features Guide* at <https://www.cisco.com/c/en/us/support/customer-collaboration/packaged-contact-center-enterprise/products-maintenance-guides-list.html>.



PART VI

Database Administration

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CHAPTER 24

Database Administration

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Unified CCE Database Administration

When you install a new Logger, you create its central database. Create an HDS database on a real-time Administration & Data Server. When you create a database, you specify the size of its data or log files. The data files must be sufficient for all the data that you expect the database to hold. The size of the central and HDS databases depend on your call center traffic and your data retention requirements.



Note For more information on how to perform a manual configuration for integrating AWDB with ECE, see the section *Integrating ECE with Unified CCE* in the [Enterprise Chat and Email Installation and Configuration Guide](#).

The local database (awdb) contains configuration and real-time data, if the Administration & Data Server role includes a real-time server. Because the real-time data in the local database (awdb) are constantly overwritten by new data, the database size remains fairly constant.

Over time, the size of your enterprise or your call volumes can change significantly. Therefore, you might need to resize the central and HDS databases to meet new requirements. You normally do not need to resize the local database (awdb). To resize the local database (awdb), use the ICM Database Administration (ICMDBA) tool.

The data in the central database and HDS database grow as they accumulate historical data and call detail records. The growth is directly related to the following factors:

- Size of the Unified ICM configuration; for example, how many services, skill groups, routes, and trunk groups are configured.
- Call rate; that is, how many calls per day the system software is handling.
- How long historical data is kept in the database.

The amount of configuration data directly affects the amount of historical data generated. The system software generates a new historical record every half hour for each service, skill group, route, trunk group, and so on, that is configured in the Unified ICM system.

You size and create the central and HDS databases after installing the system software. Use the Database Sizing Estimator applet for estimating the size of these databases, based on the expected usage.

If your configuration expands significantly or if you change the retention times for historical data, you might have to increase the size of the database. This increase might involve adding more disks to the system.

Historical Data

The system software initiates a purge process on the Logger once every day. By default, the purge process runs each night at 12:30 A.M. The purge process deletes records that are older than a specified number of retain days. When you set up the Logger using the Web Setup tool, you can modify the default retention time and purge schedule.

This table lists the *default* settings for retaining historical data.

Historical tables	Default retention time
Logger_Admin, Import_Rule_History, Persistent	30 days
Recovery	3650 days
All other historical tables	14 days

The following large historical tables are not purged by the system software but as a scheduled SQL Server Agent Job:

- Agent_Event_Detail
- Call_Type_SG_Interval
- Dialer_Detail
- Network_Event_Detail
- Route_Call_Detail
- Route_Call_Variable
- Termination_Call_Detail
- Termination_Call_Variable

**Caution**

SQL Server Agent Jobs are installed and enabled during the Unified CCE install and upgrade procedure. Do not stop these jobs while the system software is active. If you plan to stop the Logger and Administration & Data Server-hds component services for maintenance for more than a day, manually disable the Microsoft SQL Server jobs using the SQL Server enterprise management tool. Later, after the services are started, re-enable the jobs.

Database Statistics

Maintaining accurate, up-to-date statistical details is essential to a well-run database environment and contributes to the optimizer's efficient handling of work load. In some SQL Server-based environments, it is not unusual to see users rely on the database itself to maintain statistics by using the Auto Create Statistics and Auto Update Statistics options. Setting these options in an AW environment (with its rapid data turnover) results in a considerable effort being expended in updating statistics. For that reason, users often schedule these options to run during off-peak hours. Because the database in the AW environment is nearly empty during off-peak times, however, statistics gathered then might not be as helpful as they would be when collected at other, busier times.

Another option to consider for gathering statistics is the creation of a SQL Server Agent job that periodically executes the Microsoft stored procedure `sp_updatestats`. The `sp_updatestats` procedure updates statistics as required for all user-defined and internal tables in the current database and can be run on an hourly basis if workload and environment permit.

Database Administration Tool

Unified CCE includes the ICMDBA tool (`icmdba.exe`) in the `\icm\bin` folder. This tool provides a central utility to administer the Unified ICM databases. Use this tool to:

- Create, edit, and delete central databases, local databases, and historical databases
- Resize database files
- Recreate databases
- Import and export Unified ICM configuration data to and from databases
- View database properties

In addition to these tasks, you can start or stop a server and do some limited SQL Server configuration.

**Note**

Before using the ICMDBA tool, install the Unified CCE software. See the Cisco Unified Contact Center Enterprise Installation and Upgrade Guide, for information on the Unified CCE installation.



Note The ICMDBA Import /Export feature works on Unified ICM configuration data only. To import or export Unified ICM historical data, use Microsoft's SQL Server Database Backup and Database Restore utilities.

You start the ICMDBA either by double-clicking **ICMDBA** in the Unified CCE Tools folder or by selecting **Start > Run > ICMDBA**.

The main window is a tree hierarchy displaying the Unified ICM database servers in the current domain.



Note If you cannot find the server you want in the main window, you can select any computer on your local network by choosing **File > Add Computer**.

Expanding the server name displays the Unified ICM instances that have databases on the server. Expanding the Unified ICM instance displays a specific Unified ICM node or nodes (Administration & Data Server and Logger) on machines that have databases for that instance. Expanding the node displays the databases associated with the node. Expanding the node database displays a list of the individual tables in the node database. Under databases are the table groups, and the final level lists the tables in the group.

You can create databases for instances with or without configured components. When an instance does not have configured components, database creation occurs under the instance within a component placeholder on the ICMDBA tree view.

To view the properties of a table, right-click the desired table in the list and select Properties from the context menu, or double-click the table in the list.

There are two ways to access the ICMDBA tool functions:

- From the main window, select a node or database from the tree and then select a function from the menu bar menu.
- Right-click a node or database to display a context menu.

Create Database with Configured Components

Use the Create function to create a database for an Administration & Data Server or Logger. You can only create one Logger database per side.

