

Deploying Cisco Unified Contact Center Express

Volume 2

Version 4.0

Student Guide

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Cisco Unified Contact Center Express ACD Operations

Overview

The Cisco Unified Contact Center Express (CCX) platform provides a multimedia (voice, data, and web), IP-enabled, customer-care application environment that enhances the efficiency of contact centers by simplifying business integration, easing agent administration, increasing agent flexibility, and enhancing network hosting.

Module Objectives

Upon completing this module, you will be able to install and set up Cisco Unified CCX. This ability includes being able to meet these objectives:

- Define and describe Cisco Unified CCX, the components, desktops, and how to set up and configure ACD properties for Cisco Unified CCX installation
- Understand ACD scripting steps in Cisco Unified CCX and create a basic Cisco Unified CCX script
- Describe how to install and use the Cisco Desktop Work Flow Administrator to customize a contact center
- Apply advanced scripting topics to modify routing based on holidays, day of week, time of day, and agent availability. Additionally, the learner will have a basic understanding of exception handling, data manipulation script email generation, and HTTP enabled applications
- Install real-time and historical reporting tools and view reports

Cisco Unified Contact Center Express

Overview

This lesson provides an overview of Cisco Unified Contact Center Express (CCX) as seen as an automatic call distribution (ACD) application.

This module looks at the different components that make the capability of an ACD possible. The topics include agents, supervisors, their desktops, and configuration processes.

Objectives

Upon completing this lesson, you will be able to implement a basic call center. This ability includes being able to meet these objectives:

- Define Cisco Unified CCX
- Define an agent
- Define a supervisor
- Define resource group routing
- Define skills-based routing
- Define CSQs
- Define teams
- Describe using the CAD Client Configuration Tool
- Describe how to use and implement IP Phone Agent
- Describe the Cisco Agent Desktop interface
- Describe the Toolbar buttons on Cisco Agent Desktop
- Describe how to use functions such as making a call and chatting
- Define the Agent states
- Illustrate Contact Management on Cisco Agent Desktop
- Describe Cisco Agent Desktop failover using high availability
- Describe the Cisco Agent Desktop installation process

- Describe upgrading Cisco Agent Desktop software
- Summarize the features of Cisco Supervisor Desktop
- Describe the Cisco Supervisor Desktop interface
- Describe reviewing, saving, and archiving recording files
- Describe how to set preferences for Cisco Supervisor Desktop
- Describe Supervisor Desktop work flows
- Describe the call flow process from the agent selection point of view
- Describe how to configure or modify the RmCm user account
- Describe how to configure an agent in Cisco Unified Communications Manager
- Describe how to configure a supervisor
- Describe how to create a resource group
- Describe how to create a skill
- Describe how to configure a resource
- Describe how to create and define resource group and skills-based CSQs
- Describe how to create and configure teams

Components Defined

This topic defines many of the various terms used in Cisco Unified CCX.

Cisco Unified CCX

This subtopic provides a definition of Cisco Unified CCX.

What Is Cisco Unified CCX?

- Cisco Unified CCX is an ACD software application that provides for the routing of inbound or outbound calls to customer service representatives.



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Cisco Unified CCX manages customer voice contact centers for departments, branches or small- to medium-size companies planning to deploy an entry-level or mid-market contact center solution. It provides an Integrated Automatic Call Distribution (ACD) and Computer Telephony Integration (CTI) virtual contact center solution with support for up to 300 agents and 300 CTI ports.

Cisco Unified CCX Agent

This subtopic provides a definition of a Cisco Unified CCX agent.

Cisco Unified CCX Agent

- Agent—A customer service representative (CSR) who handles inbound or outbound contacts. For Cisco Unified CCX, a contact is a voice call or an email.
- A voice agent must have two components:
 - A method of communication, usually a hard phone, connected to and controlled by Cisco Unified Communications Manager.
 - Agent state control. Usually provided by Cisco Agent Desktop, connected to and controlled by Cisco Unified CCX.

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Cisco Unified CCX Supervisor

This subtopic provides a definition of a Cisco Unified CCX supervisor.

Cisco Unified CCX Supervisor

- Supervisor—In Cisco Unified CCX, a supervisor is an upgraded agent.
- Supervisors provide the supervisory management functions required in a contact center. These functions include:
 - Call monitoring
 - Call recording
 - Barge In
 - Intercept
 - Coaching
- Supervisors supervise teams of agents. A supervisor can supervise multiple teams, but can only supervise one team at a time.

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Resource Groups

This subtopic provides a definition of resource groups.

Resource Groups

Cisco Unified CCX supports basic and skills-based routing of calls to agents. In basic routing, agents are assigned to resource groups. Rules of the road:

- Resource groups are static groupings of agents.
- All agents are treated as equals.
- An agent may be a member of only one resource group.
- Agent selection and other definitions are set in the CSQ.
- The CSQ definition is utilized in the Select Resource step in the script.
- Only one CSQ can point to a resource group.

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UCCXD v4.0—4-8

This figure provides a summary for resource group routing.

Agent Selection Criteria

- Linear—Selects the next available agent in the resource group. This is a top-down ordered list.
- Circular—Selects the next available agent in a resource group in circular order.
- Longest Available—Selects the agent who has been in ready state longest.
- Most Handled Contacts—Selects the agent who has answered the most handled calls.
- Shortest Average Handle Time—Selects the agent who has the shortest average handle time reporting metric.

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UCCXD v4.0—4-9

These are the agent selection criteria for resource group routing.

Skills

This subtopic provides a definition of skills.

Skills

- In Cisco Unified CCX, a skill is an attribute applied to agents.
- An agent may have multiple skills.
- Any skill assignment to an agent will also have a competency rating.
- There is no such thing as a skill group in Cisco Unified CCX.

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This figure provides a summary for skills-based routing.

Additional Agent Selection Criteria

- **Most Skilled**—Selects the agent with the highest total competency level (of all skills) and who has been available for the longest amount of time (in a tie).
- **Most Skilled by Order**—Selects the agent with the highest total competency level in the ordered list.
- **Most Skilled by Weight**—Selects the agent with the highest total competency level multiplied by the associated weight value of the skill.
- **Least Skilled**—Selects the agent with the lowest total competency level (of all skills) and who has been available for the longest amount of time (in a tie).
- **Least Skilled by Weight**—Selects the agent with the lowest total competency level multiplied by the skill associated weight value.
- **Least Skilled by Order**—Selects the agent with the lowest total competency level in the ordered list.

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UCCKD v4.0—4-11

These are additional agent selection criteria for skills-based routing.

Contact Service Queues

This subtopic provides a definition of contact service queues (CSQs).

Contact Service Queue

- The CSQ is a definition created in Cisco Unified CCX Administration.
- This definition is used by the script to determine which agents will be available to be chosen and how to choose them.
- The CSQ is the main reporting object in Cisco Unified CCX.
- For reporting purposes, it is analogous to a skill group in a traditional ACD.

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This figure provides a summary for CSQs.

Teams

This subtopic provides a definition of teams.

Teams

- Teams are groupings of agents for supervisory purposes only.
- Associate supervisors with teams.
 - A supervisor can supervise multiple teams, but only one at a time.
- Associate agents with teams.
 - An agent can be a member of only one team.
- Associate CSQs to teams.
 - To define which CSQ statistics should be available to the Cisco Supervisor Desktop.

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This figure provides a summary for teams.

Client Configuration Tool

Because the CAD services are installed on a Linux platform, it is necessary to run one of two client MSI configuration tools in order to configure the Windows-based CAD client MSIs with the correct configuration information. The tool to use depends on when the MSIs are created:

- Run the Preconfiguration tool before the Unified CCX server is installed.
- Run the CCX Desktop Client Configuration tool after the Unified CCX server is installed.

The MSIs must be preconfigured with language and IP addresses based on the system configuration, using Windows-based libraries and runtime DLLs to perform the configuration.

The client MSI configuration tools will configure the CAD client MSIs and, depending on which tool is run, either save them to the local machine or upload them to the Unified CCX server.

Run the Preconfiguration tool if you want to create client MSIs before the Unified CCX servers have been installed.

Run the Unified CCX Desktop Client Configuration tool in these scenarios:

- Whenever CAD is installed.
- The Cisco Unified CCX server is upgraded with new builds and patches.
- The Cisco Unified CCX server IP address changes.
- The language changes.
- A high-availability system is set up or torn down.
- A high-availability node is replaced.
- The Disaster Recovery Framework (DRF) restore procedure is performed.

The Unified CCX Desktop Client Configuration tool configures the CAD client MSIs, uploads them to the Unified CCX server, cleans up the created temporary files, and terminates.

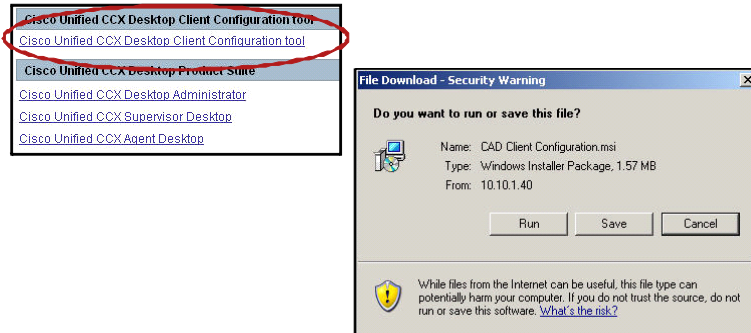
Note	The Windows PC on which you run the Unified CCX Desktop Client Configuration tool must have JRE 1.5 or later installed.

Client Configuration Tool Installation

This subtopic describes the steps required to run the Client Configuration tool.

Client Configuration Tool Installation

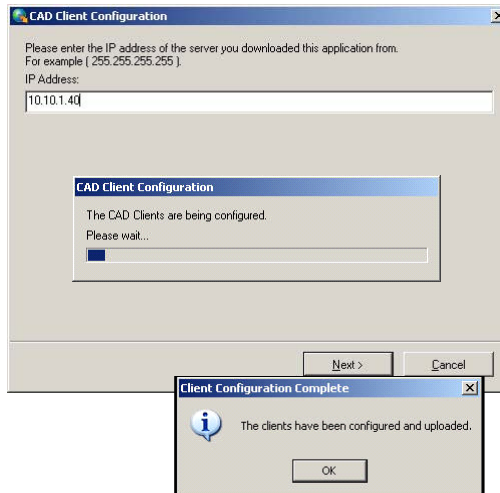
- Navigate to **Tools > Plug-ins**.
- Click **Cisco Unified CCX Desktop Suites**.
- Click **Cisco Unified CCX Desktop Client Configuration tool**.
- Click **Run**.



Navigate to **Tools > Plug-ins** to find the Client Configuration tool. Run the tool from your current location.

Client Configuration Tool Installation (Cont.)

- Enter Cisco Unified CCX server IP address and click **Next**.
- Client Configuration tool will build and insert configuration files on Cisco Unified CCX.
- Client Configuration Tool will complete and remove all files from source machine.



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When the tool runs, these actions will occur:

- It will request the IP address of the Cisco Unified CCX server.
- Create the appropriate MSI files.
- Upload them to Cisco Unified CCX.
- Remove its install files.
- Terminate.

IP Phone Agent

This topic describes the IP Phone Agent interface.

IP Phone Agent

- Used by agents without PCs as an interface to Cisco Unified CCX
- Log in/out, Ready/Not Ready
- Caller data
- Reason codes
- Wrap-up codes
- Agent-initiated recording
- Cisco Supervisor Desktop shows agent phone state.
- Supervisor monitor and record
- Supervisor Barge In and Intercept



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IP Phone Agent is a service that runs from your phone. It provides access to all the basic functions required of an agent. A supervisor can run IP Phone Agent as well but will have a limited set of supervisor activities available.

Features available with IP Phone Agent:

- Log in and log out of Cisco Unified CCX
- View enterprise data
- View CSQ statistics
- Change agent state
- Record calls
- Enter reason codes
- Enter wrap-up data

Supervisor functions available:

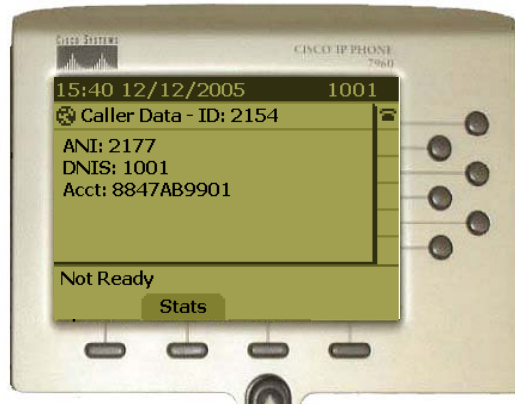
- Initiate record
- Initiate monitor
- Barge In
- Intercept

Caller Data Display

This subtopic describes the Caller Data display for the IP Phone Agent.

Caller Data Display

- Enterprise data may be displayed on ring and/or on answer, or neither.
- Default "Idle page" pushed to phone lets agents see current queue activity.
- Independently configured notification for monitoring and recording can alert agent to supervisor-initiated silent monitoring and call recording.



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This figure provides a summary for caller data.

CSQ Stats Display

This subtopic describes the CSQ Stats display for the IP Phone Agent.

CSQ Stats Display

- Skill statistics available for viewing whenever agent is on call.
- Accessed through the Stats softkey.
- Automatically refreshed every 15 seconds; can be manually updated.
- State: Agent can change states.
- CData: See Caller Data.
- Option: Record Call.



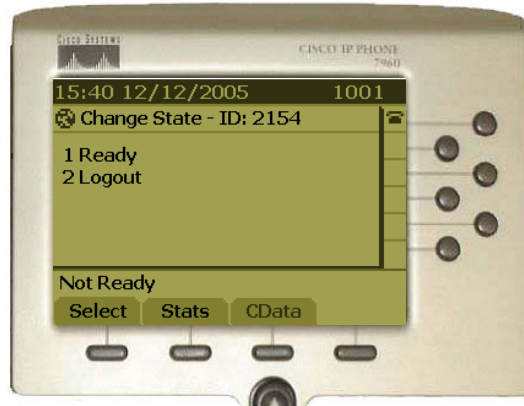
This figure provides a summary for CSQ statistics on IP Phone Agent.

Change State Display

This subtopic describes the Change State display for the IP Phone Agent.

Change State

- Call tracking, call statistics, agent state transitions, and agent statistics information available to supervisor.
- Call recording can be initiated by agent or supervisor.
- Barge In and Intercept available to supervisor.



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This figure provides a summary for changing agent state.

Reason Code Entry

This subtopic describes entering reason codes on the IP Phone Agent.

Reason Codes

- Configurable, viewable reason codes for state changes
- Support for most Cisco IP phones



This figure provides a summary for entering reason codes.

Configuring IP Phone Agent

This subtopic describes the processes required to implement Cisco IP Phone Agent.

Configuring IP Phone Agent

- On Cisco Unified Communications Manager, create IP Phone Service:
 - **http://<Cisco Unified CCX IP Address>:6293/ipphone/jsp/sciphonexml/IPAgentInitial.jsp**
- Assign IP Phone Service to agent IP phones.
- Create an Application User named telecaster.
- Associate all IP Phone Agent phones with telecaster user account.
- Change the URL Authentication parameter (**System > Enterprise Parameters**):
 - **http://<Cisco Unified Communications Manager IP address>:8080/ccmcip/authenticate.jsp**
- In Cisco Desktop Administrator, ensure that telecaster user ID and password are correct for the BIPPA user login.
- To allow agents to initiate recording, navigate to **Cisco Desktop Work Flow Administrator > Call Center 1 > Work Flow Configuration > Work Flow Groups > <Work Flow Group Name> > IP Phone Agent**.
- See Cisco Agent Desktop installation guide for further details.

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Setting up Cisco IP Phone Agent does not require any additional software but does require several configuration actions.

- Create an IP Phone Service in Cisco Unified Communications Manager.
 - In Cisco Unified Communications Manager Administration, choose **Device > Device Settings > Phone Services** to add a new phone service.
 - Use this URL: **http://<Unified_CCX_IP_Address>:6293/ipphone/jsp/sciphonexml/IPAgentInitial.jsp**
 - A one-button login method is also available. Refer to the tech note at: http://www.cisco.com/en/US/products/sw/custcosw/ps1846/products_tech_note09186a008029e6d5.shtml#proc
- Assign the IP Phone Service to your IP Phone Agent phones.
 - Under **Device > Phones** find the configuration page for an IP Phone Agent phone.
 - In the upper right corner of the page, select **Subscribe/Unsubscribe Services** from the **Related Links** drop-down list and subscribe to the service.
- Create an Application User.
 - Navigate to **User Management > Application User**. Add a user with User ID telecaster. (This user ID name is not required but is the well-known default account used for this purpose.)
 - Associate this user with the Standard CTI Enabled user group. Do this in the **Permissions Information** section at the bottom of the page by clicking the **Add to User Group** button.
 - The values here will be needed for entry in Cisco Desktop Work Flow Administrator in a later step.

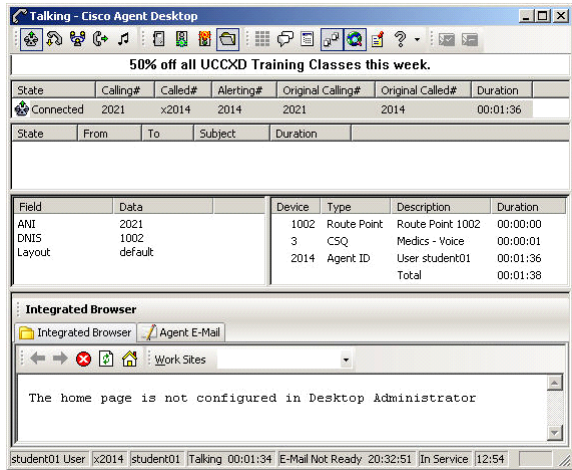
- Associate all IP Phone Agent phones with the telecaster user account.
- Ensure that the URL Authentication Parameter is correct.
 - Under **System > Enterprise Parameters** find the field for the URL Authentication Parameter. It should read: http://<Unified CM IP address>:8080/ccmcip/authenticate.jsp
 - Using the IP address is mandatory.
- In Cisco Desktop Administration ensure that the Services Configuration is correct.
 - Open Cisco Desktop Administrator and navigate to **CAD Configuration Setup**.
 - For the Browser and IP Phone Agent (BIPPA) user login, enter the user account credentials you created in the preceding steps.
- To allow agents to initiate recording, navigate to **Cisco Desktop Work Flow Administrator > Call Center 1 > Work Flow Configuration > Work Flow Groups > <Work Flow Group Name> > IP Phone Agent**, and check the check box.

Cisco Agent Desktop Interface

This topic describes the Cisco Agent Desktop interface.

Cisco Agent Desktop Interface

- One-window desktop
- Log into system
- Manipulate agent states
- Team Message
- Monitor call status
- Contact Management
 - Email
 - Voice
- Integrated Browser



The screenshot displays the Cisco Agent Desktop interface. At the top, a banner reads "50% off all UCCXD Training Classes this week." Below this, there are several data tables. The first table shows call status with columns: State, Calling#, Called#, Alerting#, Original Calling#, Original Called#, and Duration. The second table shows contact information with columns: State, From, To, Subject, and Duration. The third table shows device and type information with columns: Field, Data, Device, Type, Description, and Duration. The bottom section features an "Integrated Browser" pane with tabs for "Integrated Browser" and "Agent E-Mail". The browser pane displays a message: "The home page is not configured in Desktop Administrator". The status bar at the bottom shows: "student01 User x2014 student01 Talking 00:01:34 E-Mail Not Ready 20:32:51 In Service 12:54".

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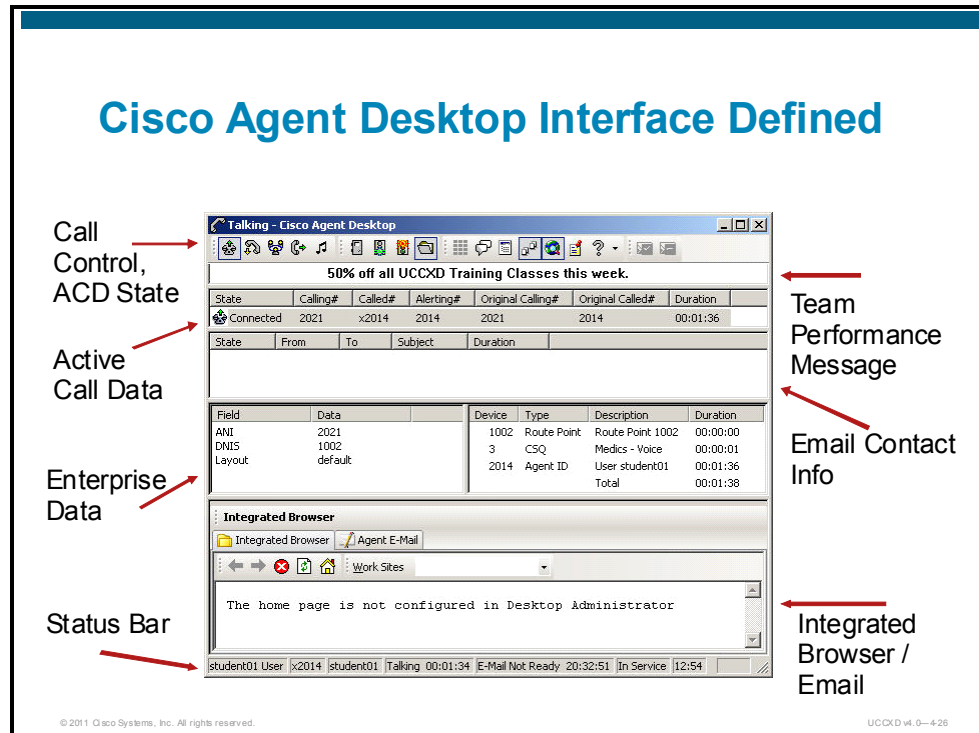
Cisco Agent Desktop provides call control capabilities, such as call answer, hold, conference, transfer, and ACD state control-ready/not ready, and wrap up. Customer information is presented to the agent through an enterprise data window and an optional screen pop-up. Agents can also answer customer email using the optional Agent Email feature. The optional integrated browser enables agents to access intranet and Internet web pages to enhance their ability to assist customers. The optional integration with Cisco Unified Presence makes it possible for agents to send instant messages to nonagent subject matter experts (SMEs) to help them assist customers.

The integrated browser pane displays Internet or intranet web pages to help you assist customers. The administrator can configure a specific website to display as your home page and add a list of work sites (similar to web browser Favorites) that allow you to navigate to frequently used websites quickly. The integrated browser pane includes:

- Integrated browser toolbar
- Up to 10 browser tabs
- Work Sites box
- Address box (must be configured by the administrator to appear)
- Browser window

Cisco Agent Desktop Interface Defined

This subtopic describes the Cisco Agent Desktop interface.



This figure provides a summary of the Cisco Agent Desktop interface and controls.

Toolbar Buttons

This subtopic describes the toolbar buttons on the Cisco Agent Desktop.

Toolbar Buttons

Call Control Buttons

Agent State Buttons

Task Buttons

Agent Operations



State	Calling#	Called#	Alerting#	Original Calling#	Original Called#	Duration
Connected	2021	x2014	2014	2021	2014	00:00:15
student01 User x2014 student01 Talking 00:00:15 In Service: 07:55						

- **Call Control:** Answer/Drop, Hold/Unhold, Conference, Transfer, Touch Tones
- **Agent State:** Login, Logout, Ready, Not Ready, Work, Task buttons
- **Agent Operations:** Make Call, Chat, Reports, Show/Hide Contact Management, Show/Hide Integrated Browser, Preferences, Help

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The toolbar contains buttons for call control and for functions not related to a specific customer contact, such as logging in and out, changing your agent state, initiating a chat session, viewing real-time displays, and configuring the appearance of the Cisco Agent Desktop interface.

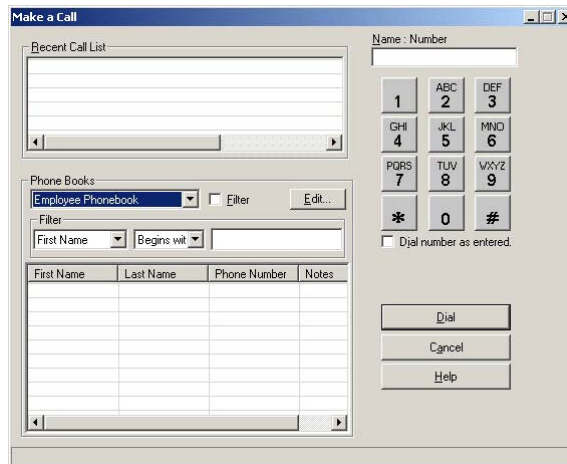
Buttons on the toolbar are disabled if they control a function that is unavailable in your current situation. For example, if you have placed a call on hold, all other call control buttons are disabled. When you take the call off hold, the other call control buttons are active again.

Make Call

This subtopic describes making a call with the Cisco Agent Desktop.

Make Call

- Make a call on Cisco Unified CCX line.
- Input number.
- Recent Call List
- Phone Books:
 - System
 - Personal



The dial pad window allows you to make calls either by entering a phone number or by selecting an existing phone number from the recent call list or from a stored phone book.

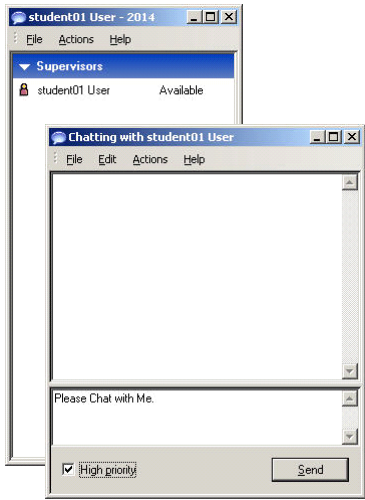
- **Recent Call List:** When you dial a phone number, it is automatically entered into the recent call list. This list stores up to 100 entries. As the number of entries exceeds 100, the number at the bottom of the list drops off.
- **Phone Books:** Phone books are phone number lists set up by you (your employee phone book) and the system administrator (public phone books). Click the drop-down arrow to choose the phone book you want to use.

Chat

This subtopic describes the chat function of the Cisco Agent Desktop.

Chat

- Chat function allows agents and supervisors to:
 - Chat with other team members
 - Chat with SMEs integrated with Cisco Unified Presence
 - Call/transfer/conference
 - Pass enterprise and call data
- High priority causes Chat window to appear on top of all other windows.
- Participate in multiple, concurrent Chat sessions.
- IM-like chat.
- Chat logs stored on client PC.



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Chat enables you to send instant messages to agents and supervisors on your team. In addition, if your configuration includes Cisco Unified Presence, you can send instant messages to nonagents (or SMEs) who are using the Cisco Unified Presence Client.

Your contacts are organized into groupings called drawers. Some drawers, such as the Agents, Supervisors, and Conference drawers are default drawers. Any other drawers that appear are customized by your administrator and appear only if you are logged in to Cisco Unified Presence.

- The Agents drawer lists all the agents on your team. The state of the agents is indicated both by an icon to the left of the agent name and by text to the right of the agent name. The agent state is updated whenever an agent state changes. Agents do not have to be currently logged in to Cisco Agent Desktop to be listed here, but they must have Cisco Agent Desktop open and they must have logged in at least once.
- The Supervisors drawer lists all supervisors on your team. Their status is always listed as Available. Supervisors must be logged in to be listed here.
- The Conference drawer appears when you are on a conference call with other agents. SMEs, if they are on the conference call, are not listed here.
- The Personal Contacts drawer appears if you have this drawer set up in Cisco Unified Personal Communicator. The contacts in this drawer are administered in Cisco Unified Personal Communicator.
- Other drawers list the SMEs associated with the work flow groups to which you belong. The Cisco Unified Presence status of the SMEs is indicated both by an icon to the left of the SME name and by text to the right of the SME name. The Cisco Unified Presence status is updated whenever an SME status changes.

Note When you log in to Cisco Unified Presence, your status is shown as Available to SMEs unless the administrator has configured the system so that agents appear offline.

You cannot chat with Cisco Agent Desktop Browser Edition (sometimes seen as “CAD-BE”) agents or IP Phone Agents.

The Contact Selection window also provides menu access to the following call-handling functions:

- Making a call
- Transferring a call
- Initiating a conference call

Some Chat features include:

- You can participate in multiple, concurrent chat sessions.
- You can paste Enterprise call data into the Chat window.
- The title bar of the Chat window displays the name of the person with whom you are chatting.
- If you flag a chat message as high priority, the Chat window will pop up on the other agent or supervisor screen so the message will be noticed immediately. This option does not apply to messages sent to SMEs.
- If the priority of a chat message is normal (the default), the Chat window will remain in its current state (open or minimized), and the corresponding icon will flash on your Windows task bar.
- A log of the chat messages sent between you and your chat partner is available as long as the Chat window is open. After you close the Chat window, the log is lost.
- The chat log is in chronological order, with the oldest message at the top of the chat window.
- You can chat with agents who are logged out of the ACD as long as they still have Cisco Agent Desktop open.

Chat logs are stored on the client PC. They can be found at C:\Program Files\Cisco\Desktop\log\transcripts folder as a plain text file. These logs are stored for one week and must be accessed manually (there is no utility to access or archive files) if the customer wants them archived.

Agent Reports

This subtopic describes the agent reports available with the Cisco Agent Desktop.

Agent Reports

- All reports in single, common window frame.
- All reports can be sorted.
- Reports:
 - Agent ACD State Log Display
 - Agent Statistics
 - Agent Call Log Display
 - Contact Service Queue Statistics
 - Agent Email Log Display
 - Agent Email Detail Display

Start Time	Direction	Answered	Calling Party	Called Party	Call Duration
07:46:40	Inbound	Yes	2021	2014	00:07:47
07:56:57	Inbound	Yes	2021	2014	00:03:22
08:41:25	Inbound	Yes	2021	2014	00:02:44
08:44:37	Inbound	Yes	2021	2014	00:00:25
08:48:26	Inbound	Yes	2021	2014	00:01:14

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There are several real-time displays (reports) you can view in the Agent Report window. These displays are:

- Agent ACD State Log Display
- Agent Call Log Display
- Agent Statistics Display
- Contact Service Queue Statistics Display
- Agent Email Log Display
- Agent Email Detail Display

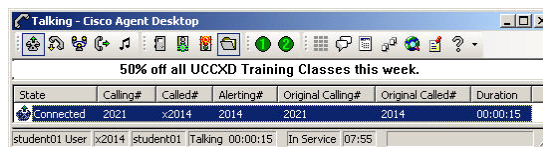
If a display you select to view is unavailable because of a service failure, the display will be blank, and “Real Time Display: Inactive” is shown in the display window status bar. You can check which real-time displays are unavailable by viewing the Service Status window. You can sort real-time displays by any of the columns in the display in ascending or descending order by clicking on the column header.

Cisco Agent Desktop Status Bar

This subtopic describes the status bar on the Cisco Agent Desktop.

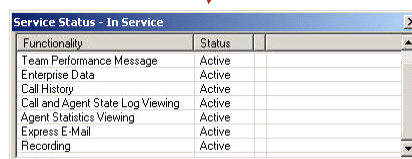
Cisco Agent System Status Bar

- Status bar shows system status:
 - In Service
 - Partial Service
 - Out of Service
- Server status dialog launched by status bar selection shows state detail.



The screenshot shows the 'Talking - Cisco Agent Desktop' window. At the top, it says '50% off all UCCXD Training Classes this week.' Below this is a table with columns: State, Calling#, Called#, Alerting#, Original Calling#, Original Called#, and Duration. The first row shows a 'Connected' call from 2021 to 2014. Below the table, it says 'student01 User: x2014 student01 Talking 00:00:15 In Service 07:55'.

State	Calling#	Called#	Alerting#	Original Calling#	Original Called#	Duration
Connected	2021	x2014	2014	2021	2014	00:00:15



The screenshot shows a dialog box titled 'Service Status - In Service'. It contains a table with two columns: 'Functionality' and 'Status'. All listed functionalities are marked as 'Active'.

Functionality	Status
Team Performance Message	Active
Enterprise Data	Active
Call History	Active
Call and Agent State Log Viewing	Active
Agent Statistics Viewing	Active
Express E-Mail	Active
Recording	Active

The status bar displays current information about Cisco Agent Desktop.

In the event of a service failure, the Current Status section changes from “In Service” to “Partial Service” or “No Service.” To learn what features are affected by the service outage, double-click the Current Status section to view a pop-up window that displays which features are active or inactive.

Agent States Defined

This subtopic describes the various agent states available with Cisco Unified CCX.

Agent States Defined

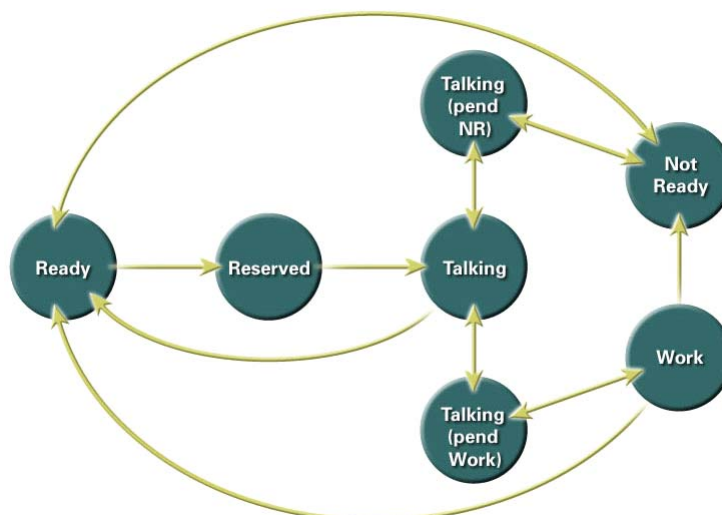
- **Ready:** Ready to accept calls
- **Reserved:** Selected to receive call; includes time while phone is ringing
- **Talking:** Actively on Cisco Unified CCX call, inbound or outbound
- **Not Ready:** Will not receive calls from application; may be on call that is not a Cisco Unified CCX call
- **Work:** Performing after-call work; will not receive calls from application

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This figure provides a summary of the agent states.

State Transition Diagram: Inbound



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The figure shows the inbound agent state transition diagram.

Contact Management

This subtopic describes the contact management area of the Cisco Agent Desktop.

Contact Management on Cisco Agent Desktop

- Email Contact Management
- Voice Contact Management
 - Enterprise Data
 - Call Activity

State	From	To	Subject	Duration		
Field	Data		Device	Type	Description	Duration
ANI	2021		2014	Agent ID	User student01	00:00:58
DNIS	2014				Total	00:00:58
Layout	default					

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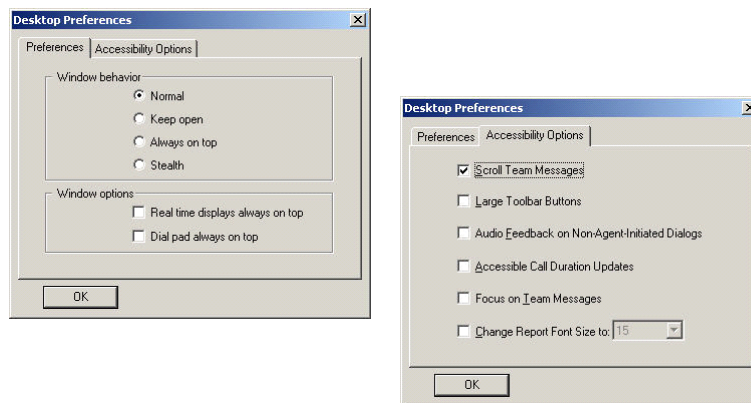
You can use Show/Hide Contact Management on the dashboard toolbar to show or hide this pane of the Cisco Agent Desktop interface.

Cisco Agent Desktop Preferences

This subtopic describes how to set preferences for the Cisco Agent Desktop.

Cisco Agent Desktop Preferences

- Agent can set Cisco Agent Desktop window behavior.
- Accessibility options are available.



If your administrator configures your toolbar so that you have access to the Preferences button, you can change your Cisco Agent Desktop window behavior and accessibility options.

The available window behavior modes and window options are:

- Normal (Default) – The window appears when calls are present and minimizes when idle.
- Keep open – The window remains open when idle.
- Always on top – The window remains open when idle and on top of all other open applications.
- Stealth – The window appears as an icon in the system tray (lower right corner of your desktop, next to the system clock) and does not appear unless double-clicked or if you receive a team message or an email.
- Real time displays always on top – The Agent Real Time Displays window remains open when idle and on top of all other open applications.
- Dial pad always on top – The Dial Pad window remains open when idle and on top of all other open applications.

The Accessibility options are:

- Scroll Team Messages – If you use a screen reader with Cisco Agent Desktop, scrolling team messages (the default mode) can be difficult to read. You can opt to turn off the scrolling feature and have stationary team messages by clearing the Scroll Team Messages check box on the Accessibility Options tab.
- Large Toolbar Buttons – You can set the desktop to display large toolbar icons.

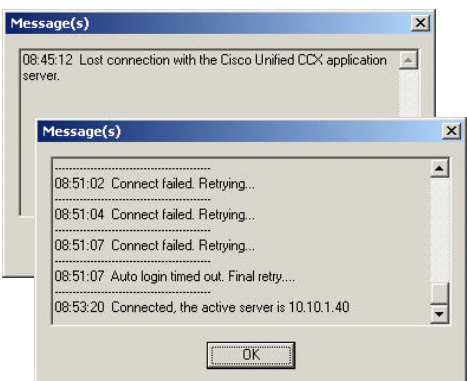
- **Audio Feedback** – Select Audio Feedback on the Non-Agent-Initiated Dialogs check box to enable the sounding of a tone when a dialog initiated by someone other than you appears on your desktop. Examples of such dialogs are new chat windows and notices to you that a supervisor is barging in, intercepting, or recording your call.
- **Accessible Call Duration Updates** – Select the Accessible Call Duration Updates check box to enable the Duration field to increment during a call. By default this option is enabled. However, a continually changing field can cause difficulties for screen readers, so agents who are visually impaired might want to disable it.
- **Focus on Team Messages** – Select the Focus on Team Messages check box to enable Cisco Agent Desktop to switch focus to the team message pane whenever a team message appears. This allows the screen readers of visually impaired agents to read the incoming team message.
- **Change Report Font Size** – Select the Change Report Font Size To check box and enter a point size in the field to make the fonts bigger or smaller in the real-time displays. You can choose a font size between 8 points and 72 points. The default point size is 15 points. You must restart the Cisco Agent Desktop for changes to take effect.

High-Availability Failover

This subtopic describes high availability and the messages presented to the Cisco Agent Desktop.

High-Availability Failover

- Desktop automatically fails over to standby (high-availability) Cisco Unified CCX server and is available to take a call within 60 seconds.
- Status messages give agent system failover and recovery state.
- When recovered, Cisco Agent Desktop logs back into “Not Ready” state.



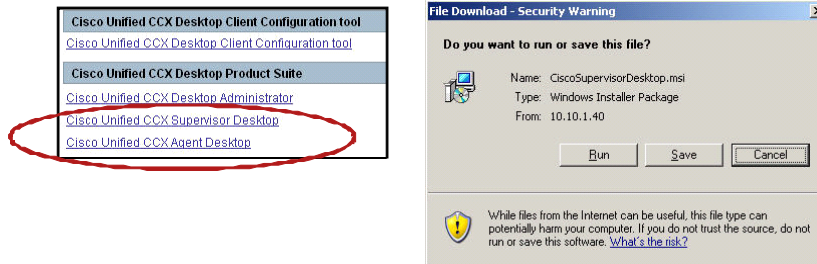
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Cisco Agent Desktop Installation

This subtopic describes installing Cisco Agent Desktop.

Cisco Agent Desktop Installation

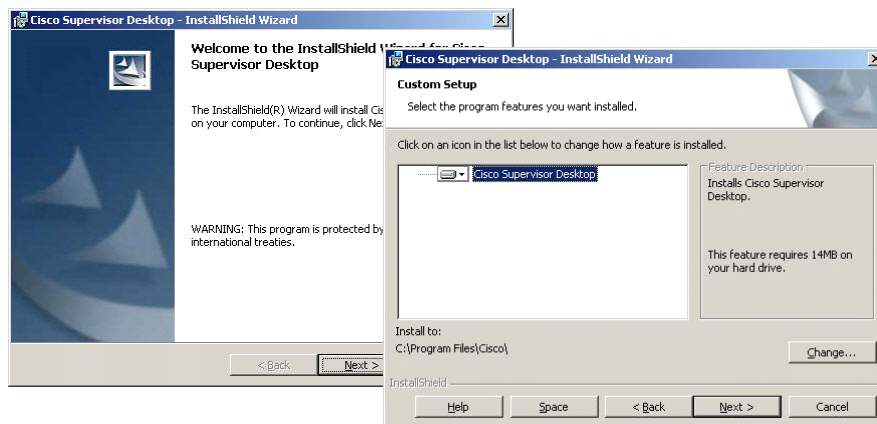
- Navigate to **Tools > Plug-ins**.
- Click **Cisco Unified CCX Desktop Suites**.
- Click **Cisco Unified CCX Supervisor Desktop** or **Cisco Unified CCX Agent Desktop**. Installing the Cisco Supervisor Desktop installs both the Cisco Agent Desktop and Supervisor Desktop.
- Click **Run**.



Go to the Plug-ins page and run the Cisco Unified CCX Supervisor Desktop or the Cisco Unified CCX Agent Desktop programs. If you install the Supervisor Desktop, it will install the Agent Desktop also.

Cisco Agent Desktop Installation (Cont.)

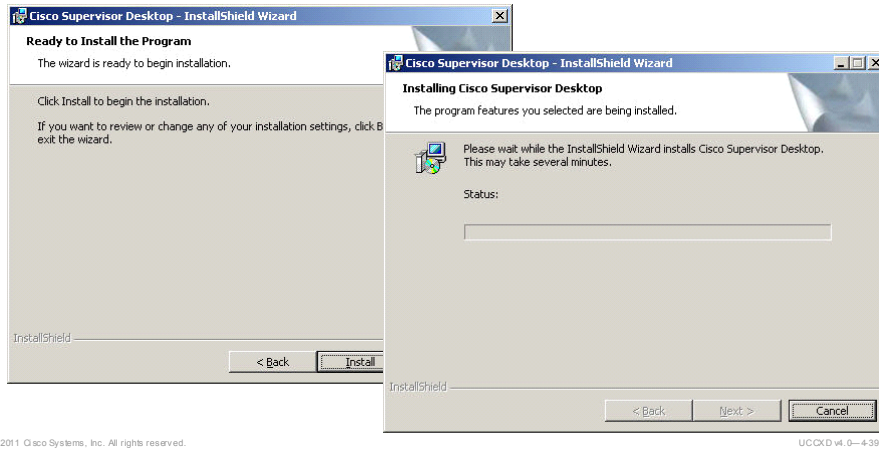
- Click **Next** at the Welcome screen.
- Click **Next** at the Custom Setup screen.



Click **Next** at the Welcome and Custom Setup screens.

Cisco Agent Desktop Installation (Cont.)

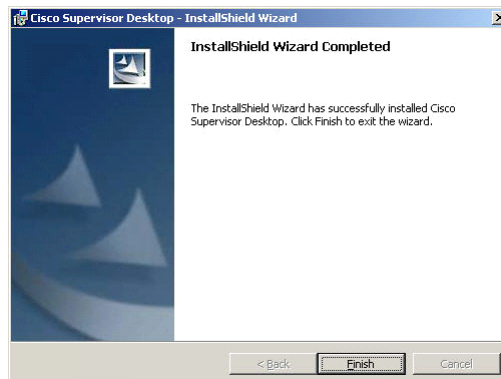
- Click **Install**.
- The desktop or desktops install.



Click **Install**.

Cisco Agent Desktop Installation (Cont.)

- Click **Finish**.



Click **Finish**.

Software Upgrades

This subtopic describes software upgrades for the Cisco Agent Desktop.

Cisco Desktop Software Upgrades

- Automatic initiated software upgrades for Cisco Agent Desktop, Cisco Supervisor Desktop, Cisco Desktop Administrator
- Initiated when new software has been loaded on the Cisco Unified CCX server and the Cisco Agent Desktop user starts the application
 - Maintenance releases
 - Major releases
- Cisco Unified CCX does not require administrator rights for client desktop upgrades; uses MSI install.

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Cisco Agent Desktop enables your administrator to automatically update all instances of the Cisco Agent Desktop applications to a newer version. It also ensures that the correct version of Java Runtime Environment (JRE) is installed on your computer.

Every time you launch Cisco Agent Desktop, the software checks to see if there is an updated version available or if there was a system configuration change that requires a Windows registry change. If either condition is true, the software automatically runs the update process.

Cisco Supervisor Desktop

This topic describes the Cisco Supervisor Desktop.

Features Summary

- Silent Monitor
- Barge In
- Intercept
- Recording/Access recording files
- Movable windows
- Real-time displays, tabular and graphical
- Enhanced preferences
- Enterprise data and call history
- Last 10 team messages are saved
- Integrated web browser
- URL push to agents
- Supervisor work flow for threshold alerts
- Email CSQ Statistics

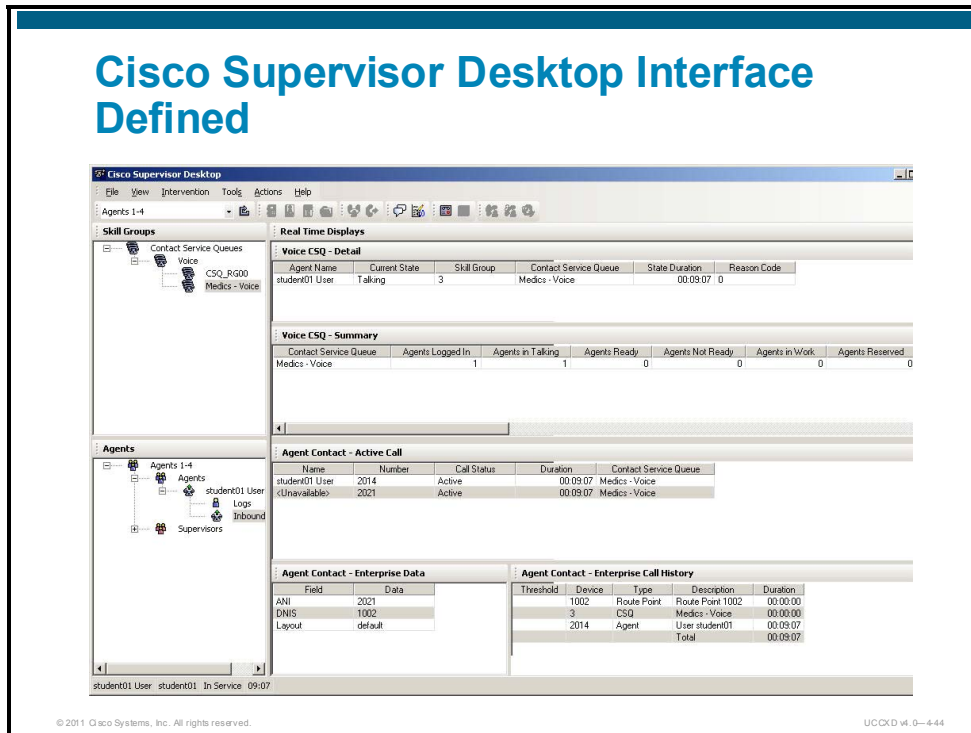
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The features of the Cisco Supervisor Desktop allow you to view real-time statistics, monitor and coach agents, Barge In, intercept, and record active agent calls when necessary, enabling effective management of agent resources.