Procedure

- Step 1** With the Unified CCE running, for the server and instance, select the node (Administration & Data Server or Logger) where you want to create the database.
- Step 2** Select **Database > Create** from the menu bar (or click the right mouse button and select **Create**). The **Create Database** window is displayed.
- Step 3** Enter the following information for the database:
 - **DB Type**—Specify the type of database: **Outbound Option** for an outbound dialer, **Administration & Database Server** for a local database (awdb), or **Historical Data Server/Detail Data Server (HDS/DDS)**

for Administration & Data Server machines. For a **Logger** device, the default database type is displayed (Logger side must be selected).

- **ICM Type**—Specify whether this system is a Unified ICM or Unified CCE, Unified ICMH, or CICM (Customer ICM) system.
- **Region**—Specify regional information where applicable.

Step 4 Select **Add**. This button invokes the **Add Device** window.

Use this window to create a new data file and a new log file for the selected database. Specify the disk drive letter and size in megabytes for each new file.

Note Move the database log file to a separate virtual drive. By default, both the log file and database data file are installed in \MSSQL\DATA on the virtual drive where you create the database. You can move the log file with SQL Server Management Studio.

Note By default, the newly created data file is set to “Automatically Grow,” if it exceeds the initially specified size. You can modify this setting, and the maximum file size, with SQL Server Enterprise Manager. Verify on the **Files** page in SQL Server Enterprise Manager that the **Autogrowth** column shows:

- Data files automatically grow in 100-MB increments.
- Log files automatically grow in 10% increments.

Step 5 After you complete entering information in the **Create Database** window, select **Create** to close the window and create the database.

Create Database Without Configured Components

Use the Create function to create a database for an Administration & Data Server or Logger. You can only create one Logger database per side.



Note When an instance does not have any configured components, database creation occurs under the instance within a component placeholder.

Procedure

- Step 1** With Unified CCE running, for the server and instance, select the instance where you want to create the database.
- Step 2** Select **Database > Create** from the menu bar (or click the right mouse button and select **Create**). The **Select Component** dialog appears.
- Step 3** Select the **Administration & Data Server**, **LoggerA**, or **LoggerB** component and select **OK**.
- Step 4** If you select LoggerA or LoggerB, the **Select Logger type** dialog appears, allowing you to select **Enterprise**, **CICM**, or **NAM**. Select the logger type and select **OK**. The **Create Database** window appears.
- Step 5** Enter the following information for the database:

- **DB Type**—Specify the type of database: **Outbound Option** for an outbound dialer, **Administration & Database Server** for a local database (awdb), or **Historical Data Server/Detail Data Server (HDS/DDS)** for Administration & Data Server machines. For a **Logger** device, the default database type is displayed (Logger side must be selected).
- **ICM Type**—Specify whether this system is a Unified ICM or Unified CCE, Unified ICMH, or CICM (Customer ICM) system.
- **Region**—Specify regional information where applicable.

Step 6 Select **Add**. This button invokes the **Add Device** window.

Use this window to create a new data file and a new log file for the selected database. Specify the disk drive letter and size in megabytes for each new file.

Note Move the database log file to a separate virtual drive. By default, both the log file and database data file are installed in \MSSQL\DATA on the virtual drive where you create the database. You can move the log file with SQL Server Management Studio.

Note By default, the newly created data file is set to “Automatically Grow,” if it exceeds the initially specified size. You can modify this setting, and the maximum file size, with SQL Server Enterprise Manager. Verify on the **Files** page in SQL Server Enterprise Manager that the **Autogrowth** column shows:

- Data files automatically grow in 100-MB increments.
- Log files automatically grow in 10% increments.

Step 7 After you have completed entering information in the Create Database window, select **Create** to close the window and create the database.

Delete a Database

Use the Delete function to delete an Administration & Data Server or Logger database.



Note When an instance does not have any configured components, component placeholders appear under that instance on the application tree view. If you delete the database, the component placeholders no longer appear.

Procedure

- Step 1** With Unified CCE running, for the server, instance, and node (Administration & Data Server or Logger), select the database that you want to delete.
- Step 2** Select **Database > Delete** from the menu bar.
- Step 3** The **Delete Database** prompt appears. Select **Yes** to delete the database.
- Step 4** Verify that you want to delete the database in the message box.

- Step 5** Select **Close** to exit. Check the main window to verify that the database was deleted.

Expand a Database

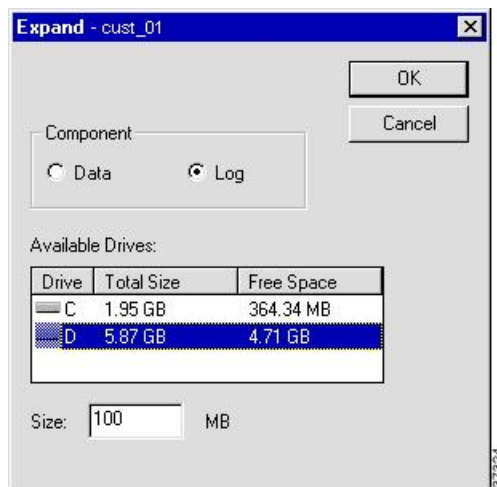
Use this function to add a new storage file.



Note ICMDDBA allows a database to be expanded a maximum of 49 times (resulting in 50 segments). In the event that you reach this limit, you must either recreate the database or use SQL Enterprise Manager to modify the database.

Procedure

- Step 1** For the server, instance, and node (Administration & Data Server or Logger), select the database that you want to expand.
- Step 2** Select **Database > Expand** from the menu bar (or click the right mouse button and select **Expand**). The **Expand** window appears:



- Step 3** Use the window to adjust the size allocation on the database storage device, by completing the following fields:
- **Component**—Specifies whether the file is a data file or log file. Each database must have a file for each type of service.
 - **Available Drives**—Specify the drive on which to create the database.
 - **Size**—Specifies the size (in MB) of the storage. The field displays a default size, adjust the value as necessary.
- Step 4** Select **OK** to expand the file and exit the screen.

Recreate a Database

Use the Recreate function to recreate a database. The procedure for recreating a database is similar to the procedure for creating a database.



Caution When you recreate a database, the information currently stored in the database is deleted.



Note When an instance does not have any configured components, database creation occurs under a component placeholder on the application tree view.