Cisco Supervisor Desktop Interface Defined

This subtopic describes the Cisco Supervisor Desktop interface.



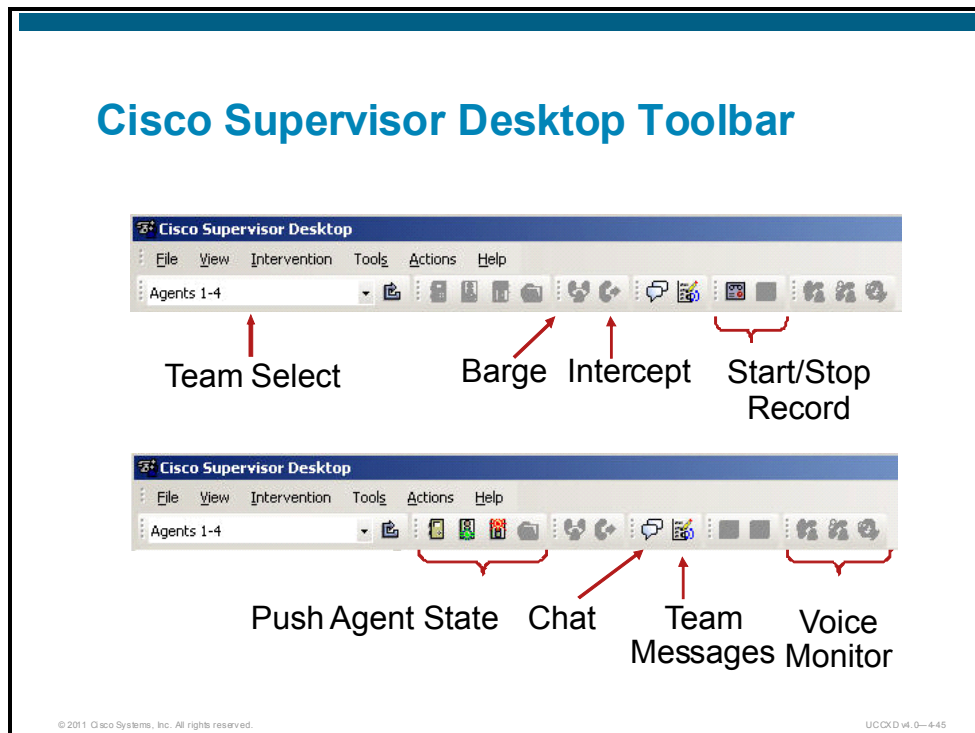
The Cisco Supervisor Desktop window is divided into five areas:

- The skill group tree, which lists all of the CSQs associated with the team you choose from the team selection list
- The agent tree, which lists all of the agents and supervisors on the team
- Tabular/graphical real-time displays of CSQ information
- Tabular/graphical real-time displays of agent and team information
- Integrated browser (if enabled)

The Cisco Supervisor Desktop interface is highly configurable. By default, the browser is not enabled and the panes are not dockable. However, you can configure real-time displays, enable the integrated browser and enable all panes to act as dockable windows (so you can move them and resize them independently). You can also change the size of the toolbar icons from the default 16×16 pixels to 32×32 pixels. The specific panes that are displayed depend on the nodes that you select in the skill group and agent trees. If you choose to enable the integrated browser, the real-time displays and the browser appear on tabs in the right pane.

Cisco Supervisor Desktop Toolbar

This subtopic describes the Cisco Supervisor Desktop toolbar.



The Cisco Supervisor Desktop toolbar consists of the following buttons. To view a tool-tip explaining a button function, move your mouse pointer over the button.

Button Name	Shortcut key	Description
Refresh	Ctrl+F	Refreshes the information in the active data view pane.
Logout	Ctrl+L	Logs the selected agent out of the ACD.
Ready	Ctrl+E	Puts the selected agent in the Ready agent state.
Not Ready	Ctrl+N	Puts the selected agent in the Not Ready agent state.
Work	Ctrl+D	Puts the selected agent in the Work agent state.
Barge In	Ctrl+B	Enables you to join the phone conversation of the selected agent.
Intercept	Ctrl+I	Enables you to intercept the phone call of the selected agent while disconnecting the agent from the phone call.
Chat	Ctrl+J	Opens the Chat window.
Team Message	Ctrl+X	Opens the Team Message dialog box.
Start Record	Ctrl+R	Starts recording the selected phone call.
Stop Record	Ctrl+S	Stops recording the selected phone call.
Start Voice Monitor	Ctrl+A	Starts monitoring the selected agent.
Stop Voice Monitor	Ctrl+P	Stops monitoring the selected agent.
Voice Monitor Volume	Ctrl+V	Pops up a slider that enables you to control or mute the volume when monitoring a call.

Integrated Web Browser

This subtopic describes the integrated web browser.



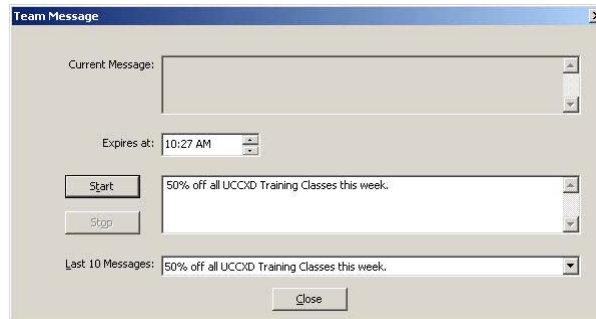
The integrated browser pane allows you to view Internet and intranet web pages to help you assist agents and customers. The integrated browser has from 1 to 10 tabs, each of which can display a different web page. You configure each tab to display a specific website.

Team Messages

This subtopic describes the Team Messages dialog box.

Team Messages

- Access from menu/toolbar.
- Displays current message and last 10 team messages of the supervisor.



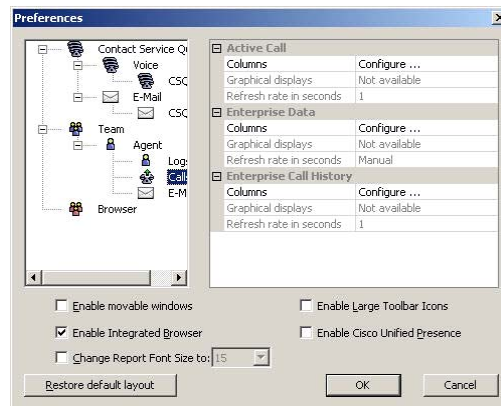
You can send a team message to all Cisco Agent Desktop agents on a team, whether or not the agent is logged in to the ACD. As long as Cisco Agent Desktop is open, an agent can view a team message.

Cisco Supervisor Desktop Preferences

This subtopic describes the Preferences dialog box.

Cisco Supervisor Desktop Preferences

- Configurable settings per supervisor
- Real-time display look and feel:
 - Which columns
 - Column order
 - Graphical view
- Enable:
 - Movable Windows
 - Integrated Browser
 - Large Toolbar Icons
 - Cisco Unified Presence



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Use the Preferences dialog to set what information will be available to the Supervisor Desktop. You can choose the columns to display, and in many cases you can set graphical views as well.

Supervisor Work Flows

This subtopic describes supervisor work flows.

Supervisor Work Flows

- Events
 - Queue statistics update.
- Rules
 - New data types: Calls Waiting and Current Oldest.
 - Thresholds allow supervisor to specify actions for below, within, and above.
- Actions
 - Tree Control Node: Set the color of the skill group and message text next to it.
 - Report: Set the color for cell highlighting.
 - Message Box: Display a customized message box to the supervisor.
 - Audible Alert: Play a customized .wav file on the supervisor desktop.
 - Email: Send an email notification to a specified email address.

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Using the Supervisor Work Flow Administrator feature, you can configure your desktop to perform certain actions based on queue statistics for calls waiting and calls in queue for specified skill groups.

These work flows apply only to you, not to any other supervisors, and are available to you no matter where you log into Cisco Supervisor Desktop. They are tied to your login information.

In general, work flows consist of events, rules, and actions.

- The event that triggers an action is a CSQ statistics update. Queue statistics are updated once every five seconds.
- The rule the event must meet is one or both of the following:
 - The number of calls waiting is below, within, or above specified limits.
 - The oldest call in queue is below, within, or above specified time durations.
- The actions triggered by meeting the rules can be:
 - Change the color of the skill group name in the tree control and/or add a message next to it.
 - Highlight data in the tabular real-time display.
 - Display a pop-up message on your desktop.
 - Play a *.wav file on your desktop.
 - Send an email to selected recipients.

Cisco Mobile Supervisor Application

This subtopic describes the Cisco Mobile Supervisor application.

Cisco Mobile Supervisor Application

- Cisco Mobile Supervisor is a free application available from the Apple App Store.
- Receive real-time performance metrics on iPhone3G and iPod touch devices.
- View the following report-based information for a list of teams belonging to a specific supervisor:
 - A list of CSQs belonging to a selected team
 - The Voice CSQ Summary report for a selected CSQ
 - The list of agents (along with their states) belonging to the selected CSQ
 - The list of agents (along with their states) belonging to a selected team
 - Supervisors can change the agent state from their mobile devices.

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UCCXD v4.0—4-50

Cisco Mobile Supervisor is a free application available from the Apple Inc. App Store. Cisco Mobile Supervisor is an extension to the Cisco Supervisor Desktop on a mobile device. As an extension to your Cisco Unified CCX product, contact center supervisors can receive real-time performance metrics on their iPhone3G and iPod touch devices. You can view color-coded indicators of agent statistics and CSQ metrics and you can dynamically respond to changing situations from your mobile device.

The Cisco Mobile Supervisor application allows you to view the following subset of Cisco Supervisor Desktop reports on your mobile devices:

- Voice CSQ Summary
- Voice CSQ Detail
- Agent Team States

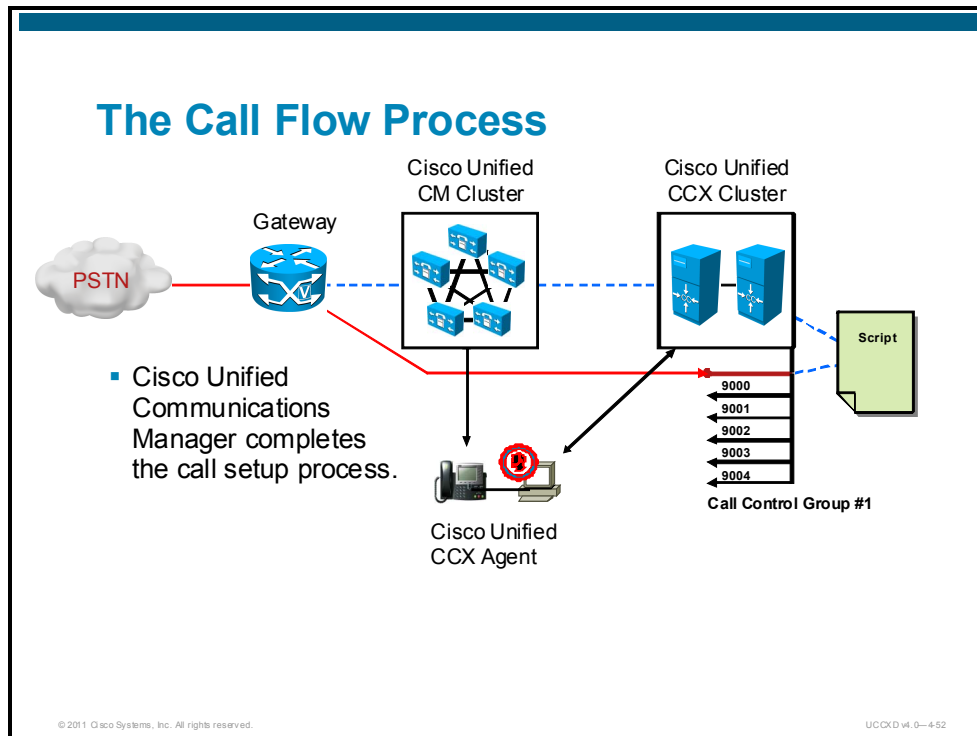
The Cisco Mobile Supervisor application provides the following features:

- Registers your Cisco Mobile Supervisor application with Cisco Systems.
- Autorefreshes the report display. If you turn off auto-updates, you can update the reports manually using the refresh icon available on every screen in the application.
- Provides color-coded indicators to identify if a CSQ Calls in a Queue or Oldest Call in a Queue fields have exceeded user-configured thresholds. You can specify or change these threshold values at any time.
- Remembers each user for subsequent sessions unless the user explicitly logs out.
- Provides supervisors with the ability to change states of agents.

See *Cisco Mobile Supervisor Application for iPhone3G and iPod touch* for more information.

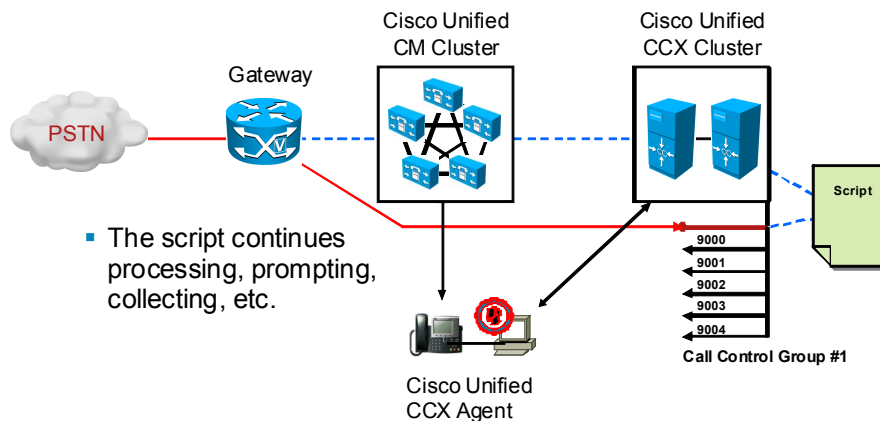
The Call Flow Revisited

This review of the call flow will reinforce your knowledge of the call flow and include the ACD properties as well.



This call flow begins with the call already established.

The Call Flow Process (Cont.)

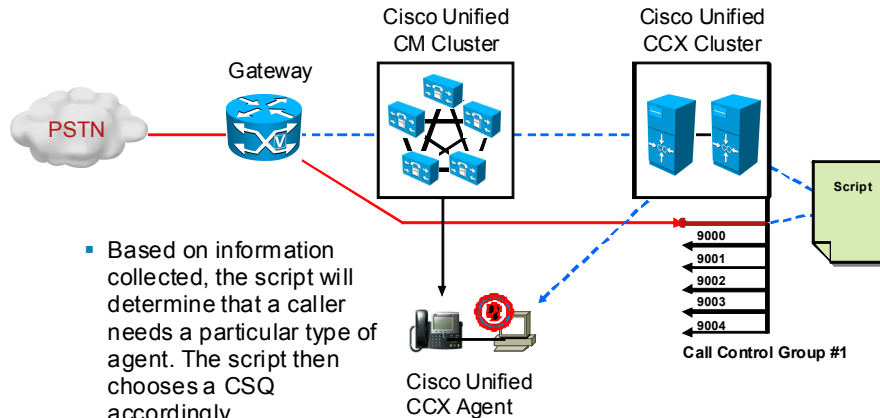


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UCCXD v4.0-4.53

The caller provides the appropriate information requested by the script.

The Call Flow Process (Cont.)

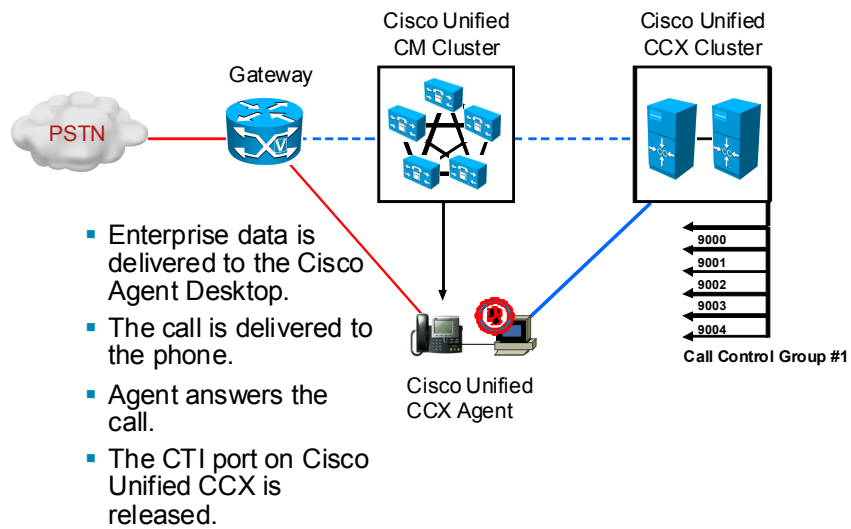


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UCCXD v4.0-4.54

Based on collected information, the script will choose the appropriate CSQ for the caller. The script can now use the CSQ definition to determine which agent to send the caller to.

The Call Flow Process (Cont.)



The script can now deliver the call.

Configuring Cisco Unified CCX

This topic describes configuring basic requirements for a Cisco Unified CCX call center.

RmCm Provider

This subtopic describes configuring the RmCm Provider.

RmCm Provider

- Navigate to **System > Unified CM Configuration**.
- Choose CTI managers under RmCm Subsystem.
- Enter User ID to create.
- Enter and confirm password.

RmCm Subsystem - RmCm Provider Configuration

Selected CTI Managers	Available CTI Managers
10.10.1.10	

Cluster Wide Parameters

User Id*

Password*

Confirm Password*

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The RmCm subsystem is normally already set by processes of the installation of Cisco Unified CCX. When you view the RmCm Provider under the Subsystems menu, it is a read-only page. If you need to set or reset the Provider information, navigate to **System > Unified CM Configuration**. In the RmCm Subsystem area, choose the CTI managers that will service Cisco Unified CCX, and set the user ID and password.

Agent Configuration

This subtopic describes agent configuration.

Agent Configuration

- Associate user account with phone device.
- Specify:
 - Primary Extension
 - IPCC Extension
 - Allow CTI Control
- User appears as Agent in Cisco Unified CCX.

The screenshot shows the 'End User Configuration' window. At the top, there are buttons for 'Save', 'Delete', and 'Add New'. Below this is a 'Status' section showing 'Status: Ready'. The 'User Information' section includes fields for 'User ID *' (filled with 'student01'), 'Password', 'Confirm Password', 'PIN', 'Confirm PIN', 'Last name *' (filled with 'User'), and 'Middle name'. The 'Device Associations' section shows 'Controlled Devices' as 'SEP00036BC97DEE' and a checked box for 'Allow Control of Device from CTI'. The 'Directory Number Associations' section has dropdowns for 'Primary Extension' (2011) and 'IPCC Extension' (2014).

Configuring an agent happens in two stages. First, you must establish a Cisco Unified Communications Manager user account for the agent and associate a phone line as an ACD line for Cisco Unified CCX.

RmCm Account Configuration

- Associate Agent Phones with RmCm Account.
- Allows RmCm to view CTI messages for agent line.
- Agent can now log in.

The screenshot shows the 'Application User Configuration' window. At the top, there are buttons for 'Save', 'Delete', 'Copy', and 'Add New'. Below this is a 'Status' section showing 'Status: Ready'. The 'Application User Information' section includes fields for 'User ID *' (filled with 'UCCX_RMTapi'), 'Password', 'Confirm Password', 'Digest Credentials', and 'Confirm Digest Credentials'. The 'Device Information' section shows 'Available Devices' as a list: 'CTIP_4004', 'CTIP_4005', 'CTIP_4006', 'PR_4000', and 'SEP00036BDD329D'. There are buttons for 'Find more Phones', 'Find more Route Points', and 'Find more Pilot Points'. The 'Controlled Devices' section shows 'SEP00036BC97DEE'.

Second, you must associate the phone with the RmCm Application User account.

Agent Phone Configuration Guidelines

Follow these guidelines when configuring agent phones for Unified CCX agents:

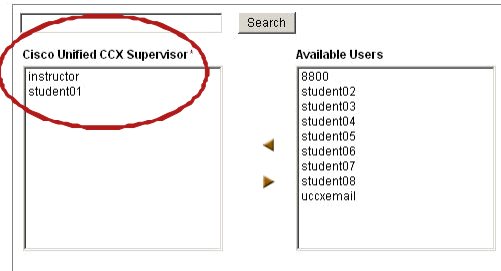
- In the Cisco Unified Communications Manager Administration Phone Configuration web page, select the line select link (on the left) to get to the Directory Number Configuration web page. In this page, make the following changes:
 - In the Multiple Call/Call Waiting Settings section, set the Maximum Number of Calls to 2 (default is 4).
 - In the Multiple Call/Call Waiting Settings section, set the Busy Trigger value to 1 (default is 2).
 - In the Call Forward and Call Pickup Settings section, verify that you do not forward any Cisco Unified Communications Manager device to the Cisco Unified CCX extension of an agent.
 - In the Call Forward and Call Pickup Settings section, verify that you do not configure the Cisco Unified CCX extension of an agent to forward to a Cisco Unified CCX route point.
- Always disable (or turn off) Secure Real-Time Transport Protocol (SRTP) when configuring a Cisco Unified Communications product. You can disable SRTP for a specified device or for the entire Unified CM:
 - For a specified device: Choose **Device > Phone**. In the Find and List Phone page, select the required phone device. In the Phone Configuration page for the selected phone, scroll down to the Protocol Specific Information section. To turn off SRTP on the phone device, select any one of the Non Secure SCCP Profile choices from the drop-down list of the SCCP Phone Security Profile or SCCP Device Security Profile field.
 - For the entire Cisco Unified Communications Manager cluster: Choose **System > Enterprise Parameters**. In the Enterprise Parameters Configuration page, scroll down to the Securities Parameters section to verify that the corresponding value for the Cluster Security Mode field is 0. This parameter indicates the security mode of the cluster. A value of 0 indicates that phones will register in non-secure mode (no security).
- Do not forward any Cisco Unified Communications Manager device to the Cisco Unified CCX extension of an agent.
- Do not configure the Cisco Unified CCX extension of an agent to forward to a Cisco Unified CCX route point.
- Do not use characters other than the numerals 0–9 in the Cisco Unified CCX extension of an agent.
- Do not configure two lines on an agent phone with the same extension when both lines exist in different partitions.
- Do not assign a Cisco Unified CCX extension to multiple devices.
- Do not configure the same Cisco Unified CCX extension in more than one device or device profile. (Configuring a Unified CCX extension in one device or device profile is supported.)

Supervisor Configuration

This subtopic describes supervisor configuration.

Supervisor Configuration

- Navigate to **Tools > User Management > Supervisor Capability View**.
- Add Supervisor as a capability.



A supervisor is an upgraded agent. Once an agent is configured, go to the User Management page to add the Supervisor capability.

Create Resource Groups

This subtopic describes resource groups configuration.

Create Resource Groups

- Navigate to **Subsystems > RmCm > Resource Groups**.
- Add a new resource group.
- Specify name.

The screenshot shows the 'Resource Group' management page. At the top, there is an 'Add New' button. Below it, the 'Status' section indicates '1 records found'. The main area is titled 'List Resource Group' and contains a table with one entry: 'Resource Group Name' with a dropdown arrow, and 'Medics' as the value. A search icon and the text 'Medics' are also visible at the bottom of the list.

The screenshot shows the 'Resource Group Configuration' dialog box. It has 'Save' and 'Cancel' buttons at the top. The 'Status' section shows 'Status : Ready'. The 'Resource Group Name*' field contains the text 'Medics'. At the bottom, there are 'Save' and 'Cancel' buttons.

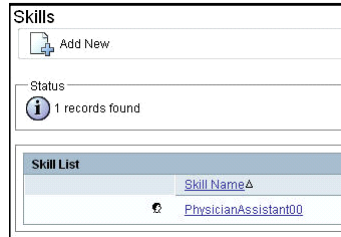
To create a resource group, go to **Subsystems > RmCm > Resource Groups** and click **Add New**.

Create Skills

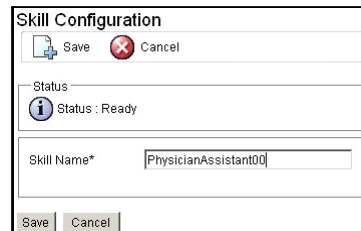
This subtopic describes creating skills.

Create Skills

- Navigate to **Subsystems > RmCm > Skills**.
- Add a new skill.
- Specify name.



The screenshot shows the 'Skills' management page. At the top, there is an 'Add New' button. Below it, a 'Status' section indicates '1 records found'. The main area is a 'Skill List' table with one entry: 'PhysicianAssistant00'. The table has a header row with 'Skill Name' and a search icon.



The screenshot shows the 'Skill Configuration' dialog box. It has 'Save' and 'Cancel' buttons at the top. The 'Status' section shows 'Status : Ready'. The 'Skill Name*' field contains 'PhysicianAssistant00'. At the bottom, there are 'Save' and 'Cancel' buttons.

To create a skill, go to **Subsystems > RmCm > Skills** and click **Add New**.

Configure Resources

This subtopic describes configuring resources.

Configure Resources

- Navigate to **Subsystems > RmCm > Resources**.
- Click **Resource Name**.
- Specify:
 - Resource group
 - Skills and competency
 - Team

Resource Configuration
Update Cancel

Resource Name

Resource ID

IPCC Extension

Resource Group

Automatic Available*

Assigned Skills

Competence Level

Team

instructor

2004

Medics00

☒ Enabled ☐ Disabled

PhysicianAssistant00(5)

5 (1-Beginner, 10-Expert)

Default

Resources
Open Resources Summary Report

Status
1 records found

Resources List
Resource Name
instructor User*

* Supervisor

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UCCXD v4.0-4-63

Now that you have resource groups and skills, they can be applied to your agents as attributes to be used by a CSQ definition to determine an agent for selection.

Configure CSQs

This subtopic describes configuring CSQs.

Configure CSQs

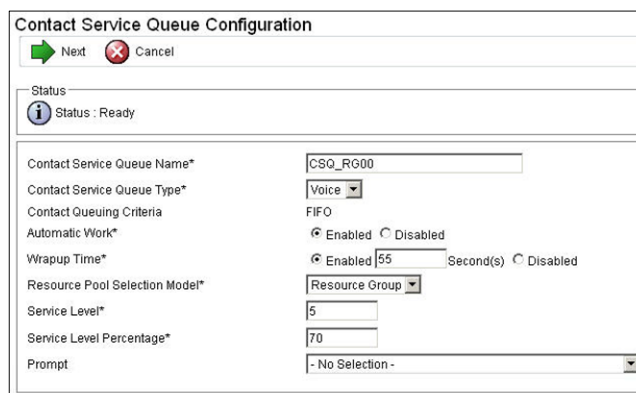
- Navigate to **Subsystems > RmCm > Contact Service Queues**.
- Add a new CSQ.

Contact Service queues	
Name ▾	Contact Queuing Criteria

To create a CSQ, navigate to **Subsystems > RmCm > Contact Service Queues** and click **Add New**.

Contact Service Queues

- Contact Service Queue Name
- Contact Service Queue Type
- Automatic Work
- Wrapup Time
- Resource Pool Selection Model
- Service Level
- Service Level Percentage
- Prompt



The image shows a 'Contact Service Queue Configuration' dialog box. At the top, there are 'Next' and 'Cancel' buttons. Below them is a 'Status' section showing 'Status : Ready'. The main configuration area contains the following fields:

- Contact Service Queue Name***: Text box containing 'CSQ_RG00'.
- Contact Service Queue Type***: Dropdown menu set to 'Voice'.
- Contact Queuing Criteria**: Text box containing 'FIFO'.
- Automatic Work***: Radio buttons for 'Enabled' (selected) and 'Disabled'.
- Wrapup Time***: Radio buttons for 'Enabled' (selected) and 'Disabled'. The 'Enabled' option has a text box containing '55' followed by 'Second(s)'.
- Resource Pool Selection Model***: Dropdown menu set to 'Resource Group'.
- Service Level***: Text box containing '5'.
- Service Level Percentage***: Text box containing '70'.
- Prompt**: Dropdown menu set to '- No Selection -'.

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UCCXD v4.0—4-65

There are two pages to complete when creating a CSQ. This is the first page.

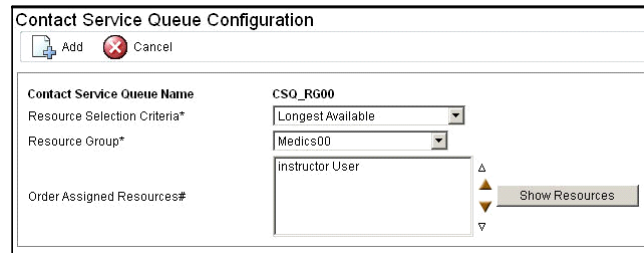
Enter these parameters for this page and then click **Next**.

- **Contact Service Queue Name:** Enter a name for the CSQ. This is a case- and space-sensitive field.
- **Contact Service Queue Type:** Choose voice or email.
- **Automatic Work:** Allows the agent to enter the work state after a call, if enabled. If this is not enabled, the agent will either be ready or not ready, depending on the automatic available setting in the Resource configuration.
- **Wrapup Time:** Allows the administrator to determine a length of time for the work state. After this time expires, the agent will either be ready or not ready, depending on the automatic available setting in the Resource configuration.
- **Resource Pool Selection Model:** Choose whether this CSQ will be route based on resource groups or on skills.
- **Service Level:** The target maximum number of seconds a call is queued before it is connected to an agent. Used for reporting purposes only.
- **Service Level Percentage:** The target goal for percentage of contacts that meet the service level. Used for reporting purposes only.
- **Prompt:** Associate a .wav file for this CSQ. This prompt is used to announce the CSQ name when a Remote Monitor is performed.

Contact Service Queues—Resource Group Routing

On the second page of the Contact Service Queue definition, set these values and view resources:

- Resource Selection Criteria
- Resource Group
- Show Resources



The screenshot shows the 'Contact Service Queue Configuration' dialog box. It has a title bar with 'Add' and 'Cancel' buttons. The main area contains the following fields:

Contact Service Queue Name	CSQ_R600
Resource Selection Criteria*	Longest Available
Resource Group*	Medics00
Order Assigned Resources#	Instructor User

Below the 'Order Assigned Resources#' field is a list box containing 'Instructor User'. To the right of the list box are up and down arrow buttons. A 'Show Resources' button is located to the right of the list box.

This figure shows what will be the second page if you chose resource group routing.

Enter these parameters:

- Resource Selection Criteria
- Resource Group

Click **Show Resources** to see the agents that can participate in this CSQ. Note that the list is an ordered list.

Contact Service Queues—Skills-Based Routing

On the second page of the Contact Service Queue definition, set these values and view resources:

- Resource Selection Criteria
- Skills Required
- Minimum Competence
- Show Resources

The image shows two overlapping windows from a Cisco Unified Contact Center Express (UCCX) interface. The top window is titled "Contact Service Queue Configuration" and contains the following fields and controls:

- Buttons: Add, Cancel, Show Resources
- Field: Contact Service Queue Name (CSQ_S600)
- Field: Resource Selection Criteria* (Longest Available)
- Field: Select Required Skills (PhysicianAssistant00) with an Add button
- Table with columns: Skills, Minimum Competence, Delete
- Table Row: PhysicianAssistant00, 5, [Delete Icon]

The bottom window is titled "Resources under Contact Service Queue:" and contains:

- Buttons: Refresh, Cancel
- Text: student01 User
- Buttons: Done, Internet

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UCCXD v4.0-4.67

This figure shows what will be the second page if you chose Resource Skills routing.

Enter these parameters:

- Resource Selection Criteria
- Skills Required
- Minimum Competence

Choose one or more skills to add as requirements to participate in this CSQ. For agents to be able to participate in this CSQ, they must have all the skills listed, and they must have the minimum competency rating for each of those skills. Depending on the selection criteria, the view can change to include an ordered list or add additional fields for a weighting factor.

Note To have a CSQ act more like a traditional skill group, specify only one skill and set the competency requirement to one.

Configure Teams

This subtopic describes configuring teams.

Configure Teams

- Team Name
- Primary Supervisor
- Secondary Supervisors
- Assigned Resources
- Assigned CSQs

The screenshot shows the 'Team Configuration' dialog box. At the top, there are buttons for 'Update', 'Delete', 'Cancel', and 'Open Printable Report'. Below these is a 'Status' section showing 'Status : Ready'. The main area is divided into two columns. The left column contains fields for 'Team Name*' (with the value 'Agents 1-4'), 'Primary Supervisor' (with a dropdown menu showing 'Instructor User'), 'Secondary Supervisors' (an empty list box), 'Assigned Resources' (an empty list box), and 'Assigned CSQs' (an empty list box). The right column contains fields for 'Available Supervisors' (an empty list box), 'Available Resources' (with the value 'Instructor User'), and 'Available CSQs' (with the values 'CSQ_RG00' and 'CSQ_SG00'). Arrows point from the left column to the right column, indicating the movement of items between the two lists.

Configure teams for supervisory purposes only.

Enter these parameters:

- Team Name
- Primary Supervisor – Specify a primary supervisor.
- Secondary Supervisor – Add more supervisors as needed. There is no difference between a primary and secondary supervisor.
- Assigned Resources – Add agents as team members.
- Assign CSQs – Assign CSQs for this team. CSQs that are assigned affect only the statistics that are displayed in the Cisco Supervisor Desktop when the supervisor is monitoring this team.

Summary

This topic summarizes the key points that were discussed in this lesson.

Summary

- Cisco Unified CCX is an ACD software application that provides for the routing of inbound or outbound calls to customer service representatives.
- Cisco Unified CCX utilizes agents as customer service representatives to handle ACD calls.
- Supervisors are upgraded agents and have an additional desktop for supervisory functions.
- Resource group routing allows calls to be routed to a specific group of agents. All agents are treated as equals.
- Skills-based routing allows calls to be routed to agents based on their skill and competency rating.
- CSQs are analogous to skill groups and determine the agents available for selection.
- Teams are groupings of agents for supervisory purposes only.
- The CAD Client Configuration Tool is used to create the appropriate MSI files on Cisco Unified CCX for subsequent desktop installations.

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UCCXD v4.0-4.60

Summary (Cont.)

- IP Phone Agent allows agents to operate from a phone without the use of a computer.
- The Cisco Agent Desktop is a program that runs on the agent PC as the agent interface to Cisco Unified CCX.
- Agents can manipulate their state, accept calls, make calls, chat, and perform other functions via the toolbar.
- Use the Make Call button to make calls from the agent ACD line.
- Agents have several states they can be in while logged in. The most common is Ready, available to take an ACD call, and Not Ready when an agent is unavailable.
- The Cisco Agent Desktop can display enterprise data and information on the steps that the caller made to arrive at the agent.
- In a failover scenario the agent will receive messages indicating a fail condition; the agent should simply wait for services to come back online before continuing to take calls.

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UCCXD v4.0-4.70

Summary (Cont.)

- Cisco Agent Desktop is installed from Cisco Unified CCX Administration.
- Cisco Agent Desktop is upgraded automatically and does not require administrator assistance.
- The Cisco Supervisor Desktop is an additional desktop used to supervise a team of agents.
- Many supervisor functions can be performed, such as: Call Monitor, Call Record, Barge, Intercept, view Enterprise Data, and view Reports.
- You can review and save agent recordings from the Supervisor Desktop.
- The Cisco Supervisor Desktop can be customized by setting preferences in the desktop interface.
- You can create supervisor work flows that alert supervisors when certain conditions meet or exceed a threshold.
- A call flow process summary might look like this: Accept call; prompt and collect information; based on information collected, choose CSQ; choose agent based on CSQ; deliver call to the agent.

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UCCKD v4.0--471

Summary (Cont.)

- The RmCm account is normally set up during installation but can be configured or reconfigured in Cisco Unified CCX Administration.
- An agent must have a Cisco Unified Communications Manager user account that is associated with the RmCm account, and the ACD line is specified in the line definition.
- For configuration purposes, a supervisor is an upgraded agent in the User Management administration page.
- Resource group names are defined in the RmCm subsystem.
- Skill names are defined in the RmCm subsystem.
- A resource is configured in the RmCm subsystem. Click the resource name to apply attributes such as resource group or skill participation.
- A CSQ is defined in the RmCm subsystem. It defines the agents available for selection by resource group or skills.
- A team is defined in the RmCm subsystem. An agent can be a member of only one team, but a supervisor can supervise multiple teams.

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UCCKD v4.0--472

Cisco Unified Contact Center Express Scripting Fundamentals

Overview

Cisco Unified Contact Center Express (CCX) only distinguishes the difference between an interactive voice response (IVR) script and an automatic call distribution (ACD) script by virtue of the scripting steps used. This lesson covers those steps utilized to provide basic ACD operations.

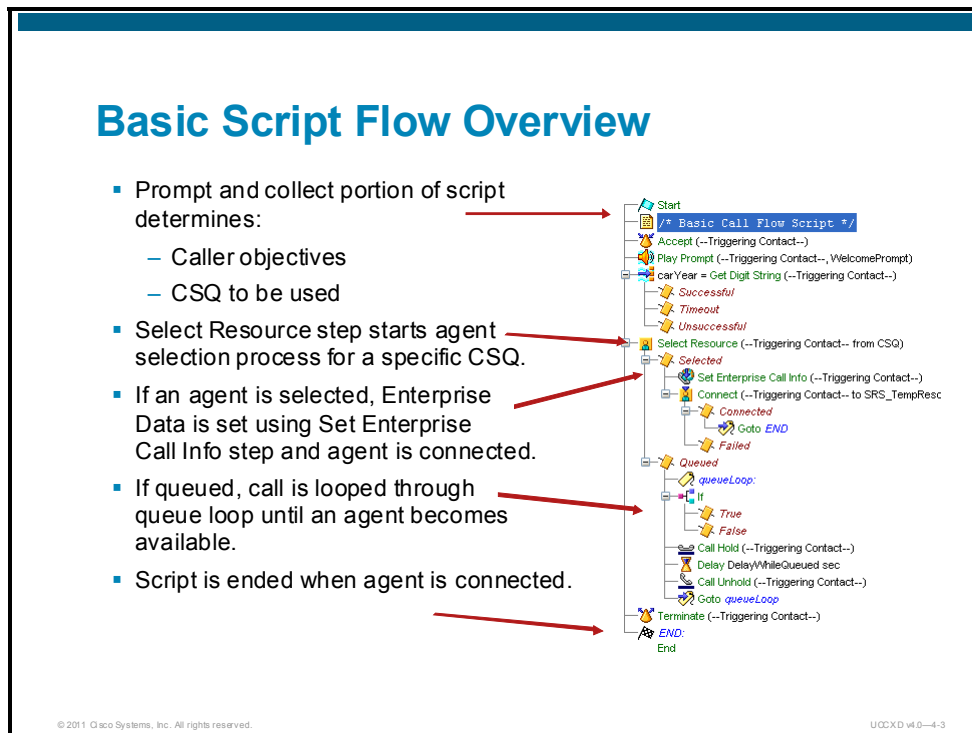
Objectives

Upon completing this lesson, you will be able to build a basic Cisco Unified CCX script. This ability includes being able to meet these objectives:

- Describe the basic flow of a Cisco Unified CCX script
- Describe the Select Resource step
- Describe the Connect step
- Describe the Call Hold and Call Unhold steps
- Describe the Get Reporting Statistic step
- Describe the Set Enterprise Call Info step
- Describe the Set Priority step
- Describe the Dequeue step

Basic Script Flow Overview

This topic describes the typical flow of an ACD script.



This is a simplified call flow overview of a Cisco Unified CCX script and the four functional areas that enable it to collect caller information and direct the call to an agent qualified to meet the caller objectives.

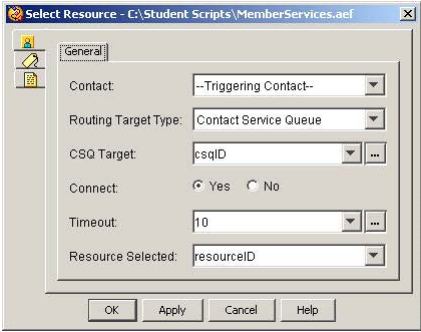
- **Prompt and Collect:** At the beginning of the script, you will answer the call. During this phase you should be collecting all the information you can as early as possible so that you have all the information required to make a decision. Based on the information collected, you will make a decision as to which contact service queue (CSQ) to present a call to. If you are going to provide for overflow queuing, the relevant queues should also be designated here.
- **Select Resource:** Use this phase to select an agent and deliver the call. The call does not have to be connected immediately, allowing you to perform other script actions here that may be required.
- **Queuing:** During this phase, typically you provide simple call treatment while the caller is waiting for an agent. But you can also do many other things in the queue loop, such as:
 - Collect real-time system information for overflow and caller announcement purposes.
 - Overflow the caller to another CSQ. If you overflow, the caller can remain in the original queue or be dequeued. If the caller is to remain in the original queue, perform the overflow activities within this queue loop.
 - Allow the caller to opt out to voicemail. If you do this, dequeue the caller before the transfer. This will cause the call to be marked as dequeued instead of abandoned.
- **End Script:** When the caller is delivered to the agent or is otherwise transferred, the script ends.

Select Resource

This topic describes the Select Resource step.

Select Resource

- Routing Target Type:
 - CSQ
 - Resource
- Targets
 - CSQ Target
 - Resource (Agent) Target
- Connect: Yes or No
- Timeout (RNA)
- Resource Selected



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The Select Resource (Agent) step starts the agent selection process using a CSQ determined by the script. Agent-based routing, as opposed to CSQ routing, may also be used by this step.

The fields are defined as follows:

- **Contact:** Defines which contact this step will act on.
- **Routing Target Type:**
 - Contact Service Queue: Route based on a CSQ definition. When this option is selected, the next field will be CSQ Target.
 - Resource: Route to a specific agent. When this option is selected, the next field will be Resource Target.
- **Target:**
 - CSQ Target: Specify the CSQ as a string or string variable.
 - Resource Target: Specify the agent to be selected. Use a user-data-type variable.
- **Connect:**
 - Yes: Connects the caller immediately when an agent is available.
 - No: Will not connect the caller. Use a Connect step afterward to connect the call.
- **Timeout:** Specify the Ring No Answer timeout. If the agent does not answer the call within this timeout, the call is requeued, and the agent is placed in the Not Ready state (by default).
- **Resource Selected:** The result of this step is the agent selected. Use a user-data-type variable for this field.

Caution When specifying a CSQ target, you must be very careful because this is a case-sensitive and space-sensitive field. If your specification does not match exactly with a CSQ name, an exception will be thrown and the script will abort.

Depending on the options taken in the Select Resource step, the output branches will be different. Note that you cannot queue to an agent.

Output Branch Options

- Output branches differ as a function of Routing Target Type and Connect settings:

Target Type	Connect	Branch	Branch
CSQ	Yes	Connected	Queued
CSQ	No	Selected	Queued
Resource	Yes	Connected	Failed
Resource	No	Selected	Failed

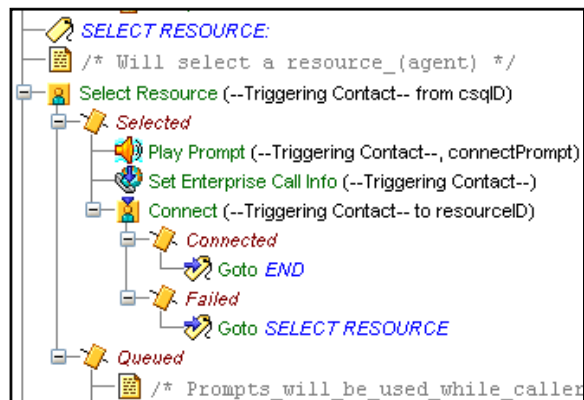
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UCCXD v4.0-4.5

You might need or want to perform some actions after the agent is selected but before the call is connected. In this case, you would not connect the call immediately.

Options If Resource Is Selected

- Play a prompt.
- Get or set database information, if required.
- Set Enterprise Call Info to populate the agent screen.
- Use Connect step to connect to agent (not optional!).



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Connect

This topic describes the Connect step.

Connect Step

- Used to connect call when the Select Resource step is set to not connect.
- Must follow in the Selected Output Branch of the Select Resource step.
- Resource Selected—Use variable from Select Resource step.
- Output branches:
 - Connected
 - Failed



Use the Connect step within the Selected Output Branch of the Select Resource step.

The fields are defined as follows:

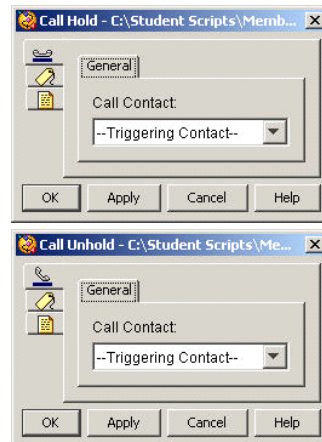
- **Contact:** Defines which contact this step will act on.
- **Resource Selected:** Use the result of the Select Resource step.
- **Timeout:** Specify the Ring No Answer timeout. If the agent does not answer the call within this timeout, the call is requeued, and the agent is placed in the Not Ready state (by default).

Call Hold and Call Unhold

This topic describes the Call Hold and Call Unhold steps.

Call Hold and Call Unhold

- Call Hold places call on Cisco Unified Communications Manager Hold.
- Call Unhold removes call from Hold.
- Call Hold is interruptible.
- Use Delay step between these two steps to time Hold action.
- Plays MOH from Cisco Unified Communications Manager.
 - Configure CTI ports for Music On Hold.
 - Select User Audio Source.
 - Play .wav, audio source, or live audio (radio).
- Alternative: Use Play Prompt step for a specific time.



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UCCXD v4.0-4.8

The Call Hold and Call Unhold steps allow the caller to hear music on hold in the queue loop. The source of the music is based on the Cisco Unified Communications Manager CTI Port definitions. If you need to modify any of these settings, ensure that you make the modifications on the Cisco Unified CCX Call Control Groups page in Cisco Unified CCX Administration.