Procedure

- Step 1** For the server, instance, and node (Administration & Data Server or Logger), select the database that you want to recreate.
- Step 2** Select **Database > Recreate** from the menu bar. The **Recreate** window appears.
- Step 3** Enter the database information. See the online help for a description of the fields.
- Step 4** Select **Create** to continue. A message is displayed asking if you are sure you want to recreate the database. Select **Yes** to continue the operation.
- Step 5** The next **Recreate Database** window appears. Select **Start** to recreate the database. After the process completes, a message appears indicating the action was successful. Select **OK** and then select **Close** to exit.

View Database Properties

The ICMDBA tool allows you to view the properties of specified databases.

Procedure

- Step 1** For the server, instance, and node (Administration & Data Server or Logger), select the database that you want to view.
- Step 2** Select **Database > Properties** from the menu bar (or click the right mouse button and select **Properties**). The **Properties** window appears.
The screen display includes the following information:
 - Instance name
 - The database configuration
 - The size and percentage used of the files
 - Where the data and log files are stored
- Step 3** After you finish viewing the database properties, select **Close** to exit the window.

View Table Properties

ICMDBA also allows you to view the properties of each table in the database.

Procedure

-
- Step 1** Select and expand the database to display the tables of a database.
 - Step 2** Double-click the table you want to view. The **Table Properties** window appears.
 - Step 3** After you finish viewing the table properties, select **Close** to exit the window.
-

Import and Export Data

You can use Import/Export functions to move Unified ICM configuration data from one database to another.



Note The ICMDBA Import/Export feature handles Unified ICM configuration data only. To import or export Unified ICM historical data, use Microsoft's SQL Server Database Backup and Database Restore utilities.

Procedure

-
- Step 1** For the server, instance, and node (Administration & Data Server or Logger), select the database from which you want to import or export data.
 - Step 2** Select **Data > Import** (or Export) from the menu bar. The **Import data to** (or Export) window appears.
 - Step 3** Check **Lockout Changes**, if you want to prevent changes to the database during the import or export operation.
 - Step 4** Check **Truncate Config Message Log**, if you want to truncate the Config_Message_Log table in the Logger database.
 - Note** Truncating deletes the data and does not export the Config_Message_Log table.
 - Step 5** Set the **Data type** for the imported data.
 - Step 6** Indicate the path for the source/destination of the data.
 - Step 7** Select **Import** (or Export) to display the **Import** (or Export) dialog.
 - Step 8** Select **Start** to import (or export) the data. After the process completes, a message appears indicating that the action was successful. Select **OK** and then select **Close** to exit. You can select **Cancel** at any time to end the process.
-

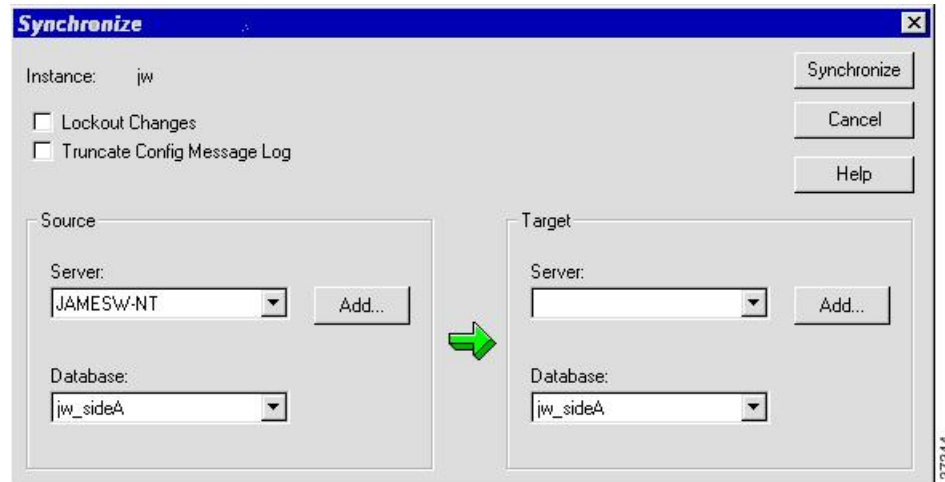
Synchronize Database Data

Use the Synchronize function to synchronize the configuration data of two Logger databases. This function does not synchronize the historical data.

Procedure

Step 1 For the server and instance, select the Logger database to synchronize.

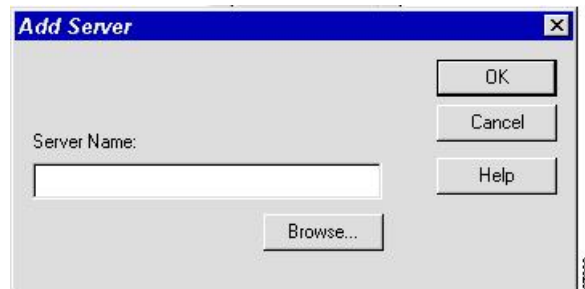
Step 2 Select **Data > Synchronize** from the menu bar. The **Synchronize** window appears:



Step 3 Check **Lockout Changes**, if you want to prevent changes to the database during the synchronize operation.

Step 4 Check **Truncate Config Message Log**, if you want to truncate the Config_Message_Log table in the Logger database.

Step 5 Select the server name and database for both source and target from the drop down lists. To select a server that is not on the drop down list, select **Add** and enter the server name in the **Add Server** box:



Step 6 Select **Synchronize**.

Step 7 A message box appears asking for confirmation. Select **OK** to continue.

Step 8 The next **Synchronize** window appears. Select **Start** to synchronize the data. After the process completes, a message appears indicating that the action was successful. Select **OK** and then select **Close** to exit. You can select **Cancel** at any time to end the process.

Configure a Database Server

ICMDBA allows you to start or stop a server and to do some limited server configuration.

To start or stop a server, select the node from the list and select **Server > Start/Stop** from the menu bar.



Note When you use the Configure option, the SQL Server, Administration & Data Server, and Logger restart automatically. However, when you use the Stop option from the Server menu, manually restart the Logger and Administration & Data Server from ICM Service Control.