Get Reporting Statistic

This topic describes the Get Reporting Statistic step.

Get Reporting Statistic

- Real-time info about Cisco Unified CCX.
 - Resources (agents)
 - CSQs
 - Overall IPCC Express
 - Outbound
- Real-time information can be made available to script.
 - Current wait duration of contact
 - Contact position in queue
 - Expected wait time for contact
- Use information to make announcements to caller or to make decisions.

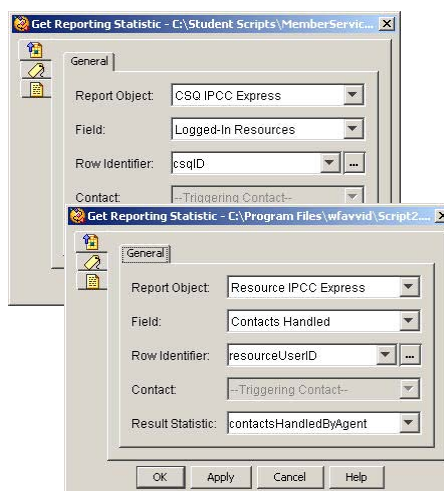
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UCCXD v4.0-4.9

Use the Get Reporting Statistic step to get information from the real-time reporting system. Use this information for announcements or decision making.

Get Reporting Statistic (Cont.)

- Report Object:
 - Outbound Campaign
 - Overall IPCC Express
 - Resource IPCC Express
 - CSQ IPCC Express
- Field is statistic desired.
- Row Identifier specifies which report object is being evaluated (example: CSQ2 or CSQ3).
- Result Statistic.



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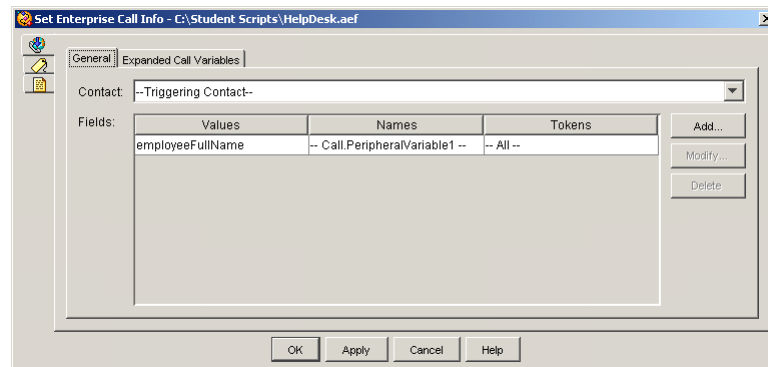
UCCXD v4.0-4.10

Set Enterprise Call Info

This topic describes the Set Enterprise Call Info step.

Set Enterprise Call Info Step

- Use the Set Enterprise Call Info step to move data from your script to the Cisco Agent Desktop.

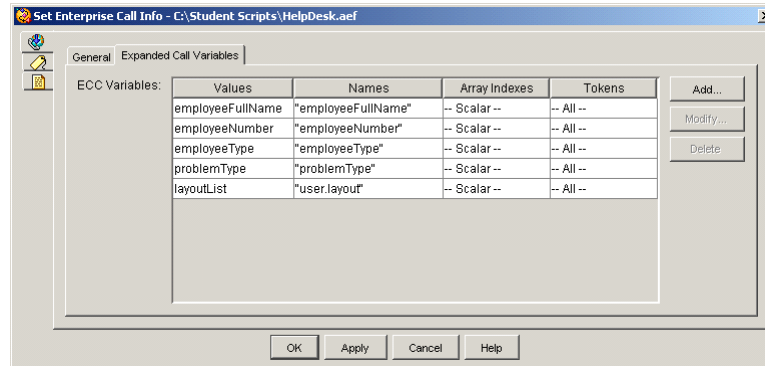


Options for the General tab:

- For Cisco Unified Intelligent Contact Management (Cisco Unified ICM) deployments, use this tab to pass peripheral variables 1–10, caller-entered digits, and the account number field to the Cisco Unified ICM system.
 - Values: Specify the data from Cisco Unified CCX to pass to Cisco Unified ICM.
 - Names: Name of the Enterprise Data field. Specify the data field to use to pass data.
 - Tokens: Tokens allow the passing of multiple data fields within the confines of a single Enterprise Data field. If your Cisco Unified ICM system is set up to use tokens, specify the token here. If not, do nothing.
- For a Cisco Unified CCX deployment, use these fields to set the custom variables 1–10, caller-entered digits, and the account number field in the Contact Call Detail Record (CCDR) database. These fields can be reported on via historical reporting.
 - Values: Specify the data that Cisco Unified CCX will write to the CCDDR database.
 - Names: Name of the Enterprise Data field. Specify the data field to set.
 - Tokens: Tokens allow the passing of multiple data fields within the confines of a single Enterprise Data field. If the Cisco Unified CCX system is set up to use tokens, specify the token here. If not, do nothing.

Set Enterprise Call Info Step (Cont.)

- Variable information can also be passed to and received from Cisco Unified ICM.



Options for the Expanded Call Variables tab:

- For Cisco Unified ICM deployments, use these fields to pass custom expanded call variables to the Cisco Unified ICM system.
 - For IP IVR-to-Cisco Unified ICM deployments, the Name of the Enterprise Data field must be predefined in Cisco Unified ICM and in the Cisco Unified CCX Script Editor. These definitions in the script editor are made in a dialog box under Settings > Expanded Call Variables.
 - For Cisco Unified CCX-to-Cisco Unified ICM (Parent/Child) deployments, the Name of the Enterprise Data field must be predefined in Cisco Unified ICM, in the Cisco Unified CCX Script Editor, and in the Desktop Administrator.
 - Array Index: If the Cisco Unified ICM variable is defined as an array, specify which index to use.
 - Tokens: Tokens allow the passing of multiple data fields within the confines of a single Enterprise Data field. If your Cisco Unified ICM system is set up to use tokens, specify the token here. If not, do nothing.
- For Cisco Unified CCX deployments, use these fields to pass data to an agent desktop.
 - The name of the Enterprise Data field must be predefined in the Desktop Administrator and specified in the Cisco Unified CCX script as a string value. You may use a hard-coded string value as shown in this figure or use the contents of a variable.
 - Array Index: If the Cisco Unified CCX variable is defined in the Desktop Administrator as an array, specify which index to use.
 - Tokens: Tokens allow the passing of multiple data fields within the confines of a single Enterprise Data field. If the Cisco Unified CCX system is set up to use tokens, specify the token here. If not, do nothing.

Set Priority

This topic describes the Set Priority step.

Set Priority

- Increases or decreases priority of a call in queue.
- Operation:
 - Assign
 - Increase
 - Decrease
- Default priority = 1.
- Priority range is 1 (lowest) to 10 (highest).



The Set Priority step allows you to assign or change the priority of a call in queue. The priority can be set inside or outside the queue loop but is meaningless unless the caller actually has to wait for an agent. The default priority of all calls is 1. If the priority of a call is increased, its queue position moves forward in line accordingly.

Note Be careful in announcing a caller position in queue when using multiple priorities. In this case, you must be aware that a caller position in queue can move forward or backward in queue based on the other priority settings of the callers.

Dequeue

This topic describes the Dequeue step.

Dequeue

- Removes a queued call from one or more CSQs.
- Use when abandoning effort to reach an agent in a specific CSQ.
- Causes a call to be marked as Dequeued as opposed to Abandoned.



Even though it is not a requirement to use this step, you should use this step to dequeue a call from one or more queues at the appropriate times.

Before understanding what this step does, you must understand certain reporting aspects of Cisco Unified CCX. Cisco Unified CCX, like other ACDs, has handled and abandoned attributes that are applied to calls for reporting purposes. But unlike other ACDs, Cisco Unified CCX has a third attribute: Dequeued. Cisco Unified CCX has determined that there are times when the attributes Handled or Abandoned simply do not apply appropriately.

For example, suppose you have a call in queue for multiple queues. Ultimately, an agent becomes available from one of these queues and answers the call. Certainly, the CSQ that answers the call marks the call as Handled, but what about the others? How should the attributes for the others be set? The Calls Presented counter to a CSQ never goes down, and setting a Handled or Abandoned attribute for the CSQs that did not answer the call is not appropriate. So a third option is available— Dequeue.

To sum it up, consider this equation: Calls Presented to a CSQ = Calls Handled + Calls Abandoned + Calls Dequeued.

Summary

This topic summarizes the key points that were discussed in this lesson.

Summary

- From a scripting perspective, the only difference between an IVR script and a Cisco Unified CCX script is the addition of ACD steps.
- Use the Select Resource step to choose an agent. You can choose a specific agent or use a CSQ to determine who is available to be chosen and how to choose an agent.
- If you have chosen not to connect the caller in the Select Resource step, use the Connect step to connect the caller.
- Use the Call Hold and Call Unhold steps to connect and disconnect a caller from Music on Hold.
- Use the Get Reporting Statistic to obtain real-time reporting metrics. These metrics can be used as announcements to your caller or for the decision-making process.

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Summary (Cont.)

- Use the Set Enterprise Call Info step to move data from Cisco Unified CCX to the agent desktop.
- Use the Set Priority step to manipulate the position of a caller in queue.
- If you allow the caller to opt out of the queue, use a Dequeue step to remove the caller from the queue. The call will be marked as Dequeued for reporting purposes.

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Cisco Desktop Work Flow Administrator Fundamentals

Overview

Desktop administration has changed significantly since the last version of Cisco Unified Contact Center Express (CCX). All the properties of the Cisco Desktop Administrator are still present in this utility, but there have been many enhancements to its operation and the functions it controls. This includes designating properties for Cisco Unified Presence and Agent Email.

Objectives

Upon completing this lesson, you will be able to utilize the Cisco Desktop Work Flow Administrator to customize your contact center. This ability includes being able to meet these objectives:

- Describe how to install Cisco Desktop Work Flow Administrator
- Describe the Cisco Agent Desktop Configuration Setup properties
- Describe dial strings
- Describe the phone book settings
- Describe reason code settings
- Describe wrap-up settings
- Describe Record and Monitor Notification options
- Describe enterprise data configuration
- Describe reason code configuration
- Describe wrap-up data configuration
- Describe phone book configuration
- Describe the user interface options
- Describe how to configure voice contact work flows
- Describe how to configure agent management work flows
- Describe how to perform Services configuration to include setting up Enterprise Data and Silent Monitor options

- Describe Personnel configuration
- Describe settings needed for integration to Cisco Unified Presence

Cisco Desktop Administration Overview and Installation

This topic describes the Cisco Desktop Work Flow Administrator, how to install it, and how to configure system properties.

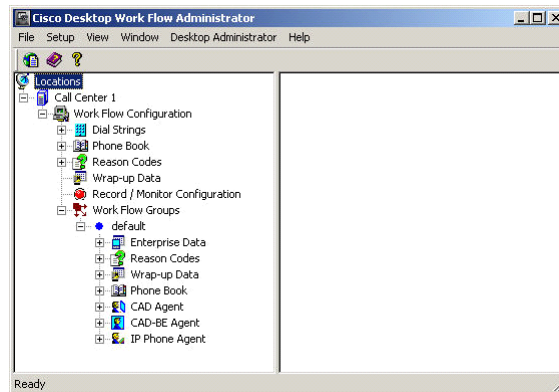
Overview—Cisco Desktop Administrator

- Accessed from administration web pages



Overview—Cisco Desktop Work Flow Administrator

- Utility downloaded from Cisco Unified CCX server



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Cisco Desktop Administrator consists of two parts:

- Desktop-based Cisco Desktop Work Flow Administrator
- Web-based Cisco Desktop Administrator

Cisco Desktop Work Flow Administrator enables you to configure the following:

- Dial strings
- Phone books
- Reason codes
- Wrap-up data
- Record/monitor notification
- Work flow groups

Cisco Desktop Administrator enables you to configure the following:

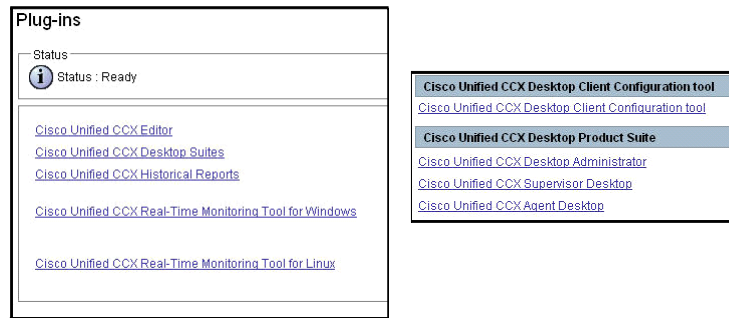
- Enterprise data
- Personnel
- Cisco Unified Presence settings
- Agent Email settings

Installing Cisco Desktop Work Flow Administrator

This subtopic describes installing the Cisco Desktop Work Flow Administrator.

Installation Process

- Navigate to Tools > Plug-ins Cisco Unified CCX Desktop Suites > Cisco Unified CCX Desktop Administrator.
- Run Install and accept defaults.



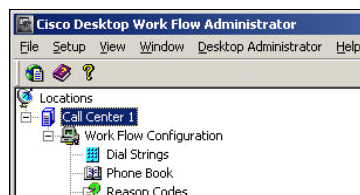
Install the Cisco Desktop Work Flow Administrator from the Plug-ins page. Navigate to **Tools > Plug-ins Cisco Unified CCX Desktop Suites > Cisco Unified CCX Desktop Administrator** to access the installer. Run the program and accept the defaults.

Menu and Toolbar

This subtopic describes the menu and toolbar.

Menu and Toolbar

- Changes based on selection.
- Toolbar for Logical Contact center.
 - Web: Page for Cisco
 - Help: Help screens
 - About: Desktop Administrator
- Menu bar for Logical Contact center.
 - File: Exit
 - Setup: Configure systems, synchronize directory services, change password
 - Desktop Administrator
- Manual synchronization with directory services and Cisco Unified CCX Agent databases.
- Password is optional; it may be set here.



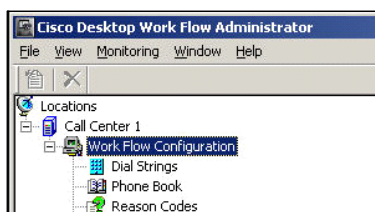
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The menu and toolbar change is based on the selection made in the navigation pane. Highlight the Call Center to access system configuration and directory services.

Menu and Toolbar (Cont.)

- Changes based on selection
- Toolbar for Work Flow Configuration
 - File new
 - Delete
- Menu bar for Work Flow Configuration
 - File: New
 - Monitoring (Notification)



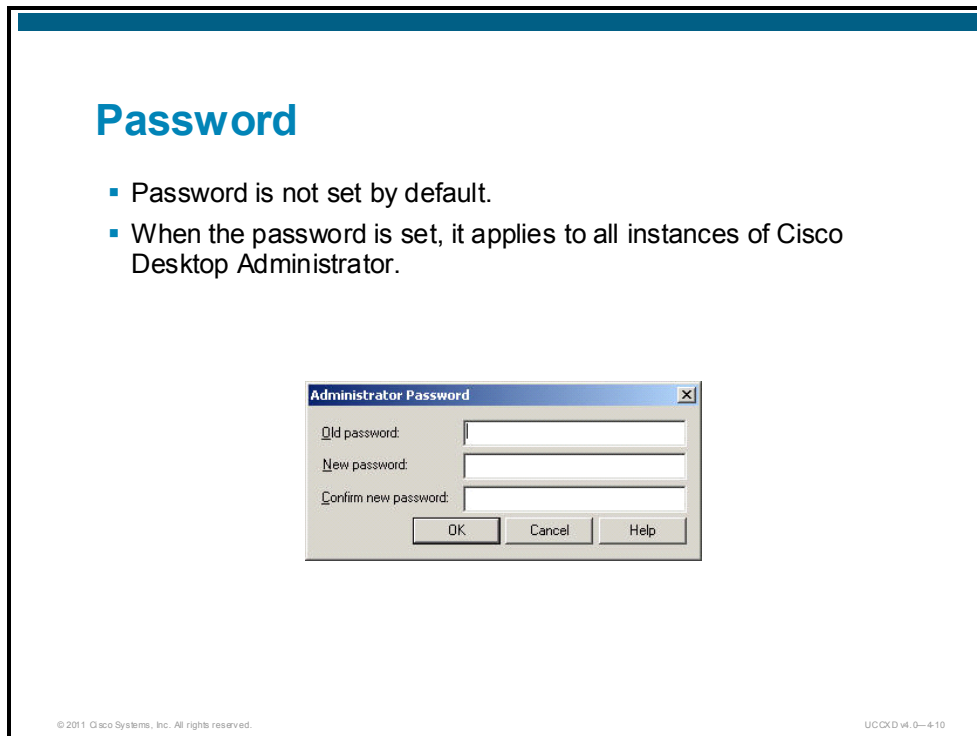
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Highlight Work Flow Configuration to access item-specific menus.

Password

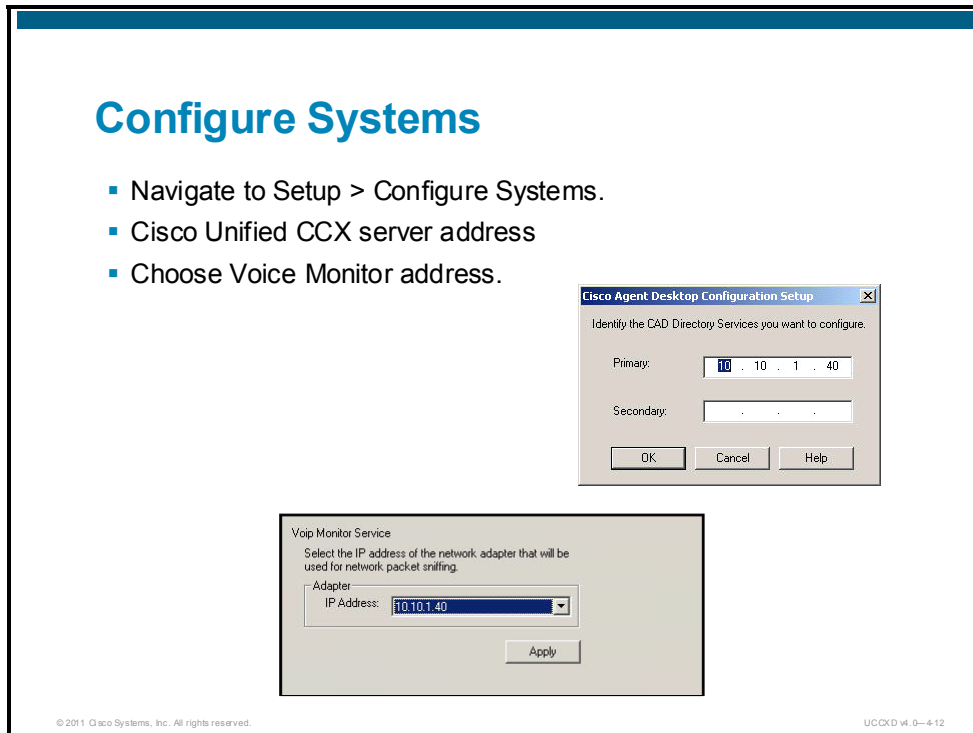
Highlight the call center, and from the menu bar, choose **Setup > Change Password** to add a password.



A password is optional for Cisco Desktop Work Flow Administrator. If a password is configured, when you select the logical contact center node, you will be prompted to provide the password before you can access any of the subnodes.

Cisco Agent Desktop Configuration Setup

This topic describes the Cisco Agent Desktop Configuration Setup.



Highlight the call center, and from the menu bar choose **Setup > Configure Systems** to change system properties.

In most instances, the default settings in CAD Configuration Setup are correct and there is no need to run it after the client desktop is installed. You should run CAD Configuration Setup in the following instances:

- There is only one Unified CCX server, and its IP address changes.
- There is a primary and secondary Unified CCX server, and both server IP addresses change:
 - If either the primary or secondary Unified CCX server IP address changes, but not both, there is no need to run CAD Configuration Setup. The next time a client desktop is started, the automated update feature will reinstall the client desktop and make the necessary change.
 - However, if both the primary and secondary Unified CCX server IP addresses change, the client will be unable to start because it cannot communicate with either server. In that case, you must run CAD Configuration Setup and change the Unified CCX server IP addresses.
- There is more than one NIC in the client PC.
- The client desktop application is running in a thin client environment.

CAD Configuration Setup

- Access CAD Configuration setup from Cisco Desktop Administrator.
- Specify CAD-BE Services servers.

CAD-BE Servers
Enter the host name or IP address of the primary and optional secondary CAD Base Services server.

If you have agents outside your firewall, use the external host name or IP address that maps to the primary and secondary CAD Base Services servers. If all agents are inside your firewall, use the internal host name or IP address.

NOTE: The secondary CAD Base Services server must be set up and configured for replication before you can enter information in this section.

Primary

Location ☐ Host Name ☒ IP Address

Secondary

Location ☐ Host Name ☐ IP Address

Access the CAD Configuration Setup utility from the Cisco Desktop Administrator.

Enter the host name or IP address of the Cisco Agent Desktop Base Services server in the Primary Location field. Apache Tomcat, which is required for running Cisco Agent Desktop Browser Edition, is installed on this server.

If some of your agents are outside the firewall, use the external hostname/IP address that maps to the server. If all your agents are inside the firewall, use the internal hostname/IP address.

If your configuration includes a second server that hosts the Cisco Agent Desktop Base Services and you have configured replication between the primary and secondary servers, enter the location of the second server in the Secondary Location field.

CAD Configuration Setup (Cont.)

- Browser and IP Phone Agent (BIPPA) Service.
- Address where services are located.
- Telecaster is the Application User account on Cisco Unified Communications Manager.

Services IP Address
Services must register their IP address with Directory Services in order to function correctly. If the server on which the services are installed has more than one network interface card (NIC), select the IP address of the NIC that is used to communicate with the clients.

NOTE: If you have a High Availability (HA) system, you must configure the IP address for both the Primary and Secondary systems.

IP Address

BIPPA User Login
Enter the login ID and password to be used by the Browser and IP Phone Agent (BIPPA) service to connect to the Unified CM.

Login ID
Password
Confirm Password

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If the computer has more than one IP address, select the IP address of the network interface card used to connect to the LAN. It must be accessible by the client desktops.

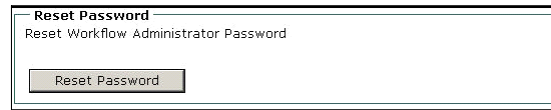
In order to connect to the Cisco Unified Communications Manager, the Browser and IP Phone Agent (BIPPA) Service must have a user ID and password. This user ID and password are also set up in Cisco Unified Communications Manager (see “Configuring IP Phones for Cisco IP Phone Agent” in the *Cisco CAD Installation Guide*). You can complete these fields before actually setting up the user in Cisco Unified Communications Manager, but the user ID and password must be identical in both places. If they are changed either in this window or in Cisco Unified Communications Manager, they must be changed in both.

Note If Directory Services is not running when you view this step, the Cisco IP Phone Agent login information cannot be changed.

Note If you change these settings, you must restart all Cisco Agent Desktop services to ensure that the change is registered with them properly.

CAD Configuration Setup (Cont.)

- Reset the password for Cisco Desktop Administrator.

A screenshot of a 'Reset Password' dialog box. The dialog has a title bar that says 'Reset Password'. Inside the dialog, the text 'Reset Workflow Administrator Password' is displayed. At the bottom of the dialog, there is a button labeled 'Reset Password'.

Use Reset Password to clear the password for accessing the Cisco Desktop Work Flow Administrator.

Work Flow Configuration

Work Flow Configuration enables you to configure and maintain the appearance and behavior of Cisco Agent Desktop, Cisco Agent Desktop Browser Edition, and Cisco IP Phone Agent. Work Flow Configuration has the following functions:

- Dial Strings
- Phone Book
- Reason Codes
- Monitor/Record Notification
- Work Flow Groups

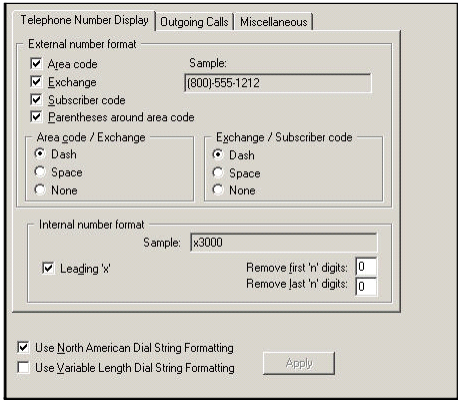
To use any Work Flow Configuration application, select its node in the left navigation pane of the Desktop Work Flow Administration window. The right display pane shows the selected node.

Dial Strings

Use the Dial Strings option to configure the way desktop applications display and dial phone numbers.

Dial Strings

- Defines how telephone numbers are displayed on the desktop
- Outgoing calls
 - Prefixes
 - Area code treatment
 - Dial plan formatting
- Miscellaneous
 - Clipboard interactions



The Telephone Number Display tab enables you to configure how phone numbers are displayed in the Cisco Agent Desktop.

The selections you make are reflected in the Sample fields. (An exception is if you enter a value in either the “Remove first ‘n’ digits” or the “Remove last ‘n’ digits” field. In that case, the sample does not change.)

The Outgoing Calls tab enables you to configure your local area codes and exchanges.

The Miscellaneous tab sets up further dialing properties:

- Use text from the clipboard as the phone number when pressing the call button.
- Show the dial pad when using text from the clipboard for dialing.
- Convert text to digits in phone numbers.

Phone Book

The global Phone Book window enables you to set up and manage the global phone books that are shared by all agents and to disable all phone books or just personal phone books.

Phone Book

- Create global phone books here.
- Configuration allows administrator to:
 - Disable all phone books
 - Disable personal phone books
 - Create or edit phone books via Phone Book editor
- Import and export contacts for global phone books only.

☐ Disable all phone books

☐ Disable personal phone book

Phone Books: ☐ Filter

Filter

First Name

Begins with

First Name	Last Name	Phone Number	Notes

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Global phone books, which are available to all agents, are created and maintained using the Phone Book node under the Work Flow Configuration node. Work flow group phone books, which are available to agents only in that specific work flow group, are created and maintained using the Phone Book node under the specific work flow group node.

Global and Work Flow Groups phone books now have an import and export function for contacts.

Reason Codes

Reason codes describe why an agent has changed to the Not Ready agent state or has logged out.

Reason Codes

- Create all reason codes here.
- Use tabs to specify global reason codes.
- Work flow groups use available reason codes for their definitions, too.

Logout | Not Ready

Available Reason Codes List

Edit Master List

Global Reason Codes List

Reserved List

22 Supervisor logout

1000 ACD voice

32755 Call ended

32756 Device in service

32757 Call Manager failover

32758 Work timer expired

Apply

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A maximum of 999 reason codes can be set up for Cisco Agent Desktop and Cisco Agent Desktop Browser Edition. Cisco IP Phone Agent has a limit of 100 reason codes.

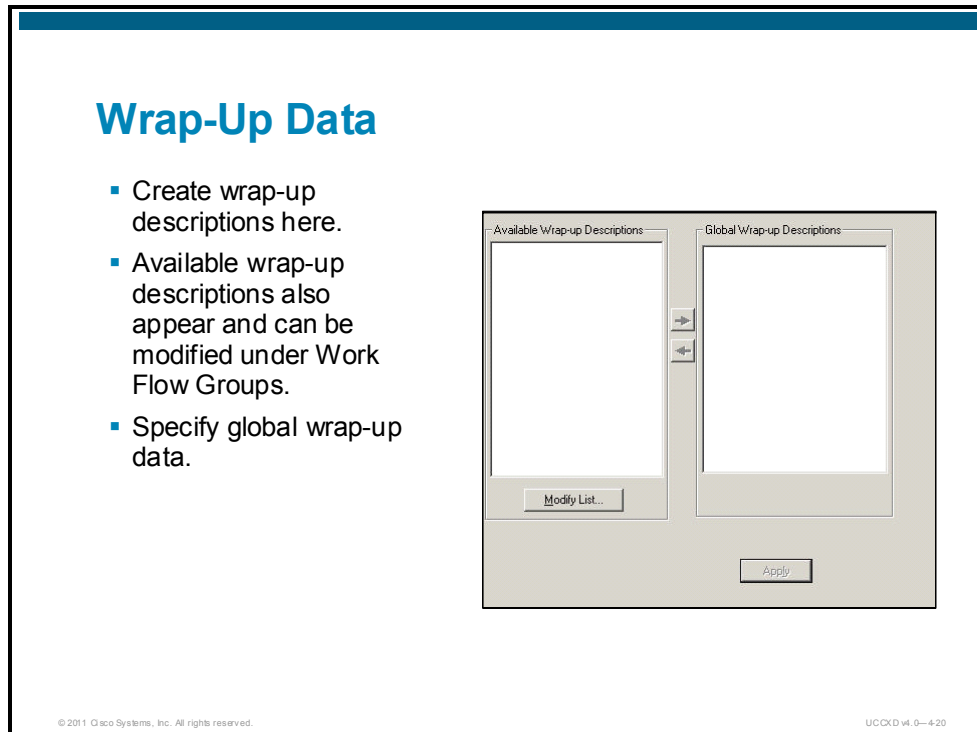
Global reason codes, which are available to all agents, are assigned using the Reason Codes node under the Work Flow Configuration node. Work flow group reason codes, which are available only to agents in that specific work flow group, are assigned using the Reason Codes node under the specific work flow group node.

Reserved reason codes (identified by [RESERVED] after the description) are predefined in Directory Services and cannot be created or deleted.

There are also reason codes that are generated by Cisco Unified CCX and that are entered when an agent is automatically put in the Not Ready or Logout state. For instance, when an agent receives a call that is not an automatic call distribution (ACD) call, the agent is put into the Not Ready state by Cisco Unified CCX and the reason code “32761–Non-ACD Call” is entered.

Wrap-up Data

Wrap-up data descriptions are used by contact centers for purposes such as tracking the frequency of different activities and identifying the account to which to charge a call, among others.



Wrap-up data is set up and maintained, and automated state changes are enabled, using the Wrap-up Data window. Wrap-up data descriptions are used for both calls and emails.

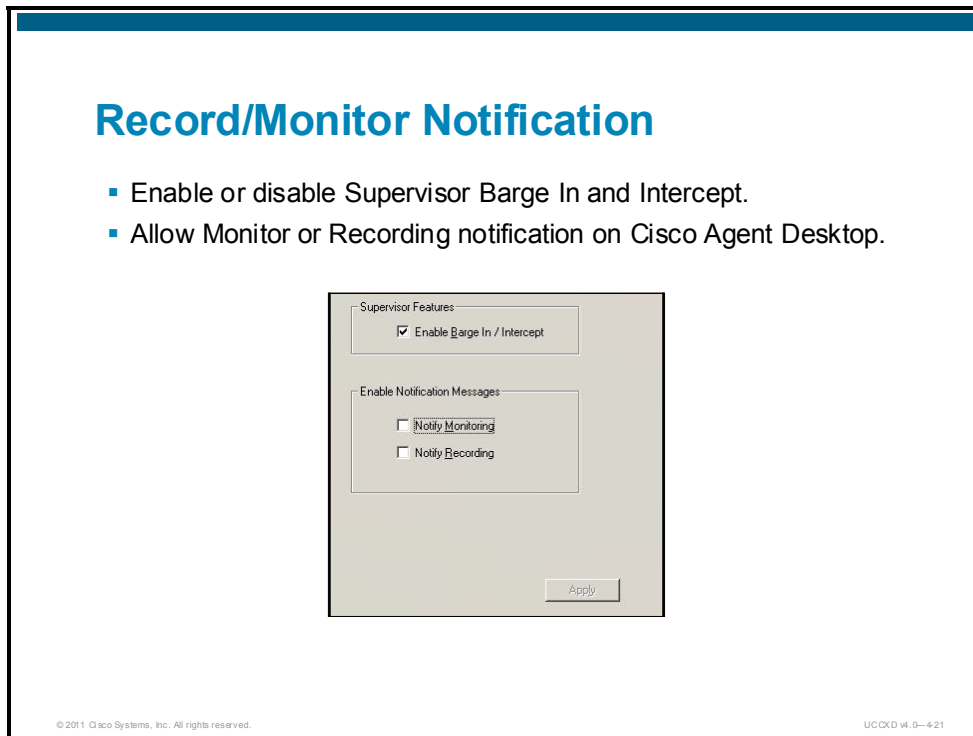
There is no limit on how many wrap-up data descriptions can be set up for Cisco Agent Desktop and Cisco Agent Desktop Browser Edition. Cisco IP Phone Agent has a limit of 100 wrap-up data descriptions.

Note Cisco Agent Desktop and Cisco Agent Desktop Browser Edition agents must log out, exit, and restart the application for changes to take effect.

Global wrap-up data descriptions, which are available to all agents, are created and assigned using the Wrap-up Data node under the Work Flow Configuration node. Work flow group wrap-up data descriptions, which are available to agents only in that specific work flow group, are created and assigned using the Wrap-up Data node under the specific work flow group node.

Record/Monitor Notification

The Monitor/Record Notification window is used at the global level to enable or disable messages telling agents that they are being recorded, monitored, or both.



You can enable or disable the supervisor Barge-In and Intercept functions from here. These functions are enabled by default.

To enable or disable agent notification:

- Select the **Record/Monitor Notification** node in the navigation tree.
- In the **Record/Monitor Notification** window, select or clear the **Notify Monitoring** and **Notify Recording** check boxes, and then click **Apply**.

You can also enable or disable monitoring and recording from the menu bar. To enable or disable agent notification from the menu bar:

- From the menu bar, choose **Monitoring > Notify Monitoring** or **Monitoring > Notify Recording**. A check mark appears next to the option when it is enabled.

Work Flow Groups Configuration

Use the Work Flow Groups function to create and configure agent work flow groups.

Individual work flow groups are under the Work Flow Groups node. Initially, there is a default work flow group, which can be edited, renamed, or deleted. You can also create additional work flow groups.

When you click on a work flow group, the elements that make up and apply only to that work flow group appear as subnodes:

- Enterprise Data: Configure enterprise data on Cisco Agent Desktop.
- Reason Codes: Assign reason codes.
- Wrap-up Data: Create and edit wrap-up data.
- Phone Book: Create and edit phone books.
- CAD Agent: Configure the user interface, voice contact work flow, and agent management work flows for agents using Cisco Agent Desktop.
- CAD-BE Agent: Configure the user interface and voice contact work flows for agents using Cisco Agent Desktop Browser Edition.
- IP Phone Agent: Enable agent-initiated recording for agents using the Cisco IP Phone Agent service.

Enterprise Data

The Enterprise Data window enables you to:

- Configure Cisco Agent Desktop so that agents in the selected work flow group can edit enterprise data
- Set thresholds for call duration at a particular type of device while a call is in the contact center

Enterprise Data

- Allow agent to edit enterprise data at the Cisco Agent Desktop.
- Set Call Activity thresholds.

Data | Call Activity

☒ Allow agent to edit Enterprise Data

Data | Call Activity

Device Type	Caution		Warning	
	Min	Sec	Min	Sec
CSQ:	0	0	0	0
Agent:	0	0	0	0
Total:	0	0	0	0

Enter a Warning threshold before entering a Caution threshold.
The Warning threshold must be greater than the Caution threshold.

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The Data tab controls whether or not an agent in the work flow group is allowed to edit the enterprise data displayed in Cisco Agent Desktop.

The Call Activity tab enables you to set the thresholds for the selected work flow group for call duration at a particular type of device (CSQ and Agent) while a call is in the contact center.

If a call remains at a device longer than the defined Caution or Warning threshold, a Caution or Warning icon is displayed next to the device name in the Cisco Agent Desktop call activity pane.

Reason Codes

Set up reason codes under the work flow configuration level for individual work flow groups.

Reason Codes

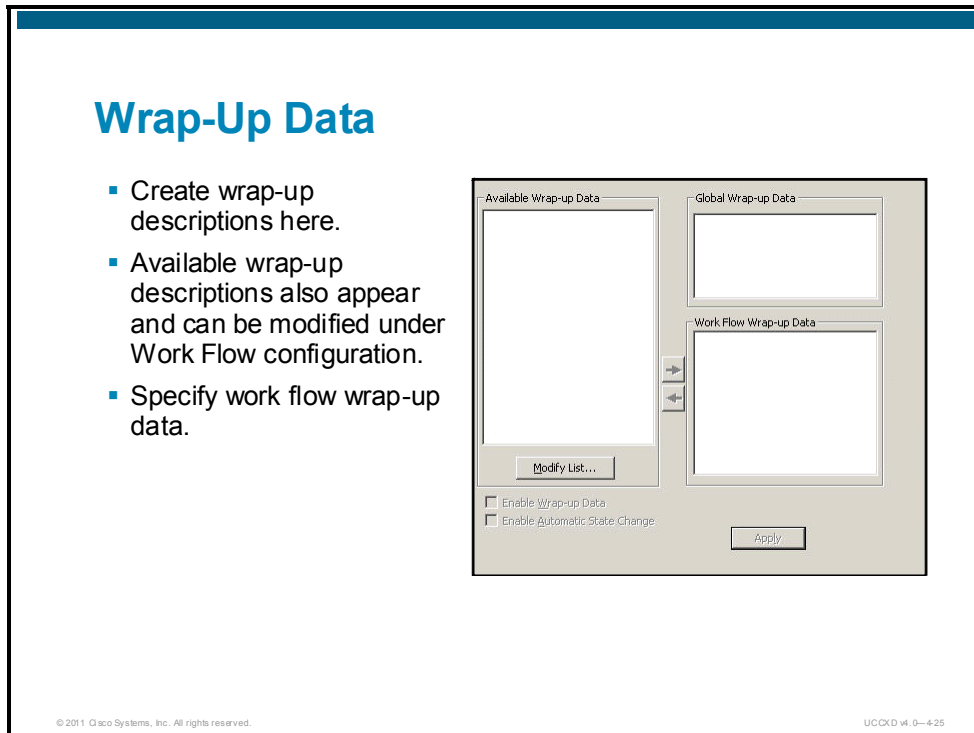
- Specify reason codes for this work flow group.

The screenshot shows a web-based configuration window titled "Reason Codes". At the top left, there are tabs for "Logout" and "Not Ready". The main area is divided into three sections: "Available Reason Codes List" on the left, "Global Reason Codes List" on the top right, and "Work Flow Group List" on the bottom right. Between the "Available Reason Codes List" and the "Work Flow Group List" are two arrows, one pointing right and one pointing left, indicating a selection or mapping process. At the bottom left, there is a checkbox labeled "Enable Logout Reason Codes". At the bottom center, there is an "Apply" button.

You create available reason codes at the global level and designate them here for use at the Work Flow Group level.

Wrap-Up Data

Set up wrap-up data under the work flow configuration level or the individual work flow group.



You can create wrap-up data at the global or work group level. Designate them here for use in the work flow group. Other options:

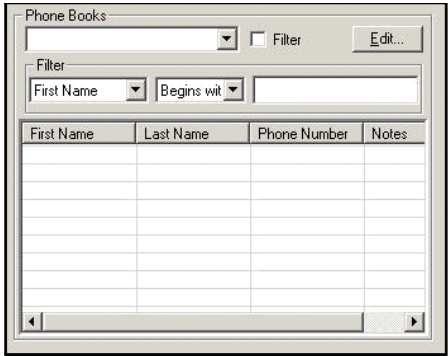
- Check the Enable Wrap-up Data check box to enable wrap-up data for this work flow group.
- Check the Enable Automatic State Change check box to enable automatic state changes for this work flow. If automatic state changes are enabled, agents are automatically changed from the Work state to the Ready state (or Not Ready if they press the Not Ready state button while on a call) when they enter wrap-up data.

Phone Book

Set up phone books under the work flow configuration level and at the individual work flow group.

Phone Book

- Create phone books for the work flow group.
- Lists of phone numbers available to agents:
 - Recent call list
 - Personal phone book
 - Global phone books



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Agents have a number of lists of phone numbers available to them:

- The Recent Call List, a dynamic list of up to 100 recently called phone numbers kept by Cisco Agent Desktop
- A personal phone book, created and maintained by the agent (and enabled/disabled by the system administrator)
- Up to 256 global phone books, each with unlimited entries, created by the system administrator with the global Phone Book function
- Work flow group phone books, created by the system administrator with the work flow group Phone Book function

Unlike reason codes or wrap-up data, there is no interaction between global and work flow group phone books. Global phone books are shared with all agents regardless of their work flow group affiliation.

At the work flow group level, create phone books that will only appear to agents in the work flow group. Click **Edit** to create a new phone book and populate its contents.

User Interface

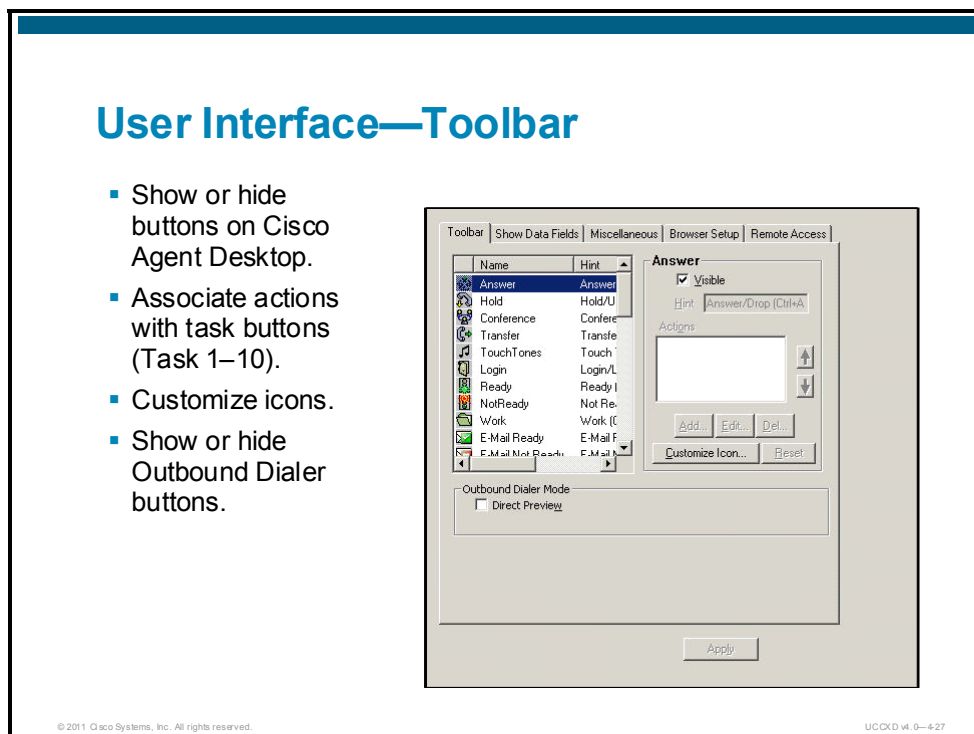
The User Interface window enables you to configure the appearance and behavior of Cisco Agent Desktop (when accessed under the CAD Agent node) and Cisco Agent Desktop Browser Edition (when accessed under the CAD-BE Agent node).

Note The User Interface windows for CAD Agent and CAD-BE Agent are slightly different to allow for the differences in the two applications. The following section will discuss the CAD Agent version and note where it is different for CAD-BE Agent.

Toolbar

The Toolbar tab enables you to:

- Add or remove toolbar buttons.
- Associate actions with Task buttons.
- Change a task button Hint.
- Customize button icons.



The pane on the left of the Toolbar tab displays the buttons that are available to be used on the Cisco Agent Desktop toolbar. Buttons that are assigned show an icon next to them; unassigned buttons do not show an icon.

You cannot change the hint or the shortcut key combination on any of the standard buttons or assign an additional action to them. You can, however, customize the icon displayed on the button.

User Interface Actions

Actions are stored independently of events and rules. You can use an action in more than one event, and you can assign actions to more than one task button in Cisco Agent Desktop and Cisco Agent Desktop Browser Edition.

User Interface—Actions

- Run macro
- Launch external application
- Delay action
- Call control
- Agent state
- Agent notification
- Utility action
- Set enterprise data action
- IPC action
- HTTP action

Utility Action Name	Action	Attribute
Emergency Chat	HighPriorityChat	"Help Student 00"
Record Start	Record	Start
Record Stop	Record	Stop

[New...](#)
[Edit...](#)
[Delete](#)

[Add Action](#)
[Close](#)

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Not all actions are available for all events or for all types of agents. The table below shows which actions are available for the three types of work flows and for each type of agent (Cisco Agent Desktop agents and Cisco Agent Desktop Browser Edition agents).

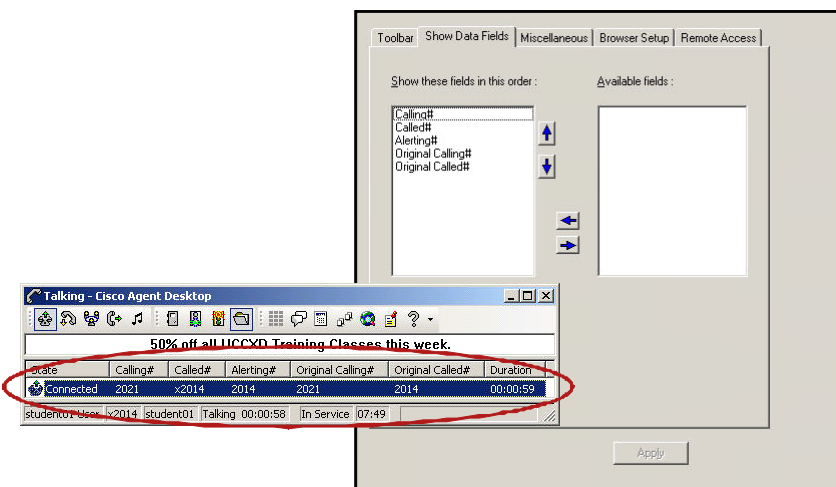
Action Type	Voice Contact		Agent Management		Time of Day	
	Cisco Agent Desktop	Browser Edition	Cisco Agent Desktop	Browser Edition	Cisco Agent Desktop	Browser Edition
Agent Notification	X		X		X	
Agent State	X				X	
Call Control	X					
Delay	X		X			
HTTP	X	X	X		X	
IPC	X		X			
Launch External Application	X		X			
Run Macro	X		X			
Set Enterprise Data	X					
Timer	X					
Utility	X	X				

Show Data Fields

The Show Data Fields tab configures the data fields that appear in the contact appearance pane in Cisco Agent Desktop and Cisco Agent Desktop Browser Edition, and enables you to rename data fields. It also allows you to enable and disable incrementing duration fields in Cisco Agent Desktop Browser Edition.