Procedure

- Step 1** Select the server and select **Server > Configure** from the menu bar. The **Configure** window appears.
- Step 2** Use this window to modify the following SQL Server parameters:
- **User Connections**—Indicates the maximum number of users that can connect to SQL Server at one time.
 - **Locks**—Indicates the maximum number of available locks.
 - **Open Objects**—Indicates the maximum number of available open objects.
- Note** User Connections, Locks, and Open Objects are “dynamically allocated” by SQL Server. Unified ICM does not allow you to change these options, so they are dimmed.
- **Open Databases**—Indicates the maximum number of available open databases.
 - **Memory**—Indicates the amount of memory (in megabytes) allocated to SQL Server processing.
- Note** You can configure a specific amount of memory instead of the SQL Server default of “Dynamic.” Specifying a value of 0 sets the Memory setting to “Dynamic.”
- **Recovery Interval**—This setting controls checkpoint frequency.
 - **Max Async ID**—Indicates the maximum number of outstanding asynchronous disk input/output (I/O) requests that the entire server can issue against a file.
- Step 3** After you are finished configuring the server, select **OK** to complete the operation or select **Cancel** to end the operation without making any changes.

Database Sizing Estimator Tool

The Database Sizing Estimator tool enables you to perform database sizing tasks.

The Database Sizing Estimator estimates the storage requirements for a Cisco Unified ICM/CCE logger or HDS database. The tool bases the estimate on information about the configuration of the environment (for example, the number of agents, skill groups, call types, and so on) and database retention days. You can supply initial values by loading values from your local Unified ICM database.

When values are updated in the Database Sizing Estimator, the application recalculates its totals. This update enables you to immediately see the affects of each change as it is made, with the values displayed in a spreadsheet. The tool enables you to engage in what-if scenarios to see the effects that various changes have on the database sizing requirements.

The Database Sizing Estimator allows you to save the values as an XML file on your local machine. At any time, you can load the saved XML file back into the Database Sizing Estimator, so you can continue revising your estimates.

Cisco Unified ICM/CCE Database Retriever Dialog

The Cisco Unified ICM/CCE Database Retriever dialog, which you access from the Database Sizing Estimator tool, queries the existing database and registry configuration. The Database Sizing Estimator tool then uses this data to provide starting values, which you can modify.

To access the **Database Retriever** dialog, select **Load from DB** in the Database Sizing Estimator tool on your local machine.



Note Cisco Unified ICM/CCE Database Retriever can retrieve the configuration and retention information from any Unified ICM/CCE system containing a Logger or Historical Data Server (HDS) database. The Database Sizing Estimator can calculate a database size for a newer schema other than the deployment to which the Database Sizing Estimator is connected.

Start Database Sizing Estimator

The following steps describe how to start the Database Sizing Estimator.



Note For Database Sizing Estimator field-level descriptions, see the online help.

Procedure

- Step 1** Open the Database Sizing Estimator tool by selecting **Database > Estimate** in the ICMDBA tool.
- Step 2** The Cisco Unified ICM/CCE Database Sizing Estimator window appears:

Database Sizing Estimator

Configuration

Agents:	10	Routing Clients:	10	Translation Routes:	10
Application Gateways:	10	Scripts:	10	Trunk Groups:	10
Call Types:	10	Services:	10	Precision Queue:	10
Network Trunk Groups:	10	Skill Groups:	10	Precision Queue per Agent:	10
Peripherals:	10	Skills per Agent:	10		
Routes:	10	Skills per Call Type:	10		

Call and Event Data | Interval Data | Five Minute Data | Outbound | Advanced

	Records Per Day	Days	MB
<input checked="" type="checkbox"/> Route Call Detail	1000	14	11.8
<input checked="" type="checkbox"/> Termination Call Detail	400	14	8.5
<input checked="" type="checkbox"/> ECC Variables Stored	# of Variables Per Call Detail: 0	Total ECC Bytes Per Call Detail: 0	Days: 14, MB: 0.0
<input checked="" type="checkbox"/> Events	10000	14	244.2

Database Size

Required: 741.5 MB

Database Version

Schema Version: 10.0(x)

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- Step 3** The window displays initial default values for all fields. As you change the field values, the database size requirements update automatically. You can load values from a previous version or from the **Cisco Unified ICM/CCE Database Retriever** dialog by selecting **Load from File** to load an external XML data file.

Estimate Database Size



Note Steps 1–3 in this procedure only apply when using existing databases.

Procedure

- Step 1** Use your existing database as the starting point. Select **Load from DB** in the **Database Sizing Estimator** main window. The **Cisco Unified ICM/CCE Database Retriever** dialog appears.
- Step 2** Select the database you want to use as the starting point for your sizing estimates.
- Step 3** Select **Retrieve**.

The fields in the **Database Sizing Estimator** main window auto-populate with the information from the selected database.

- Step 4** Modify the database information depending on your scenario. As changes are made, the **Database Size Required** value changes.
- Step 5** Save your work in progress by selecting **Save to File**.
-

Administration & Data Server with Historical Data Server Setup

There are two ways to set up a Historical Data Server (HDS) VM:

- The instance is created in the domain, but not already added.
- The instance is created in the domain and is already added.

Set Up HDS and Add Instance

Procedure

- Step 1** Run the Cisco Unified ICM/Contact Center Enterprise & Hosted Installer (if you have not run it already) on the local machine.
- Step 2** Run the Web Setup tool for that machine (in a browser, from anywhere). Under **Instance Management**, select **Add** and add the instance.
- Step 3** Run the ICMDBA tool on the local machine. Create the Historical Data Server/Detail Data Server database.
- Step 4** Return to the Web Setup tool. Under **Component Management**, select **Add** on the Administration & Data Server list page, then follow the instructions in the Cisco Unified Contact Center Enterprise Installation and Upgrade Guide. If you did not perform step 3, the Administration & Data Server **Add** wizard does not allow you to finish this procedure until you create an HDS database.
-

What to do next

Use the Database Sizing Estimator tool to determine the size of the database and then use the ICMDBA tool to create the database.

Set Up HDS from Added Instance

Procedure

- Step 1** Run the Cisco Unified ICM/Contact Center Enterprise & Hosted Installer (if you have not run it already) on the local machine.
- Step 2** In the Web Setup tool, under **Component Management**, select **Add** on the Administration & Data Server list page, then follow the instructions in the Cisco Unified Contact Center Enterprise Installation and Upgrade

Guide. If you did not perform step 1, the Administration & Data Server **Add** wizard does not allow you to finish this procedure until you create an HDS database.