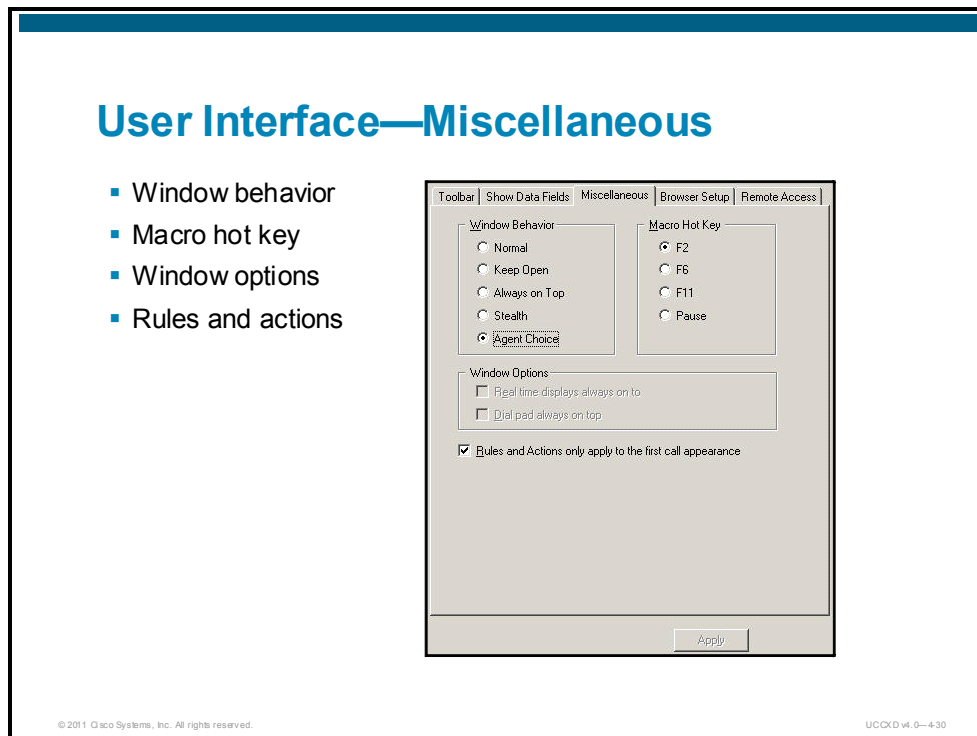
User Interface—Show Data Fields

- Show or hide Call Data fields.



Miscellaneous

Use the Miscellaneous tab to configure other user interface options. Select or check your desired settings, and then click **Apply** to save your changes.



Window Behavior: Specify how you want the Cisco Agent Desktop window to behave. The default setting is Agent Choice.

- **Normal:** The window appears when calls are present and minimizes when idle.
- **Keep Open:** The window is always visible, but can be hidden by other open applications.
- **Always on Top:** The window is always visible and on top of other applications.
- **Stealth:** The window appears as an icon in the system tray.
- **Agent Choice:** Behavior is set locally by the agent. The local setting persists until the settings are reset or until you choose something other than Agent Choice. On the agent desktop, the default setting is Normal.
- **Macro Hot Key:** Specify the key you want to use to pause macro recording and display the Suspend Macro Recording dialog. The default is F2.

Window Options allows you to set “windows on top” for:

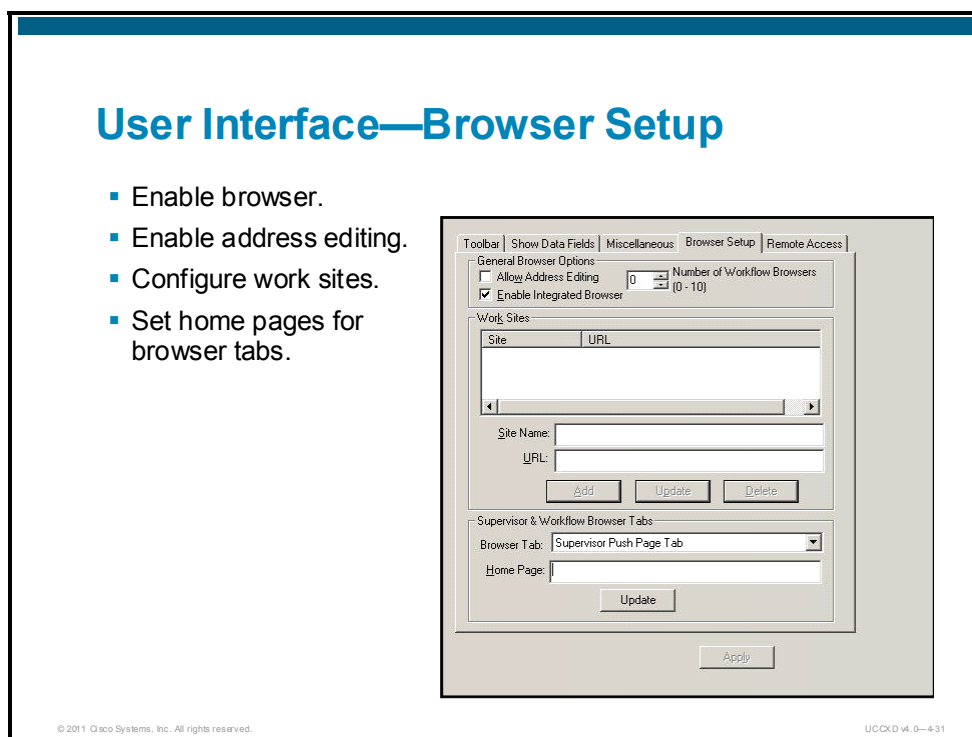
- Real-time displays
- Dial pad

Rules and Actions only apply to the first call appearance. Select to invoke rules processing only for the oldest (top) call appearance. If the check box is not selected, rules processing is invoked for all inbound calls.

Browser Setup

Use the Browser Setup tab to configure the Integrated Browser portion of Cisco Agent Desktop and Cisco Agent Desktop Browser Edition. On this tab you can:

- Enable or disable the integrated browser window
- Set the default web page displayed by the browser
- Enable up to 10 browser tabs
- Enable or disable access of agents to other websites
- Add work sites (or favorites) so agents can quickly access frequently used websites



Enabling the Integrated Browser

You can enable or disable the integrated browser in Cisco Agent Desktop/Cisco Agent Desktop Browser Edition by selecting or clearing the Enable Integrated Browser check box at the bottom of the Browser Setup tab.

Enabling Access to Other Websites

You can enable or disable the access of an agent to other websites by selecting or clearing the Allow Address Editing check box. When selected, the Address field appears in the integrated browser window, and agents can enter the URL of a website they wish to view it. When disabled, the Address field does not appear in the integrated browser window.

Configuring the Number of Browser Tabs

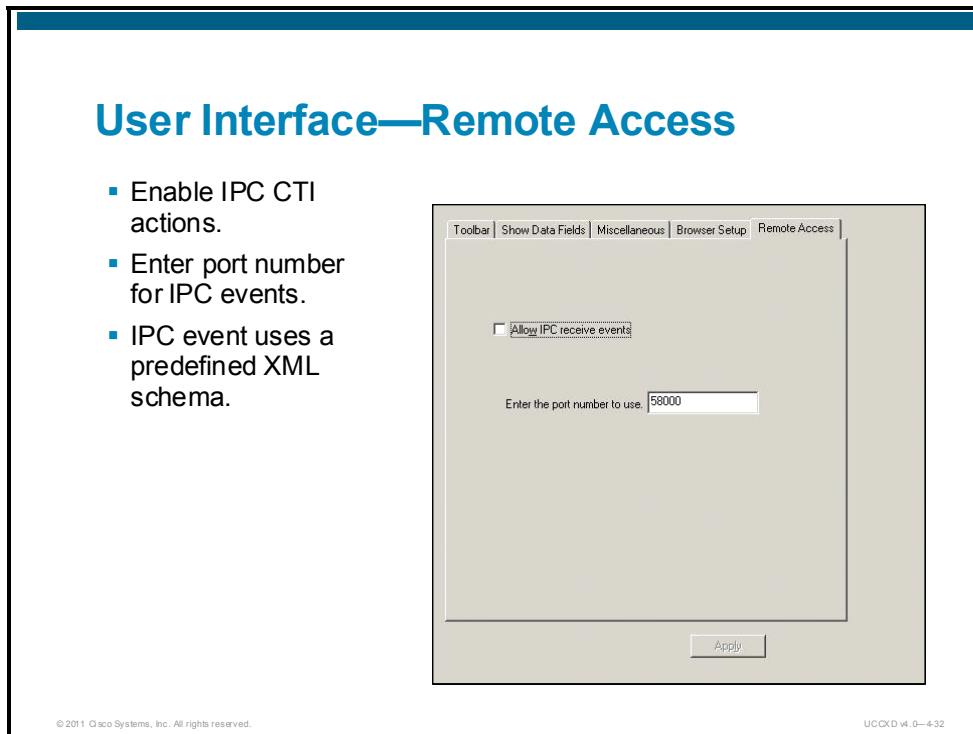
Choose from 0 to 10 in the Number of Work Flow Browsers field to set how many browser tabs appear in Cisco Agent Desktop (this feature is not available in Cisco Agent Desktop Browser Edition). If you choose 0, only the Supervisor Push Page tab appears; it is always enabled. If you choose 1 to 10, that many tabs, in addition to the Supervisor Push Page tab, appear. Work flow HTTP actions can be set up to display web pages in a specific browser tab.

Setting Up the Home Page

A home page is the website that appears in the integrated browser when the Cisco Agent Desktop or Cisco Agent Desktop Browser Edition is started. The default website is www.cisco.com. If no home page is configured (the default is deleted), the integrated browser tab is blank.

Remote Access

The Remote Access tab is used to enable the IPC Receive Event feature and configure the port used by the feature. The IPC Receive Event feature is available in the Enhanced and Premium bundles only.



An IPC Receive Event occurs when a third-party application sends a message to Cisco Agent Desktop over a UDP socket. These messages must adhere to a predefined XML schema and cannot exceed 4000 bytes.

Unlike work flow actions, IPC Receive Event actions do not require configuration or setup in Desktop Administrator. All attributes that IPC Receive Event actions require in order to execute are a part of the IPC Receive Event message content. All incoming IPC Receive Event messages must adhere to a strict predefined XML schema. The required schemas and additional information can be found in the *Cisco Desktop Administrator User Guide*.

When Cisco Agent Desktop receives an IPC Receive Event message, it does not send back a reply. IPC Receive Events are queued so that no messages are lost.

By default, IPC Receive Events are disabled. The default port number is Port 58000.

Note The Remote Access action provides for receiving an asynchronous event. Even if the event is solicited by an IPC Action request being sent out, the request may never be delivered. There is no assurance that a response will arrive, because of the nature of UDP.

Five actions are supported by the IPC Receive Event:

- IPC Make Call
- IPC High Priority Chat
- IPC Record
- IPC Agent Notification
- IPC Set Variable

Voice Contact Work Flows

This topic describes voice contact work flows.

Voice Contact Work Flows

- A work flow is a sequence of actions triggered by specific call events.
- Work flow rules can be two-tiered. First tier:
 - Specify call category and rules.
 - Use default (no rules).
- Work Flow configuration has three functions. Second tier:
 - Event: The four call or agent states are ringing, answered, dropped, or work state.
 - Rule: A data condition required before action is invoked
 - Action: An occurrence that is invoked when a rule is met

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Voice contact work flows manage agent activity based on voice call events. Once a call is classified, it is further filtered according to events, rules, and actions. Voice contact work flows are available to Cisco Agent Desktop and Cisco Agent Desktop Browser Edition agents.

Voice Contact Work Flows—First Tier

The Voice Contact Classification is the first level of filtering in a voice contact work flow.

Voice Contact Work Flows—First Tier

- Use default for no classification or rules.
- Classify type of call:
 - Inbound
 - Outbound
 - Disable work flow
 - All calls
- Create up to three rules.

The screenshot shows two overlapping windows from the UCCXD v4.0 interface. The background window, titled 'Voice Contact Work Flow List', displays a list with a single entry '<Default>'. The foreground window, titled 'Edit Voice Contact Classification', is for editing the 'Voice Contact Classification' workflow. It includes a 'Work Flow Name' field, an 'Enable Work Flow for...' dropdown menu currently set to 'Inbound calls', and three 'Edit...' buttons. To the right, there are three empty 'Data Field Conditions' rows, each with an 'Edit...' button. At the bottom, the 'Execute Actions When' section has two radio buttons: 'Any Condition is True' (which is selected) and 'All Conditions are True'. 'OK' and 'Cancel' buttons are at the bottom right.

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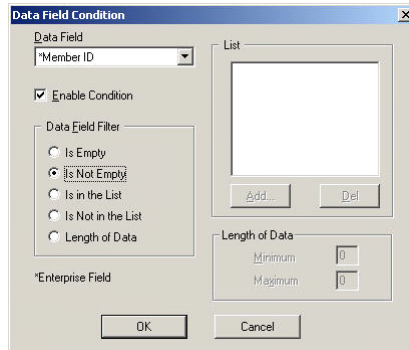
When you select the Voice Contact Work Flow node in the navigation tree, the Voice Contact Work Flow List window is displayed. This window shows all the existing voice contact work flows and enables you to edit them or to set up new ones.

Voice Contact Work Flows—Creating Rules

Data field conditions are criteria that the selected enterprise data fields of a call must meet in order for a voice contact classification or a work flow rule to be enforced.

Voice Contact Work Flows—Creating Rules

- Choose data field.
- Enable condition.
- Specify data condition of field.

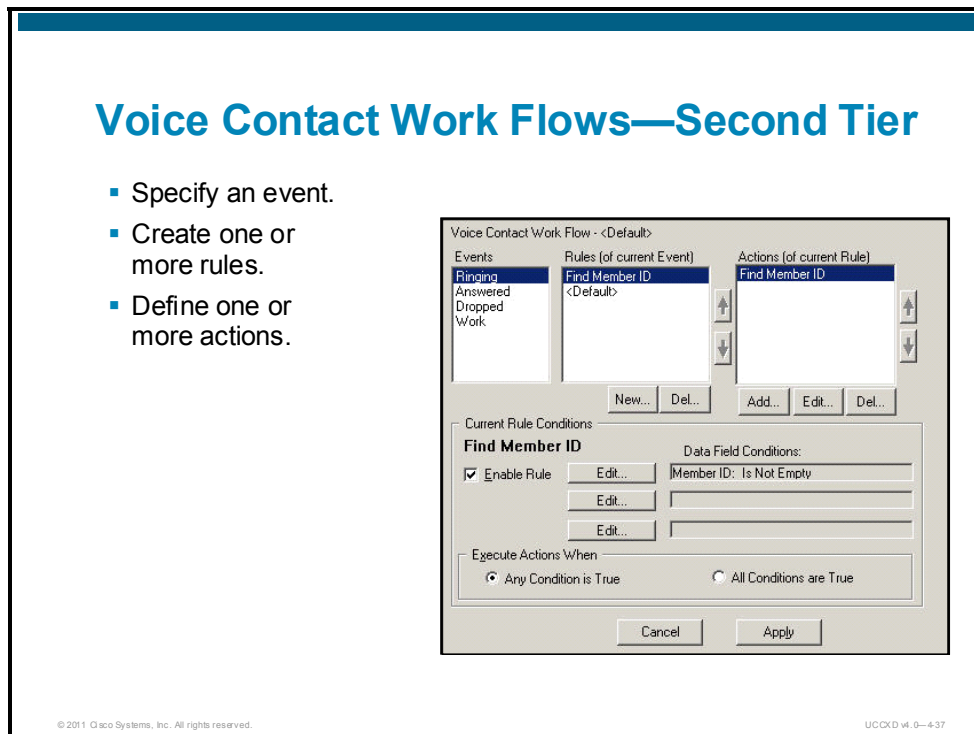


You can configure up to three data field conditions for a voice contact classification filter and for a work flow rule. You must specify if all the data field conditions must be met (an AND statement) or if any of the data field conditions must be met (an OR statement).

To configure data field conditions, you use the Data Field Condition dialog box (for a voice contact classification) or the Current Rule Conditions section of the Voice Contact Work Flow window (for a work flow rule).

Voice Contact Work Flows—Second Tier

After a new voice contact classification is created, Desktop Work Flow Administrator takes you to the Voice Contact Work Flow window. In this window you set up the second level of filtering, consisting of events and rules and the resulting actions for your new voice contact work flow.



When an event occurs, the rules associated with the event are evaluated in the order in which they are listed in the Rules pane. When a rule is met, the actions associated with that rule are executed in the order in which they are listed in the Actions pane. Subsequent rules are not evaluated.

If no rules are met, the default rule governs, and all actions associated with the default rule are executed. Default rules cannot be changed or deleted.

Agent Management Work Flows

Agent management work flows manage agent activity based on Cisco Agent Desktop and Cisco Agent Desktop Browser Edition activity agent ACD states and time of day. The work flows follow the event - rule - action behavior used by voice contact work flows. There is a major difference: there is no initial filtering similar to the voice contact classification applied to voice contacts.

Agent Management Work Flows

- Agent management work flows are single-tiered.
- Events:
 - Startup
 - Shutdown
 - Ready
 - Not ready
 - Time of day
- Create one or more rules.
- Define one or more actions.

The screenshot shows a configuration window for Agent Management Work Flows. It is divided into three main sections at the top: 'Events', 'Rules (of current Event)', and 'Actions (of current Rule)'. The 'Events' list includes Startup, Shutdown, Ready, Not ready, and Time of day. The 'Rules' section shows a single rule named '<Default>'. The 'Actions' section shows a single action named '<No Action>'. Below these are buttons for 'New...', 'Del...', 'Add...', 'Edit...', and 'Del...'. The bottom section is titled 'Current Rule Conditions' and includes a checkbox for 'Enable Rule' (which is checked), an 'Edit...' button, and a 'Data Field Conditions' section with three empty input fields. At the bottom, there is a section for 'Execute Actions When' with two radio buttons: 'Any Condition is True' (selected) and 'All Conditions are True'. An 'Apply' button is located at the very bottom.

Unlike rules in voice contact work flows, rules in agent management work flows can be applied only to a time-of-day event, not to all events.

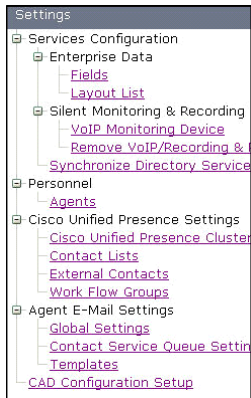
Not all actions are available for agent management work flows; see the preceding pages in this lesson under Actions for more information.

Cisco Desktop Administrator

This topic describes the Cisco Desktop Administrator.

Cisco Desktop Administrator

- Services configuration
- Personnel
- Cisco Unified Presence settings
- Agent Email settings



The screenshot shows the 'Settings' menu in the Cisco Desktop Administrator application. The menu is organized into several categories: 'Services Configuration' (including Enterprise Data, Silent Monitoring & Recording, and Synchronize Directory Service), 'Personnel' (including Agents), 'Cisco Unified Presence Settings' (including Cisco Unified Presence Cluster, Contact Lists, External Contacts, and Work Flow Groups), and 'Agent E-Mail Settings' (including Global Settings, Contact Service Queue Settings, Templates, and CAD Configuration Setup).

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UCCXD v4.0-4.4.1

Cisco Desktop Administrator enables you to configure the following Cisco Agent Desktop elements:

- Services Configuration—Enterprise Data and Silent Monitoring and Recording
- Personnel—Agents
- Cisco Unified Presence settings
- Agent Email settings

Enterprise Data

The Enterprise Data node has two pages: the Fields page and the Layout List page.

You can perform the following tasks on the Fields page:

- Create a custom field
- Edit a field
- Delete a field

You can perform the following tasks on the Layout List page:

- Create a custom layout
- Copy a layout
- Edit a layout
- Delete a layout

Enterprise data is information associated with an incoming call. It is displayed in the Contact Management pane of Cisco Agent Desktop and Cisco Agent Desktop Browser Edition and on the Caller Data screen in IP Phone Agent.

Enterprise Data

- Use the Enterprise Data System to move data from Cisco Unified CCX to agent and supervisor desktops.
- There are 255 data fields (0 – 255). User-definable fields are 0 – 158; system predefined fields are 159 – 255.
- Layout List:
 - Defines which data is listed on the agent desktop
 - 16 fields maximum
- Use Set Enterprise Call Info step in script to set enterprise data.
- Set user.layout (Field #252) with layout list name.

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Enterprise data fields and layouts are configured under the Enterprise Data node.

Note The agent applications must be restarted for any enterprise data variable or layout changes you make to go into effect.

The Field List displays both the predefined fields available for your switch type and the custom fields you create.

- Predefined fields have index numbers of 159 – 255. Only the display name of these fields is editable, with the exception of field 252, whose display name and field name can be edited. Note that when you click the Select All button, these fields are not selected.
- Custom fields have index numbers of 0 – 158 and are editable.

Enterprise Data Configuration

The following figure shows how to create a Custom field.

Enterprise Data Configuration

- Click on Enterprise Data > Fields.
- Add new.

Selected	Field Name	Display Name	Expanded Call Context (ECC)
☐	ANI	ANI	No
☐	BAAccountNumber	BAAccountNumber	Scalar
☐	BABuddyName	BABuddyName	Scalar
☐	BACampaign	BACampaign	Scalar
☐	BACustomerNumber	BACustomerNumber	Scalar
☐	BADialedListID	BADialedListID	Scalar
☐	BResponse	BResponse	Scalar
☐	BStatus	BStatus	Scalar
☐	BTimeZone	BTimeZone	Scalar
☐	Call Variable 1	Call Variable 1	No

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Choose **Services Configuration > Enterprise Data > Fields**. The Field List page appears.

Enterprise Data Configuration—Add New

- Field name
- Display name
- ECC
 - Scalar
 - Array
- Field index

Settings: Services Configuration > Enterprise Data > Fields > Add New

Field Information

Field Name:

Display Name:

Expanded Call Context (ECC):

Field Index:

Settings: Services Configuration > Enterprise Data > Fields > Add New

Field Information

Field Name:

Display Name:

Expanded Call Context (ECC):

Field Index:

Click **Add New**. The Add New page appears. The field name and value can be up to 29 characters long and can contain only the following characters: numbers, letters, underscores, and periods. If you choose Array, specify how many enterprise data fields you will need for the array.

Layout List

The Layout List displays the field layouts available for use in the agent applications. Each layout can contain up to 16 fields chosen from the Field List.

There are two default layouts:

- Default: Basic layout for normal operations
- OODefault: Layout for Cisco Outbound Dialer campaigns

Cisco Unified CCX automatically uses the default layout for normal call activity. If you want to use a custom layout, a custom script to pop that layout must be created. You cannot delete the default layout, but it can be edited to add or remove enterprise data variables.

You can create up to 14 custom layouts in addition to the default layouts. Once the limit of custom layouts is reached, the Add New and Copy buttons are disabled.

Layout List

- Click Enterprise Data > Layout List.
- Default
- OODefault
- Add new.

The screenshot shows the 'Layout List' page in the Cisco UCCXD interface. The breadcrumb navigation at the top reads 'Settings: Services Configuration > Enterprise Data > Layout List'. Below this is a search bar with 'Layout Name' selected in the dropdown, and buttons for 'Find', 'Clear Filter', and '+' and '-' icons. The main table has two columns: 'Selected' and 'Layout Name'. The 'Layout Name' column lists 'default' and 'OODefault'. Below the table are buttons for 'Add New', 'Select All', 'Clear All', and 'Delete Selected'. At the bottom right, there is a 'Goto' field showing '1 of 1' and a 'Save' button at the bottom center.

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Choose **Services Configuration > Enterprise Data > Layouts**. The Layout List page appears.

Layout List—Add New

- Define Layout Name.
- Select fields.
- 16 fields maximum

The screenshot shows the 'Add New' page in the Cisco UCCXD interface. The breadcrumb navigation at the top reads 'Settings: Services Configuration > Enterprise Data > Layout List > Add New'. The page is divided into two main sections: 'General Information' and 'Fields In Layout'. The 'General Information' section has a 'Layout Name' text field. The 'Fields In Layout' section is further divided into 'Available' and 'Selected' columns. The 'Available' column lists 11 fields: 200 BAAccountNumber, 201 BAABuddyName, 202 BACampaign, 203 BADialedListID, 204 BAResponse, 205 BAStatus, 206 BATimeZone, 207 BACustomerNumber, 210 cisco.com.Category, and 211 cisco.com.MessageKey. Between the columns are buttons for '>', '<', '>>', '<<', 'Up', and 'Down'. At the bottom are 'Save' and 'Return to Layout List' buttons.

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UCCXD v4.0-446

To create a custom layout:

- Click **Add New**. The Add New page appears
- Provide a layout name (no longer than 16 characters).
- Move available data fields to the selected window.
- Click **Save**.

VoIP Monitor

Cisco Unified CCX offers two types of monitoring methods: Cisco Agent Desktop Monitor, also known as Endpoint Monitor, and the traditional SPAN Port Monitor.

VoIP Monitor

- Two methods of agent monitoring:
 - SPAN Port configuration
 - Cisco Agent Desktop Monitor
- SPAN Port requirements:
 - SPAN voice ports to monitor component
 - SPAN any port in voice path
 - Setup is easier if all agent ports are downstream from Cisco Unified CCX Monitor component.
- Desktop monitoring requirements:
 - Cisco Agent Desktop must be connected via switch of IP phone.
 - Agent PC needs 802.1q LAN card.
- Many setup issues. See SRND.

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Desktop Monitor

The desktop monitor method relies upon the fact that many Cisco IP phones contain a small internal switch and a second network port on the back of the phone to which a computer can be daisy-chained. This capture method can work with either a hard or soft IP phone.

In this configuration, the IP phone and the computer are sharing a single network cable for their network configuration. When a hard phone is used, the phone and the computer are separate network endpoints with their own unique IP and MAC addresses. When a soft IP phone is used, the computer and the phone are a single network endpoint that share a MAC and IP address.

When a hard phone is used, the phone must be configured to send its network traffic down the line to the desktop in order for the network interface card (NIC) on the computer to see the traffic meant for the phone. This is a setting that is accessed through the Cisco Unified Communications Manager Administration application. This allows the audio data for phone calls (as well as other traffic sent to and from the phone) to hit the computer NIC. But, by definition, the computer NIC will not pass this data up to an application on the computer because it is not addressed for the computer NIC. It is addressed to the IP phone. In order to see this traffic, the NIC needs to use promiscuous mode.

NICs that support the network driver interface specification (NDIS), which includes almost all NICs for PCs, will also support a packet capture feature called promiscuous mode. In this mode, the NIC passes packets up to the software on the machine even if they are not addressed to the machine NIC. Cisco monitoring and recording software uses a packet-sniffing driver that opens a NIC adapter and puts it into promiscuous mode so it can see the daisy-chained IP phone audio traffic when the agent is on a call. With this configuration, the software is able to capture both of the agent phone call audio streams and process them for silent monitoring or recording.

Cisco monitoring and recording software also supports the use of approved software-based IP phones. Soft IP phones are applications that run on the agent PC.

The desktop software treats this soft IP phone as if it were a hard IP phone daisy-chained to the PC. The only difference is that the NIC does not need to be put into promiscuous mode for a soft IP phone, because the soft IP phone and the PC have the same IP address. As a result, the sniffing software automatically has access to all the audio packets when the agent is on a call.

Using the desktop monitor method requires the following:

- A PC that can run the Cisco monitoring and recording software and driver
- A NIC that supports promiscuous mode packet capturing (hard IP phone only)
- Either of the following types of supported Cisco IP phones:
 - A hard IP phone with a second network port
 - A soft IP phone
- Proper configuration of the IP phone to send the IP phone network traffic to the connected PC (hard IP phone only)
- A direct connection between the agent PC and hard IP phone, and a direct connection between the IP phone and the switch with no other devices (for example, other hard IP phones, routers, gateways, or hubs)

SPAN Port Monitor

There will be cases where the desktop capture method cannot be used, for example, when the contact center agent does not have a PC, but just an IP phone. In these cases, the SPAN Port Monitor method is an option for monitoring or recording agent calls.

The SPAN Port Monitor method assumes that a SPAN or port-monitoring session is configured on the switch in order to copy network traffic from one or more ports to a destination port used by a server machine that is running packet-capturing software.

Because the capture point is moving further from the IP phone and toward the network cloud, configuration becomes more complex. This complexity is the primary cause of support calls concerning the monitoring and recording features not working as expected. The following list of requirements describes the factors that affect this method of capturing packets.

Using the SPAN Port Monitor method requires the following:

- A supported hard or soft IP phone connected to a switch
- No Layer 2 routing devices between the IP phone and the switch when the phone MAC address is used to identify audio packets
- A SPAN or port-monitoring session configured that uses the IP phone port as one of the session's source ports
- A VoIP monitoring and recording service connected to the destination port of the SPAN session

- Proper configuration of the Cisco software that associates the agents IP phone device with a VoIP monitoring/recording service

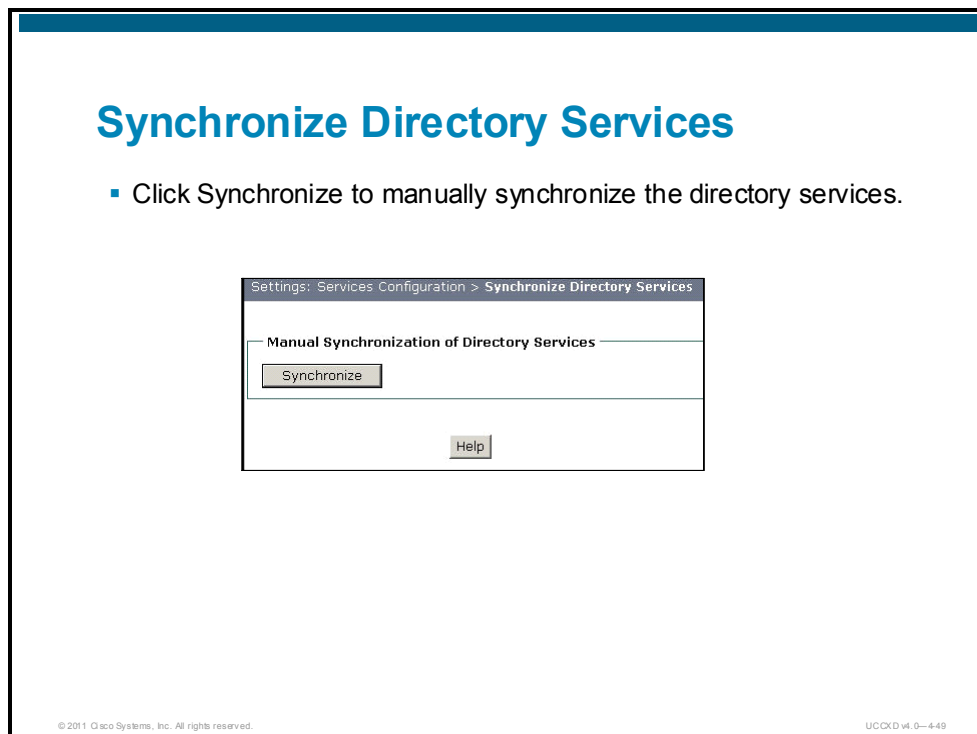
Layer 2 Routing Device Restriction

A Layer 2 routing device is any piece of networking hardware that causes the MAC address used in a packet to change. This includes almost all network devices except for repeaters.

This is a problem because the monitoring software has an association with the MAC address of the actual phone device being used by the agent. This is the MAC address that is looked for in the audio packets that traverse the switch to which the monitoring server is connected. An audio packet that must traverse a Layer 2 routing device before reaching the phone will have the Layer 2 device MAC address in the packet rather than the phone MAC address. As a result, the monitoring software will never see packets with the phone MAC address, and any monitoring and recording will result in silence.

Synchronize Directory Services

Use Synchronize Directory Services to manually synchronize CAD directory services.



The Directory Services database should be synchronized with the master Unified CCX agent database. The databases are synced automatically whenever the master Unified CCX database changes. However, you can manually synchronize them with the Synchronize Directory Services command.

VoIP Monitor Device

Use the VoIP Monitor Device page to specify the type of monitoring.

VoIP Monitor Device

- Default VoIP Monitor Service
- Set Monitor Service
- Enable Desktop Monitoring

Settings: Services Configuration > Silent Monitoring & Recording > VoIP Monitoring Device

General Settings

Default VoIP Monitor Service: MCS-TRAIN02

Search For: Extension

Begins With

Find

Clear Filter

+

-

Set Monitor Service for selected rows to: - Select -

Modify

Selected	Extension	MAC Address	Monitor Service	Enable Desktop Monitoring
☐	2011, 2012, 2013, ...	SEP000368C97DEE	MCS-TRAIN02	☐

Select All

Clear All

1 of 1

Goto

Results Per Page 10

Save

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Choose **Services Configuration > Silent Monitoring & Recording > VoIP Monitoring Device**. The VoIP Monitoring Device page appears.

If necessary, search for the phone device for which you want to enable desktop monitoring.

If you want to enable Desktop Monitoring, select the check box for the phone device and click **Save**. Desktop monitoring is enabled for that device.

If your system has only one VoIP Monitor service, it is not necessary to set a default monitor service or to manually assign each device to that single monitor service. The VoIP Monitor service assumes that each device is assigned to it as the only available monitor service.

It is advisable to select a default monitor service to avoid the possibility of having devices unassigned to any monitor service. This situation can arise when there is more than one VoIP Monitor service in the system.

Modifications you make on the VoIP Monitoring Device page go into effect immediately after you save your changes.

Personnel

The Personnel option displays a list of agents configured in Cisco Unified CCX. This node enables you to view information about agents and assign agent to work flow groups.

Personnel

- Set Work Flow Group.

Settings: Personnel > Agents

Search For: Last Name Begins With Find Clear Filter + -

Agent List

Set Work Flow Group for selected rows to: default Modify

Selected	Last Name	First Name	Login ID	Team	Work Flow Group
☐	User	student01	student01	Agents 1-4	Student00

Select All Clear All Goto 1 of 1 Results Per Page 10

Save

Choose the appropriate work flow for your agent and click **Save**.

Cisco Unified Presence Integration

The Cisco Unified Presence Settings node in Desktop Administrator gives administrators the ability to integrate Cisco Unified Presence with Cisco Agent Desktop.

Integrating Cisco Unified Presence with Cisco Agent Desktop makes it possible for supervisors using Cisco Supervisor Desktop and agents using Cisco Agent Desktop to view the availability of non-agents using Cisco Unified Personal Communicator or Microsoft Office Communications Server (MOCS). This feature enables supervisors and agents to initiate chat sessions with subject matter experts (SMEs) who can provide information that can help agents assist customers more quickly and effectively.

Cisco Unified Presence Cluster Settings

The first task in integrating Cisco Agent Desktop with a Cisco Unified Presence cluster is configuring the Cisco Unified Presence cluster by specifying the connection information.

Cisco Unified Presence Cluster Settings

- Enable
- Version
- Publisher IP Address
- AXL Login ID
- Password
- Subscriber IP Address

Settings: Cisco Unified Presence Settings > Cisco Unified Presence Cluster Settings

Cisco Unified Presence Cluster Configuration

Enable Cisco Unified Presence Integration ☐

Version

- Select -

Publisher Host/IP Address

Verify

AXL Login ID

Password

Subscriber Host/IP Addresses

Delete Add Another

Save

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Complete the following fields:

- Enable Cisco Unified Presence Integration.
- Version: Version of Cisco Unified Presence.
- Publisher Host/IP Address: Hostname or IP address of Cisco Unified Presence server (the publisher if you have a Cisco Unified Presence cluster).
- AXL Login ID: ID for a user with Cisco Unified Presence server/client capabilities and who has the same Lightweight Directory Access Protocol (LDAP) profile that agents have.
- Password: Password for the AXL Login ID user.
- Subscriber Host/IP Addresses: If you have a Cisco Unified Presence cluster, the hostname or IP address of the Cisco Unified Presence subscriber or subscribers.

Cisco Unified Presence—Contact List

A contact list consists of the SMEs that you want to make available to agents who use Cisco Agent Desktop.

Cisco Unified Presence—Contact List

- Contact list name
- Contact list description

The screenshot shows the 'Add New' contact list configuration page. It includes a breadcrumb trail: 'Settings: Cisco Unified Presence Settings > Contact Lists > Add New'. Below this is a 'Contact List Information' section with two text input fields: 'Contact List Name' and 'Contact List Description'. A search section follows with 'Search For:' set to 'Included' and a 'True' dropdown, along with 'Find' and 'Clear Filter' buttons. Below the search is a 'Subject Matter Expert List' table. The table has columns for 'Last Name', 'First Name', 'URI', and 'Included'. It shows one row with a 'Goto 1 of 1' link and a 'Results Per Page 10' dropdown. At the bottom are 'Save' and 'Return to Contact List' buttons.

Last Name	First Name	URI	Included
Select All Clear All			
Goto 1 of 1			
Results Per Page 10			

Agents and supervisors see the SMEs in the Contact Selection window after clicking the Chat button when the Presence feature is enabled. An agent only sees the SMEs who are assigned to the agent work flow group. A supervisor, however, sees all the SMEs in all the work flow groups that are associated with the supervisor teams.

Note Agents and supervisors must restart Cisco Agent Desktop and Cisco Supervisor Desktop to see any changes made to contact lists.

Cisco Unified Presence can be configured to allow you to assign up to 100 SMEs to a contact list in Cisco Unified Presence 6.0, and up to 200 SMEs to a contact list in Cisco Unified Presence 7.0 or later.

Cisco Unified Presence—Contact List (Cont.)

- Add or remove names from a contact list.

The screenshot shows the Cisco Desktop Presence Administrator interface. The top navigation bar includes 'Admin | Logout | Change Password | About | Help'. The breadcrumb trail is 'Settings: Cisco Unified Presence Settings > Contact Lists > Marketing - West'. The 'Contact List Information' section shows 'Contact List Name' as 'Marketing' and 'Contact List Description' as 'Marketing - West'. The 'Search For:' section has two rows: 'Last Name' with 'Begins With' set to 's' and 'Last Name' with 'Begins With' set to 'c'. Below this is a table titled 'Subject Matter Expert List' with columns 'Last Name', 'First Name', 'URI', and 'Included'. The table lists seven contacts: Sanchez, Alexandra (sanchea@p1.rd.id), Sanchez, Alexandra (sancheal@p1.rd.id), Sanchez, Ali (sancheali@p1.rd.id), Schultz, Hannah (schulth@p1.rd.id), Schultz, Justin (schultj@p1.rd.id), Schwartz, Brent (schwarb@p1.rd.id), and Stucke, Elizabeth (stucke@p1.rd.id). Each contact has an 'Included' checkbox. At the bottom, there are buttons for 'Select All', 'Clear All', 'Save', 'Copy', and 'Return to Contact List'.

Last Name	First Name	URI	Included
Sanchez	Alessandra	sanchea@p1.rd.id	☐
Sanchez	Alexandra	sancheal@p1.rd.id	☐
Sanchez	Ali	sancheali@p1.rd.id	☐
Schultz	Hannah	schulth@p1.rd.id	☐
Schultz	Justin	schultj@p1.rd.id	☐
Schwartz	Brent	schwarb@p1.rd.id	☐
Stucke	Elizabeth	stucke@p1.rd.id	☐

Find the SME you want to add, using the Search function.

Cisco Unified Presence—External Contacts

If you have an external environment with SMEs who do not use Cisco Unified Personal Communicator but who do use Microsoft Office Communicator (MOC), you can use the External Contacts feature to provide access to those additional users.

The screenshot shows a web interface titled "Cisco Unified Presence—External Contacts". Below the title is a bulleted list of required fields: Last name, First name, URI, and Phone number. Below the list is a form titled "External Contact Information" with four input fields corresponding to the list items. At the bottom of the form are two buttons: "Save" and "Return to External Contact List". The breadcrumb trail at the top of the form reads "Settings: Cisco Unified Presence Settings > External Contacts > Add New".

Cisco Unified Presence—External Contacts

- Last name
- First name
- URI
- Phone number

Settings: Cisco Unified Presence Settings > External Contacts > Add New

External Contact Information

Last Name

First Name

URI

Phone Number

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Under the External Contacts link, click **New** and provide the following information:

- Last name: Optional; use a maximum of 128 characters. No restrictions on the characters that can be entered.
- First name: Optional; use a maximum of 128 characters. No restrictions on the characters that can be entered.
- URI (Uniform Resource Identifier): Required; no restrictions on the length or characters that can be entered.
- Phone number: Optional; no restrictions on the length or characters that can be entered.

Cisco Unified Presence – Work Flow Groups

Use the Work Flow Groups node to add the contact lists that you create for work flow groups. You can assign up to 25 contact lists to a work flow group.

Cisco Unified Presence—Work Flow Groups

- Choose work flow groups.

Agents appear offline	Work Flow Group
☐	default
☐	Student00

Select All Clear All Goto 1 of 1 Results Per Page 10 Save

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Choose **Cisco Unified Presence Settings > Work Flow Groups**. The Work Flow Groups page appears.

Cisco Unified Presence—Work Flow Groups (Cont.)

- Add contact lists and work flow groups.

Contact List Name	Included
Manufacturing	☒
Marketing	☒
Operations	☒
R&D	☐
Sales	☐
Team 01	☐
Team 02	☒

Select All Clear All Goto 1 of 1 Results Per Page 10 Save Return to Workflow Group list

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Add up to 25 contact lists by selecting the corresponding check boxes in the Included column. To select all contact lists, click **Select All**.

Summary

This topic summarizes the key points that were discussed in this lesson.

Summary

- Install the Cisco Desktop Work Flow Administrator from Tools > Plug-ins.
- Configure Cisco Agent Desktop system properties from the Cisco Desktop Administrator. Configure items such as VoIP Monitor service, CAD-BE services, and browser and IP phone agent services.
- Use dial strings to configure dialing attributes and display.
- Under Work Flow Configuration, use reason codes to keep track of why agents transition to the Not Ready state or log out of the ACD. All reason codes are defined here and can be designated for use by all agents in Cisco Unified CCX.
- Under Work Flow Configuration, use wrap-up data to keep track of the kind of calls the agents are handling. The wrap-up data list can be defined here or in the Work Flow Groups section. Wrap-up data defined here can be designated for use by all agents in Cisco Unified CCX.
- Under Work Flow Configuration, use phone books to create dialing lists that will be available to all agents on Cisco Unified CCX.
- Under Work Flow Configuration, you can configure recording and monitor notifications to the agent.

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Summary (Cont.)

- Under Work Flow Groups, you can define whether an agent can edit enterprise data or not.
- Under Work Flow Groups, you can define reason codes for the work flow group.
- Under Work Flow Groups, you can define wrap-up data for the work flow group.
- Under Work Flow Groups, you can define phone books for the work flow group.
- Under User Interface, you can define the look and feel of the agent desktop including adding automated task buttons.
- Voice contact work flows are rules-based, event-driven, CTI activities. You can cause CTI activities to occur based on agent or phone states such as ring, answer, dropped, or work state.
- Agent management work flows are rules-based, event-driven, CTI activities. You can cause CTI activities to occur based on the Cisco Agent Desktop startup and shutdown, and the agent states of ready, not ready, and time of day.

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Advanced Cisco Unified Contact Center Express Scripting Topics

Overview

Just implementing automatic call distribution (ACD) operations is often not enough for a call center. Almost always there is a need to perform routing based on time of day, day of the week, and holidays. In many cases, there is a need to pull and manipulate data for decision-making purposes. This lesson covers those types of activities.

Objectives

Upon completing this lesson, you will be able to perform many of the ancillary functions required in most call centers. This ability includes being able to meet these objectives:

- Describe how to implement Time of Day and Day of Week routing
- Describe the steps required and how to determine the date today
- Describe how to implement holiday routing using dates defined in the script
- Describe how to implement holiday routing using dates defined in a database
- Describe how to implement holiday routing using dates defined in an XML file
- Define and describe subflows and how to use them
- Describe the Call Subflow script step and how to use one
- Describe how to obtain real-time data about CSQ and agent status using the Get Reporting Statistic step
- Define and describe how to use exception handling
- Describe how to perform data type conversions
- Describe how to manipulate data in a script
- Understand the basic concepts of email contacts in a script
- Describe how to set up the Email subsystem

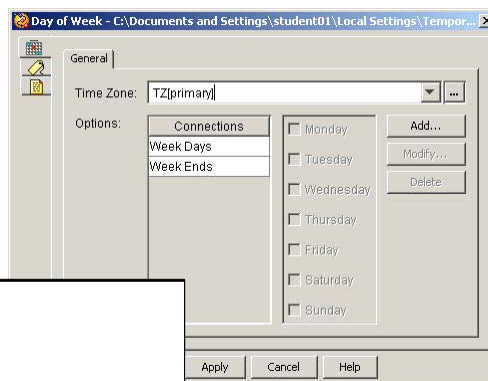
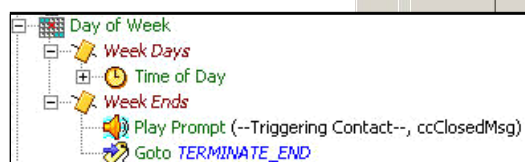
- Describe the email steps and list their sequence in a script
- Describe HTTP-enabled applications

Day of Week

This topic describes Day of Week routing.

Day of Week

- Use the Day of Week step to apply logic based on the current day of the week.
- Must account for all days of the week.



Use the Day of Week step to cause the script to branch to different connection output branches depending on the current day of the week.

Steps that you add following a specific connection branch will execute if the application server system clock indicates that the day of the week matches one of the days associated with that connection.

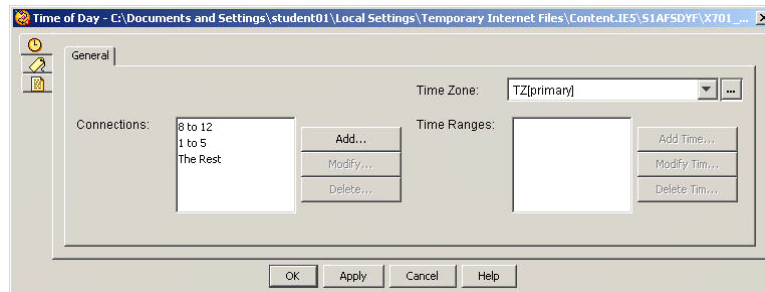
You must associate all days with an output branch. If a day is not assigned to at least one output branch, the Cisco Unified Contact Center Express (CCX) Script Editor displays a warning dialog box when you close the Day of Week customizer window.

Time of Day

This topic describes Time of Day routing.

Time of Day

- Use the Time of Day step to apply logic based on the current time of the day.
- Any time of the day not defined takes the Rest output branch.