What to do next

Use the Database Sizing Estimator tool to determine the size of the database and then use the ICMDDBA tool to create the database.

Database Size Monitoring

Regularly monitor the space used by the central database and transaction logs. You can monitor database size by viewing the Logger's per-process log files. The per-process log files contain information on Logger and database activity, as this example log file illustrates:

```

C:\icr\bin\DUMPLLOG.exe
Events from February 25, 1997:
00:38:13 Trace: 81% of the available free space is used in cus01_sideA database.
01:08:13 Trace: 76% of the available free space is used in cus01_sideA database.
02:08:15 Trace: 77% of the available free space is used in cus01_sideA database.
07:08:21 Trace: 78% of the available free space is used in cus01_sideA database.
12:08:27 Trace: 79% of the available free space is used in cus01_sideA database.
17:07:32 Trace: 80% of the available free space is used in cus01_sideA database.
22:07:38 Trace: 81% of the available free space is used in cus01_sideA database.

Events from February 26, 1997:
00:37:41 Trace: 79% of the available free space is used in cus01_sideA database.
01:07:42 Trace: 70% of the available free space is used in cus01_sideA database.
05:07:47 Trace: 71% of the available free space is used in cus01_sideA database.
09:37:52 Trace: 72% of the available free space is used in cus01_sideA database.
10:37:54 Trace: 73% of the available free space is used in cus01_sideA database.
11:07:54 Trace: 74% of the available free space is used in cus01_sideA database.
12:07:56 Trace: 75% of the available free space is used in cus01_sideA database.
13:07:57 Trace: 76% of the available free space is used in cus01_sideA database.
13:37:57 Trace: 77% of the available free space is used in cus01_sideA database.
14:37:59 Trace: 78% of the available free space is used in cus01_sideA database.
15:38:00 Trace: 79% of the available free space is used in cus01_sideA database.
  
```

The Logger logs events and trace messages that show the percentage of space used in the database. These files are stored in a \logfiles subdirectory in the Logger's folder (1a or 1b). You can view the Logger's per-process log files by using the Unified ICM dumplog utility.

When the database becomes 80 percent full, the Logger logs an EMS warning message to the central database. The "80 percent full" warning message might also immediately be sent to your Unified ICM network management station through SNMP or SYSLOG.



Note See the [Serviceability Best Practices Guide for Cisco Unified ICM/Contact Center Enterprise](#) for more information on using the dumplog utility.

If you decide that you need more database space, contact your Unified ICM support provider.

System Response When Database Nears Capacity

The system software has automatic checks to prevent the central database from becoming full:

- **Warning message**—When the central database begins to approach its capacity, the system software issues a warning message. By default, this warning occurs when the database is 80% full, but you can configure this value. Warning messages trigger an event that is registered in AlarmTracker, which the console window displays in an EMS trace message.
- **Purge Adjustment**—Purge Adjustment automatically deletes the oldest historical data when the database usage exceeds 80% threshold or when the central or HDS database nears its capacity. However, purge adjustment does not happen immediately. It happens at the default scheduled purge time (00:30 AM), or at the time that you have specified for the scheduled purge to happen.

By default, purge adjustment occurs when the database is 80% full, but you can specify the percentage when you set up the Logger.

If the historical databases for the Logger, AW-HDS-DDS, AW-HDS, and HDS-DDS are not adequately sized, the purge adjustment feature is activated when the database usage exceeds the threshold. Use the **Database Sizing Estimator** tool to size your database requirements.



Note The purge adjustment feature affects performance of the Unified CCE system. The high CPU and disk usage due to purge adjustment could affect component performance including failures.

See the Cisco Unified Contact Center Enterprise Installation and Upgrade Guide for more on purging information from databases.

- **Emergency/Automatic Purge**—By default, the system automatically deletes the oldest historical data from all historical tables when the database exceeds 90% usage capacity.

The automatic purge ensures that the database can never become full. But, the purge means that you can lose older historical data.

Allocation of More Database Space

If the central database is growing too large, you can allocate more space. If you require more space in the central database, back up the primary database before you add more space. Your Unified CCE support provider might have options for allocating more space.

Initialize Local Database (AWDB)

Normally, you do not need to initialize the local database (awdb), because initialization happens automatically during its creation. If you ever need to initialize the local database after its creation, you can do so.

Procedure

- Step 1** Double-click **Initialize Local Database** within the Administration Tools folder. The **Initialize Local Database** main window appears.
- Step 2** Select **Start** to transfer the data. As data is copied, the screen displays the number of rows processed for each table.

Step 3 After the transfer is complete, select **Close** to exit.

General Database Administration

Because Unified ICM is a mission-critical application that runs 24 hours a day, the system software takes care of many routine administration tasks automatically. In general, the system software retains control of most of the database administration functions in order to keep external interference to a minimum.

The Unified ICM administrator might perform several optional Unified ICM administration tasks:

- Setting networking options
- Monitoring Logger activity
- Backing up the central database
- Restoring the central database from a backup
- Comparing databases
- Resynchronizing databases



Note To conserve system resources, minimize all Unified ICM process windows before configuring your system.

Logger Events

You can view recent Logger activity by viewing the Logger's per-process log files. Per-process log files document events for the specific processes running on a computer. These files are useful in diagnosing problems with processes on the Logger (and on other nodes in the Unified ICM system).

You can also view Logger event data in the central database. The Event Management System (EMS) logs events to the central database. Be especially aware of Error and Warning events generated by the Logger. For example, the system software logs a Warning event when the central database becomes 80% full.

See the [Serviceability Best Practices Guide for Cisco Unified ICM/Contact Center Enterprise](#) for more information on viewing the per-process log files and central database event data.

Database Networking Support

You can use the SQL Server Setup program to specify which network protocols the database manager supports.

The correct order and states are:

1. **Shared Memory**—Enabled
2. **Named Pipes**—Enabled
3. **TCP/IP**—Enabled
4. **VIA**—Disabled

See the *Staging Guide for Cisco Unified ICM/Contact Center Enterprise* http://www.cisco.com/en/US/products/sw/custcosw/ps1844/prod_installation_guides_list.html for detailed information about installing SQL Server. For more information about database networking, see the Microsoft documentation for Microsoft SQL Server.

Database Backup and Restore

A database can be lost or corrupted for several reasons. Because you cannot protect against all these reasons, you must have a backup strategy in place. This backup strategy is especially important if you have a nonredundant central database configuration. However, even for a redundant system, you still need to perform backups to protect against software problems that corrupt both sides of the system.

The commonly used database backup strategies are:

- Regularly scheduled database backups
- Mirrored disk configurations
- Redundant Array of Inexpensive Disks (RAID) configurations

Although the last two strategies might decrease system performance, they have the advantage of not requiring manual intervention. However, while these configurations protect against disk drive failure and bad media, they might not protect against some software errors.

In a single database configuration, ensure protection against all types of errors. To protect your data, regularly back up the central database with the SQL Administrator tool provided with SQL Server.

When you restore a database, you can only restore up to the last backup. Any transactions after that backup are lost. In single database configurations, daily backups are required to ensure maximum data protection.



Note You must back up the entire database at each backup interval. The system software does not support the use of transaction log dumps as incremental backups.

For general information about developing a backup strategy, including the use of mirrored disks, see *Microsoft's SQL Server System Administrator's Guide*. For specific information about backing up a database using SQL Administrator, see *Microsoft's SQL Administrator User's Guide*.

Database Recovery Models

When you install a Logger and create an HDS database, the ICMDBA tool automatically sets the database recovery model to Simple. The Simple model is required for the Unified CCE data recovery mechanism.

When you create the local database (AWDB), the ICMDBA tool automatically sets the recovery model to Bulk-Logged. If required, you can modify the SQL properties of AWDB to set the model to Simple. For more information, see your Microsoft documentation.

Database Comparison

For diagnostic purposes, you can check that two databases have the same data in a specific table. For example, you can check that the ICM_Locks table contains the same data on both sides of a Central Controller. The tool `dbdiff.exe` performs this type of check. Its syntax is as follows:


```
dbdiff database1.table@host1 database2.table@host2
```

For example:

```
dbdiff cust1_sideA.ICM_Locks@geoxyzlgra cust1_sideB.ICM_Locks@geoxyzlgrb
```

The batch script `diffconfig.bat` invokes **dbdiff** for various tables to automatically compare two Unified ICM databases. Its syntax is as follows:

```
diffconfig database1 host1 database2 host2
```

For example:

```
diffconfig cust1_sideA geoxyzlgra cust1_sideB geoxyzlgrb
```

Database Resynchronization

You might occasionally need to repair corrupt configuration data on the Logger database on one side of a redundant Unified ICM by copying the configuration data on Logger database from the other side. You can synchronize the configuration data on the databases using either the DOS Command window or the ICM Database Administration (ICMDBA) tool.

The ICMDBA synchronize process involves dropping the targeted side data and copying the data from the source. For example, if you are synchronizing side B data to side A data, the side B data is replaced with the data stored in side A. For more information, see [Synchronize Database Data, on page 299](#).



Note Perform these procedures in a maintenance window.

Synchronize Configuration Data between Loggers from Command Window

Procedure

-
- Step 1** Stop the Logger for the target database, if that Logger is running.
 - Step 2** In a DOS Command window on the VM for that Logger, change to the `\icm` directory.
 - Step 3** Run the following command: `install\syncloggers <Source_logger_server> <Source_logger_database> <Target_logger_server> <Target_logger_database>`.
 - Step 4** When prompted, Type **Y** to continue, upon which configuration of target database will be deleted and synced with source database.
-

What to do next

When the command is complete, restart the Logger on the target server.



APPENDIX A

Troubleshooting

- [Packaged CCE Logs, on page 311](#)
- [Native Character Sets, on page 313](#)
- [System Performance During Database Updates, on page 314](#)

Packaged CCE Logs

You can download several types of Packaged CCE log files from the Unified CCE Administration interface.

System Validation Logs

When you configure your deployment, if either the server or any of the VMs do not meet requirements, you see a message indicating connection problems. This message has a link to a log file. Open this file to see whether the servers are valid and whether all VMs match the deployment profiles.

Sample log file showing summary of invalid results:

```
VM Validation Results: Wed Aug 20 08:05:36 EDT 2012
Overall: false
Valid Systems: 0 of 1
Summary:
ESX Server: sideB
ESX Server Properties Valid: true
VM Layout Valid: false.
```

The information at the top of the log is a summary of the results. This log shows that the server is valid but the VM layout is not.

Sample log showing invalid server

This shows that the server does not have the required number of CPU Cores.

```
Server Result:
Required Version: 5.0.0
Required Min CPU Cores: 20
Required Min Memory (MB): 95000
Required HD(s) (GB): [1392, 1949, 273]
Required Bios <Major version>: C260
Required Vendor: Cisco Systems Inc
Found Version: 5.0.0
Found CPU Cores: 10
Found Memory (MB): 98185
Found HD(s) (GB): [1392, 273, 1949]
```

```
Found Bios: C260.1.4.2b.0.102620111637
Found Vendor: Cisco Systems Inc
```

There are three log entries for invalid VMS:

- Required Profiles without Matching Virtual Machines

This means system does not have VMs present that match our requirements

- Optional Profiles without Matching Virtual Machines

This means that the CVP Reporting profile, which is defined as optional, does not exist on the system. This does not block validation.

- Virtual Machines without Matching Profiles

This means the system has VMs that do not match requirements. They might be extra VMs or incorrectly-configured VMs.

Sample log showing valid VM

```
Virtual Machines Matching Defined Profiles:
VM: BB-CCE-AW-A
Profile: Unified CCE Data Server
CPU Cores: 4
Reservation: 5100
RAM (MB): 8192
HD(s) (GB): [80, 750]
VMWare Tools Version: 8384
```

Bulk Job Logs

A log file is generated for each bulk job. The log file is retained until the bulk job is deleted and contains details about each operation that was executed, as well as a summary indicating whether the bulk job completed successfully or failed.