Use the Time of Day step to cause the script to branch to different connection branches depending on the current time of day.

Steps that you add following a specific output branch will execute if the Cisco Unified CCX Engine clock indicates that the time of day matches the time associated with that connection.

You associate each output branch with a specified range of time. During run time, if the current time falls out of the configured time range, the script follows the Rest output branch of the Time of Day step.

Holiday Routing

This topic describes how to implement holiday routing.

Holiday Routing

- Holiday routing requires two basic functions:
 - Determine what the date is.
 - Compare the date today to some list.
- Determine the date today with Java methods.
- List of dates can be:
 - Internal to the script
 - In a database
 - In an XML file

There is no Holiday step in Cisco Unified CCX. Determining holidays will have to be done by the scripter, using Java methods to determine the current date and comparing this value to some list.

Determining the Date Today

This subtopic describes how to determine the date today.

Determining the Date Today

- Three Java methods:
 - .year – yields integer 4-digit year
 - .month – yields integer 1- or 2-digit month
 - .date – yields integer 1-or 2-digit day of the month
- Java methods require input, for example, D[now] .year
 - D[now] means the date at this current time.
 - Yields integer value, 2009.
- Another example, if the date today is July 4, 2009:
 - D[now] .month + "/" + D[now] .date + "/" + D[now] .year
 - Yields – "7/4/2009"
 - Remember that the script editor will convert integer to string automatically.

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Determining the date today is not as difficult as it may look. It is a simple process of using Java methods or functions to pull the date values and then formatting those values into something you can use.

Java methods act like function calls that do some fairly specific things for you. Most often they will require some input and will provide some output. Knowing what kind of input and the format of the input can be challenging sometimes, but most often it is rather straightforward. In this case, you are dealing with three Java methods: .year, .month, and .date (Java term for "day of the month"). The input could be any fully qualified date, such as 25 December 1991. But in this case, you want the date for today, which on any given day can be different. So use the term D[now] to indicate to the method that you want a value based on the date right now.

The return values for these methods are integers, so if you need them as integers, you can simply set these values to an integer variable. If you need them as strings, you can also simply set them to a string variable, because this system will do the data type conversion for you. That is the reason that the expression D[now] .month + "/" + D[now] .date + "/" + D[now] .year works so well in the value field of a string variable.

Holiday Routing—Internal to the Script

This subtopic describes holiday routing where the holiday dates are declared within the script or on the application page.

Holiday Routing—Internal to Script

- Use If or Switch step.

Condition

Value:

```
{ holidayDate1 == todaysDate } || { holidayDate2 == todaysDate }  
|| { holidayDate3 == todaysDate }
```

Switch - C:\Student Scripts\2404_AS_03_TOD-HolidaySubflow.aef

General

Switch Value: todaysDate

Cases:

Values	Connections
"9/4/2006"	Labor Day
"10/31/2006"	Halloween
"11/23/2006"	Thanksgiving Day
"12/25/2006"	Christmas Day
"1/1/2007"	New Years Day

Buttons: Add..., Modify..., Delete...

Buttons: OK, Apply, Cancel, Help

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The main advantage to routing internal to the script is that the script has no dependencies on any external sources.

If you are going to perform the same actions without regard as to which holiday it is, using a simple If step to compare dates works quite well. It also has an added advantage in that you can use “holiday” variables that can be present on the application page, and the customer can simply enter the dates and everything will work fine.

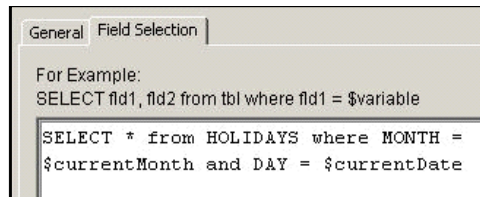
If you are planning on performing different actions based on the holiday, it may be worthwhile to use a Switch step. This provides you with a different output branch for each holiday. The disadvantage here is that you cannot use variables from the application page with the Switch step.

Holiday Routing—Database

This subtopic describes holiday routing where the holiday dates are declared in a database.

Holiday Routing—Database

- Use database steps to see if date is in table.
- If the date is present, today is a holiday.



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If you already have holiday dates in a database, you can use database steps to see if a particular holiday date is present.

If you are not concerned with which holiday it is, this method is actually quite straightforward. All you are doing here is finding out if the holiday date is *present in the database*. If it is, then it is a holiday. In this case, you do not really care what was retrieved; you only care that you got *something* (or nothing if it is not a holiday).

If you are concerned with which holiday it is, you can still use this method with some modifications. For example, you can add another field to your database that would be retrieved along with the holiday date that declares which holiday it is. You would then have to use some additional script steps to determine which holiday it is and then branch off to the appropriate script steps for handling that particular holiday.

Holiday Routing—XML File

This subtopic describes holiday routing where the holiday dates are declared in an XML file.

Holiday Routing—XML File

- Use XML steps to see if date is in file.
- The file can be located in the document repository, on the Cisco Unified CCX file system, or on a web server.
- If the date is present, today is a holiday.

dateList

Document

DOC[HolidayDates.xml]

 dateList = Create File Document (System.getProperty("uccx.customer.dir") + "/" + "Holidays.xml")

 dateList = Create URL Document ("http://10.10.1.2/helpdesk/HolidayDates.xml")

 dateList = Create XML Document (dateList)
 date_null = Get XML Document Data (dateList, "/descendant::Holidays/child::bogusstring")
 XML_FILE_LOOP:
 Increment holidayEntryNum
 Set holidayEntrySuffix = holidayEntryNum
 Set Holiday = "Holiday" + holidayEntrySuffix
 dateFromFile = Get XML Document Data (dateList, "/descendant::Holidays/child::" + Holiday)
 If (todaysDate == dateFromFile) Then

 True
 False

 END:
 End

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Cisco Unified CCX version 8.0 and above no longer allows access from the script to the local (Cisco Unified CCX) file system in the same manner as before. Cisco Unified CCX now has only one directory that can be used by scripts to write or retrieve documents. It is recommended that customers who have been using the local file system move those files to the document repository and adjust their scripts accordingly. But for those customers who cannot or are unwilling to use the document repository, the documents can be placed in the directory provided.

Caution Files placed in the customer-provided directory are *not* backed up using the Disaster Recovery System.

Caution Files placed in the customer-provided directory are *not* replicated in a high-availability deployment, as is seen with the document repository.

Obtaining holiday dates from an XML file is not difficult to do, but there are some differences depending on where the XML file is. The following discussions provide an overview on how to access these files.

Accessing Files from the Document Repository

Retrieving a document from the document repository can be done in a couple of different ways, but the key is to use the document type variable (DOC[filename.ext]) to declare the filename. The following are two short examples on how this is done. Assume the filename in question is called “HolidayDates.xml”.

Example One

- Step 1** Declare a document type variable and provide a name such as `dateList` (as seen in the current labs). Set the value of the variable as `DOC[HolidayDates.xml]`. When the script runs, it will already point to the correct file.
- Step 2** In the script, use a Create XML Document step to retrieve the data in the document. This step will need to point to the `dateList` document variable to know which data to retrieve. During runtime, when this step is processed, the variable `dateList` will contain the contents of the `HolidayDates.xml` file.
- Step 3** Use additional script steps to interrogate the data in the `dateList` document as required.

Example Two

- Step 1** Declare a document type variable and provide a name such as `dateList` (as seen in the current labs). Set the value of the variable as `DOC[]`. When the script runs, it will not have the correct file information.
- Step 2** Use a Create XML Document step to retrieve the data in the document. This step will need to point to the source document (`DOC[HolidayDates.xml]`) to know which data to retrieve. During runtime, when this step is processed, the variable `dateList` will contain the contents of the `HolidayDates.xml` file.
- Step 3** Use additional script steps to interrogate the data in the `dateList` document as required.

Accessing Files from the Customer-Provided Directory

Accessing files from the customer-provided directory is similar to accessing files from the repository, but there are a couple of differences to note. First of all, you need to be concerned with the path to the directory.

In the current release, the path can be stated (or declared) as a string data type in this manner: `"/opt/cisco/uccx/Customer/filename.ext"`. But because Cisco cannot guarantee the directory location on future releases, there is a Java method that has also been provided that will produce the path to the directory. The syntax is `System.getProperty("uccx.customer.dir")`. To provide an example on how to use it, you could use a Set step in the script to set a string variable to `System.getProperty("uccx.customer.dir")`. The result would be `"/opt/cisco/uccx/Customer"`. You would then need to append a forward slash and a filename to end up with a complete path and filename statement.

The next thing you need to address is the document variable declaration. You will still use a document data type variable, but you will need to use this syntax when declaring the filename: `FILE["path/filename.ext"]`.

Since you are dealing with string data types when building a pathname, there are several ways to attain the same result. Here is one example of accessing a file from the local file system. (Assume the same filenames as before.)

- Step 1** Declare a document type variable and provide a name such as `dateList` (as seen in the current labs). Set the value of the variable as `DOC[]`. (You can use the `FILE[]` declaration as well, but it will be overwritten in the next step anyway.) When the script runs, it will not have the correct file information.

- Step 2** In the script, use a Create File Document step to declare the document name. The filename could be declared as follows: `System.getProperty("uccx.customer.dir") + "/" + "HolidayDates.xml"`. This provides a complete path (`/opt/cisco/uccx/Customer/HolidayDates.xml`). The result goes in the document variable `dateList` and will look like this:
`FILE[/opt/cisco/uccx/Customer/HolidayDates.xml]`.
- Step 3** Use a Create XML Document step to retrieve the data in the document. This step will need to point to the `dateList` document variable to know which data to retrieve. During runtime, when this step is processed, the variable `dateList` will contain the contents of the `HolidayDates.xml` file.
- Step 4** Use additional script steps to interrogate the data in the `dateList` document as required.

Accessing Files from a Web Server

After reading the previous sections, obtaining an XML file from a web server is rather simple. In this case, use a Create URL Document step to extract the file. The other steps are the same. Here is an example of the processes needed:

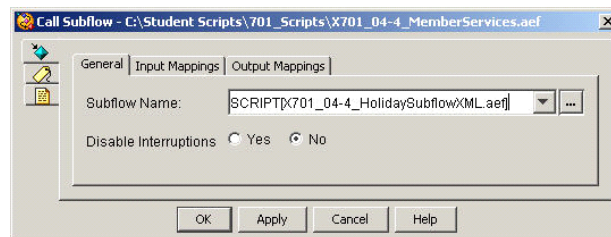
- Step 1** Declare a document type variable and provide a name such as `dateList` (as seen in the current labs). Set the value of the variable as: `DOC[]`. When the script runs, it will not have the correct file information.
- Step 2** In the script, use a Create URL Document step to point to a URL location that contains your XML file. You might use a string entry for the URL field that looks like this: `"http://10.10.1.2/helpdesk/HolidayDates.xml"`. The result of this step will be placed in the `dateList` variable and would look like this:
`URL[http://10.10.1.2/helpdesk/HolidayDates.xml]`.
- Step 3** Use a Create XML Document step to retrieve the data in the document. This step will need to point to the `dateList` document variable to know which data to retrieve. During runtime, when this step is processed, the variable `dateList` will contain the contents of the `HolidayDates.xml` file.
- Step 4** Use additional script steps to interrogate the data in the `dateList` document as required.

Call Subflow

This topic describes the Call Subflow step.

Call Subflow

- Use the Call Subflow step to execute a subflow, which is analogous to a subroutine or module in structured programming.
- Define the Subflow Name.
- Disable Interruptions.



You create the subflow with the Cisco Unified CCX Script Editor as an independent script that you can reuse in other scripts. You can also call subflows from within scripts that are themselves used as subflows.

If the script was originally loaded from disk, the subflow script must reside in the same folder as the script that calls it. If the script was loaded from the repository, then the subflow must also reside in the repository.

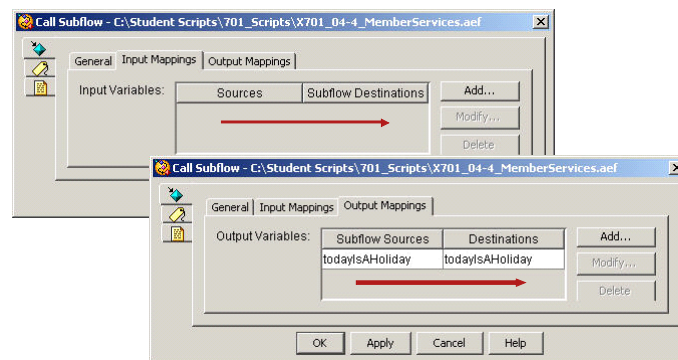
Input Options

The following are input options:

- Subflow Name – File name of the script that contains the subflow you want to call. All user script subflow names are displayed as SCRIPT[name.aef] entries.
- Disable Interruptions – If Yes is selected, execution of the step cannot be interrupted by external events.

Call Subflow (Cont.)

- Pass variable information to and/or from subflow.
- Variable data types must match, but names can be different.
- Variable names are case-sensitive and space-sensitive and must be correct.



Use the Input mappings to pass variable information to the subflow. When you click Add, use the drop-down menu to designate the variable from the “calling” or parent script. You will then need to type the variable name you are passing this information to (in the subflow). You do not need to make the variable names the same (although you should do so to avoid confusion), but they must be defined in this step as they are defined in your scripts.

Use the Output mappings to obtain variable information from the subflow. When you click Add, use the drop-down menu to designate the variable you are going to populate in the parent script. You will then need to type the variable name you are obtaining this information from (in the subflow). You do not need to make the variable names the same (although you should do so to avoid confusion), but they must be defined in this step as they are defined in your scripts.

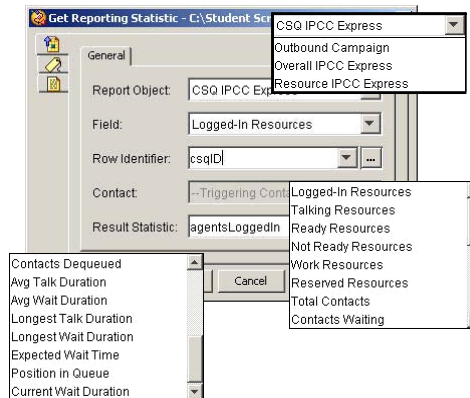
Caution When providing variable names from the subflow, you must be very careful to designate variables that exist in the subflow (these are case-sensitive and space-sensitive fields). They must also match the correct data type. Failure to do this can cause your application to go out of service.

Get Reporting Statistic

This topic describes the Get Reporting Statistic step.

Get Reporting Statistic

- Use the Get Reporting Statistic step to obtain real-time information from Cisco Unified CCX.
- Report Objects
 - Outbound Campaign
 - Overall IPCC Express
 - Resource IPCC Express
 - CSQ IPCC Express
- Field
- Row Identifier
- Result Statistic



Use the Get Reporting Statistic step to access real-time information about agents, contact service queues (CSQs), the overall Cisco Unified CCX system, and contacts.

You can use this step to obtain the current state of the Cisco Unified CCX system or to report back to a caller such information as current wait duration, position in queue, and expected wait time.

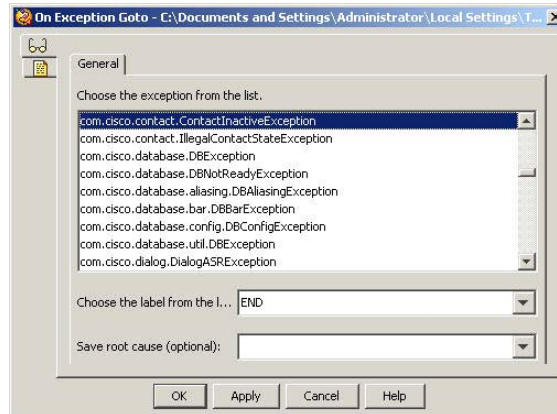
The system bases the expected wait time calculation on the number of agents in Reserved, Talking, and Work states for this CSQ; the position of the call in the queue; and the average call duration for this CSQ. Average call duration of a CSQ is the average time that agents spend in Reserved, Talking, and Work states while handling a call from this CSQ.

Exception Handling

This topic describes exception handling in Cisco Unified CCX.

Exception Handling

- Use the On Exception Goto step to catch an exception and direct script logic to a label.
- Most common exception is the Contact Inactive Exception.



Exceptions can be viewed as a special class of errors that a programmer has written into the software for a program. When a program (or script, in our case) encounters an exception, the program will abort, unless the program has an exception-handling routine built in to catch the exception.

When an exception is caught, the exception-handling routine can cause the program to perform some other actions based on the type of exception that occurred. For example, suppose that you have a script that uses an XML file for holiday routing. Also suppose that the XML file is loaded into the repository and has a specific name. You have tested your script and all works well. Now suppose someone has accessed the XML file and has either removed or renamed the file. When your script runs, it will look for a file it cannot find. An exception will be thrown and your script aborts, and your caller is disconnected. In this case, you could use exception handling to catch the exception to redirect script logic to bypass holiday routing, perform some default routing, and even send an email notification to an administrator indicating that this error had occurred.

The most common exception that occurs in Cisco Unified CCX is when a caller is navigating a script and the call disconnects. In this case, a Contact Inactive Exception is “thrown,” and the script will immediately abort. From the caller point of view, the fact that the script aborted isn’t an issue. But from a programming point of view, it is always best if you can provide a graceful shutdown of the script. Additionally, suppose you have a script in which you expect a caller to disconnect before your processing is complete. In this case, you *must* use the Contact Inactive Exception to guarantee that the script continues to run. Thus, it should be considered a best practice to use the On Exception Goto step to catch the Contact Inactive Exception in all voice scripts.

Data Type Conversions

Most data type conversions are a simple matter of format.

Data Type Conversions

- Most conversions are integer to string and string to integer.
- Script editor automatically converts integer to string and string to integer.
- Many formats are specifically formatted strings, such as:
 - Prompt (P[value]), Document (DOC[value]), Date(D[value]), Time (T[value]), etc.
- Example: You prompted a caller for a time of day and determined it was 5:25 in the afternoon. But the values you got were strings of 5 and 25, and you want to speak back the time to the caller for confirmation. System prompts require a time data type. Do this:
 - `timeVariable = (hour + ":" + minute + "pm")`
 - Yields – `T[5:25 pm]`

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As explained before, most data type conversions are integer to string and string to integer. These conversions are done for you by the Cisco Unified CCX system. For example, you can set an integer type variable to equal "1234" and the result would be 1234. But the one thing you must do here is to ensure that the variable string ("1234") does not contain other nonnumeral characters, such as "1234abc." This would result in an exception, and the script would abort.

Most other data type conversions you might need to know are really a matter of formatting strings. Any input you get from a caller will be a string from the Get Digit String step. Problems begin to arise here when you want to use these values to generate prompts to speak them back to the caller for confirmation purposes. Take, for example, the time data type. In Cisco Unified CCX, the time data type has a specific format: T[value]. Even though what you are really seeing here are string characters, the system sees T[], indicating that this is a "time" kind of data. Now that it knows this is a time, it looks to the value inside the brackets to indicate what time. The formatting for the value can also be very specific.

Data Manipulation

This topic describes data manipulation of strings.

Data Manipulation

- Most data manipulation involves strings.
- There are many string methods in the expression editor.
Examples follow: (“String” is variable input; “int” is integer input.)
- To count characters:
 - String .length() – yields integer
- To remove leading characters:
 - String .substring(int)
- To remove leading and trailing characters:
 - String .substring(int,int)
 - Example: “1234567” .substring(2,4), yields “34”



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It is generally not necessary to look for, change, and manipulate string characters in our scripting environment, but sometimes it is. Having a basic understanding of how these processes occur can be very helpful. All of these Java methods can be found in the Cisco Unified UCCX Expression Editor.

Data Manipulation (Cont.)

- To remove leading and trailing white space from a string:
 - String .trim()
 - Example: “ A34 ” .trim(), yields – “A34”
- To change case:
 - String .toLowerCase()
 - Example: “Fred Jones” .toLowerCase, yields – “fred jones”
- Other methods:
 - Replace character sequence
 - Match character sequence
 - Many more

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Email Contacts

This topic describes email contacts and how to set up and send email from the script.

Email Contacts

- Email can be used to confirm IVR self-service activity or to email system administrators in the event of error conditions.
- Email is generated from the script and is sent outbound via an external email server.
- Email subsystem generates only outbound email.
- Email subsystem uses the SMTP format.
- Email steps format and send email messages to the caller email account or to a service provider.

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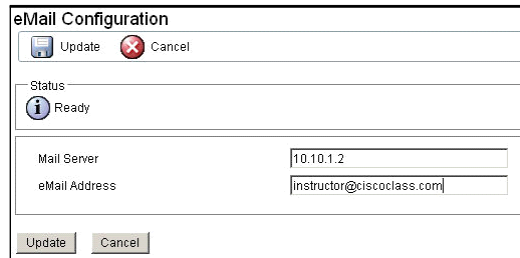
The Cisco Unified CCX system uses the Email subsystem of the Cisco Unified CCX Engine to communicate with your email server and enable your applications (scripts) to create and send email.

Email Subsystem Configuration

This subtopic describes the Email subsystem properties.

Email Subsystem Configuration

- Subsystems > eMail.
- Enter fully qualified email server name or IP address.
- Enter fully qualified email address.
- The eMail Address field is a default “from” address for email.



eMail Configuration

Update Cancel

Status

Ready

Mail Server 10.10.1.2

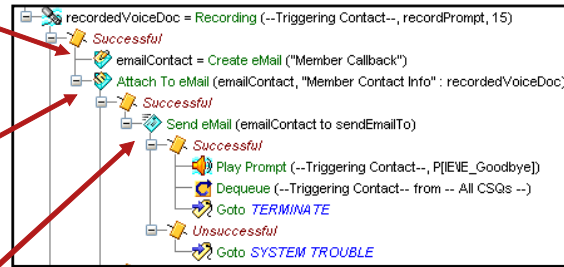
eMail Address instructor@ciscoclass.com

Update Cancel

The email configuration identifies the default “from” email address and server to be used for sending email (including e-pages and faxes) and for receiving acknowledgments.

Email Step Sequence

- Use the Create Email step to create the message.
- Use the Attach to Email step to attach documents (optional).
- Use the Send Email step to send the message.



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The following is a typical sequence you would use in creating and sending email.

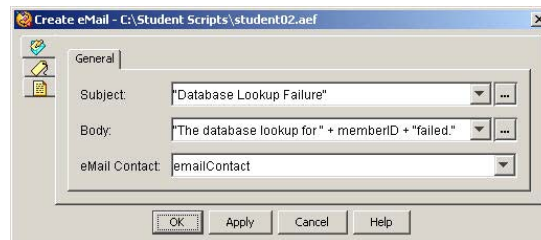
- From the script you will need to determine an email address. You can use a statically defined email address or obtain one from Cisco Unified Communications Manager or from a database. Obtaining one from Cisco Unified Communications Manager is typically done in two stages:
 - Use a Name to User step or a Get User step to identify a Cisco Unified Communications Manager user account.
 - Use a Get User Info step to extract the email address.
- Use the Create Email step to create the email message.
- If required, use the Attach to Email step to attach any documents.
- Use the Send Email step to send the email.

Create Email Step

This subtopic describes the Create Email step.

Create Email

- Create subject and body.
 - Text input
 - String variables
 - Expression that evaluates to text
- Choose eMail Contact variable.



Use the Create Email step to create an email and define these properties:

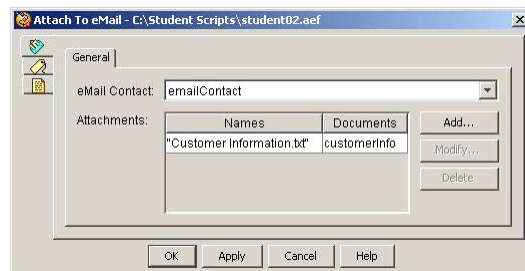
- Subject: Enter a subject. This is a string value.
- Body: Provide a message that this email is supposed to contain. This is a string value.
- eMail Contact : Choose a “Contact” data type variable to link these email steps together. This variable must be predefined in the script editor.

Attach to Email Step

This subtopic describes the Attach to Email step.

Attach to Email

- Optional step to add attachments.
- Choose eMail Contact.
- Add document and provide filename for attachment.



Use the Attach to Email step to attach any documents you require for this email. This is an optional step. When you add a document:

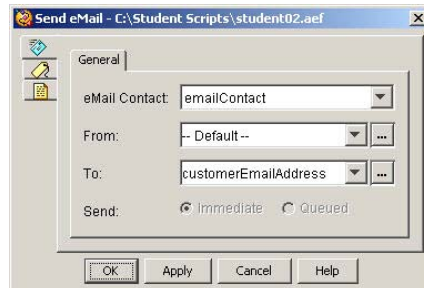
- Provide an email contact. Use the email contact used in the Create Email step.
- Declare a document. This can be the contents of a Document data type variable, a document from the repository, or a document from the hard drive.
- Declare a name for this attachment. This is the name of the document that will be sent to the recipient. You should always include an extension so that the receiving computer will recognize the type of document it has received.

Send Email Step

This subtopic describes the Send Email step.

Send Email

- Choose eMail Contact.
- Provide From address or use default.
- Provide To address.



Use the Send Email step to send the email.

- Provide an email contact. Use the email contact used in the Create Email step.
- Provide a “From” email address. While this entry *should* contain a fully qualified email address, it is not a requirement. Using Default will cause the system to use the email address specified on the Email Subsystem Configuration page.
- Provide a “To” email address. This, of course, must be a fully qualified email address.

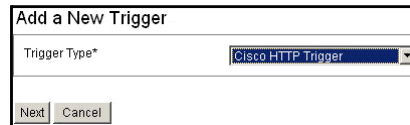
Caution The To and From email addresses must not have any white space (a space or any nonvisible characters). Any white space present in these fields will cause a failure in the Send function.

HTTP-Triggered Applications

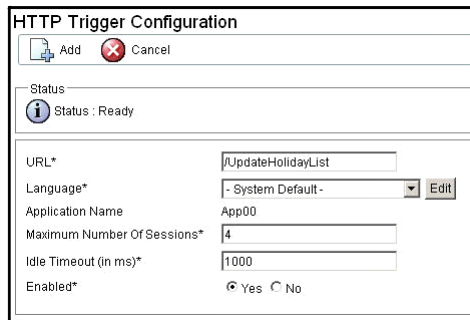
This topic describes HTTP-triggered applications (scripts).

HTTP-Triggered Applications

- Like a phone call can trigger a script to run, Cisco Unified CCX can accept a web contact that will trigger a script to run.
- The Accept step is not used.
- Can pass variables into script from web form.
- Can provide web response or redirected response.
- Uses port **9080**. Example:
http://www.ciscoclass.com:9080/UpdateHolidayList



The 'Add a New Trigger' dialog box contains a 'Trigger Type*' dropdown menu with 'Cisco HTTP Trigger' selected. At the bottom are 'Next' and 'Cancel' buttons.



The 'HTTP Trigger Configuration' dialog box shows configuration options for an HTTP trigger. It includes a status bar indicating 'Status : Ready'. The configuration fields are: 'URL*' with the value '/UpdateHolidayList', 'Language*' with a dropdown set to '- System Default -' and an 'Edit' button, 'Application Name' with the value 'App00', 'Maximum Number Of Sessions*' with the value '4', 'Idle Timeout (in ms)*' with the value '1000', and 'Enabled*' with radio buttons for 'Yes' (selected) and 'No'.

The Cisco Unified CCX system uses the HTTP subsystem of the Cisco Unified CCX Engine to add components to the Cisco Unified CCX Engine that allow applications to be triggered in response to requests from a variety of web clients, including computers and IP phones.

The URL for inbound HTTP contacts will use this form: `http://<Cisco Unified CCX Name or address>:9080/<URL>`. When entering the URL, you must include the forward slash (/) and a relative URL, for example, /UpdateHolidayList. The resulting URL for inbound contacts:

<http://www.ciscoclass.com:9080/UpdateHolidayList>

Summary

This topic summarizes the key points that were discussed in this lesson.

Summary

- Use Time of Day and Day of Week steps to allow for different treatment based on time of day and day of week.
- To determine the date today, you must use Java methods to extract and then reformat the information into a date.
- You can easily use an If step or a Switch step to compare the date today to see if it is a holiday.
- You can use database steps to see if the date today is present in a database.
- You can also compare the date today to an XML file with holiday dates to see if today is a holiday.
- Use the Call Subflow step to call a subflow script to run.
- With the Call Subflow step, you can pass variable information to and from a subflow.

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Summary (Cont.)

- Use the Get Reporting Statistic step to obtain real-time data about CSQ and agent status. This information can then be used for decision-making processes.
- Use exception handling to recover a script from runtime errors.
- Converting string to integer and integer to string is performed automatically by the system. Most other data type conversions use strings as inputs.
- There are many Java methods you can use to manipulate data. Most data manipulation is performed on strings.
- Cisco Unified CCX has editor steps that allow you to create and send an email from a script.
- On the Email subsystem designate an outbound email server and a default From email address.
- Use the three Email steps to create an email, attach a file, and then send the email.
- Inbound Http web forms can also trigger an application to run a script.

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Cisco Unified Contact Center Express Reporting

Overview

Cisco Unified Contact Center Express (CCX) provides you with a reporting system that reports on interactive voice response (IVR) and contact center activities. Depending on product licensing, you will have access to one or two reporting packages. They are referred to as IVR and ICD (Intelligent Contact Distribution—an older reference to Cisco Contact Center Express).

Cisco Unified CCX also offers reports from a real-time perspective and reports from a historical perspective. Real-time reports are accessed from the administration and supervisor web pages, and historical reports are accessed from the Historical Reports client.

Objectives

Upon completing this lesson, you will be able to install and access real-time and historical reports. This ability includes being able to meet these objectives:

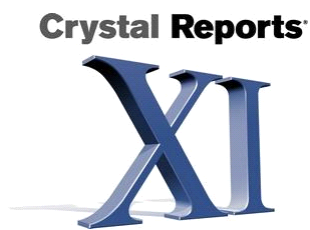
- Describe the reporting packages available with Cisco Unified CCX
- Discuss the unique abandoned rate concepts used in Cisco Unified CCX
- List and summarize real-time reports found in Cisco Unified CCX
- Describe how to access Real-Time Reporting and use the real-time reporting tools
- Illustrate and discuss real-time report examples
- List and summarize the features of historical reporting found in Cisco Unified CCX
- Describe how to install the Historical Reports client
- Describe how to allow users to use the Historical Reports client
- Describe how to log in and view historical reports
- Describe how to save and load report settings
- Describe how to schedule historical reports
- Illustrate and discuss real historical report examples

Reporting Overview

This topic describes Cisco Unified CCX reporting. Cisco Unified CCX offers two reporting packages: IVR and ICD. Reports are displayed as real time or historical.

Crystal Reports XI

- Historical Reports client upgraded to Version 11.
- Crystal Reports current version.
- Backward compatibility with custom reports created with old Crystal Reports continue to work with the new Historical Reports client.



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UCCXD v4.0-4.3

Cisco Unified CCX historical reporting templates are based on Crystal Reports version XI.

Two Types of Reports

Cisco Unified CCX includes real-time and historical reporting.

Two Types of Reports

- Real-time reports:
 - Dynamic information
 - During system operations
 - Enables immediate contact center adjustments
- Historical reports:
 - Supervisors generate reports
 - Report data can be days or months old
 - Graphical and text output
 - Generated by Historical Reports client
 - Save report settings
 - Schedule recurring reports
 - Multiple output formats

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UCCXD v4.0—4-4

Real-time reports allow the administrator or supervisor to view information about contacts that are occurring in real time. Real-time reporting provides information on general contacts to the system and applications and also provides information about automatic call distribution (ACD) activities.

Historical reporting is provided by the Historical Reports client. The client must be installed on the user PC, and the user must be allowed access to the appropriate reporting packages. The Historical Reports client allows the user to view, save, and schedule historical reports.

Two Reporting Packages

The two reporting packages available are IVR and ICD.

Two Reporting Packages—IVR

- Real-time reports
 - Contacts summary
 - Application task summary
 - Application tasks
 - Engine tasks
 - Contacts
 - Applications
 - Sessions
 - Data source usage
- Historical reports
 - Application Performance Analysis report
 - Detail Call by Call CCDR report
 - Traffic Analysis report

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The IVR reporting package comes with all Cisco Unified CCX products. The attributes found in these reports can be viewed as “IVR” attributes, but probably more accurately, they do not include any ACD attributes. These attributes would apply to any call that arrives on the Cisco Unified CCX server and are viewed in general as “contacts” whether they are ACD or not.

One must be careful in trying decipher the “numbers” that occur across different reports. Some reports will increment counters where others do not or will not, depending on the caller activities. For example, assume you do have an ACD type of script running. Also assume that the caller does enter the script but abandons it *before* being presented to the Select Resource step. Counters in these reports will see the contact and provide dispositions as required based on the script. But there will be no ACD counters affected by this call since it was never presented to a contact service queue (CSQ).

Two Reporting Packages—ICD

- Real-time reports
 - Overall Cisco Unified CCX statistics
 - CSQ Cisco Unified CCX statistics
 - Resource Cisco Unified CCX statistics
 - Outbound Campaign Cisco Unified CCX statistics
- Historical reports are available in the following categories:
 - CSQ Detail: Activity, skills, distribution, priority, service levels
 - Agent Detail: Call summary, login, logout, reason codes, states, wrap-up
 - Remote monitoring
 - Outbound
 - Email: CSQ activity, agent activity, inbox traffic
 - Call custom variables

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The Interactive Contact Distribution (ICD) (an older reference to Cisco Unified CCX) reporting package provides reporting on ACD activities. There are four real-time reports that provide the administrator and supervisor with a wealth of real-time ACD statistics. These statistics are also available to the script via the Get Reporting Statistic step.

There are also several historical reports available to those users who have been allowed to view them in the User Management page. Refer to these documents for further details:

- *Cisco Unified Contact Center Express Administration Guide, Release 8.0(1)*
- *Cisco Unified CCX Historical Reports User Guide, Release 8.0(1)*

Abandoned Rates

This subtopic discusses abandoned rate attributes offered by Cisco Unified CCX.

Abandoned Rates

In the Cisco Unified CCX system there are two Handled/Abandoned attributes:

- A system/application contact Handled/Abandoned attribute
- A Cisco Unified CCX (ACD) Handled/Abandoned attribute

Use the Set Contact Info step to mark the Handled attribute of the system/application contact.

The Handled/Abandoned attribute in Cisco Unified CCX is set automatically by the system when an ACD call is actually handled by an agent, abandoned by a caller, or dequeued by the script.

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When considering Handled/Abandoned rates, you must remember that there are two separate attributes for this concept. When this product was originally created, it was created as an IP IVR. At that time, the designers designated a Handled/Abandoned attribute for *any* contact that occurred to the system. It was reported as an “Application” attribute. Thus, any triggered contact that was presented to an application was marked as either handled or abandoned. These metrics may be viewed in the Contact and Contact Summary reports in Real-Time Reporting, and viewed in Historical Reporting with the Application Performance Analysis Report. Here are some additional notes for this attribute:

- Any triggering contact will be marked as abandoned unless it “marked” as handled by a Set Contact Info step in the script.

Note If this is an ACD call and an agent answers the call, the Application attribute is also set as handled automatically by the system whether you “mark” it or not.

- For a non-ACD call, the definition of “Handled” for this attribute is solely based on the decision of the developer about where in the script to mark the contact as handled. Presumably this is done at the direction of local management.

The second Handled/Abandoned attribute is a function of Cisco Unified CCX (ACD). A call is designated as a Cisco Unified CCX call when a Select Resource step is encountered in a script. The attribute is set automatically by the system. The attribute is set as follows:

- **Handled:** An agent answers the call. The Application attribute is also set as handled automatically by the system whether you “mark” it or not.
- **Abandoned:** A caller abandons the call or is transferred after being presented to a Select Resource step. The Application attribute would be abandoned unless you had already “marked” it as handled with a Set Contact Info step.

- Neither handled nor abandoned: A caller has been presented to a Select Resource step and abandons the call or is transferred *after* being dequeued with a Dequeue step. In this case, the call would be marked abandoned by the Application attribute unless you had already “marked” it as handled with a Set Contact Info step. The ACD attribute would be Dequeued.

For *all* contacts that are presented to a Select Resource step there will be only one attribute marked true (for purposes of Cisco Unified CCX Express Reporting): Handled, Abandoned or Dequeued. Remember this simple equation for the ACD attribute: Calls Presented to a CSQ (Calls Presented *never* decreases) = Calls Handled + Calls Abandoned + Calls Dequeued.

Note	While it is true that $\text{Calls Presented to a CSQ} = \text{Calls Handled} + \text{Calls Abandoned} + \text{Calls Dequeued}$, if you look at a report for a specific interval, the numbers may not add up exactly. This is due to the existence of calls that are occurring during the interval boundaries.

Caution	Exceptions: Please note that there are cases where the discussion in this section will not hold true. The Set Contact Info step affects real-time and historical reports differently. Please read the contact dispositions section in the release notes for further details. Also note that some historical reports will have additional dispositions for calls that will affect disposition count. Review the appropriate historical reporting guide for each report as required.

Real-Time Reports

This topic describes how to install and view real-time reports.

Real-Time Reports

- Contacts: Active and Summary
- Application Tasks: Active and Summary
- Engine Tasks: Active
- Applications: On Cisco Unified CCX Server
- Sessions: Active
- Data source usage: Configured DSNs
- Cisco Unified CCX: Overall, CSQ, Resource, and Outbound

Report	Tools	Settings	Help
Contacts Summary			
Application Tasks Summary			
Application Tasks			
Engine Tasks			
Contacts			
Applications			
Sessions			
Datasource Usage			
Overall Cisco Unified Contact Center Express Stats			
CSQ Cisco Unified Contact Center Express Stats			
Resource Cisco Unified Contact Center Express Stats			
Outbound Campaign Cisco Unified Contact Center Express Stats			

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When the Cisco Unified CCX system is configured and functioning, you can run reports to monitor real-time activity using the Cisco Unified CCX Administration web interface.

If you have the Cisco Agent Desktop and Cisco Supervisor Desktop, you also can run real-time reports directly from these applications. Cisco Agent Desktop and Cisco Supervisor Desktop do not use the same calculations or data display methods as those that Cisco Unified CCX real-time reporting uses. Therefore, a report run using Cisco Unified CCX real-time reporting and a report run using Cisco Supervisor Desktop may not display the same information for a given statistic. To avoid confusion, it might help to make one of these tools your standard reporting tool.

Here is a summary of the real-time reports:

- Application Tasks: Provides information about currently active applications.
- Application Tasks Summary: Provides a summary of specific application activity.
- Applications: Provides a list of all applications loaded on the Cisco Unified CCX server.
- Contacts Summary: Provides information for call contacts, email contacts, and HTTP contacts. Also provides the total number of contacts.

Note Calls made by the Outbound subsystem will not be displayed in the Contact Summary Real-Time Report.

- Contacts: Provides information about currently active contacts.
- Datasource Usage: Provides information about configured data source names (DSNs).
- Engine Tasks: Provides information about currently active Cisco Unified CCX Engine tasks.

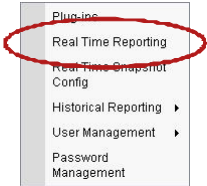
- Sessions: Provides information on all active sessions.
- Application Performance Analysis Report: A summary of information about calls received by each Cisco Unified CCX or Cisco Unified IP IVR application.
- Detailed Call by Call CCDR Report: This is information from the Contact Call Detail Record (CCDR), the contact routing detail record, and the agent connection detail record for each leg of a call.
- Traffic Analysis Report: This is a summary of information about calls received by the Cisco Unified CCX system during each day in the report range.

Opening Real-Time Reports

This subtopic describes accessing real-time reports.

Opening Real-Time Reports

- Access from **Tools > Real Time Reporting**.
- First-time access installs required Java plug-in.
- Continues until Application Reporting page appears.



Application Reporting

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Data Host='10.10.1.40|'|, Data Port='6999'

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To access real-time reports, navigate to and choose **Tools > Real Time Reporting** from the **Cisco Unified CCX Administration** menu.

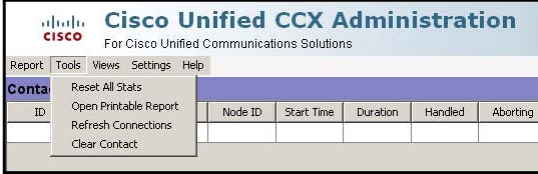
The Application Reporting web page opens in a new window. The real-time reporting tool requires a Java plug-in. If the plug-in is not installed on the machine you are using, the Cisco Unified CCX system prompts you to accept the automatic installation of the plug-in. If you do not accept the installation, you cannot use real-time reporting.

Real-Time Report Tools

This subtopic describes the Tools menu in Real-Time Reporting.

Real-Time Report Tools

- Reset all statistics
- Open printable report
- Refresh connections
- Clear contact



The screenshot shows the Cisco Unified CCX Administration web interface. The top navigation bar includes 'Report', 'Tools', 'Views', 'Settings', and 'Help'. The 'Tools' menu is open, displaying four options: 'Reset All Stats', 'Open Printable Report', 'Refresh Connections', and 'Clear Contact'. Below the menu, a table with columns 'Node ID', 'Start Time', 'Duration', 'Handled', and 'Aborting' is visible. The footer contains the copyright notice '© 2011 Cisco Systems, Inc. All rights reserved.' and the version 'UCCXD v4.0-4.11'.

Use the Reset All Stats option to reset all statistics accumulated since the last time the statistics were reset. It will not reset active statistics, such as active contacts and tasks.

To access a printable report, select a real-time report from the Report menu option. Then choose **Tools > Open Printable Report** from the Application Reporting menu bar.

Refresh connections with the Cisco Unified CCX system by choosing **Tools > Refresh Connections** from the Application Reporting menu bar. The Cisco Unified CCX system refreshes all connections.

You may sometimes see a Contact/Call as waiting in Real-Time Reporting in CSQ Stats, and even though there are available agents in the queue, the call does not seem to get routed to these agents. The waiting time for the queued call accumulates and will not clear even if the user activates the Reset All Stats option from the Tools menu.

To enable clearing such stuck call entries from the system, Cisco Unified CCX system provides the Clear Contact option. This option has the ability to clear stuck calls in the system without requiring a restart of the engine. You can clear contacts from the following reports:

- Contacts
- Overall Cisco Unified Contact Center Express Stats
- CSQ Cisco Unified Contact Center Express Stats

See the *Cisco Unified CCX Administration Guide* for further details.

Historical Reporting

This topic describes how to install, view, save, and schedule historical reports.

Overview

- Call activity data is collected in system database.
- Provides long-term reports for the contact center.
- Features:
 - Easy access to historical call data.
 - View, print, and save report definitions.
 - Sort and filter reports.
 - Send scheduled reports to a file or printer.
 - Export as PDF, Microsoft Excel, RTF, XML, CSV formats.
 - Create custom reports using third-party applications.
- Report on the ACD line and up to three non-ACD lines.

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The Cisco Unified CCX Historical Reports system is designed to provide you with information about the call activities of your Cisco Unified CCX system. With Cisco Unified CCX Historical Reports, you can perform the following:

- Easily access historical data.
- View, print, and save reports.
- Sort and filter reports.
- Send scheduled reports to a file or to a printer.
- Export reports in a variety of formats, including Portable Document Format (PDF), Microsoft Excel, Rich Text Format (RTF), Extensible Markup Language (XML), and Comma-Separated Values (CSV).
- Prepare custom reports using a variety of generally available third-party applications that are designed to create reports from databases.

Multiline Support

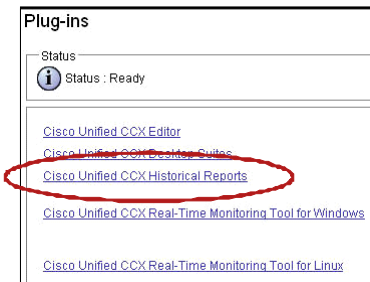
Cisco Unified CCX supports using the 6900/8900/9900 series phone as agent devices. Cisco Unified CCX monitors calls on multiple lines in order to support Join Across Line (JAL) and Direct Transfer Across Line (DTAL) on those agent devices. Up to four lines are monitored by Cisco Unified CCX; these include one ACD line and three non-ACD lines, but only the ACD line can be controlled from the Agent Desktop. If more than four lines are configured on an agent device, the agent cannot log in using that phone. JAL and DTAL are also supported on agent devices using the 7900 series phone, and up to four lines can be configured on those phones.

Installing Historical Reports Client

This subtopic discusses how to install the Historical Reports client.

Installing the Historical Reports Client

- Installer tasks:
 - Installing the Historical Reports client
 - Creating storage directories
 - Installing the Scheduler
- Access installation from **Cisco Unified CCX Administration > Tools > Plug-ins > Cisco Unified CCX Historical Reports**.



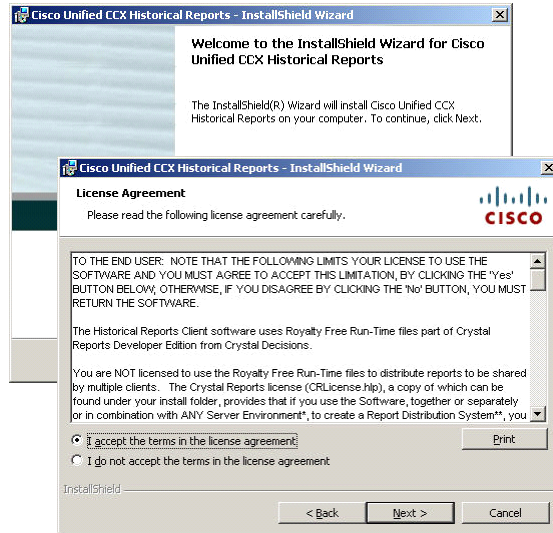
Perform one of the following actions:

- From Cisco Unified CCX Administration, choose **Tools > Plug-ins**. When the Plug-ins web page appears, click the **Cisco Unified CCX Historical Reports** hyperlink.
- From the Cisco Unified CCX Supervision Download web page, click the **Cisco Unified CCX Historical Reports** hyperlink.

The File Download dialog box appears.

Installing the Historical Reports Client (Cont.)

- Click **Run** or **Save** file.
- Click **Run** at security warning.
- Start installation.
- Accept the license agreement.



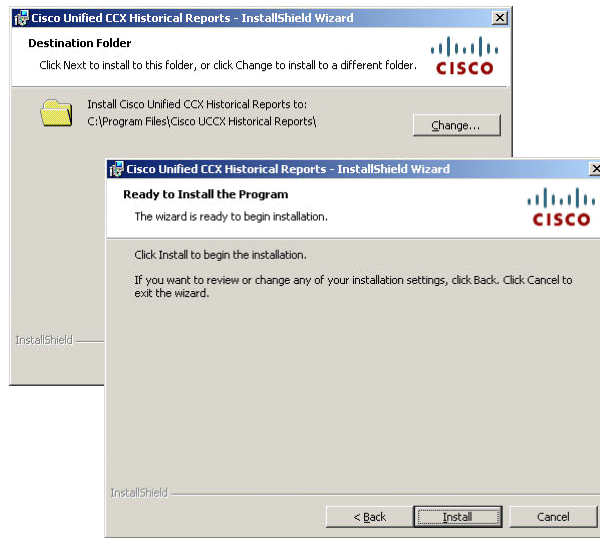
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- Either click **Run** to start the installation, or after saving the setup file, run the setup program.
- Click **Run** at the security warning (not shown).
- Click **Next** at the installation welcome screen.
- Read and accept the license agreement.

Installing the Historical Reports Client (Cont.)

- Choose drive and folder.
- Install.
- Restart the computer.



- Choose the folder where you want the client files installed.
- Click **Next** to start copying the files for installation.
- Click **Install**.
- Click **Finish** when completed (not shown).
- Reboot the PC (not shown).

Historical Reporting User Configuration

Historical reporting requires a user to be allowed to access the reports.

Historical Reporting User Configuration

- Go to User Management.
- Choose user.
- Apply reporting capability.
- Assign historical reporting packages.
- Update.

Capabilities

Selected Capabilities

Administrator
Supervisor
Reporting
Agent

Available Capabilities

Historical Reporting Packages

☒ IVR ☒ ICD

Search

Historical Report Users*

Instructor

Available Users

8800
student01
student02
student03
student04
student05
student06
student07
student08
uccxemail

Historical Reporting Packages*

☒ IVR ☒ ICD

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Before a user can generate historical reports from the Cisco Unified CCX Historical Reports client, you must specify the Cisco Unified CCX application packages for which the user can generate reports.

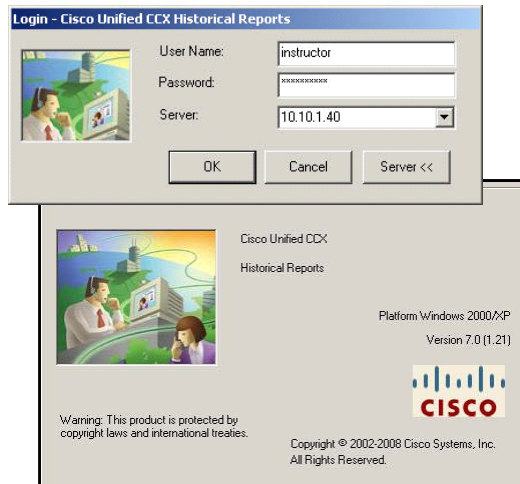
To give a user access to historical reporting, you must first set up the user in Cisco Unified CCX Administration.

Historical Reports Client

The Historical Reports client is your access to historical reports.

Historical Reports Client Login Process

- Enter Cisco Unified Communications Manager user ID and password.
- Select the Cisco Unified CCX server to which you want to connect and from which you want to generate reports.



Log into the Historical Reports client by starting the application and supplying this information:

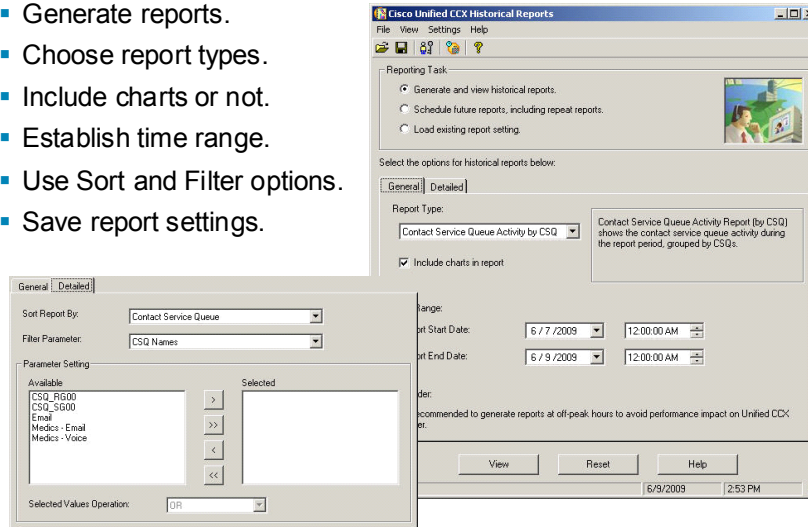
- User Name: Enter a Cisco Unified Communications Manager user ID.
- Password: Enter the password for the user account.
- Server: If it is not already present, enter the IP address of the active Cisco Unified CCX server.

View Reports

View reports from the Historical Reports client.

View Reports

- Generate reports.
- Choose report types.
- Include charts or not.
- Establish time range.
- Use Sort and Filter options.
- Save report settings.

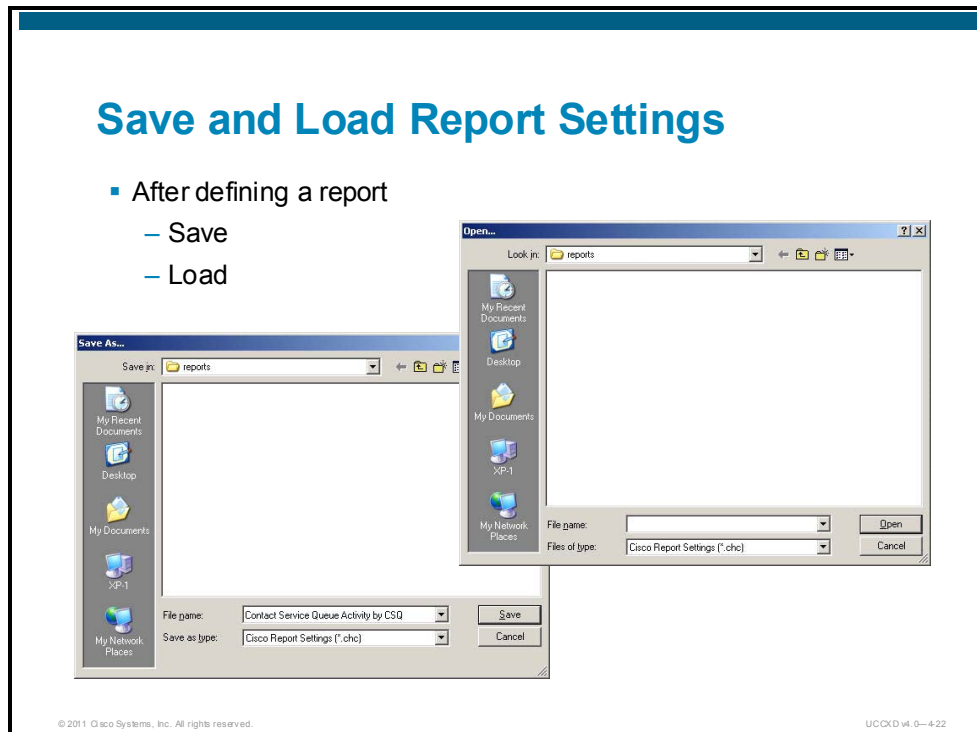


To view reports:

- Under **Reporting Task**, choose **Generate and view historical reports**.
- Choose a report type from the drop-down menu.
- Optionally, choose to include charts or not.
- Optionally, click the **Detailed** tab to declare a sort order and filter.
- Declare a date and time range that has occurred in the past.
- Click **View**.

Save and Load Report Settings

You can save report settings to be used or loaded at a later time.



To save a report setting:

- After performing the processes to view a report, click **Save**.

To load previously saved report settings:

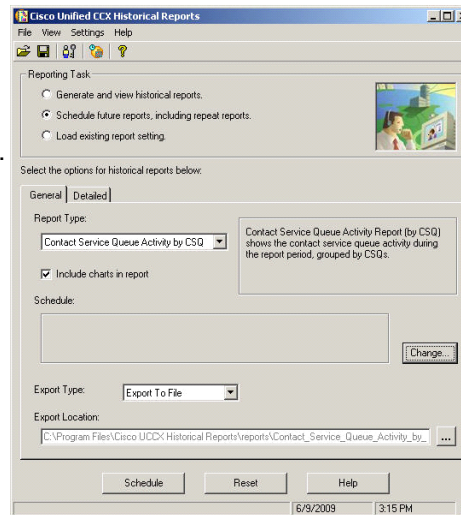
- Under **Reporting Task**, choose **Load existing report setting**.
- Click on the filename and you are ready to “view.”

Schedule a Report

You can schedule reports to occur at predetermined intervals.

Schedule a Report

- Schedule a report.
- Choose report type.
- Include charts or not.
- Use Sort and Filter options.
- Define the occurrences.
- Export formats:
 - PDF
 - Microsoft Excel
 - RTF
 - XML
 - CSV



Scheduling a historical report means instructing the Cisco Unified CCX Historical Reports client to automatically generate the report at some time in the future. Although you can schedule a report to generate once, the report scheduling function is particularly useful for preparing reports that you require regularly. For example, you can schedule an Agent Detail Report to generate every Monday at midnight and an Agent Summary Report to generate on the first Sunday of every month at noon.

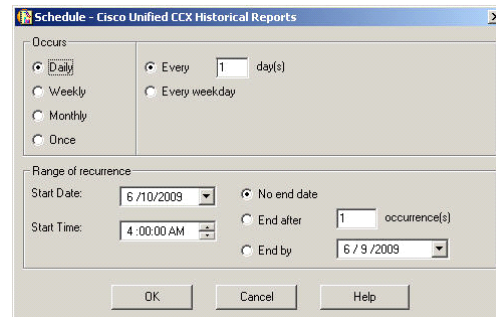
When you schedule a report, you perform these general steps:

- Choose general settings for the report, including the name of the report, whether to include charts, and whether to save (export) or print the report.
- Choose detailed settings for the report, if necessary, including a sort method and a filter parameter.
- Choose scheduling settings, including how often and when the report is generated.
- Save the scheduling information.

When a scheduled report generates, it can use significant resources on the Cisco Unified CCX server. To help keep the server running most efficiently, schedule reports to generate at times when the Cisco Unified CCX server is least busy, for example, late at night or early in the morning.

Schedule a Report (Cont.)

- Define recurrence schedule:
 - Daily
 - Weekly
 - Monthly
 - Once
- Report generated after recurrence time period includes complete time period.
- Example: Scheduling a daily report at 4 a.m. generates report for previous full day.



The Cisco Unified CCX Historical Reports client includes a program called the Scheduler. A Scheduler resides on each client computer and performs these functions:

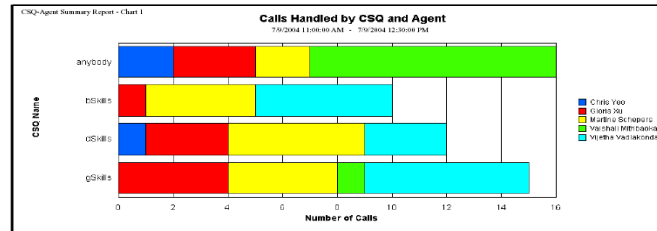
- Maintains information about each schedule, including when each schedule should execute and what information the scheduled report should contain
- Executes schedules at their scheduled times, based on the time and date of the Cisco Unified CCX Historical Reports client computer

The Scheduler runs automatically and unattended in the background on the Cisco Unified CCX Historical Reports client computer. It will not affect other activities that you perform on the client computer. The Scheduler should always be left running, even when you exit the Cisco Unified CCX Historical Reports main window. If the Scheduler is not running when a schedule should execute, the schedule will not execute.

If a schedule does not execute because the Scheduler is not running, the Missed Report dialog box appears when the Scheduler restarts.

You must remember when creating scheduled reports that you are using a system that assumes that you are scheduling reports for a full day, a full week, or a full month. Therefore, you need to schedule reports to occur after the reporting period. For example, a monthly report that runs any time during a month (which, of course, they all do) will contain information on the *previous* month.

Example: CSQ Agent Summary



* RNA: Ring No Answer

CSQ - Agent Summary Report

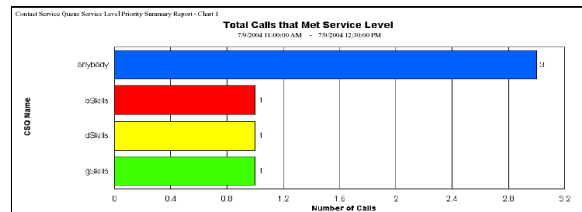
7/9/2004 11:00:00 AM - 7/9/2004 12:30:00 PM

CSQ Name	Agent Name	Extension	Calls Handled	Talk Time		Work Time		Total Ring Time	Calls On Hold	Hold Time		RNA *
				Avg	Total	Avg	Total			Avg	Total	
anybody	Chris Yoo	1020	2	0:01:26	0:02:51	0:24:00	0:48:01	0:00:01	0	0:00:00	0:00:00	0
anybody	Cilena Xu	1015	3	0:01:29	0:04:27	0:01:10	0:03:32	0:00:03	1	0:00:11	0:00:11	0
anybody	Marlene Schepers	3192	2	0:00:33	0:01:06	0:00:00	0:00:00	0:00:05	2	0:00:05	0:00:10	0
anybody	Vaishali	1006	9	0:01:41	0:15:09	0:07:07	0:13:47	0:00:11	3	0:00:06	0:00:18	0
bSKills	Mahmoud	1015	1	0:07:21	0:07:21	0:00:03	0:00:03	0:00:01	1	0:00:02	0:00:02	0
bSKills	Marlene Schepers	3192	4	0:01:25	0:05:42	0:00:00	0:00:00	0:00:05	3	0:00:05	0:00:16	0
bSKills	Vijeta	1001	5	0:00:46	0:03:51	0:00:04	0:00:22	0:00:04	2	0:00:05	0:00:11	0

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Example: CSQ Service Level Priority



Contact Service Queue Service Level Priority Summary Report

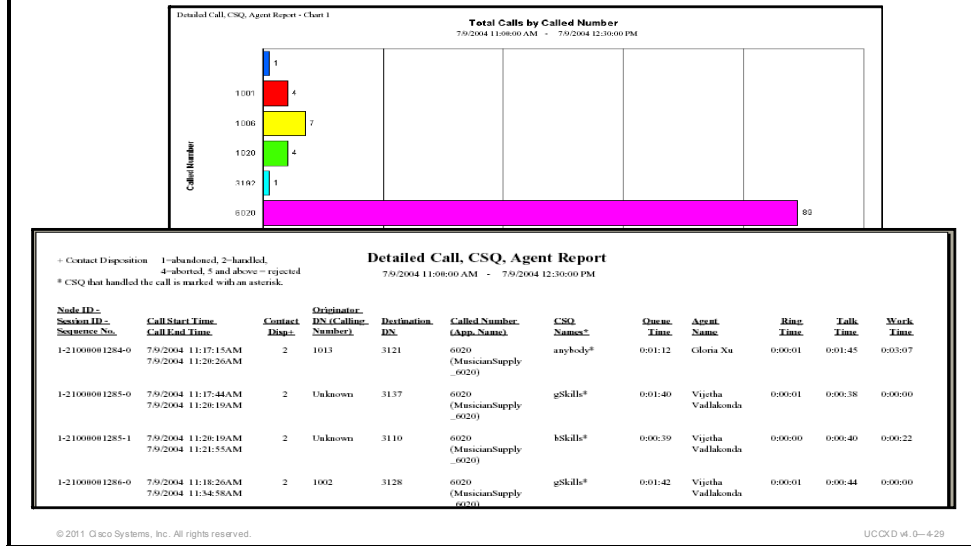
7/9/2004 11:00:00 AM - 7/9/2004 12:30:00 PM

CSQ Name (Call Skills)	Service Level (sec)	Calls Presented	Total Service Level Met	Number and Percentage of Calls that Met Service Level for Each Call Priority									
				Priority 1 (low)	Priority 2	Priority 3	Priority 4	Priority 5	Priority 6	Priority 7	Priority 8	Priority 9	Priority 10 (high)
anybody	5	20	3 15%	3 20%	0%	0%	0%	0%	0%	0%	0%	0%	0%
bSKills (bSKILLS)	5	17	1 6%	1 10%	0%	0%	0%	0%	0%	0%	0%	0%	0%
dSKills (dSKILLS)	5	14	1 7%	1 9%	0%	0%	0%	0%	0%	0%	0%	0%	0%
gSKills (gSKILLS)	5	24	1 4%	1 7%	0%	0%	0%	0%	0%	0%	0%	0%	0%

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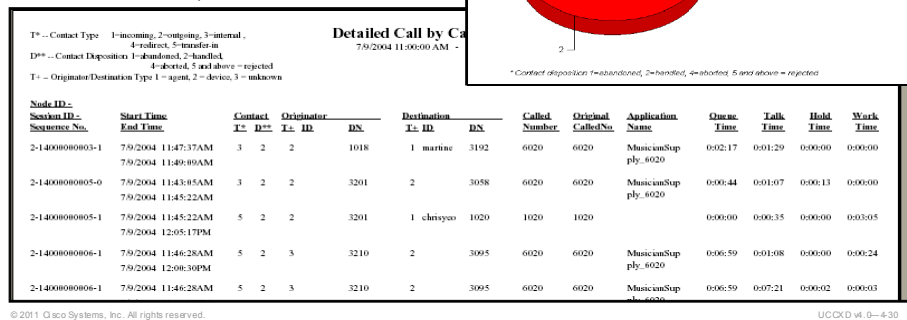
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Example: Detailed Call, CSQ, Agent



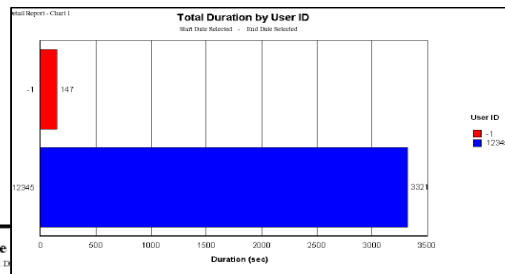
Example: Detailed Call By Call CDR

- CCDR information: Contact type, contact disposition, originator, destination, called number, application
- CSQ information: Queue time
- Agent information: Talk time, hold time, work time



Example: Remote Monitoring

- Details on remote monitoring sessions by supervisor
- Monitored CSQs
- Monitored agents



* -1 indicates no valid user ID is configured through the workflow script.

Remote Start Date

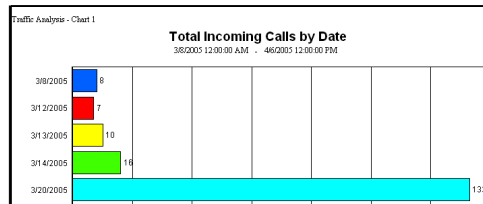
User ID*	Start Time	Original Monitored Party	Monitored Extension(s)	Duration	Wait Time	Status
-1	7/15/2003 4:46:16PM	2000	2000	0:00:29	0:00:01	Normal - Monitored
-1	7/15/2003 4:48:47PM	2000	2000	0:00:16	0:00:00	Normal - Monitored
-1	7/15/2003 5:11:08PM	2000	2000	0:00:10	0:00:00	Normal - Monitored
-1	7/15/2003 5:11:59PM	2000	2000	0:00:13	0:00:00	Normal - Monitored
-1	7/15/2003 5:12:50PM	2000	2000	0:00:21	0:00:01	Normal - Monitored
-1	7/15/2003 5:13:33PM	2000	2000	0:00:51	0:00:37	Normal - Monitored
-1	7/15/2003 5:15:10PM	2000	2000	0:00:57	0:00:01	Normal - Monitored
12345	7/14/2003 2:22:25PM	2000	2000	0:00:12	0:00:00	Normal - Monitored
12345	7/14/2003 2:23:04PM	3	2000	0:00:00	0:00:00	Error - Invalid Input
12345	7/14/2003 2:23:31PM	3	2000	0:00:50	0:00:00	Error - Invalid Input
12345	7/14/2003 2:26:25PM	CSQ	2000	0:00:27	0:00:00	Normal - Monitored
12345	7/14/2003 2:27:23PM	CSQ	2000	0:00:52	0:00:34	Normal - Monitored
12345	7/14/2003 2:28:35PM	2000	2000	0:00:39	0:00:00	Normal - Monitored
12345	7/14/2003 2:29:31PM	2000	2000, 2103, 2000	0:02:30	0:02:07	Normal - Monitored
12345	7/14/2003 2:32:21PM	2000	2000	0:05:48	0:05:35	Normal - Agent RNA
12345	7/14/2003 2:38:09PM	2000	2000	0:00:33	0:00:00	Normal - Monitored
12345	7/14/2003 2:38:50PM	CSQ	2000	0:03:44	0:03:34	Normal - Agent RNA

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Example: IVR Traffic Analysis

- Determines peak calls, hours
- Average call durations



+ Summary values are calculated for the entire report period.

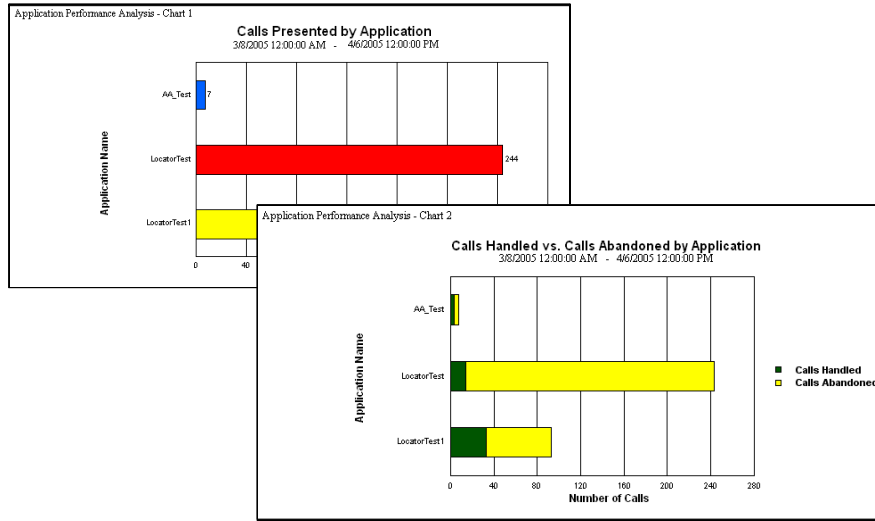
Traffic Analysis
3/8/2005 12:00:00 AM - 4/6/2005 12:00:00 PM

Date	Total Incoming Calls	Avg Calls (per hour)	Peak Calls (by hour)	Peak Hour		Call Duration		
				Start	End	Avg	Min	Max
3/8/2005	8	0.80	8	2:00 pm	3:00 pm	0:00:20	0:00:03	0:00:35
3/12/2005	7	0.29	4	4:00 pm	5:00 pm	0:02:59	0:00:00	0:19:17
3/13/2005	10	0.42	10	7:00 pm	8:00 pm	0:00:10	0:00:00	0:00:46
3/14/2005	16	0.67	14	3:00 pm	4:00 pm	0:00:27	0:00:00	0:02:08
3/20/2005	133	5.54	67	7:00 pm	8:00 pm	0:00:24	0:00:00	0:11:56
3/21/2005	74	3.08	25	3:00 pm	4:00 pm	0:00:33	0:00:00	0:02:56
3/22/2005	37	1.54	9	12:00 pm	1:00 pm	0:00:05	0:00:01	0:00:58
3/24/2005	29	1.21	8	6:00 pm	7:00 pm	0:01:19	0:00:00	0:05:34
3/30/2005	40	1.67	28	12:00 pm	1:00 pm	0:00:54	0:00:01	0:09:09
4/2/2005	7	0.29	7	10:00 pm	11:00 pm	0:00:08	0:00:03	0:00:24
Summary+	361	0.53	67			0:00:34	0:00:00	0:19:17

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Example: Application Performance Analysis



Example: Agent Wrap-Up Data Detail

Agent name, extension

ACD call details

For each ACD call handled by each agent, show **Wrap-Up Data** chosen by the agent in work state.

Agent Wrap-Up Data Detail Report
Start Date Selected - End Date Selected

Agent Name	Extension	NodeID-SessionID-Seq Num	Call Start Time Call End Time	Call ANI	Called Number	Call Routed CSO (Shells)	Talk Time	Hold Time	Work Time	Wrap-Up Data
Agent Andrew	947678	1-96000005614-0	3/29/2006 7:05:06AM 3/29/2006 7:06:09AM	00424750625	50530	ASG_Main	0:01:01	0:00:00	0:00:20	
Agent Daniel	947717	1-96000005577-0	3/29/2006 7:04:26AM 3/29/2006 7:06:19AM	00749274326	50504	(ASG_Main) Store Sys	0:01:42	0:00:00	0:01:00	Account Inquiry
Agent David	948509	1-96000005621-0	3/29/2006 7:05:08AM 3/29/2006 7:08:26AM	00409233915	50555	(Str_Sys) IT_HelpDesk	0:02:12	0:00:55	0:00:45	New Customer
Agent Edward	947683	1-96000005572-0	3/29/2006 7:01:28AM 3/29/2006 7:04:44AM	00397691557	50530	(IT_Hdesk) ASG_Main	0:02:45	0:00:24	0:00:20	Account Inquiry

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Example: Agent Wrap-Up Data Summary

For each **Wrap-Up Data**, show Total ACD Calls.

Handle Time metrics

Talk Time metrics

Work Time metrics

Agent Wrap-Up Data Summary Report
Start Date Selected - End Date Selected

Wrap-Up Data	Total ACD Calls	Total Handle	Avg Handle	Max Handle	Total Talk	Avg Talk	Max Talk	% Talk/Handle	Total Work	Avg Work	Max Work	% Work/Handle
Account Inquiry	4	0:06:54	0:01:43	0:03:29	0:04:30	0:01:12	0:02:45	70.00 %	0:01:40	0:00:25	0:01:00	24.20 %
New Customer	5	0:26:16	0:05:15	0:19:10	0:20:43	0:04:08	0:15:39	78.90 %	0:01:50	0:00:22	0:00:45	7.00 %
VIP Customer	5	0:18:05	0:03:37	0:15:35	0:12:16	0:02:27	0:10:10	67.80 %	0:00:41	0:00:08	0:00:20	3.80 %

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Example: Outbound Campaign Summary

For each **Campaign**, show Total Dialing List records, available records, attempted records.

Agent action:
Accept,
Reject,
Close

Call result
classification

Talk time for
voice calls

Outbound Campaign Summary Report
4/9/2007 11:00:00 AM - 4/9/2007 1:00:00 PM

Campaign	Total	Available	Attempt	Accept	Reject	Close	Voice	Answer Machine	Fax / Modem	Invalid	Call Back	Not Home	Wrong Num	Do Not Call	Busy	Talk Time Avg	Max
ob_camp1	101	59	10 9.90%	12	4	3	5	2	1	1	1	0	1	0	1	0:00:04	0:00:21
ob_camp2	76	28	26 34.20%	28	6	6	14	1	1	2	1	3	1	3	1	0:00:03	0:00:46

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Example: Outbound Agent Detail Performance

For each **Agent** and each **Campaign**, show...

Offered = Accepted + Rejected + Closed + RNA

Another agent transfers an outbound call to this agent

Talk time for voice calls

Outbound Agent Detail Performance Report
4/9/2007 11:00:00 AM - 4/9/2007 1:00:00 PM

Agent Name	Campaign	Offered	Accepted	Rejected	Closed	RNA	Transfer	Talk Time	
								Avg	Max
Schepers	ob_camp1	7	5	2	0	0	0	0:00:10	0:00:21
Schepers	ob_camp2	11	6	3	2	0	0	0:00:00	0:00:00
Summary:		18	11	5	2	0	0		

Summary line for each agent over all campaigns

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Example: Agent Email CSQ Agent Activity

By CSQ and agent

Contacts presented

Contact dispositions

Average times

Email Contact Service Queue Agent Activity
Start Date Selected - End Date Selected

CSQ Name	Date	Agent Name	Routed In	Trans In	Requested	Trans Out	Sent	Deleted	Sent In Process	Avg In Process	Avg On Desk
Mike Email CSQ 2											
1/31/2008											
		Mike Bendickson	1	1	0	1	0	0	00:00:00	00:00:00	00:00:00
2/1/2008											
		Pete Wall	1	0	0	0	0	0	00:00:00	00:00:00	00:00:00
		Mike Bendickson	1	0	0	0	2	0	00:19:10	00:09:35	02:54:00
2/2/2008											
		Pete Wall	0	0	0	0	1	0	00:03:20	00:03:20	03:55:00

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Example: Agent Email Response Detail

By CSQ and agent		Dates		To/From addresses		Email subject
CSQName	Agent Name	Date Received	Date Retrieved	To Address	From Address	Email Subject
email csq 1						
4/14/2008						
1:43:41PM	Li2183 Feng	4/14/2008	9:17:37AM	mddemo55.1@p1.rd.id	justin.ehlert@calabrio.com	Rollerbender Success
2:04:34PM	Li2183 Feng	4/14/2008	9:17:48AM	mddemo55.1@p1.rd.id	justin.ehlert@calabrio.com	Something is wrong with my internets

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Summary

This topic summarizes the key points that were discussed in this lesson.

Summary

- Cisco Unified CCX has two reporting packages available: IVR and ICD. IVR reports provide contact and application-level reports.
- Cisco Unified CCX has three basic call result values: handled, abandoned, and dequeued.
- Cisco Unified CCX has several categories of real-time reports, including contact, application, agent, and CSQ.
- Install Real-Time Reporting from **Tools > Real Time Reporting**. The installation process will start automatically.
- Access and view real-time reports from **Tools > Real Time Reporting**. Reports are viewed via a pop-up browser window.
- The Historical Reports client allows the ability to view, save, schedule, and export reports.
- Install the Historical Reports client from the **Tools > Plug-ins** page. You must allow a user to view reports on the User Management page.

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Summary (Cont.)

- Users must be configured in User Management to be allowed access to historical reporting.
- You must log into the Historical Reports client to view reports.
- Once you have set up a report to be viewed, you can save the settings for future use.
- You can schedule a historical report to run on a recurring basis: once, daily, weekly, or monthly.
- Historical reporting also has several categories of real-time reports, including contact, application, agent, and CSQ.

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Module Summary

This topic summarizes the key points that were discussed in this module.

Module Summary

- Setting up and configuring a Cisco Unified CCX installation requires that RmCm providers, resource groups, skills, and CSQs be defined. The proper configuration of resources and CSQs will determine overall routing capability.
- Create basic Cisco Unified CCX scripts to provide for IVR activity and ACD routing. CSQs determine the resources available for selection and how to choose one.
- Use the Cisco Desktop Work Flow Administrator to create work flow groups, which determine the look and feel of the Cisco Agent Desktop. Use the Cisco Desktop Administrator to define enterprise data, call monitor options, Cisco Unified Presence integration, and Agent Email.

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UCCXD v4.0—#1

Module Summary (Cont.)

- Determining agent availability and providing for holiday routing requires you to be more meticulous about obtaining information from the system and formatting that information into something useful. In many cases, it may be necessary to use Java methods to manipulate and format your data.
- Real-time reports can be viewed by administrators and supervisors from their respective web pages. Historical reports can be viewed by any user who has installed the client and has been allowed under User Management.

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UCCXD v4.0—#2

Cisco Unified Contact Center Express Premium Functions

Overview

Cisco Unified Contact Center Express (CCX) has several functions provided with the premium product licensing. This module covers some of those functions.

Module Objectives

Upon completing this module, you will be able to install and set up several of the Cisco Unified CCX premium functions. This ability includes being able to meet these objectives:

- Define, configure, and use Remote Monitoring
- Define, configure, and use the Outbound Preview Dialer
- Define, configure, and use Agent Email
- Understand ASR and TTS technologies and how to integrate to their applications; additionally, the learner will be able to discuss the concepts of grammars and spoken names and how to implement ASR and TTS in a Cisco Unified CCX script

Remote Monitoring

Overview

This lesson discusses the Cisco Unified Contact Center Express (CCX) Remote Monitoring feature.

The Remote Monitoring feature allows a supervisor (or manager) to call into any site where the supervisor has a Cisco Unified Communications Manager user profile and monitor an agent conversation.

The supervisor, when monitoring a conversation, can hear all parties on the call. The parties will have no indication that the supervisor is monitoring the call. The supervisor cannot join the call or be heard by the parties.

Objectives

Upon completing this lesson, you will be able to configure and test a Remote Monitoring application. This ability includes being able to meet these objectives:

- Define Remote Monitoring
- List the steps required to set up Remote Monitoring
- Describe how to configure a Remote Monitoring Supervisor
- Describe how to assign CSQs and resources to a Remote Monitoring Supervisor
- Describe how to configure the Remote Monitoring application

Remote Monitoring Overview

This topic provides an overview of Remote Monitoring.

The supervisor may call into a Remote Monitoring application and monitor an agent or a contact service queue (CSQ).

Remote Monitoring Overview

- Remote Monitoring allows a Remote Monitoring Supervisor to call from any location and monitor agent calls via a script.
- G.711 codec is required for Remote Monitoring.
- A Remote Monitoring Supervisor may call an application that enables Remote Monitoring of one of the following:
 - Specific agent extension (immediate)
 - CSQ (next call into CSQ)
- Remote Monitoring Supervisor:
 - Special account used only for Remote Monitoring
 - Must have a numerical Cisco Unified Communications Manager user ID
 - Not same type of user as a contact center supervisor
- Only monitor capabilities
 - No barge-in or intercept
 - No monitoring notification to the agent

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Remote Monitoring allows a supervisor to monitor a call in two ways:

- **By agent extension:** In this case, the supervisor identifies the resource by agent extension.
 - If the agent is on a call, monitoring will begin immediately.
 - If the agent is not on a call, monitoring will begin when the agent is presented with a call (that is, when the agent phone rings) or when the agent initiates any call.
- **By CSQ ID:** In this case, you will monitor the call of an agent who belongs to a specific CSQ. The supervisor selects the CSQ by its numeric ID. When a Cisco Unified CCX call is presented to an agent who belongs to the selected CSQ, monitoring will begin for that agent and call.

Note	When you monitor by agent, monitoring begins immediately, whether the agent is in a conversation or not. When you monitor by CSQ, the <i>next</i> call answered by an agent in that CSQ is monitored.

Remote Monitoring Configuration

This topic describes the steps for configuring Remote Monitoring.

Configuration Steps

There are four steps required for configuring Remote Monitoring. The first step is done in Cisco Unified Communications Manager configuration.

Remote Monitoring Configuration Steps

- Create a Cisco Unified Communications Manager user account for Remote Monitoring.
- Define user account as a Remote Monitoring Supervisor.
- Assign resources and CSQs to be monitored by the supervisor.
- Configure a Remote Monitoring application using the rmon.aef script.

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These four steps are covered on the next few pages.

Create a Cisco Unified Communications Manager User Account

The first step is to create a special Cisco Unified Communications Manager user account for use as a Remote Monitoring Supervisor.

Create a Cisco Unified Communications Manager User Account

- Create a Remote Monitoring user on Cisco Unified Communications Manager.
- User ID must be numerical to log into Remote Monitoring application.
- PIN will be used to log into application.
- Not required to enable CTI application use or make any other associations.

User Information	
User ID *	8800
Password	
Confirm Password	
PIN	
Confirm PIN	
Last name *	Supervisor
Middle name	
First name	8800 Remote
Telephone Number	

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When creating a user account for Remote Monitoring in Cisco Unified Communications Manager, create a user ID and PIN that are numerical in nature. The password can be alphanumeric as desired. No other associations need to be made.

Define Remote Monitoring Supervisor

Now that you have a Cisco Unified Communications Manager account, make that account a Remote Monitoring Supervisor.

Define Remote Monitoring Supervisor

- In Cisco Unified CCX Administration: **Tools > User Management.**
- Choose **Supervisor capability only** for this user.
- Defines the Cisco Unified Communications Manager user account as a Remote Monitoring Supervisor.

The screenshot displays the 'User Configuration' interface in Cisco Unified CCX Administration. At the top, there are buttons for 'Update', 'Clear', and 'Back to User List'. Below these, the 'Status' is shown as 'Ready'. A search bar is present. The main area is divided into two sections: 'Cisco Unified CCX Supervisor' and 'Available Users'. The 'Available Users' list contains the following entries: student01, student02, student03, student04, student05, student06, student07, student08, and uccxemail. Navigation arrows are visible between the two lists.

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In Cisco Unified CCX, go to the User Management page and click the user account. Give the remote supervisor account the supervisor capability only.

Assign CSQs and Resources

Assign the CSQs and resources that this supervisor is allowed to monitor.

Assign CSQs and Resources

- In Cisco Unified CCX Administration: **Subsystems > RmCm > Remote Monitor**.
- Allow CSQs and resources to be monitored.

Remote Monitor

Save Cancel

Status

Status: Ready

Remote Monitor User ID: 8800

Configure Contact Service Queues

Name

☒ CSQ_R000

☒ CSQ_S000

☒ CSQ_R001

☒ CSQ_S001

Configure Resources

Name

☒ instructor User

☒ student01 User

Save Cancel

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UCCXD v4.0—1-8

To make these assignments, go to **Subsystems > RmCm > Remote Monitor**, click the user ID, and check the check boxes of those items that the supervisor is allowed to monitor.

Configure Remote Monitoring Application

Now that you have a Remote Monitoring Supervisor account, you need to create a Remote Monitoring application to use the rmon.aef script.

Configure Remote Monitoring Application

- Configure application to use the system rmon.aef script.

Name	App00
ID*	0
Maximum Number of Sessions*	4
Script*	SSCRIPT[rmon.aef] Edit
☐ AuthenticationRetry	3
☐ welcomePrompt	SSAWelcomeRmon Show Prompts
Description	App00
Enabled	☒ Yes ☐ No
Default Script	- System Default - Edit

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UCCXD v4.0—1-9

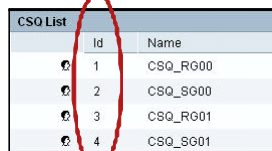
Create an application, just like any other, that points to the rmon.aef script.

CSQ Device IDs

This topic describes how to locate CSQ device IDs.

CSQ Device IDs

- Find CSQ device IDs on the web page of the Remote Monitoring Supervisor.
- Log into AppAdmin with supervisor credentials.
- Go to **Tools > Plug-ins > Cisco Unified CCX Desktop Suites > View CSQ**.



CSQ List		
	Id	Name
🔍	1	CSQ_RG00
🔍	2	CSQ_SG00
🔍	3	CSQ_RG01
🔍	4	CSQ_SG01

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UCCXD v4.0-1.10

The CSQ device IDs can actually be found in two places, but the most convenient place is the web page of the Remote Monitoring Supervisor. The other location is the Cisco Agent Desktop. The device IDs can be viewed in the right pane of the enterprise data area under the column labeled “Device.”

Summary

This topic summarizes the key points discussed in this lesson.

Summary

- Remote Monitoring allows a Remote Monitoring Supervisor to call from any location and monitor agent calls via a script.
- Remote Monitoring requires these basic items for setup: Create a Remote Monitoring Supervisor user account, enable the user to monitor agents and CSQs, and set up an application to use the Remote Monitoring script.
- To create a Remote Monitoring Supervisor account: Create a Cisco Unified Communications Manager user account, and enable this account by giving the supervisor capability only in Cisco Unified CCX User Management.
- You can allow the supervisor to monitor resources and CSQs in **RmCm > Remote Monitor**.
- Create an application to use the rmon.aef script just like any other script would use.

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UCCKD v4.0-- 5-11

Outbound Preview Dialer

Overview

The Outbound Preview Dialer feature provides outbound dialing functionality in addition to existing Cisco Unified Contact Center Express (CCX) inbound capabilities. This feature allows agents who are not busy with inbound calls to preview and handle outbound calls. With the outbound feature, customer calls are placed using the Cisco Agent Desktop by way of the Cisco Unified Communications Manager for call control.

Objectives

Upon completing this lesson, you will be able to implement an Outbound Dialer solution. This ability includes being able to meet these objectives:

- Summarize Cisco Outbound Dialing Campaign features
- Define Outbound Dialing Campaign capabilities and limitations
- Define the concepts of call status and call results, and list their possible values
- Describe the three stages of an outbound call
- Illustrate and define the additional Cisco Agent Desktop toolbar buttons used for outbound calls
- List and define the different options allowed to agents during the preview and call stages of an outbound call
- Describe callbacks and how they are handled
- Describe the steps required to mark a contact as a “Do Not Call” contact
- Describe the general configuration options for Outbound Dialing
- Describe how to configure a campaign
- Describe how to import contacts for a campaign
- Describe how Cisco Unified CCX uses area codes for mapping to time zones and how to make these settings
- Describe how to enable the Outbound toolbar on the Cisco Agent Desktop
- Describe the Outbound Layout List
- Describe additional real-time and historical reports used to report on Outbound Campaigns
- Discuss common user errors

Outbound Preview Dialer Overview

The Cisco Unified CCX Outbound Preview Dialer provides a blended agent environment for both inbound and outbound calls. This subtopic provides an overview of the Outbound Preview Dialer.

Outbound Preview Dialer Overview

- Outbound Preview Dialer adds blended preview outbound dialing capabilities to Cisco Unified CCX.
- Provides ability to create and schedule Outbound Preview Campaigns.
- Requires Cisco Unified CCX Premium Product Package. No additional licensing is required.
- Not supported with Cisco Unified Communications Manager Express.
- Maximum number of combined inbound and outbound agents supported is 300.
- Agent licenses follow same concurrency model as inbound calls.
- Geographic region support:
 - North America area code and time zone mappings are prepopulated.

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UCCXD v4.0-2.4

The Outbound feature supports the direct preview mode in Cisco Unified CCX. The direct preview dialing mode allows agents to preview a customer call on Cisco Agent Desktop before the call is placed. The advantage of this mode is that an agent is already on the call when the customer answers and can begin talking with the customer immediately.

The Outbound subsystem presents the agent with a pop-up window displaying the customer information prior to placing the outbound call. The agent has the choice of accepting the call or ignoring it. The Outbound subsystem dials the customer only if the agent accepts the call. If the agent accepts the call in this mode, the outbound call is initiated from the agent phone. Since the call is initiated from the agent phone, the agent can hear the customer phone ring and hear other tones, such as a busy signal.

Outbound Preview Dialer Overview (Cont.)

- The contacts to dial are stored in the Cisco Unified CCX database:
 - Customer name
 - Account number
 - Up to three phone numbers
- Inbound calls are always treated at a higher priority than outbound calls.
- Outbound Campaign selects agents from CSQs assigned to it:
 - Multiple CSQs can be assigned to the same campaign.
 - Same CSQ can be assigned to multiple campaigns.
- Individual CSQs can be configured as inbound only (default) or blended (inbound and outbound).
- The percentage of agents in a CSQ that can be used for outbound calls can be specified.

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UCCXD v4.0—2-5

Additional characteristics of the Outbound Preview Dialer continue on the next page.

Deployment Notes and Limitations

This subtopic discusses deployment notes and limitations of the Outbound Preview Dialer.

Deployment Notes and Limitations

- Outbound supports a maximum of 15 campaigns, a maximum of 10 CSQs for each campaign, and a maximum of 10,000 active outbound records for each campaign.
- Only Cisco Agent Desktop agents are supported. Cisco IP Phone Agent is not supported.
- Outbound cannot detect an answering machine, fax, or modem. The agent should manually reclassify the call to “answer machine” or “fax” from the desktop. The contact will be called again using the same number in the case of “answer machine,” or using an alternate number in the case of “fax.”
- Agent should not transfer or conference the outbound call if the call is answered by an answering machine, fax machine, or other media instead of a person.

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Please note these deployment notes and limitations.

Deployment Notes and Limitations (Cont.)

- All macros and automatically invoked work flows configured for the Cisco Agent Desktop are disabled during an outbound call.
- Outbound does not come preinstalled with any U.S. national Do Not Call lists. The system administrator should manually filter the contact list against the Do Not Call list prior to importing contacts.
- **Failover/Warm Standby note:** The publisher Configuration Datastore (CDS) is required for outbound operation. In a two-node cluster, as long as the publisher CDS is available, outbound will function. If you lose the publisher CDS, the Outbound Campaigns are stopped until it comes back online.

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UCCXD v4.0—2-7

Outbound Agent Experience

This topic describes the outbound call experience that the agent will see.

Call Status

This subtopic describes the call status values for the Outbound Preview Dialer.

Call Status

Each outbound record maintains a status field. Possible values for the Call Status field are:

- **1 = Pending:** The call is pending.
- **2 = Active:** The record is sent (active) to the Outbound subsystem for dialing.
- **3 = Closed:** The record is closed.
- **4 = Callback:** The record is marked for a callback.
- **5 = Max Calls:** Maximum attempts have been reached for this record (considered closed).
- **6 = Retry:** This record is retried because the previous attempt resulted in busy, answering machine, etc.
- **7 = Unknown:** If the Outbound subsystem was restarted with records in the Active (2) state, they are moved to this state.

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Each outbound call record has a field used to keep track of the state of the outbound call attempts. Call status values change based on system or agent activities and are set by the system.

Call Result

This subtopic describes the call result values for the Outbound Preview Dialer.

Call Result

For each outbound record, the Call Result field is populated. Possible values:

- **1 = Voice (default value):** Customer answered and was connected to agent.
- **2 = Fax:** Fax machine was detected.
- **3 = Answering Machine:** Answering machine was detected.
- **4 = Invalid:** Number was reported as invalid by the network.
- **5 = Do Not Call:** Customer does not want to be called again.
- **6 = Wrong Number:** Number successfully contacted but was wrong number.
- **7 = Customer Not Home:** Number successfully contacted but reached the wrong person.

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UCCXD v4.0-2.10

For each contact, the call result, and the corresponding value, is recorded in the database.

Call Result (Cont.)

- **8 = Callback:** Customer requested callback.
- **9 = Agent Rejected:** Agent has skipped or rejected a preview call.
- **10 = Agent Closed:** Agent has skipped or rejected a preview call with close option.
- **11 = Busy:** Busy signal detected.
- **12 = Ring No Answer:** Timeout (The agent did not respond in the allotted time to the previous call.)

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UCCX v4.0--2.11

When the outbound contacts are imported into the database from Cisco Unified CCX Administration, the Call Result column in the Dialing List table is assigned the default value of 1 (Pending), indicating that these contacts are yet to be dialed. When the Outbound subsystem retrieves a batch of contacts from the database, the call status is set to 2 (Active). After a call is placed to the outbound contact, the call status is set to 3 (Closed), and the call result is set to 1 (Voice), because all outbound calls are classified by Cisco Agent Desktop as voice by default. If the agent clicks the reclassification button on Cisco Agent Desktop and reclassifies the call as answering machine/fax/busy/invalid, or selects the Callback button and schedules a callback, the Outbound Subsystem updates the Call Result field accordingly and, based on the call result, also updates the call status.