Follow this procedure to open the log:

1. Open the Bulk Jobs tool.
2. From the List of Bulk Jobs, click the ID to go to the View Bulk Job page.
3. Click Log File **Download**. If the job is still processing, click **Download** again to review the updates as the job progresses.

You must authenticate to open or save this file.

The **Download** button is disabled if the bulk job was created using Unified CCE Administration on an AW host that is different from the host on which the job is being viewed.

Sample log file:

```
2016-06-27T17:20:19-04:00 - Job created
2016-06-27T17:20:19-04:00 - Job started
2016-06-27T17:20:19-04:00 - Processing line 1: Header
2016-06-27T17:20:19-04:00 - Processing line 2: operation=CREATE, agentId=1000,
userName=asmith,
firstName=Agent, lastName=Smith, password=secret, loginEnabled=true, ssoEnabled=false,
description=Agent Smith,
agentStateTrace=false,agentDeskSettingsName=Default_Agent_Desk_Settings,
agentTeamName=robots, skillGroups=sg1;sg2, defaultSkillGroup=sg1, attributes=,
supervisor=false,
supervisorTeams=, departmentName=
```

```

2016-06-27T17:20:20-04:00 - Created /unifiedconfig/config/agentteam/6348
2016-06-27T17:20:20-04:00 - Created /unifiedconfig/config/skillgroup/13515
2016-06-27T17:20:21-04:00 - Created /unifiedconfig/config/skillgroup/13516
2016-06-27T17:20:21-04:00 - Created /unifiedconfig/config/agent/13517
2016-06-27T17:20:21-04:00 - Processing line 3: operation=UPDATE, agentId=,
userName=neo@cisco.com,
firstName=Mister, lastName=Anderson, password=passw0rd, loginEnabled=true, ssoEnabled=false,
description=Neo, agentStateTrace=true,agentDeskSettingsName=~, agentTeamName=~, skillGroups=,
defaultSkillGroup=~, attributes=kungFu=9; actuallyKnowsKungFu=false, supervisor=true,
supervisorTeams=team1;team2, departmentName=department1
2016-06-27T17:20:21-04:00 - Error processing line 3: agentUserName: The specified agent
userName
does not exist neo@cisco.com.
2016-06-27T17:20:21-04:00 - Processing line 4: operation=UPDATE, agentId=1001, userName=,
firstName=,
lastName=, password=, loginEnabled=, ssoEnabled=, description=,
agentStateTrace=,agentDeskSettingsName=,
agentTeamName=, skillGroups=, defaultSkillGroup=, attributes=, supervisor=, supervisorTeams=,
departmentName=
2016-06-27T17:20:21-04:00 - Error processing line 4: agentId: The specified agent Id does
not exist 1001.
2016-06-27T17:20:21-04:00 - Processing line 5: operation=DELETE, agentId=1001, userName=,
firstName=,
lastName=, password=, loginEnabled=, ssoEnabled=, description=,
agentStateTrace=,agentDeskSettingsName=,
agentTeamName=, skillGroups=, defaultSkillGroup=, attributes=, supervisor=, supervisorTeams=,
departmentName=
2016-06-27T17:20:21-04:00 - Error processing line 5: agentId: The specified agent Id does
not exist 1001.
2016-06-27T17:20:21-04:00 - Processing line 6: operation=DELETE, agentId=, userName=jsmith,
firstName=,
lastName=, password=, loginEnabled=, ssoEnabled=, description=,
agentStateTrace=,agentDeskSettingsName=,
agentTeamName=, skillGroups=, defaultSkillGroup=, attributes=, supervisor=, supervisorTeams=,
departmentName=
2016-06-27T17:20:21-04:00 - Error processing line 6: agentUserName: The specified agent
userName does not
exist jsmith.
2016-06-27T17:20:21-04:00 - Job partially completed due to errors
2016-06-27T17:20:21-04:00 - 5 lines processed, 1 succeeded, 4 failed
2016-06-27T17:20:21-04:00 - 1 agent teams created, 1 agents created, 2 skill groups created

```

Native Character Sets

If you installed the Language Pack, the Sign-In window includes a Language drop-down menu. The drop-down menu includes more than a dozen languages. Select any one of them to see the Unified CCE Administration interface and online help in that language.

You must enter characters that the database recognizes in the **Description** field in all tools and in the **First Name** and **Last Name** fields in the Agent tool. If you do not, you see an error message which states that “The system does not support these characters.”

System Performance During Database Updates

Saving, Editing, and Deleting

The addition, update, or deletion of any object triggers a database update. The system can process a single update at a time. When an update is already in progress, the system queues subsequent pending updates.

While updates are pending or in progress, a spinning wheel, indicating progress, appears on the window during a save or deletion.

If an update fails, you see an error message appear indicating that your record was not saved or deleted. You do not need to refresh or navigate away from the page. You can try the save or delete action again.

Validation and Capacity Checks

The system performs the following checks when you initially save or edit and when you confirm a deletion. It performs the same two checks when the transaction reaches the head of the queue and is about to be written to the database.

- Validation check. The initial validation checks if a required field is missing or if a field contains too many characters or invalid characters. The second validation ensures system integrity. For example, are you adding an agent to an agent team that was just deleted?
- Capacity check.

If the transaction fails either check, an error message alerts you to the validation error or capacity restriction.



APPENDIX **B**

Packaged CCE Lab-Only Deployment

- [Packaged CCE Lab Only Deployment Components, on page 315](#)
- [Enable System Inventory, Log Collection, and Live Data Using the Inventory Content File , on page 318](#)

Packaged CCE Lab Only Deployment Components

Packaged CCE Lab Mode allows you to install Packaged CCE for demonstration and lab use. You can use all the features in a limited capacity without the need to install a full Packaged CCE deployment on supported hardware. If you exceed the capacity limit of an attribute, you are alerted with error messages that are displayed in the **Unified CCE Administration** interface.

Packaged CCE Lab Only deployments can be configured as simplex systems or duplex systems only in 2000 Agents deployment. In a simplex system, all components are installed on Side A and there is no Side B. In a duplex system, components are installed on Side A and Side B.