The call status is set to 3 (Closed) when the outbound contact is no longer dialed for this campaign. This happens when a call was successfully placed (call result is Voice) and when an agent selects Skip-Closed, Reject-Closed, or Do Not Call. This also happens automatically if the system reaches the maximum attempts limit for an outbound contact, which means that the system tried dialing the outbound contact the maximum number of times configured in Cisco Unified CCX Administration.

Basic Outbound Call Flow

This subtopic describes the call flow stages for the Outbound Preview Dialer.

Basic Outbound Call Flow

- Initial Stage: Outbound Campaign begins and reserves an agent.
 - Call status is set to Active.
- Second Stage (Preview): The call record is presented to the agent via Cisco Agent Desktop.
 - Cisco Agent Desktop displays outbound CTI data.
 - Agent chooses to accept, reject, or skip the call.
 - Call status and call result change based on choice.
- Third Stage (Call): If agent accepts, the outbound call is placed using the agent phone.
 - The call result is classified as Voice by default.
 - Agent can reclassify the call result as needed (fax, answering machine).
- The contact record in the dialing list table is updated with the appropriate call status and call result.

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UCCXD v4.0-2.12

There are typically four types of dialing modes in outbound automatic call distributions (ACDs) today: predictive, progressive, preview, and direct preview. Outbound supports only the direct preview dialing mode.

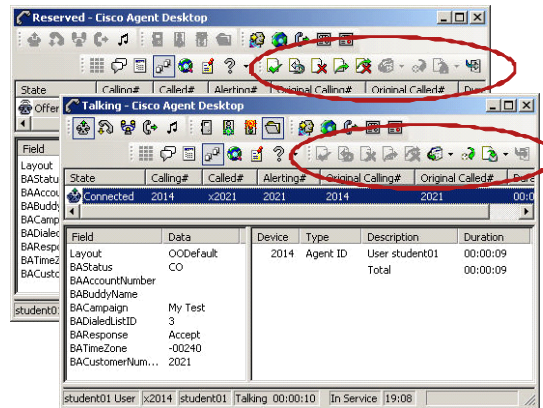
Outbound uses a three-stage process for making an outbound call. The first stage is to find an available agent and retrieve the customer information for making the outbound call. The second stage is the reservation call, and its purpose is to reserve an agent and send customer data to the Cisco Agent Desktop. During this stage, the agent is reserved, and the data appears on the desktop so that the agent can review the data and decide whether to accept the call by pressing the corresponding button on the Cisco Agent Desktop. If the agent does not accept the call, it is handled by other outbound agents or is closed for the campaign. If the agent does accept the call, Outbound activates during the last stage, where Cisco Unified Communications Manager is instructed to place the outbound call using the agent phone. When the outbound call is answered, Outbound updates the customer contact in the database with the call status and call result.

When the outbound call connects with the customer, the agent can perform all call control operations that are normally supported on inbound calls (transfer, conference, hold, retrieve, and so on). Cisco recommends that the agent transfers or conferences the outbound call only if the call is answered by a person but not through other media, such as an answering machine or a fax machine.

Cisco Agent Desktop

This subtopic describes the Outbound Dialer toolbar.

Cisco Agent Desktop



Icon	Button
	Accept
	Reject
	Reject Close
	Skip
	Skip Close
	Skip-Next
	Callback
	Reclassify
	Cancel Reservation

- Outbound buttons will be enabled only when the agent is in the appropriate state.

The Cisco Agent Desktop has Outbound buttons enabled when an outbound call is presented to an agent. Depending on the state the agent is in, the available toolbar buttons will change.

Agent Options During the Preview Stage

This subtopic describes the preview stage.

Agent Options During the Preview Stage

- **Accept:** Agent accepts the current preview record. This will initiate the outbound call to the customer from the agent phone.
- **Reject:** Agent rejects the current preview record. This will cancel the agent reservation and change the agent state to Ready. The agent can now handle either inbound or outbound calls.
- **Reject-Close:** Agent rejects the current preview call and closes the record so it will not be called again for this specific campaign. This will cancel the agent reservation and change the agent state to Ready. The agent can now handle either inbound or outbound calls.
- **Skip:** Agent skips the current preview record. Agent remains reserved to handle another outbound contact.
- **Skip-Close:** Agent skips the current preview call and closes the record so it will not be called again for this specific campaign. Agent remains reserved to handle another outbound contact.
- **Cancel Reservation:** Agent cancels the agent reservation, which places the agent in Not Ready state. The record remains open in the database. Clicking Cancel Reservation has a similar effect to clicking Reject except that the agent goes to Not Ready instead of Ready.

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When presented with an outbound call preview, the agent has six choices.

Agent Options During the Call Stage

This subtopic describes the call stage.

Agent Options During the Call Stage

- Set up a callback if customer desires to be called back.
- Choose **Skip-Next**.
 - Wrong Number
 - Customer Not Home
- Change the Call Result classification.
 - Voice
 - Fax
 - Answering Machine
 - Invalid
 - Do Not Call
 - Busy

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A contact can be classified as either Voice or as one of the other options (Answering Machine, Fax/Modem, Invalid, Busy, Do Not Call).

The first time you click Reclassify, the Voice option on the drop-down menu is disabled because the contact is classified as Voice by default. All other options are enabled.

The next time you reclassify a call, the Voice option is enabled and all other options are disabled.

You can reclassify a contact as many times as needed. The Reclassification Options menu will alternate between showing the Voice option enabled and the other options disabled, and the Voice option disabled and the other options enabled. If you need to reclassify a contact from one non-voice option to another non-voice option, you must first reclassify it as Voice in order to select the correct non-voice option.

Callbacks

This subtopic describes customer callbacks.

Callbacks

Customers can request callbacks at a specific callback phone number and specify the time and date of the callback. This information (the callback phone number, date, and time) are stored in the dialing list table.

The callbacks are handled as follows:

- Callbacks are given priority over other outbound contacts.
- **Different time zones:** If the server time zone differs from the contact time zone, then the callback time is converted to the server time zone and is stored in the database.
- **Agent not available:** The default callback time limit is 15 minutes (configurable) before and after the customer-specified time. If no agent is available, the callback is handled per rules for missed callbacks.

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A customer can request a callback at a specific callback phone number and specify the time/date of the callback. The Outbound subsystem stores this information (the callback phone number, date, and time) in the Dialing List table.

Missed Callbacks

This subtopic describes missed callbacks.

Missed Callbacks

- Three options are available for handling missed callbacks:
 - Reschedule it to the same time on the next business day.
 - Mark it as another retry. (The callback phone number is removed, and the callback date time is ignored.) In this case, the customer record moves out of the callback state and into the retry state.
 - Close the record (never dialed again).

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UCCXD v4.0—2-17

There are three possible options for missed callbacks.

Marking Contacts as Do Not Call

This subtopic describes “Do Not Call” contacts.

Marking Contacts as Do Not Call

- When an agent reclassifies an outbound contact as Do Not Call from Cisco Agent Desktop, then:
 - The record is closed and marked inactive.
 - Records in other campaigns are closed and marked inactive also.
- All contacts marked Do Not Call are exported to the text file <root dir>\DoNotCall.txt. If the file already exists, the new contacts being exported are appended to the file along with a time stamp of when the export was done.
- After the Do Not Call contacts are exported to the text file, they are marked inactive in the dialing list table and are permanently deleted from the database when the database is purged.

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UCCXD v4.0–2.18

When an agent marks a contact as “Do Not Call,” all records for that number are closed.

Outbound Preview Dialer Configuration

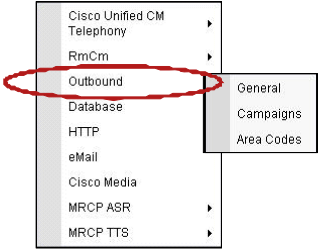
This topic addresses the tasks required to configure the Outbound Preview Dialer feature and subsystem.

Configuration Overview

The following is an overview of the general administration for this feature.

Configuration Overview

- In Cisco Unified CCX Administration, access the Outbound subsystem:
 - General
 - Campaigns
 - Area Codes



The screenshot shows the Cisco Unified CCX Administration menu. The 'Outbound' option is highlighted with a red circle. To its right, a sub-menu is visible with the following options: General, Campaigns, and Area Codes.

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Access the Outbound subsystem in Cisco Unified CCX Administration to configure General Options, Outbound Campaigns, and Area Codes.

General Configuration

This subtopic describes general configuration.

General Configuration

- Specify Contact Center Outbound Dialing Time Range.
- Specify Dialing Prefix.
- Designate Local Area Code.
- Assign CSQs to be used for Outbound Dialing.
- CSQ Allocation for Outbound (expressed as percentage of logged-in agents).

Update

Clear

Status

The general configuration has been saved successfully.

Customer Dialing Time Range (hh:mm)*

Start Time8:00AM

End Time9:00PM

Preview Call Timeout* (seconds)60

Dialing Prefix

Long Distance Prefix

International Prefix

Local Area Code

Do Not Remove Local Area Code When Dialing☐

Assigned CSQs*

CSQ_S001(100)
CSQ_RG01(100)
CSQ_S000(100)
CSQ_RG00(100)

Available CSQs

% of Logged in Agents for Outbound100

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UCCXD v4.0-2-21

Access the General Configuration page to apply global configuration settings.

The fields on the General Configuration page are defined as follows:

Field	Description
Customer Dialing Time Range (hh:mm)	The time range during which a customer can be called. This time range supersedes the time range of individual campaigns and ensures that a customer is never called outside the legally allowed time range for that country. For example, in the United States, the Federal Communications Commission (FCC) specifies the legal time range as 8 a.m.–9 p.m. This does not apply to callbacks since the customer explicitly requested to be called at a certain time. This time range always converts to the local time for each contact record. Default = 8:00 a.m.–9:00 p.m. (U.S. FCC regulations)
Preview Call Timeout	If an agent does not respond to the Outbound preview call on the Cisco Agent Desktop within the timeout duration specified in this field, the system sets the agent to the Not Ready state, similar to the behavior for Ring No Answer (RNA) for inbound calls. Default= 60 seconds, Range = 5 to 3600 seconds.
Dialing Prefix	The number to prepend to the phone number for dialing outgoing calls (also referred to as switch prefix). This number can have any numeric value, including 0 or leading zeros.
Long Distance Prefix	The number to prepend to the phone number for dialing long distance. This number can have any numeric value, including 0 or leading zeros.
Include Long Distance Prefix	If the Include Long Distance Prefix check box is checked, this number is included when dialing.
International Prefix	The number to prepend to international phone numbers. This number can have any numeric value, including 0 or leading zeros.
Local Area Code	The area code of the Cisco Unified CCX server location. This number can have any numeric value, including 0 or leading zeros.
Do Not Remove Local Area Code When Dialing	If this box is checked, the local area code is included when dialing the phone numbers within this area code. If it is unchecked, then the local area code is stripped from the phone number before dialing the local numbers. It is expected that when contacts are imported into the system, the phone numbers include the area code. For international phone numbers, the country code must be included when importing contacts.
Available CSQs	The Available CSQs pane displays all CSQs configured in the CSQ Configuration page under the RmCm subsystem configuration.
Assigned CSQs	Assigned CSQs refers to CSQs used by the Outbound subsystem. In order to allocate CSQs for Outbound, select a CSQ from the Assigned CSQs list and then select a value from the % of Logged in Agents for Outbound drop-down to indicate what percentage of the CSQ is allocated for Outbound, and then click on the "<" icon. At this point, the selected CSQ is removed from the Available CSQs box and shows up in the Assigned CSQs box with the percentage allocation in parentheses next to the CSQ name.
% of Logged in Agents for Outbound	The % of Logged in Agents for Outbound field indicates the percentage of logged in agents in each of the selected CSQs allocated for handling Outbound calls.

Campaigns

Access the Campaigns page to create and modify Outbound Campaigns.

Campaigns

- Shows list of configured campaigns with configuration summary

Campaigns

 Add New

Status

 The campaign configuration has been saved successfully.

Campaign List

	Name Δ	Start Time Δ	End Time Δ	Remaining Contacts Δ	Enabled Δ	Delete
	Outbound01	8:00 AM Central Standard Time	9:00 PM Central Standard Time	0	false	

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UCCXD v4.0-2.22

A campaign is a grouping of contacts for a particular purpose, such as a sales drive or a general announcement to a group of customers. Campaigns are used by Cisco Unified Outbound Preview Dialer to automatically place outgoing calls to a specific list of contacts. The figure shows a list of campaigns and the ability to add new campaigns.

Campaign Configuration

Use the Campaign Configuration page to configure the properties for the campaign, including the campaign name and description, CSQ selection, and the time range when a campaign can call contacts.

Campaign Configuration

- Set campaign options.
- Assign CSQs.
- Import contacts.
- Delete all contacts.

Campaign Configuration

Save
Cancel
Import Contacts
Delete All Contacts
Open Printable Report

Status
Status : Ready

Campaign Name*

Enabled* ☐ Yes ☒ No

Description

Start Time (hh:mm)* Central Standard Time

End Time (hh:mm)* Central Standard Time

Maximum Attempts to Dial Contact*

Contact Records Cache Size*

Answering Machine Retry* ☐ Yes ☒ No

Callback Time Limit* minutes

Callback Missed*

Assigned CSQs*

CSQ_RG01
CSQ_SG01

Available CSQs

CSQ_SG00
CSQ_RG00

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UCCKD v4.0--2.23

The fields on the Campaign Configuration page are defined as follows:

Field	Description
Campaign Name	Name of the campaign (must be a unique identifier).
Enabled	Indicates to the Outbound subsystem whether this campaign is currently active. Default = No
Description	Description of the campaign.
Start Time/End Time (hh:mm) AM PM	Indicate the time range during which the campaign runs. Default = 8:00 a.m.–9:00 p.m. (U.S. FCC regulations)
Maximum Attempts to Dial Contact	The maximum number of times the Outbound subsystem attempts to dial a contact. Default = 1, Range = 1 to 3

Importing Contacts

Once a campaign has been created, you must import a contact list of numbers for the campaign to dial.

Importing Contacts

- Browse to comma-separated text file.
- Associate fields with:
 - Account Number
 - First Name
 - Last Name
 - Phone1 (Required)
 - Phone2
 - Phone3

Import Contacts

Status

Status : Ready

All contacts must be verified against the National Do Not Call List before being imported.

Comma Delimited File Name*

C:\Documents and Settings\stud

Browse...

Field Names

Account Number

First Name

Last Name

Phone1

Phone2

None

Import

Cancel

Contacts imported successfully

File name ImportFile.txt

Number of contacts imported successfully:4

[Return to Campaign Configuration](#)

Cisco Unified CCX does not check the National Do Not Call list. This must be done before you upload a contact list.

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Contact centers purchase or maintain customer-dialing lists in files, which can be imported using Cisco Unified CCX Administration. When the file is imported, the Outbound subsystem generates a dialing list used to dial customers.

A dialing list can be in comma-delimited format, with a maximum of 10240 characters per row.

When contacts are imported, they will have a default value of 1 in the Call Result column and 0 in the Call Status column in the Dialing List table. A call status of 3 and a call result of 0 means that the contact was closed without being dialed. This happens if the Phone1 column is empty for the contact.

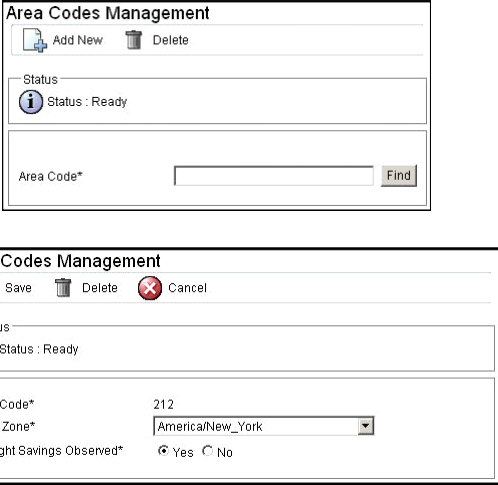
If you import contacts with the same Phone1 field as an existing contact, then the existing contact is overwritten by the imported contact in the following fields: Account Number, First Name, Last Name, Phone2, and Phone3 fields. However, other fields like Call Result and Call Status are not overwritten.

Area Code and Time Zone Mapping

For outbound dialing purposes, Cisco Unified CCX needs a method of identifying the time zones of the contacts to dial. It does this by correlating the area codes to a time zone.

Area Codes

- North America area code to time zone mappings are predefined in database.
- Any area code mapping can be modified.
- Add area code mappings for international calls.



Area Codes Management

Area Codes Management

Status: Ready

Area Code* 212

Time Zone* America/New_York

Daylight Savings Observed* ☒ Yes ☐ No

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UCCX v4.0-225

The Outbound subsystem provides all of the mappings from North American area codes to their corresponding time zones at the time of product release. The Area Codes page allows the administrator to add, modify, and delete any area code to time zone mappings.

Some area codes extend across multiple time zones. For such area codes, an administrator can edit the default time zone for that area code and specify a different one, if required.

The Area Codes Management page allows users to find, add, delete, and modify the mapping of area codes and time zones. The Outbound subsystem uses the area code of a contact phone number to determine the time zone of the calling area of the contact. This page can also be used for adding international area codes. International area codes must include the country code and the city code.

Cisco Unified CCX uses a string comparison method to determine the area code of a number. The area code length, and thus the length of the comparison, is *not* fixed. It will always use the first few digits to find an area code match; thus, you should incorporate a few guidelines:

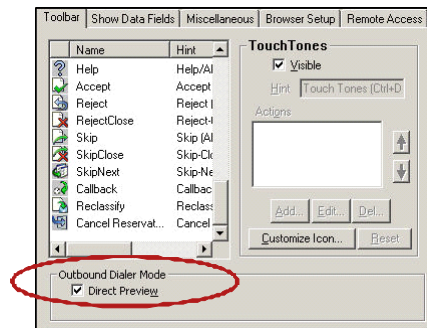
- For North American numbers, you should always upload 10-digit numbers. Use General Configuration options for local numbers so that Cisco Unified CCX will recognize local dialing rules.
- For international numbers include all country *and* city codes as area codes in Cisco Unified CCX.
- Never include prefix numbers such as 9 or 1 for contacts uploaded. Again, use General Configuration options for these numbers.

Enabling Agent Desktop Toolbar Buttons

Use the Cisco Desktop Work Flow Administrator to enable the Outbound Dialer toolbar buttons.

Cisco Desktop Work Flow Administrator

- Enable **Direct Preview** toolbar buttons.



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Outbound Layout List

Cisco Unified CCX comes with a predefined layout list for outbound dialing. This list comes set up with all the Expanded Call Context (ECC) variables included and is called OODefault. This is the only layout list that can be used for outbound dialing, but it can be modified to suit your needs.

Outbound Layout List

- Only one layout list is available for outbound calls, and it is called OODefault.
- OODefault is prepopulated with system-defined ECC variables used by Outbound Preview Dialer.
- OODefault cannot be deleted, but it can be modified.

The screenshot shows a web-based configuration interface for the Outbound Layout List. It has a title bar 'General Information' and a 'Layout Name' field containing 'OODefault'. Below this is a section titled 'Fields In Layout' which contains two columns: 'Available' and 'Selected'. The 'Available' column lists various ECC variables, and the 'Selected' column lists the variables currently in the layout. Navigation buttons like '>', '<', '>>', '<<', 'Up', and 'Down' are placed between the two columns.

General Information	
Layout Name: OODefault	
Fields In Layout	
Available	Selected
2 Arrival Type	0 Member ID
210 cisco.com.Category	3 Member Name
211 cisco.com.MessageKey	1 Phone Number
212 cisco.com.Priority	252 Layout
221 Customer Account Numl	205 BAStatus
222 Caller Entered Digits	200 BAAccountNumber
231 Call Variable 1	201 BABuddyName
232 Call Variable 2	202 BACampaign
233 Call Variable 3	203 BADialedListID
234 Call Variable 4	204 BResponse

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Outbound Dialer Reports

This topic describes the reports available for outbound dialing.

Real-Time Reports

- Outbound Campaign Summary:
 - Shows real-time statistics for the outbound campaigns.
- Modifications to existing real-time reports:
 - Overall Cisco Unified CCX Stats Report includes overall outbound statistics.
 - Resource Stats reports include resource outbound statistics.
 - Get Reporting Statistic step can be modified to include above.

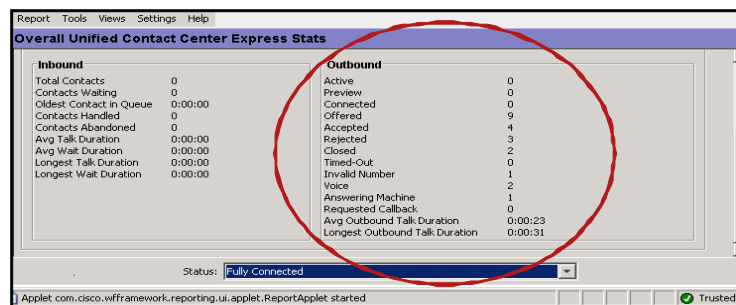
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General notes on outbound reports:

Outbound Overall Report

- Overall Cisco Unified CCX report includes new counters: active, preview, connected, offered, accepted, rejected, closed, timed-out, invalid number, voice, answering machine, requested callback, and average/longest outbound talk duration.
- Number of active, preview, and connected calls are for currently active calls.



Inbound		Outbound	
Total Contacts	0	Active	0
Contacts Waiting	0	Preview	0
Oldest Contact in Queue	0:00:00	Connected	0
Contacts Handled	0	Offered	9
Contacts Abandoned	0	Accepted	4
Avg Talk Duration	0:00:00	Rejected	3
Avg Wait Duration	0:00:00	Closed	2
Longest Talk Duration	0:00:00	Timed-Out	0
Longest Wait Duration	0:00:00	Invalid Number	1
		Voice	2
		Answering Machine	1
		Requested Callback	0
		Avg Outbound Talk Duration	0:00:23
		Longest Outbound Talk Duration	0:00:31

Status: Fully Connected

Applet com.cisco.wfframework.reporting.ui.applet.ReportApplet started

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This report adds new outbound counters to the real-time reports.

Outbound Campaign Report

- Shows campaign name, status (e.g., stopped, running), active, preview, connected, offered, accepted, rejected, closed, timed-out, invalid number, voice, answering machine, requested callback, and average/longest talk duration.
- Number of active, preview, and connected calls are for currently active calls.

Outbound Campaign Unified Contact Center Express Stats										
Campaign Name	Status	Active	Preview	Connected	Offered	Accepted	Rejected	Closed	Timed	
Campaign_1_csq Run										
Campaign_2_csq Sto										
Campaign_3_csq Sto										

Outbound Campaign Unified Contact Center Express Stats										
Accepted	Rejected	Closed	Timed-Out	Invalid Nu...	Voice	Answering Machine	Requested Callback	Avg Talk Duration	Longest Talk Duration	
4	3	2	0	1	2	1		0:00:23	0:00:31	
0	0	0	0	0	0	0		0:00:00	0:00:00	
0	0	0	0	0	0	0		0:00:00	0:00:00	

Status: Fully Connected

Applet com.cisco.wframework.reporting.ui.applet.ReportApplet started

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This report offers real-time status and information for each campaign.

Outbound Resource Report

- The resource report includes outbound offered, outbound accepted, outbound rejected, outbound closed, outbound timed-out, outbound voice, outbound average talk/hold duration, and outbound longest talk/hold duration.

Resource Unified Contact Center Express Stats										
Name...	State	Duration in ... State	Contacts Presented	Contacts Handled	Avg Talk Duration	Avg Hold Duration	Longest Talk Duration	Longest Hold Duration	Outbound Offered	C
Christ ... Work		0:12:36	0		0:00:00	0:00:00	0:00:00	0:00:00	9	A

Resource Unified Contact Center Express Stats										
Outbound Offered	Outbound Accepted	Outbound Rejected	Outbound ...	Outbound Timed-Out	Outbound ...	Outbound ... Talk Duration	Outbound ... Hold Durati...	Outbound ... Talk Duration	Outbound ... Hold Durati...	
9	4	3	2	0		2:00:23	0:00:00	0:00:31	0:00:00	

Status: Fully Connected

Applet com.cisco.wframework.reporting.ui.applet.ReportApplet started

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This report offers real-time information and statistics about outbound agents.

Real-Time Report Guidelines

- Get Reporting Statistics work flow step enhanced to include all new outbound statistics.
- In general, outbound durations are updated only after the call ends and the agent has moved out of Work state.
- If an outbound call is transferred back to a route point and queued on a CSQ, the inbound Overall and CSQ reports will get updated. If the call then goes to an agent, the outbound resource statistics for that agent will be updated.

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These are a few guidelines regarding real-time reports.

Transfers and Conferences

- An outbound call that is transferred or conferenced continues to be treated as an outbound call.
- For agents who join the call after being transferred or in conference, only Callback and Do Not Call (re-classify) buttons remain enabled. All other reclassify options are disabled.
- Transferring or conferencing outbound calls to a “Trigger (Route-Point)” could cause the layout on the Cisco Agent Desktop to change if the call hits an inbound work flow that changes the layout.
- Real-time and historical reports track the outbound calls through the transfers and conferences.

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Outbound calls offer some varying characteristics in real-time reports.

Historical Reports

- **Outbound Campaign Summary:** This report shows summary statistics for each campaign over the specified time period.
- **Outbound Agent Detail Performance:** This report shows detailed outbound activity statistics for each agent over a specified time period, with a breakdown for each campaign that was handled by the agent.

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There are two outbound historical reports.

Troubleshooting

This subtopic discusses troubleshooting topics.

Resetting Contact Status at Midnight

- The Outbound subsystem performs the following data clean-up actions at midnight (fixed schedule—nonconfigurable):
 - The dialing list records with a CallStatus of Unknown (7) are reset to Pending(1). A record could get into the Unknown state because of system failure to update the database while calls were in progress.
 - Missed callback records (scheduled callbacks that could not be placed that day) are updated depending on the missed callback action.
 - Dialing list records with a CallStatus of Closed (3) or Max_Calls (5) are deleted.
 - Dialing list records with a call result of Do Not Call are not deleted as these records are exported to a text file.

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Several clean-up actions regarding the call status happen at midnight.

Common Issues and User Errors

This subtopic describes some of the most common issues and errors for Outbound Preview Dialers.

Common Issues and User Errors

- Incorrect customer or campaign dialing time range.
- Campaigns are not enabled.
- Publisher CDS node failure in a two-node cluster.
- The system may take up to 2 minutes to start the campaigns even after agents are ready and campaigns are configured to start.
- No contacts in the dialing list.
- High number of inbound calls, and agents are not available.
- The percentage of agents in CSQ allocated for outbound calls is too low.
- Incorrect (or no) CSQs assigned to outbound campaigns.

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Common Issues and User Errors (Cont.)

- Outbound toolbar buttons not available. Check user interface in Desktop Work Flow Administrator.
- Enterprise Server could be down. Ensure that the Enterprise Data Service is running on Cisco Unified CCX.
- Some contacts are not being imported. While you are importing contacts, any duplicate contacts based on the phone numbers are overwritten. This could cause a discrepancy in the number of contacts in the import file and the number that actually got imported.
- Incorrect switch prefix/telephony settings.
- Invalid phone numbers in dialing list.
- Area code and time zone mapping missing (for international or new area codes).

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Summary

This topic summarizes the key points discussed in this lesson.

Summary

- Outbound Dialing allows the blending of inbound and outbound contacts to your agents.
- Outbound Dialing requires Premium licensing and can support up to 300 agents. It is not offered with Cisco Unified Communications Manager Express.
- For outbound dialing, the contact records in the database have fields that contain call status and call result information.
- The three stages of an outbound call are agent reservation, call contact is previewed by the agent, and the call is placed from the agent phone.
- Several toolbar buttons are enabled on the Cisco Agent Desktop for the agent to use for outbound dialing.
- During a call preview, the agent can accept the call, skip the call, or reject the call.
- If a customer desires a callback, the agent can set up the callback from the agent desktop.
- The agent can mark a call as "Do Not Call" from the toolbar, if requested.

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Summary (Cont.)

- General Outbound configuration defines dialing, time range, and skill attributes that can be used in campaign dialing.
- Use Cisco Unified CCX Administration to set up a campaign.
- You can upload a contact list from the Campaign page and enable the campaign to run.
- Area codes are used to associate contacts with a time zone.
- From the Cisco Desktop Work Flow Administrator, enable the Outbound Campaign toolbar buttons for the Cisco Agent Desktop.
- A layout list is already preconfigured for outbound dialing.
- Real-time and historical reports now include outbound reporting metrics.
- Most outbound errors are user configuration problems. Ensure that you have the basics: The campaign is defined and enabled; contacts are uploaded; CSQs are properly defined; and a sufficient number of agents are available.

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Agent Email

Overview

The Agent Email feature is tightly integrated into Cisco Agent Desktop, with controls built into the toolbar and display. It queues and routes emails to staffed and skilled agents, facilitates the creation of the agent response, and provides a collection of real-time and historical reports that help measure email performance accurately.

Objectives

Upon completing this lesson, you will be able to set up the Agent Email feature. This ability includes being able to meet these objectives:

- Define Agent Email
- Describe the email delivery and response process
- Summarize the integration process
- Create an email CSQ
- Describe the requirements for integration to Microsoft Exchange
- Describe Agent Email settings in Cisco Desktop Administrator

What Is Agent Email?

This topic provides an overview of Agent Email.

What Is Agent Email?

- Agent Email allows agents to handle email contacts.
- Agents can be voice and email agents, otherwise known as blended agents.
- MCS-7845 and MCS-7835 support up to 120 email agents; MCS-7825 and MCS-7816 support up to 30 email agents.
- Customers can send email to email addresses assigned to specific CSQs. The CSQs funnel the customer emails to agents who service those CSQs.
- Agent Email requires Microsoft Exchange 2003/2007 as an email server.
- Other than defining email CSQs, all integration settings are performed from the Cisco Desktop Administrator.

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As part of the Premium offering, Cisco Unified Contact Center Express (CCX) agents can service customer emails using the Cisco Agent Desktop interface. This capability does not exist with Cisco Agent Desktop Browser Edition or IP Phone Agent.

Cisco Supervisor Desktop includes real-time displays and information that enable supervisors to manage email contact service queues (CSQs) and their email capable agents. When creating a CSQ in Cisco Unified CCX Administration, you designate the CSQ as either email or voice. A single CSQ cannot be both an email CSQ and a voice CSQ. Agent association with email CSQs is done in the same manner as voice CSQs.

The agent states READY and NOT READY for email and voice are independent of each other. An agent can handle both emails and voice calls simultaneously. Agents can receive emails only if they manually move themselves to the email READY state. Only agents who have been assigned to at least one email CSQ will see the email functionality in Cisco Agent Desktop. Likewise, only supervisors who service a team with at least one email capable agent will see the email functionality in Cisco Supervisor Desktop.

The Agent Email feature requires the use of an external mail store (Microsoft Exchange 2003 and 2007 are supported). This mail store is not provided, installed, or configured as part of the Cisco Agent Desktop installation.

Agent Email uses the Internet Message Access Protocol Version 4 (IMAPv4) for message retrieval and Simple Mail Transfer Protocol (SMTP) for message sending. These protocol types must be enabled in Microsoft Exchange, and host/IP information must be specified using Cisco Desktop Administrator. These protocol types are not typically enabled by default. Cisco Agent Desktop and the Cisco Agent Desktop email service make IMAP connections to the mail store. Cisco Agent Desktop email service also makes an SMTP connection to the mail store. Agent Email supports both secure and plain text connections to the mail store.

Cisco Agent Desktop components (Cisco Agent Desktop and Cisco Agent Desktop Email Service) will connect to the mail store using a single dedicated mail store account. The mail store administrator must create this account. Cisco Agent Desktop must be configured to use this account via Cisco Desktop Administrator. This account should be a dedicated account and should not be used for purposes other than the Agent Email feature.

While Cisco Agent Desktop uses a single email account, it can, and typically will, have multiple distribution list addresses associated with that user. The mail store administrator must configure this email account and the corresponding distribution lists manually. Routing information for the distribution list addresses can then be specified using Cisco Desktop Administrator.

Note	Microsoft Exchange allows you to associate multiple email addresses with an email account. Administrators may be tempted to use this feature instead of distribution lists. However, Microsoft Exchange may rewrite the To address in the incoming email to the primary address of the account, which then causes the Agent Email feature to be unable to properly route emails to agents.

Email Delivery Summary

This subtopic provides a summary of the processes of email delivery for Agent Email.

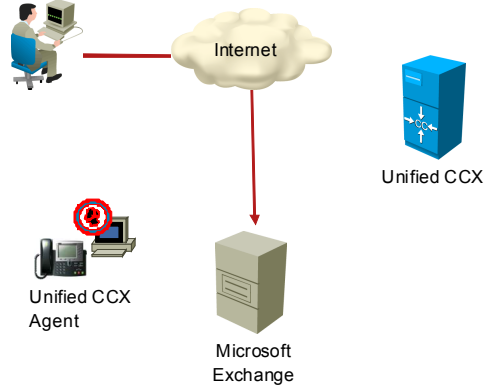
The following steps describe how an email is routed using the Agent Email feature:

- Step 1** The Cisco Agent Desktop email service on the Cisco Unified CCX server connects to the mail store (IMAP and SMTP) on startup.
- Step 2** An email-capable agent in the email CSQ logs in using Cisco Agent Desktop. Cisco Agent Desktop connects to the Cisco Agent Desktop email service and to the mail store (IMAP).
- Step 3** The agent goes to an email ready state. Cisco Agent Desktop requests an email from the Cisco Agent Desktop email service.
- Step 4** A customer sends an email to, for example, sales@companyname.com.
- Step 5** sales@companyname.com is a distribution list with the Agent Email account as the only member. Microsoft Exchange presents the email to the inbox of that account.
- Step 6** The Cisco Agent Desktop email service has been monitoring the Agent Email account inbox and sees the new email. Based on the routing rules specified in Cisco Desktop Administrator, it sees that emails to sales@companyname.com are associated with the email CSQ and that an agent in the email CSQ is in the ready state. The service then assigns the email to the agent and notifies the agent.
- Step 7** Cisco Agent Desktop receives notification of the assignment and retrieves the email from the mail store directly.
- Step 8** The agent is presented with the email from the customer.
- Step 9** The agent authors a response and presses the Send button.
- Step 10** The agent response is saved to the Outbox folder on the mail store using IMAP commands.
- Step 11** The Cisco Agent Desktop email service periodically checks the Outbox folder and sends all messages in it.

The following figures provide a visual summary of the email delivery process.

Email Delivery Summary

- Email arrives at mail server.

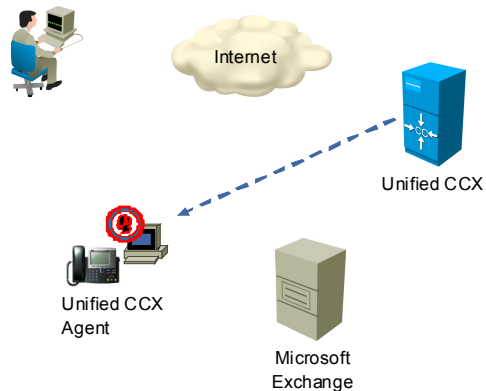


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Email Delivery Summary (Cont.)

- The Cisco Desktop Agent Email Service assigns email to agent.

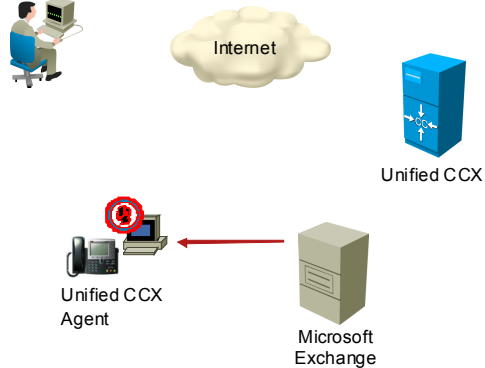


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Email Delivery Summary (Cont.)

- Cisco Agent
Desktop pulls email
from email server.

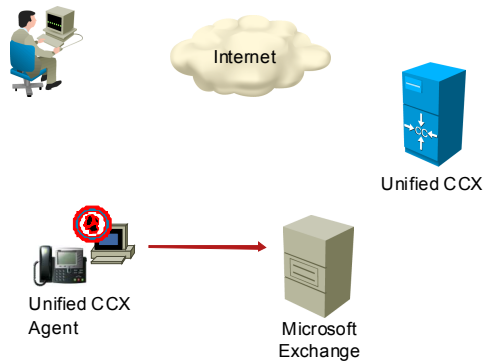


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Email Delivery Summary (Cont.)

- Agent responds to
email and sends to
Outbox.

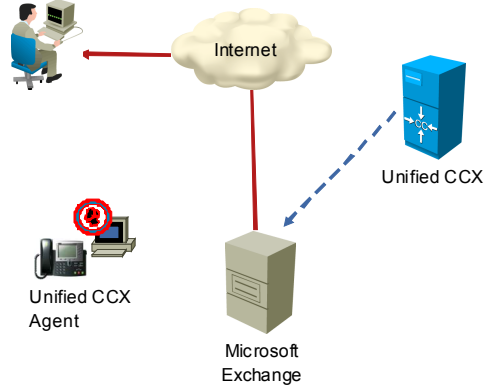


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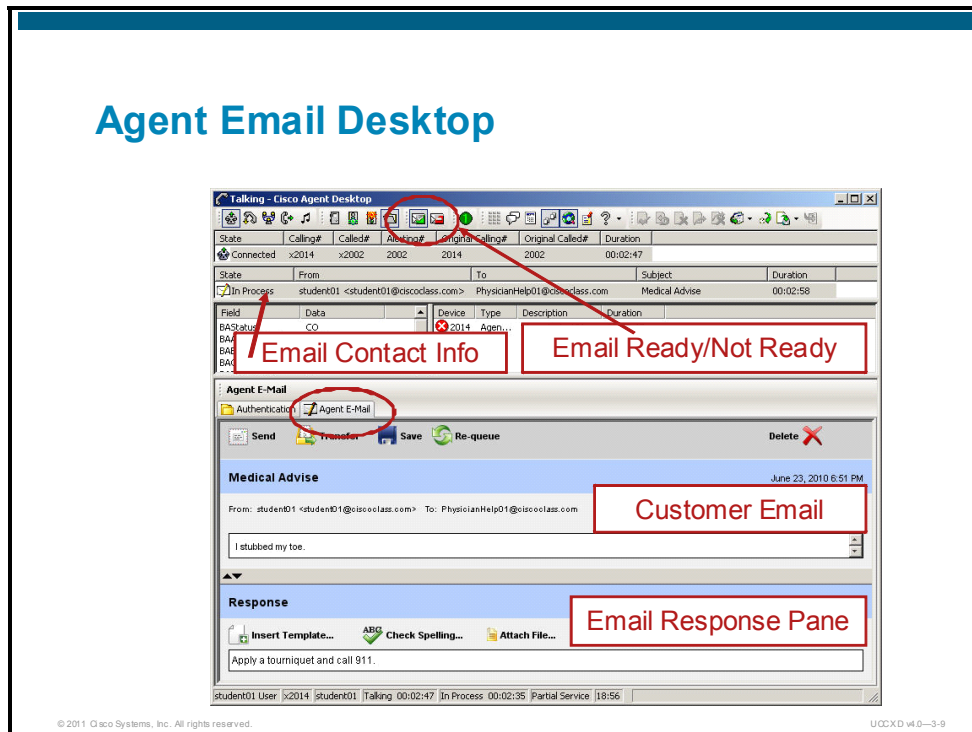
Email Delivery Summary (Cont.)

- The Cisco Desktop Agent Email Service checks Outbox and sends email response to customer.



Agent Email Desktop

This subtopic describes the Agent Email interface.



Customers can send email to email addresses assigned to specific customer service queues. The CSQs funnel the emails of customers to agents who service those CSQs.

Agents put themselves in the Email Ready state to receive customer email. Going into the Email Ready state signals Cisco Agent Desktop to deliver the configured number of customer emails to the agent desktop. Depending on how it is configured, an agent can work on up to five customer emails at a time. The agent can also take the following actions:

- Download and view attachments if they are present.
- Requeue the email if the agent wants it to be handled by another agent in the same CSQ.
- Transfer the email to a different, more appropriate CSQ.
- Save the email as a draft so it can be worked on at a later time.
- Delete the email, which can optionally transfer the email to a specific email address where supervisors can evaluate it for true deletion or for requeuing if it needs to be handled.
- Send a response to the customer. The response can include boilerplate text inserted from templates and attached files of any format.

During the response phase, an agent can perform these actions:

- Use a template
- Check spelling
- Attach files

The system can also be configured to send an automated response to every customer email, set retention periods for keeping email in the email store, and other settings.

Summary of Agent Email Integration

This figure summarizes the requirements for setting up Agent Email.

Summary of Agent Email Integration

- In Cisco Unified CCX Administration, create email CSQs. You can use resource group or skills-based routing.
- Install Microsoft Exchange in an Active Directory domain. Cisco Unified CCX does not and should not be a domain member.
- Create a domain user account with email for Cisco Unified CCX to use for email retrieval.
- For each address the customer will send an email to, create a distribution list and make the Cisco Unified CCX user account a member.
- Complete setup in the Cisco Desktop Administrator.

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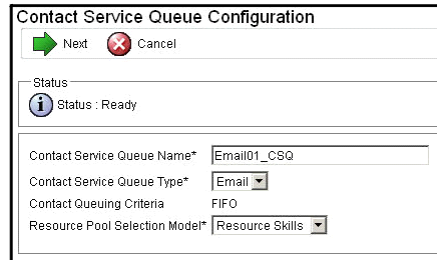
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Creating Email CSQs

This topic describes how to create an email CSQ.

Create an Email CSQ

- Enter CSQ name.
- Choose **Resource Groups** or **Resource Skills**.



The image shows a 'Contact Service Queue Configuration' dialog box. At the top, there are 'Next' and 'Cancel' buttons. Below them is a 'Status' section with an information icon and the text 'Status : Ready'. The main configuration area contains four fields: 'Contact Service Queue Name*' with the value 'Email01_CSQ', 'Contact Service Queue Type*' with a dropdown menu showing 'Email', 'Contact Queuing Criteria' with the value 'FIFO', and 'Resource Pool Selection Model*' with a dropdown menu showing 'Resource Skills'.

To create an email CSQ:

- Navigate to **Subsystems > RmCm > Contact Service Queues**. Add a new CSQ.
- Enter a CSQ name.
- For Contact Service Queue Type, choose **Email**.
- For Resource Pool Selection Model, choose **Resource Groups** or **Resource Skills**.
- Click Next.

Create an Email CSQ (Cont.)

- Choose the resource group or skills required.
- Agent selection criteria is longest available.

Skills	Minimum Competence	Delete
PhysicianAssistant01	5	

- Choose the resource group or skills required for the CSQ (in this case, the appropriate skills and associated competency ratings).
- Click **Add**.

Routing Rules:

- Cisco Unified CCX only supports Longest Available agent selection criteria for email CSQs.
- Skill competency is used to determine those agents available to receive an email. However, skill competency is not considered for *how* agents are chosen (such as least or most skilled).
- Emails are routed using a first-in-first-out (FIFO) methodology. The oldest email is always delivered first.

Defining Accounts in Microsoft Exchange

This topic describes those accounts required in Microsoft Exchange for Cisco Unified CCX.

Cisco Unified CCX User Account

- Use the Active Directory Users and Computers utility to create an account for Cisco Unified CCX.
- This account will be used by Cisco Unified CCX to get emails from the email server.

The screenshot shows the 'UCCX Email Properties' dialog box. It has a tabbed interface with 'General' selected. The 'General' tab contains fields for 'First name' (UCCX), 'Initials' (empty), 'Last name' (Email), 'Display name' (UCCX Email), 'Description' (empty), 'Office' (empty), 'Telephone number' (empty), 'E-mail' (uccxemail@ciscoclass.com), and 'Web page' (empty). There are 'Other...' buttons next to the telephone and web page fields. At the bottom are 'OK', 'Cancel', 'Apply', and 'Help' buttons.

For Agent Email to operate, only one domain user account needs to be created. This account will be used by Cisco Unified CCX to retrieve emails for the contact center.

Contact Center Email Addresses

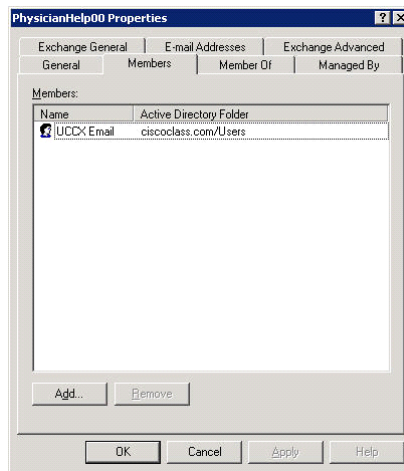
- Use the Active Directory Users and Computers utility to create a Group account.
- Set these accounts as Distribution accounts.

The screenshot shows the 'PhysicianHelp00 Properties' dialog box. It has a tabbed interface with 'Exchange General' selected. The 'Exchange General' tab contains fields for 'Group name (pre-Windows 2000)' (PhysicianHelp00), 'Description' (empty), and 'E-mail' (PhysicianHelp00@ciscoclass.com). Below these are two sections: 'Group scope' with radio buttons for 'Domain local' (selected), 'Global', and 'Universal'; and 'Group type' with radio buttons for 'Security' and 'Distribution' (selected). There is a 'Notes' text area at the bottom. At the bottom are 'OK', 'Cancel', 'Apply', and 'Help' buttons.

To create contact center email addresses, go into Microsoft Exchange and create a distribution list.

Contact Center Email Addresses (Cont.)

- Make Cisco Unified CCX user account a member of distribution account.



Once the distribution list has been designated, add the Cisco Unified CCX user account as a member. Other members can be added here if needed, but it is not required for Agent Email.

Agent Email Settings

There are several settings performed in the Cisco Desktop Administrator. They are under these categories:

- Global Settings
- Contact Service Queue Settings
- Templates

Agent Email—Global Settings

In the Desktop Administrator, choose **Agent Email Settings > Global Settings**. The Global Settings page appears.

Agent Email—Global Settings

- Mail Server Settings
 - IMAP Server
 - SMTP Server

IMAP Server	
Host/IP Address	10.10.1.6
Port	143
User Name	ciscoclass/uccxemail/ui
Password	••••••••

SMTP Server	
Host/IP Address	10.10.1.6
Port	25
User Name	ss/uccxemail/uccxemail
Password	••••••••

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IMAP server:

- **Host/IP Address:** The hostname or IP address of the Internet Message Access Protocol (IMAP) server.
- **Port:** The port used to access the IMAP server.
- **User Name:** Username required to gain access to the IMAP server.