Simplex Mode

The Lab Only simplex deployment must consist of the following components:

- 1 Unified CCE Rogger
- 1 Unified CCE AW-HDS-DDS
- 1 Unified CCE PG
- 1 Cisco Unified CM, functioning as a combined Publisher and Subscriber
- 1 Cisco Unified Intelligence Center, functioning as a combined Publisher and Subscriber
- 1 Cisco Finesse, functioning as both a Publisher and Subscriber
- Gateways
- SocialMiner
- Cisco MediaSense
- Cisco Enterprise Chat and Email
- Third-Party Multichannel



Note In the System Inventory, the status rules that apply to machines outside of the Packaged Contact Center Enterprise Simplex Lab Only deployment returns a status of blocked. Status rules which require ESXi host return a status of blocked.

For remote site, you can add the following external machines:

- Cisco Unified CVP Reporting



Note Adding a CVP Reporting Server via Inventory CSV is not supported. It can only be added as an external server after a successful initialization of inventory.

- Cisco Enterprise Chat and Email



Note SocialMiner can be added as an external machine only in the main site.

For more information on the configuration limits for external machines, see the *Solution Design Guide for Cisco Packaged Contact Center Enterprise* at <https://www.cisco.com/c/en/us/support/customer-collaboration/packaged-contact-center-enterprise/products-technical-reference-list.html>.

Duplex Mode

The Lab Only duplex mode consists of the following components.



Note In Lab Mode, Packaged CCE does not validate the ESXi host.

Side A

Side A must have the following:

- 1 Unified CCE Rogger
- 1 Unified CCE AW-HDS-DDS
- 1 Unified CCE PG
- 1 Cisco Unified CVP OAMP Server
- 1 Cisco Unified CVP Server
- 1 Unified Communications Manager Publisher
- 1 Unified Communications Manager Subscriber
- 1 Unified Intelligence Center Publisher

- 1 Finesse Primary

Side B

Side B must have the following:

- 1 Unified CCE Rogger
- 1 Unified CCE AW-HDS-DDS
- 1 Unified CCE PG
- 1 Cisco Unified CVP Server
- 1 Unified Communications Manager Subscriber
- 1 Unified Intelligence Center Subscriber
- 1 Finesse Secondary

External

The Lab Only duplex mode can have the following external machines:

- Gateways
- Cisco Virtualized Voice Browsers
- SocialMiner
- Enterprise Chat and Email
- Unified CVP Reporting
- MediaSense
- third Party Multichannel



Note Status rules which require ESXi host returns a status of blocked.

For remote site, you can add the following external machines:

- Cisco Unified CVP Reporting
- Cisco Enterprise Chat and Email
- Third-Party Multichannel



Note SocialMiner can be added as an external machine only in the main site.

For more information on the configuration limits for external machines, see the *Solution Design Guide for Cisco Packaged Contact Center Enterprise* at <https://www.cisco.com/c/en/us/support/customer-collaboration/packaged-contact-center-enterprise/products-technical-reference-list.html>.

Enable System Inventory, Log Collection, and Live Data Using the Inventory Content File

To use the following Unified CCE Administration features for demonstration purposes, you must provide Packaged CCE with information and credentials for the machines in your deployment:

- System Inventory (available under **System > Deployment**)
- Log Collection
- Live Data
- Single Sign-on

You provide this information using the Inventory Content File.

If you are configuring the Packaged CCE Lab Only deployment in Unified CCE Administration as part of the installation process, you are prompted to complete and upload the Inventory Content File.

If you switch into Packaged CCE Lab Only deployment from a different deployment, you complete and upload the Content Inventory file in Unified CCE Administration from the Bulk Jobs tool.

To complete and upload the Content Inventory file in Bulk Jobs :

Procedure

-
- Step 1** In the Unified CCE Web Administration, navigate to **Manage > Bulk Jobs** click the **Bulk Import** card on the **Overview** page. Download the Inventory content file template.
- Step 2** Open the file in Microsoft Excel and populate the content file fields as described in Inventory Content File.
- Step 3** Save your changes.
- Step 4** Create a new bulk job in **Bulk Jobs**. In the **Content File** field, select the Inventory content file you created and click **Save**.

Related Topics

[Manage Bulk Jobs](#), on page 81

Inventory Content File

The Inventory content file template contains the following fields:



Note If a username and/or password contains the "=" or "&" characters, use the encoded value of "%3D" or "%26" respectively.

Field	Description
operation	The default is CREATE; do not change the operation.

Field	Description
name	Do not change the machine name. Note This field applies only to duplex mode.
machineType	Do not change the machine type.
publicAddress	Enter the public IP address for each machine.

Field	Description
publicAddressServices	<p>CCE_ROGGER - Do not change this field.</p> <p>CCE_PG - This field specifies services that are required for the Unified CCE PG. If the Logical Controller ID for the UCM PG is not the default of 5000, change the pairing value for the TIP_PG and TIP_PG_TOS services to match the Logical Controller ID. (The Logical Controller ID can be found on the Peripheral Gateways tab of System > Information.)</p> <p>CCE_AW -</p> <p>This field specifies credentials for the Diagnostic Framework for Unified CCE. Replace user@domain.com and password with credentials of a domain user who is a member of the Config security group for the instance. The credentials must be valid on all Unified CCE machines in your deployment.</p> <p>Note Every time the Active Directory credentials are updated, the credentials configured here must be updated as well.</p> <p>CVP_OPS - This field specifies credentials for the Unified CVP Ops Console System CLI and for the Unified CVP Operations Console. For type=DIAGNOSTIC_PORTAL, replace user and password with the correct credentials for the Unified CVP Ops Console System CLI. For type=ADMINISTRATION, replace user and password with the correct credentials for the Unified CVP Operations Console.</p> <p>CM_PUBLISHER - This field specifies AXL credentials. Replace user and password with the correct credentials.</p> <p>CUIC_PUBLISHER - This field specifies the services for Unified Intelligence Center. For the Administration credentials and Cisco Identity Service credentials, replace user and password with the correct credentials. For all other services, do not change the default values.</p> <p>FINESSE - This field specifies Finesse Administration credentials. Replace user and password with the correct credentials.</p>
privateAddress	Enter the private IP address for the CCE_PG and CCE_ROGGER . Leave this field blank for all other machines.
side	Enter sideA or sideB.