Note If the account you are using to log into IMAP is an NT domain account, the login must be specified as NTDOMAIN/NTACCOUNT/ALIAS. For example, if your email address is Jane.Doe@mydomain.com and your Windows NT login name is jdoe, then your NT domain name is mydomain and your Microsoft Exchange mailbox name is Jane.Doe. You would use the username mydomain/jdoe/Jane.Doe when logging in to the IMAP server.

- **Password:** The password required to gain access to the IMAP server.

Note	Supported authentication mechanisms are Basic Authentication (plainTextLogin) and Secure Password Authentication (SecureLogin) with SSL encryption.

SMTP server:

- **Host/IP Address:** The hostname or IP address of the Simple Mail Transfer Protocol (SMTP) server.
- **Port:** The port used to access the SMTP server.
- **User Name:** Username required to gain access to the SMTP server.
- **Password:** The password required to gain access to the SMTP server.

Note	Supported authentication mechanisms are Open Relay and Basic Authentication over non-encrypted connections. Secure Socket Layer/Transport Layer Security (SSL/TLS) is not supported.

Agent Email—Global Settings (Cont.)

■ Other Settings

Other Settings	
Maximum Number of E-Mails on Agent desktop	2
Retention Period for E-Mails Sent and Handled (Days)	30
Retention Period for E-Mails Pending Delete and System Status (Days)	30
Enable Outbound Attachments	☒
Maximum Outbound Attachments size (MB)	10
Forwarding Address for Deleted E-Mails	

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- **Maximum Number of E-Mails on Agent desktop:** The maximum number of emails an agent can have on the desktop at any one time. Minimum is one; maximum is five. The emails can be in draft or in process.
- **Retention Period for E-Mails Sent and Handled (Days):** The number of days that sent and handled emails are retained in the mail store. After the time period is up, the sent and handled emails are permanently deleted from the mail store.
- **Retention Period for E-Mails Pending Delete and System Status (Days):** The number of days that pending delete and system status emails are retained in the mail store. After the time period is up, the emails are permanently deleted from the mail store.
- **Enable Outbound Attachments:** Select this check box to allow agents to attach files to outgoing emails. The files can be of any format allowed by the mail server.
- **Maximum Outbound Attachment Size (MB):** The maximum size of a file, in MB, that agents are allowed to attach to outgoing emails. The default value is 10 MB, and the maximum allowed size is 50 MB.

Note This value must not exceed the maximum outbound attachment size limit set in the Microsoft Exchange Server, if that is less than 50 MB.

- **Forwarding Address for Deleted E-Mails (optional):** An external email address to which all agent-deleted emails are sent. An administrator or supervisor can then review the deleted emails using a third-party email client and determine if they should be requeued or permanently deleted.

Note With regard to inbound email attachments, you may experience degraded efficiency when downloading and viewing attachments greater than 1 MB in size. See procedures in the *Cisco Agent Desktop Installation Guide* for increasing the java applet heap size.

Agent Email—Contact Service Queue Settings

Use the Contact Service Queue Settings page to configure how email that is sent to specific CSQs is handled.

Agent Email—Contact Service Queue Settings

- Provide email response settings.
- Map email addresses to CSQ.

Settings: Agent E-Mail Settings > Contact Service Queue Settings

Search For: CSQ Name Begins With Find Clear Filter + -

Contact Service Queue List

CSQ Name
Email00_CSQ
Medics - Email

1 of 1 Results Per Page 10

Settings

Send automatic response ☐

Response template URI
Example: (http://www.myserver.com/mytemplate.txt, or file:///x:/templates/mytemplate.txt, or file:///fileServer/share/templates/mytemplate.txt)

Send responses using E-Mail address

BCC all responses to E-Mail address

E-Mail addresses that map to this CSQ

[Delete](#) [Add Another](#)

Save

Return to Contact Service Queue List

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Settings

- **Send Automatic Response:** Select this check box if you want to send an automated response to all who send an email to this CSQ. Note that when sending a single email to multiple addresses that are mapped to multiple email CSQs, only one of the CSQs will get the email; therefore, only the single auto response will be sent if configured for that CSQ.
- **Response Template URI:** The Uniform Resource Indicator (URI) of the automated response. This field is enabled only if you select Send Automatic Response. URIs should follow either of these formats:
 - http://www.myserver.com/mytemplate.txt
 - file:///x:/mytemplate.txt

Note File URIs must be accessible from the Cisco Agent Desktop servers and are limited to a maximum of 64 characters.

- **Send responses using E-Mail address:** The email address from which both agent and automated responses are sent.
- **BCC all responses to E-Mail address:** The blind carbon copy (BCC) email address to which all agent responses to customer email are sent.

Note Cisco Agent Desktop will not route email based on an address in the BCC field. The CSQ email address must be in the TO field in order for email to be routed correctly.

- **E-Mail addresses that map to this CSQ:** The one or more email addresses that map to the CSQ. Any email sent to these addresses is routed to agents assigned to the CSQ. These email addresses are the addresses of distribution groups set up in Active Directory, each of which contains only one member—the email address set up as the Agent Email user in Active Directory. See the *Cisco CAD Installation Guide* for information on setting up the user and distribution groups.

Agent Email—Templates

Templates are text files that agents can insert into their responses to customer emails. They enable agents to answer common email questions and problems with consistent and accurate answers. You can add up to 50 templates for agents to use.

Agent Email—Add Templates

- Template Name
- Description
- URI

Settings: Agent E-Mail Settings > Templates > Add New

Template Information

Template Name

Description

URI

Example: (http://www.myserver.com/mytemplate.txt, or file:///x:/templates/mytemplate.txt, or file:///fileServer/share/templates/mytemplate.txt)

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To add a template, complete the following fields:

- **Template Name:** The name that identifies the template. Maximum length = 64 characters.
- **Description:** A description of the template. Maximum length = 64 characters.
- The Uniform Resource Indicator (URI) of the template. Maximum length = 64 characters. The URI must be accessible from all agent desktops that use the Agent Email feature. The URI can follow these formats:
 - http://www.myserver.com/mytemplate.txt. This protocol is used for web server files.
 - file:///x:/templates/mytemplates.txt. This protocol is used only when the network share is mapped to the same drive letter on all agent desktops.
 - file:///fileServer/share/templates/mytemplate.txt. This protocol is used when the network share is not mapped to the same drive letter on all agent desktops.

Note URIs using the file:/// or file:/// protocol are not validated. You must ensure that the correct path is entered. URI validation for the http:// protocol is performed.

Summary

This topic summarizes the key points discussed in this lesson.

Summary

- Agent Email enables a Cisco Unified CCX deployment to also route email contacts.
- Agent Email uses email-type CSQs to route emails to agents. Cisco Unified CCX uses one email account to obtain emails from a Microsoft Exchange Server.
- Microsoft Exchange must be set up to use the IMAP and SMTP protocols. Email addresses for customer emails are set up as distribution accounts in Microsoft Exchange.
- An email CSQ is created in the same manner as a voice CSQ but has fewer attributes required.
- Cisco Unified CCX must have an email account recognized on the Exchange server. This account must then be set up as members of distribution lists that are receiving emails from customers.
- Use Cisco Desktop Administrator to set up interface parameters for Microsoft Exchange.

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Automatic Speech Recognition and Text-to-Speech

Overview

This lesson discusses Automatic Speech Recognition (ASR) and text-to-speech (TTS) deployment, and the use of ASR and TTS in Cisco Unified Contact Center Express (CCX) script applications.

Cisco Unified CCX uses a standards-based Media Resource Control Protocol (MRCP) to exchange information between the Cisco Unified CCX server and speech servers. MRCP-compliant speech servers can be purchased from Nuance and IBM. These speech servers must be purchased directly from the manufacturers, distributors, or partners.

Automatic Speech Recognition

ASR allows users to speak words, phrases, or utterances so that the user does not have to press keys on a touch-tone telephone to move through a menu option. With ASR, callers are encouraged to follow a logical structure flow that prompts the caller to speak responses instead of pressing their telephone keys.

Speech recognition dramatically reduces on-hold time and eliminates touch-tone menus. It also makes delivering 24/7 services more cost effective and ensures that callers receive consistent, dependable, and friendly assistance. Self-service information is available from any phone by using the most natural form of communication—speech.

Text-to-Speech

TTS is used to convert plain text into a spoken phrase that can be spoken to a caller.

As another example, a customer may dial into a predesignated phone number, access a voice portal, and listen to the latest weather report, stock quotes, or simply speak a command for retrieving email. TTS would then convert the email text-to-speech and play it for the user on the phone.

A Cisco Unified CCX application properly designed and deployed can offer a caller a satisfying information retrieval experience.

Objectives

Upon completing this lesson, you will be able to add functionality to a Cisco Unified CCX script application to acquire information from a caller in the form of spoken phrases using ASR and to deliver information to the caller in the form of spoken text using TTS. This ability includes being able to meet these objectives:

- Define ASR and TTS
- List supported speech application vendors
- Summarize preinstallation requirements
- Describe integration to MRCP-compliant ASR and TTS servers
- Define and describe grammars
- Describe ASR-specific steps used in the script editor
- Describe name grammar generation
- Describe how to perform a name grammar generation
- Contrast the differences in how media steps operate in the ASR mode
- Define spoken names and describe how to upload them using the SNU.aef script
- Describe how to implement TTS in a script

Defining ASR and TTS

This topic describes some common terminology for speech-enabled applications.

Terminology

The speech terminology is described in this figure.

Terminology

- **Automatic Speech Recognition (ASR):** A software application that recognizes the spoken words or phrases of a caller and returns a token or text tag to an application. The application logic can then react to the result.
- **Text-to-speech (TTS):** A software application that accepts text and converts it to speech so it may be spoken to a caller. Used for dynamic or extensive information.
- **Media Resource Control Protocol (MRCP):** Standard network control protocol for ASR and TTS.

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Automatic Speech Recognition

ASR applications allow callers to choose menu options or to provide information by conducting a spoken dialog with the system.

ASR provides groups of special technologies that allow callers to speak words, phrases, or utterances that are used to control applications. Speech recognition is used to replace touch-tone input, make for more intuitive menu structures, and add a level of simplicity and security to some systems. Speech recognition uses the spoken word as input that has an effect on the logic flow and execution of the program in question.

Text-to-Speech

TTS applications convert plain text (UNICODE) into speech, which can be played to a caller.

TTS delivers text-based, frequently changing information over the telephone with a natural-sounding voice. TTS also reduces the need to prerecord information needed in applications, reducing the overall costs of voice-driven application development. Examples of applications are directory assistance, account updates, order management, driving directions, product information, news feeds, stock quotes, email reading, and other dynamic content.

Media Resource Control Protocol

MRCP is a standard network protocol for control of ASR and TTS servers in distributed environments. The protocol was originally conceived in May 2001 with a collaborative effort between ScanSoft, Cisco, and Nuance.

ASR and TTS services can be deployed in a variety of configurations ranging from a single CPU system connected to a PBX, to a highly distributed architecture where application interpreters, media servers, and speech systems are distributed across a VoIP infrastructure. The distributed model has created a need for a common protocol to allow multiple vendor solutions to be more easily integrated.

MRCP is designed for network-based solutions where ASR and/or TTS servers are configured to work together with VoiceXML interpreters, media gateways, and application servers using a VoIP connection. MRCP uses Real-Time Transport Protocol (RTP) as the transport mechanism for audio information captured from callers as well as audio played to callers from either recordings or conversion of TTS. Real Time Streaming Protocol (RTSP) is used as the foundation of the control between the media gateway and speech recognition and TTS servers. Additional control has been defined in addition to standard RTSP to handle barge-in events for ASR, manage rate and volume of TTS output, and support various speech recognition and TTS management issues.

Currently, MRCP-based speech products are manufactured by Nuance, which provides and distributes Nuance and ScanSoft legacy products.

MRCP Speech Vendors

MRCP vendors are Nuance and IBM.

MRCP Speech Vendors

- All Nuance and ScanSoft legacy products are provided by Nuance.
- Cisco does not resell ASR and TTS technology. You must purchase these products from the vendor of your choice.
- ScanSoft/Nuance:
 - SpeechWorks Media Server 3.1.6 or 3.1.9
 - Open Speech Recognition Server 3.0.4 or 3.0.9
 - RealSpeak 4.0.6 or 4.0.10
- Nuance 8.5:
 - MRCP Server 1.0 SP 9 or 1.0 SP 10 or 1-0-0-SP12
 - Speech Recognition 8.5, SP050513 or 8.5, and SP050930
 - Vocalizer 4.0.4 or 4.0.5 or 4.0.6

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Nuance Corporation and ScanSoft merged and are now Nuance. Legacy products for ScanSoft and Nuance continue to be supported by Cisco. Consult your *Cisco Unified CCX Software and Hardware Compatibility Guide* for details regarding the specific software version.

MRCP Speech Vendors (Cont.)

- Nuance 9.0:
 - Nuance Speech Server 5.0.2
 - Nuance Recognizer 9.0.3
 - RealSpeak 4.5.0
- IBM WebSphere Voice Server:
 - MRCP server: MRCP Server 1.0
 - ASR: WebSphere Voice Server V5.1.3
 - TTS: CTTS V5.1.3
 - WVS Language Support 5.1.3

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Provisioning ASR and TTS

Overview

This is a brief overview of the provisioning tasks and rules.

Overview

Tasks

- Order MRCP server software directly from Nuance or IBM.
- Seek vendor help for sizing, ports, and licenses.
- Provision, install, and configure vendor software.

Rules

- You can have multiple ASR and TTS servers that can be configured in the appropriate subsystem.
- ASR and TTS servers are not to be installed on any servers running Cisco services.
- Do not mix vendors on same speech server.

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Cisco Unified CCX allows integration with MRCP-compliant ASR and TTS servers. Nuance, ScanSoft, and IBM are the only ASR and TTS providers tested and supported. ASR and TTS software must be purchased from one of these vendors. These vendors can provide design and server sizing requirements for their software. Cisco no longer resells Nuance ASR and TTS as a Cisco Unified CCX option.

Calls requiring ASR require the Cisco Unified CCX Engine to pass the media stream from the CTI port to the ASR Server. This activity affects system performance and system sizing. This impact is reflected in the sizing and configuration tools.

When ASR is used, the ASR resource is allocated at the time of the first step that uses ASR. The ASR resource is then allocated for the duration of the call. When using ASR, you must calculate the required number of ASR resources (ports) similar to the way you calculate any IVR port requirement. You will need the average time the ASR port is used (similar to average call treatment time) and the number of calls using ASR in the busy hour. You can then input this data into any Erlang-B traffic calculator or other tool to compute the number of ASR resources required. In environments where you have long queue times, it might be economical to transfer the call to another CTI Route Point and pass call data to the second application (via session data steps) in order to allow the ASR resource to be released.

For TTS, each “Generate TTS Prompt” allocates and releases a TTS resource, and the TTS resource is typically only allocated for a couple of seconds and then released (this might vary depending on the application). To determine the number of TTS resources, use the same methodology described earlier for ASR resources.

Provisioning the ASR Subsystem

This topic describes the provisioning of the ASR subsystem.

MRCP ASR Providers

The first step is to identify the ASR provider.

MRCP ASR Providers

- Add MRCP ASR provider
- Provider Name
- Number of Provider Licenses
- Grammar Variant:
 - “OSR 3.1.x” for ScanSoft servers
 - “Nuance” for Nuance servers
 - “2003 SISR” for IBM servers

MRCP ASR Provider Configuration

Add New Refresh All

Status

1 records found

Ports List

Provider	Licenses
Scansoft	4

Add New Refresh All

MRCP ASR Provider Configuration

Add Cancel

Status

Status : Ready

Provider Name* Nuance Provider

Number Of Provider Licenses* 10

Grammar Variant* Nuance

Add Cancel

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Navigate to **Subsystems > MRCP ASR > MRCP ASR Providers** to add one or more provider definitions.

- Provider Name: Provide a name for this provider.
- Number of Provider Licenses: Enter the number of ASR licenses that Cisco Unified CCX will be allowed to use.

Note The licenses referenced here are ASR licenses, not Cisco Unified CCX licenses. Cisco Unified CCX will use as many licenses (or connections) as you allow. Generally, you will enter the number of licensed ASR ports you purchased from your ASR provider. However, if the ASR provider is providing ASR services to more than one application (in a server farm), you may choose to allow Cisco Unified CCX access to fewer licenses.

- Grammar Variant: Choose the appropriate grammar type needed for this provider.

MRCP ASR Servers

The next step is to identify the ASR servers, ports, and languages.

MRCP ASR Servers

- Add MRCP ASR server.
- Server Name is IP address or hostname.
- Port Number:
 - 4900 = ScanSoft
 - 554 = Nuance
 - 554 = IBM
- Locales to select languages.

The screenshot displays the 'MRCP ASR Server Configuration' interface. It features a 'Ports List' table with one entry: '10.10.1.5' under the 'Computer Name' column. Below this, a detailed configuration form is shown for the selected server. The form includes fields for 'Server Name*' (10.10.1.5), 'Provider Name*' (ScanSoft), 'Port Number*' (4900), and 'Locales*' (aa [Afar]). There is an 'Add Language' button next to the locales field. At the bottom, the 'Enabled Languages*' section shows 'English (United States)' checked. The interface also includes 'Add New', 'Add', and 'Cancel' buttons, and a status indicator showing 'Status : Ready'.

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Once an ASR provider has been defined, you need to define one or more servers for Cisco Unified CCX to connect to. Navigate to **Subsystems > MRCP ASR > MRCP ASR Servers** to add a new MRCP ASR Server.

- **Server Name:** Provide the IP address or hostname of the ASR server.
- **Port Number:** Enter the appropriate integration port number.
- **Provider Name:** Choose the appropriate provider for this server.
- **Locales:** Click Add Language to choose one or more languages.
- Check the check box to enable the language.

Note Deploying ASR servers over a WAN is not supported for Cisco Unified CCX. ASR servers must be deployed and associated from the Cisco Unified CCX local LAN.

MRCP ASR Dialog Groups

The final step for ASR is to configure ASR dialog groups.

MRCP ASR Dialog Groups

- Group ID should be unique.
- Maximum Number of Sessions.
- Choose Provider.
- Enabled Languages.
- MRCP ASR subsystem should go into service after stop and start of engine.

MRCP ASR Dialog Group

Add

Cancel

Status

Status : Ready

Group ID*

1

Description*

MRCP ASR Group #1

Number Of Provider Licenses

4

Number Of Licensed IVR Ports

68

Maximum Number Of sessions*

10

Provider Name

Scansoft

Enabled Languages*

☒ English (United States)

MRCP ASR Dialog Group Configuration

Add New

Status

1 records found

Ports List

Group ID ▾	Description ▾
4009	MRCP ASR Group #4009

Add New

An ASR dialog group is required for ASR operations to occur. The ASR dialog group enables Cisco Unified CCX to use ASR if resources are available. The dialog group is set in the trigger definition. Navigate to **Subsystems > MRCP ASR > MRCP ASR Dialog Groups** to add an MRCP ASR dialog group.

- Group ID: Enter a unique ID.
- Description: Enter a description or use the default.
- Number of Provider Licenses: Display only.
- Number of Licensed IVR Ports: Display only.
- Maximum Number of Sessions: Enter the number of connections this dialog group will be allowed to use.
- Provider Name: Indicate which provider this dialog group will use.
- Enabled Languages: Use the check boxes to indicate which languages this dialog group will use.

Provisioning TTS Subsystems

This topic describes the provisioning of the TTS subsystems.

MRCP TTS Providers

The first step is to identify the TTS provider.

MRCP TTS Providers

- Add new TTS provider.
- Choose provider:
 - Nuance Vocalizer 4.0.x
 - RealSpeak 4.0.x
 - IBM WebSphere Voice Server
 - Shown on drop-down menu for TTS steps

The image shows two screenshots of the MRCP TTS Provider Configuration interface. The top screenshot displays a list of providers under the heading 'MRCP TTS Provider Configuration'. It includes buttons for 'Add MRCP TTS Provider' and 'Refresh All', a status section indicating '1 records found', and a 'Ports List' table with one entry: 'Scansoft Realspeak 4.0'. The bottom screenshot shows a detailed configuration window for a provider, with a 'Provider Name' dropdown menu listing 'IBM WebSphere Voice Serve', 'IBM WebSphere Voice Server V3', 'Nuance Vocalizer 4.0', and 'Scansoft Realspeak 4.0'. It also includes 'Add' and 'Cancel' buttons.

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Navigate to **Subsystems > MRCP TTS > MRCP TTS Providers** to add one or more provider definitions.

- Provider Name: Use the drop-down menu to choose your provider.

MRCP TTS Servers

The next step is to identify the TTS servers, ports, and languages.

MRCP TTS Servers

- Add TTS server.
- Server Name is IP address or hostname.
- Port Number:
 - 4900 = ScanSoft
 - 554 = Nuance, IBM
- Locales to select languages.
- Select genders for each language.

The screenshot displays the 'MRCP TTS Server Configuration' window. It features a 'Ports List' table with columns for 'Computer Name' and 'IP Address'. Below this is an 'Add New' button. The main configuration form includes fields for 'Server Name*' (10.10.1.5), 'Provider Name*' (Scansoft Realspeak 4.0), 'Port Number*' (4900), and 'Locales*' (aa [Afar]). There is an 'Add Language' button next to the locales field. The 'Enabled Languages*' section has checkboxes for 'English (United States)', 'Male', 'Female', and 'Neutral'. At the bottom are 'Add' and 'Cancel' buttons.

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Once a TTS provider has been defined, you need to define one or more servers for Cisco Unified CCX to connect to. Navigate to **Subsystems > MRCP TTS > MRCP TTS Servers** to add the MRCP TTS server.

- **Server Name:** Provide the IP address or hostname of the TTS server.
- **Port Number:** Enter the appropriate integration port number.
- **Provider Name:** Choose the appropriate provider for this server.
- **Locales:** Click Add Language to choose one or more languages.
- Check the check boxes to enable the language and choose a preferred gender.

Note	Part of the installation process for TTS is to install one or more “language packages.” These language packages are categorized by language and gender. It is possible to have more than one language and more than one gender per language.
Note	Some cultures respond more positively to one gender or the other. For other cultures, the gender is relatively unimportant. Use the “Neutral” gender to allow the system to choose gender based on amount of resources available at the time.
Note	Deploying TTS servers over a WAN is not supported for Cisco Unified CCX. TTS servers must be deployed and associated from the Cisco Unified CCX local LAN.

MRCP TTS Default Genders

The next step is to identify the TTS default genders.

MRCP TTS Default Genders

- Default gender for each language
- Neutral could be either gender
- Shows TTS in service after refresh

The screenshot shows a web interface titled "MRCP TTS Default Gender Configuration". At the top, there are "Update" and "Clear" buttons. Below them is a "Status" section showing "Status: Ready" with an information icon. The "Provider" is listed as "Scansoft Realspeak 4.0". A "Locales List" table is displayed with columns for "Locale", "Male", "Female", and "Neutral". The table contains one row for "en_US" with radio buttons for each gender option.

Locale	Male	Female	Neutral
en_US	☐	☒	☐

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Navigate to **Subsystems > MRCP TTS > MRCP TTS Default Genders**, and set the default genders for each provider and language. These settings may be overridden in the script.

Grammars

This topic describes the grammars used in an ASR deployment.

Overview

Grammars are a possible set of words recognized by the ASR server.

Grammars

- A grammar is a text value used to specify to the ASR application a word or combination of words to recognize. It also contains a tag for the ASR application that is used to indicate to Cisco Unified CCX what word or words were recognized as spoken by the caller.
- A grammar must be supplied for each ASR operation.
- Cisco Unified CCX scripts can:
 - Create grammars quickly, during run time
 - or
 - Use predefined grammar files
- There are two types of grammar formats:
 - Speech Recognition Grammar Specification (SRGS)
 - Only SRGS is sent to MRCP speech servers.
 - Grammar Specification Language (GSL); output of the Create Menu Grammar step.
- Use Grammar Management for predefined grammar files.

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The Cisco Unified CCX system uses specific grammars when recognizing and responding to caller responses to prompts. A grammar is a specific set of all possible spoken phrases and/or dual tone multifrequency (DTMF) digits recognized by Cisco Unified CCX applications and acted upon during run time.

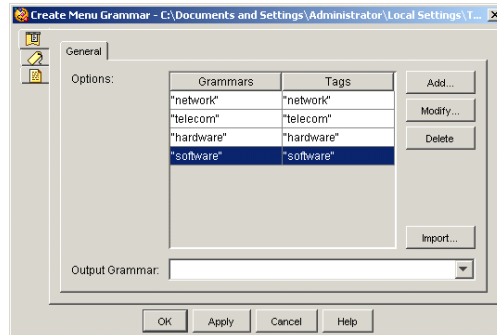
Several system-level grammar files are loaded during Cisco Unified CCX installation. However, any files you create need to be available to the Cisco Unified CCX Engine before a Cisco Unified CCX application can use them. Do this through the Cisco Unified CCX cluster repository datastore, where the grammar files are stored.

Create Menu Grammar

This subtopic describes the Create Menu Grammar step.

Create Menu Grammar Step

- Used to create a grammar that will serve to specify a set of choices for a Simple Recognition step.
- Returns a Grammar Object (data type variable).
- Tags are case sensitive references.



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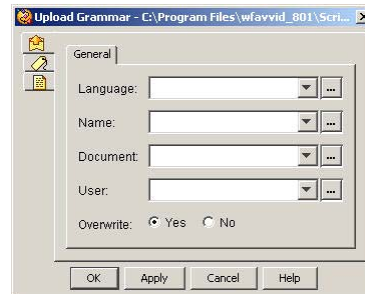
The Create Menu Grammar step creates a grammar during script run time. This GSL grammar is converted to an SRGS before it is sent to the ASR Speech Server.

Upload Grammar

This subtopic describes the Upload Grammar step.

Upload Grammar

- Used to upload a user grammar to the Repository.
- Grammar is uploaded as a document.
- Step is rarely used.
- User grammars are typically uploaded via Application Administration Grammar Management.



The Upload Grammar step allows the grammar to be uploaded into the repository during run time. This is a rarely used step because grammars are typically uploaded before run time via the Cisco Unified CCX Application Administration Grammar Management page.

Name Grammar Generation

This subtopic describes Name Grammar generation.

Name Grammar Generation

- For any ASR-enabled step to operate, there must be a grammar present. Some steps, such as the Get Digit String step, have the grammar already written into the step; therefore, there are no actions required by the scripter to provide one. Other steps require one to be provided.
- In order for the AutoAttendant in the ASR mode to understand what a caller is saying, a grammar must be supplied for all Cisco Unified Communications Manager users.
- The Cisco Unified CCX system comes fully equipped to automatically generate a grammar of all users.

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All ASR operations need a grammar to be supplied. This includes the AutoAttendant application.

Name Grammar Generation (Cont.)

- In User Management, use Name Grammar Generation to generate grammar for AutoAttendant.
- Configure periodic generation.
- Generate Name Grammar now.

The screenshot shows the 'Name Grammar Generator Configuration' window. At the top, there are three buttons: 'Update' (with a refresh icon), 'Clear' (with a red X icon), and 'Generate Name Grammar Now' (with a green arrow icon). Below these is a 'Status' section showing an information icon and the word 'Ready'. The main configuration area includes: 'Frequency*' set to 'Never'; 'Run task on (hrs of day)*' set to '12:00 AM' with a time zone of 'Central Standard Time'; 'Run task on (day of week)*' set to 'Monday'; 'Last Completed on' with the text 'Name Grammar has not been generated since installation.'; 'Last Completion Result' which is empty; 'Grammar Variant*' with three checked options: 'OSR 3.1.x', '2003 SISR', and 'Nuance'; and 'Current Status' set to 'IDLE'.

Navigate to **Tools > User Management > Name Grammar Generation** to manage name grammar generation for the AutoAttendant application. On this configuration page, you can set up a periodic autogeneration of the name grammar, and you can choose to perform an immediate name grammar generation. When a grammar is generated, the Cisco Unified CCX system will create the grammar file and automatically transfer the file to your ASR servers. No other action needs to be taken by you.

Script Editor Steps

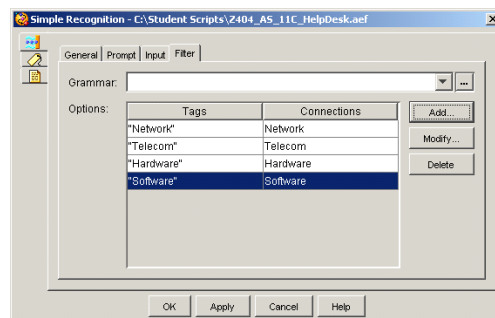
This topic describes the editor steps used in the ASR mode.

Simple Recognition

This subtopic describes the Simple Recognition step.

Simple Recognition

- ASR answer to the spoken menu.
- Requires a grammar input to define the words for options.
- Tags are case-sensitive references and must match the tags defined in the grammar.
- Grammar input is usually from a Create Menu Grammar step, but can also be from a predefined grammar.



The Simple Recognition step can only be used in the ASR mode. It operates like a spoken menu except that you prompt the caller to say the name of the output branch (*as specified in the grammar*) they want. The name of the output branch should not be confused with the “connection” label noted in this step.

The “tags” specified in the Simple Recognition step are case sensitive and *must* match the tag specified in the grammar. It is best to label your connections with the same value you specify in the grammar to reduce confusion.

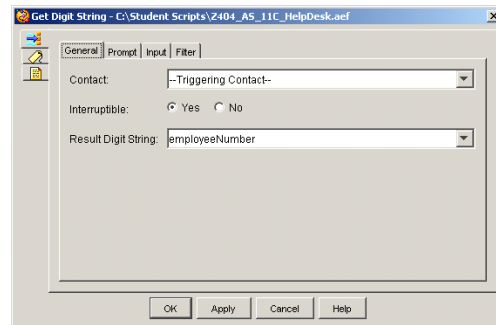
This step often follows and uses a grammar generated by a Create Menu Grammar step, but can also use a predefined grammar from the repository datastore.

Get Digit String

This subtopic describes the Get Digit String step.

Get Digit String (ASR Mode)

- Recognizes DTMF or speech.
- Will accept all spoken input but will return no more than the input length specified.
- Recognizes the spoken numeral, not complex numbers.
- Interdigit timeout not used.
- Use implicit or explicit confirmation steps to validate input from caller; they are ASR capable too.



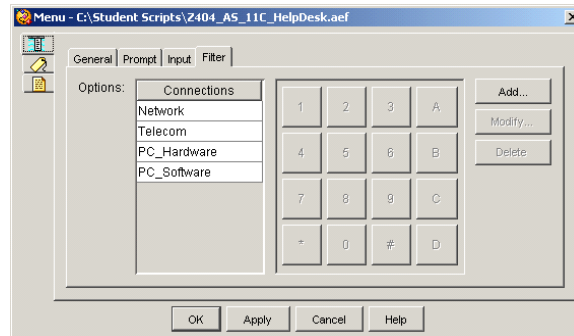
The Get Digit String step can be used in an ASR mode. With minor differences, it acts just like any other Get Digit String step. There is no need to supply a grammar, because the grammar is already defined and supplied by the system.

Menu

This subtopic describes the Menu step.

Menu (ASR Mode)

- Easiest step to incorporate ASR. No changes in properties or function.
- Recognizes DTMF or speech input.



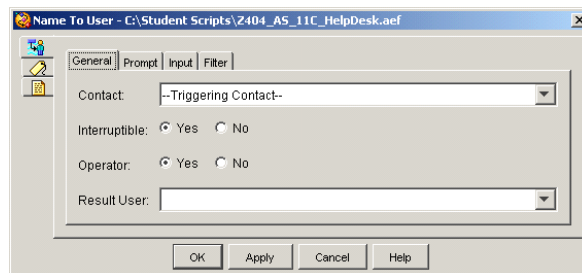
In the ASR mode, the Menu step operates exactly the same as in the non-ASR mode except that the caller can press or say 1, 2, and so on. There is no need to supply a grammar, because the grammar is already defined and supplied by the system.

Name to User

This subtopic describes the Name to User step.

Name to User (ASR Mode)

- Will only recognize speech input (with exceptions).
- Returns a user object.
- Caller must say first and last name.
- If Operator is enabled, caller must say “Operator” or press “0.”
- The Cancel Digit (as a digit press) is recognized.



The Name to User step has some notable differences in how it operates in the ASR mode. In the ASR mode, callers *must* say the name of the Cisco Unified Communications Manager user; they cannot use the DTMF keypad. Additionally, they must say the first and then last name (as opposed to last and then first name in DTMF mode).

Ensure that you perform a Name Grammar Generation on a reasonable periodic basis so that new users will be recognized. Also, remember that alternate pronunciations can be designated from the Cisco Unified CCX User web page.

Spoken Names

Spoken Names are recordings of the names of users in their own voice as a voice-mail system uses. If the Name to User step in the AutoAttendant script produces a user object, it will use the spoken name to announce to the caller the username before the transfer. You can access and use the spoken name in your scripts as well. The spoken name can be accessed with the Get User Info step.

Spoken Names

- Incorporated into the AutoAttendant, but not unique to it, is a function called the Spoken Name.
- The Spoken Name is simply a recording maintained by the Cisco Unified CCX system of each Cisco Unified Communications Manager username spoken in the voice of that user.
- It is commonly used in programs like the AutoAttendant to speak back the username to the caller, such as “Transferring to Joe Smith.”
- Spoken Names must be prerecorded by the Cisco Unified Communications Manager users.

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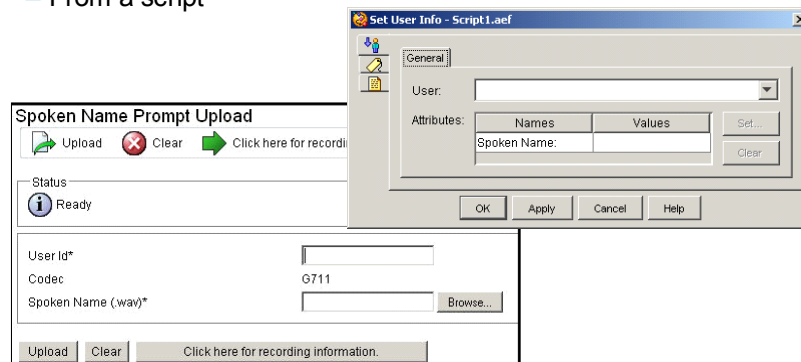
UCCXD v4.0-5.28

Uploading Spoken Names

Spoken Names can be uploaded via the Administration page or from the script.

Uploading Spoken Names

- Just like prompts, grammars, and documents, Spoken Names may be uploaded in two different ways:
 - From User Management in Cisco Unified CCX Administration
 - From a script

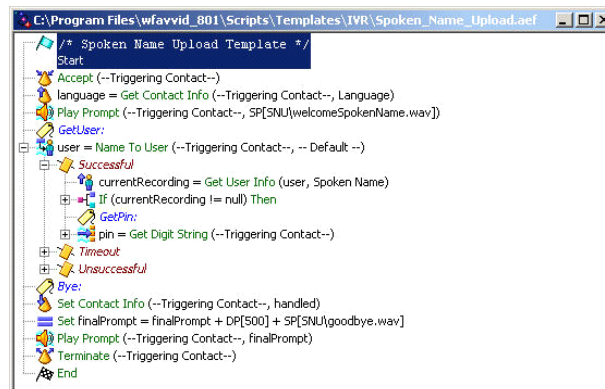


Spoken Name Upload Script

Use the SNU.aef script to generate and upload spoken names. This script is provided by Cisco and can be found on the local hard drive where the Cisco Unified CCX Editor is installed: C:\Program Files\wfavvid_801\Scripts\Templates folders area.

Spoken Name Upload Script

- Use the Spoken Name Upload script (Spoken_Name_Upload.aef or SNU.aef) to generate spoken names.



Text-to-Speech

This topic describes the Cisco Unified CCX Script Editor step used to deploy TTS technology in a script. There is only one step required to implement text-to-speech: the Create TTS Prompt step.

Text-to-speech does not require anything other than an available text-to-speech server to operate. Therefore, text-to-speech can be used for any script at any time (no dialog channels required).

Create TTS Prompt

Use the Create TTS Prompt step to obtain a playable prompt from a text-to-speech server. Once obtained, the prompt can be played just like any other prompt, saved to disk, or uploaded, if desired.

Create TTS Prompt Step

- Creates a TTS prompt using text input.
- The resultant TTS prompt object can be used as any other playable object within the prompt framework:
 - As an individual prompt or as part of a list of prompts to be passed to a Play Prompt step or any IVR step that takes prompt input
 - As an element to compose a larger (i.e., concatenated) prompt through the Create Container Prompt step before being played

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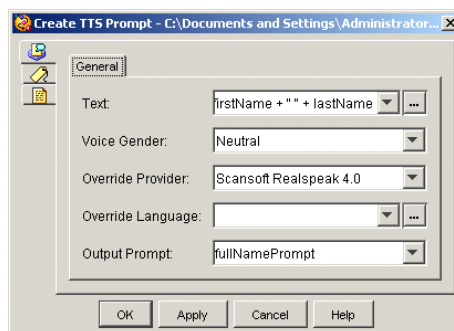
UCCXD v4.0-5.32

Create TTS Prompt Properties

This subtopic describes the Create TTS Prompt Properties.

Create TTS Prompt Properties

- Text:
 - String constant
 - String variable
 - FileDocument variable
 - URLLocument variable
- Voice Gender
- Override Provider (Optional)
- Override Language (Optional)
- Output Prompt:
 - Result of this step must be prompt data type variable.
- Play with any step needing a prompt.



- Text: Provide text as input for prompt generation.
- Voice Gender: Specify the gender used. If the TTS server does not support this gender, the system will fall back to the default or to a supported gender.
- Override Provider: (Optional) Variable or expression indicating a different TTS provider to use where the prompt plays back instead of the provider defined for the contact.
- Override Language: (Optional) Variable or expression indicating a different language to use where the prompt plays back instead of the language defined for the contact.
- Output Prompt: Variable that stores the prompt that results from this step.

It is not necessary to use the Create TTS Prompt Step to create a TTS prompt if the default gender and language values are OK. The Expression Framework allows you to specify a TTS prompt using the “TTS[]” operator. For example:

TTS[Hello and have a great day]

The preceding prompt can be used directly as the value for a prompt variable or in the prompt field of a media step. The TTS[] operator also allows you to override the default provider.

Summary

This topic summarizes the key points discussed in this lesson.

Summary

- ASR is a software application used to determine what a caller says. TTS is another application used to create prompts from text inputs.
- ScanSoft and IBM are ASR- and TTS-supported vendors.
- You must consult and purchase ASR and TTS technology from your chosen vendor.
- Use Cisco Unified CCX Administration to configure ASR and TTS providers and servers.
- Grammars are text definitions supplied to an ASR application so that the ASR application knows what it is supposed to recognize. Tags supplied with the grammars are used by the ASR application to indicate to Cisco Unified CCX what was said.
- The Create Menu Grammar and Simple Recognition steps are ASR-specific steps. Often, the Create Menu Grammar step is used to create a grammar that is used by a Simple Recognition step that follows.

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Summary (Cont.)

- Name Grammar Generation is a process of generating a grammar containing Cisco Unified Communications Manager users. This grammar is a special grammar used for the Name to User step that is used by the AutoAttendant program.
- Use the utility provided in User Management to perform a Name Grammar Generation.
- Media steps, except the Menu step, have some differences in how they operate in the ASR mode.
- Spoken Names are recorded names of Cisco Unified Communications Manager users in their own voices. Use the SNU.aef script to create spoken names for your users.
- Text-to-speech does not need any special resources other than an available TTS server. Use the Create TTS Prompt step to create a playable prompt.

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Module Summary

This topic summarizes the key points discussed in this module.

Module Summary

- Remote Monitoring allows a supervisor to monitor agents in the call center from anywhere. A supervisor dials in and connects to a script and then navigates the script to choose the CSQ or agent to monitor.
- The Outbound Direct Preview Dialer allows agents to participate in inbound and outbound ACD calls.
- Agent Email allows agents to service inbound emails using the Cisco Agent Desktop application. Emails are routed similar to voice calls using an email-type CSQ.
- Cisco Unified CCX can integrate to MRCP-compliant ASR and TTS applications. Enable ASR operation by declaring an ASR dialog group in the trigger. TTS does not require a dialog channel and can be used for any script.

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UCCXD v4.6-6-1

Cisco Unified Contact Center Express Maintenance Tools

Overview

Cisco Unified Contact Center Express (CCX) has several utilities to help you maintain and monitor your system. This module covers some of those activities.

Module Objectives

Upon completing this module, you will be able to perform many of the maintenance activities necessary to keep your system running smoothly. This ability includes being able to meet these objectives:

- Describe Cisco Unified RTMT and how it is implemented in a Cisco Unified CCX environment
- Describe Cisco Unified Analysis Manager and how it is implemented in a Cisco Unified CCX environment
- Describe the Disaster Recovery System and the backup and restore activities for Cisco Unified CCX

Real-Time Monitoring Tool

Overview

Each Cisco product that uses the Cisco Unified Communications Operating System has its own version of the Cisco Unified Real-Time Monitoring Tool (RTMT). This lesson discusses the properties of Cisco Unified RTMT and how to use RTMT for Cisco Unified Contact Center Express (CCX).

Objectives

Upon completing this lesson, you will be able to install and use Cisco Unified RTMT. This ability includes being able to meet these objectives:

- Explore the basic concepts and install Cisco Unified RTMT
- Describe performance monitoring and how to view performance counters
- Describe system alerts and how to set their properties
- Describe trace logs and how to view, schedule, and download them

Cisco Unified RTMT Concepts

This topic describes basic concepts of Cisco Unified RTMT.

What is Cisco Unified RTMT?

Cisco Unified RTMT is an application that connects to Cisco Unified CCX to provide for system and application error monitoring and notification. These activities are available with Cisco Unified RTMT:

- Monitor predefined objects for system health management.
- Generate email alerts for objects that exceed user-defined thresholds.
- Collect and view traces.
- View syslog messages.
- Work with performance monitoring (PerfMon) counters.

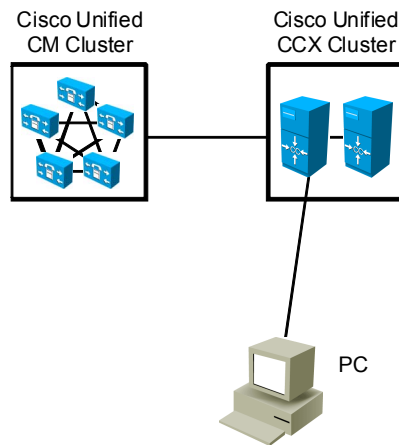
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The Cisco Unified RTMT, which runs as a client side application, uses HTTPS and TCP to monitor system performance. Cisco Unified RTMT can connect directly to devices via HTTPS to troubleshoot system problems.

Cisco Unified RTMT Topology

- Download RTMT from Cisco Unified CCX for installation.
- RTMT connects to Cisco Unified CCX server for monitor information.



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The RTMT client application connects directly to Cisco Unified CCX. When Cisco Unified RTMT is not running as an application on your desktop, tasks such as alarm and performance-monitoring updates continue to take place on the server in the background.

Installing Cisco Unified RTMT

This topic describes installing Cisco Unified RTMT.

Installing Cisco Unified RTMT

- You can install Cisco Unified RTMT on these operating systems:
 - Windows 98
 - Windows XP
 - Windows 2000
 - Windows Vista
 - Linux with KDE or Gnome client, or both
- Windows platforms require at least 128 MB of RAM.

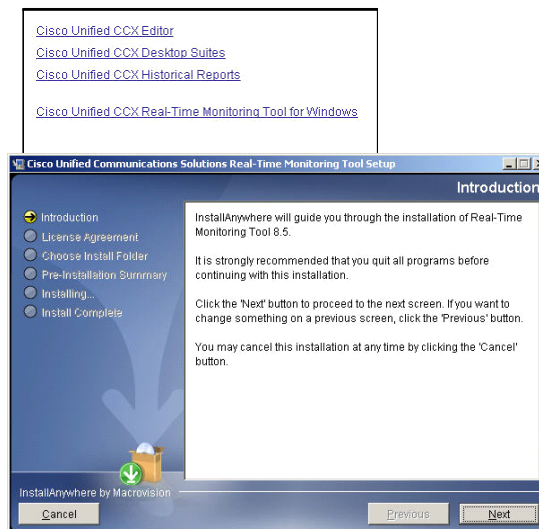
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This figure describes the operating systems on which you can install Cisco Unified RTMT.

Installing Cisco Unified RTMT (Cont.)

- In Cisco Unified CCX Administration, go to **Tools > Plugins**.
- Download or run the Cisco Unified CCX RTMT for Windows.
- To start installation, click **Next**.



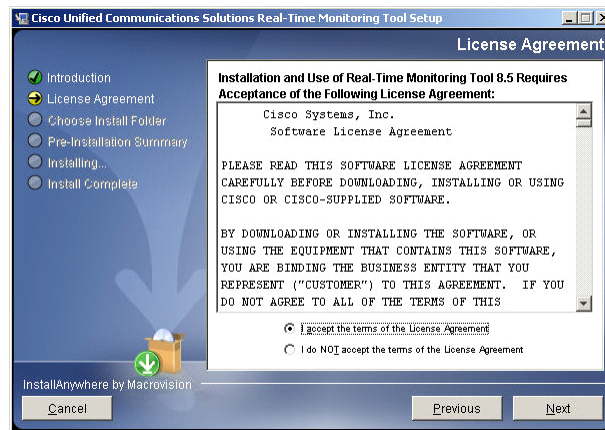
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UCCXD v4.0—6-8

From Cisco Unified CCX Administration, download and run the client side application installer to start the installation process.

Installing Cisco Unified RTMT (Cont.)

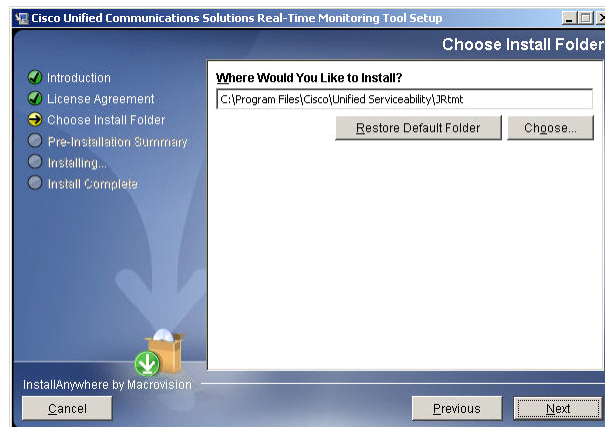
- Accept the License Agreement, and click **Next**.



Accept the license agreement, and click **Next**.

Installing Cisco Unified RTMT (Cont.)

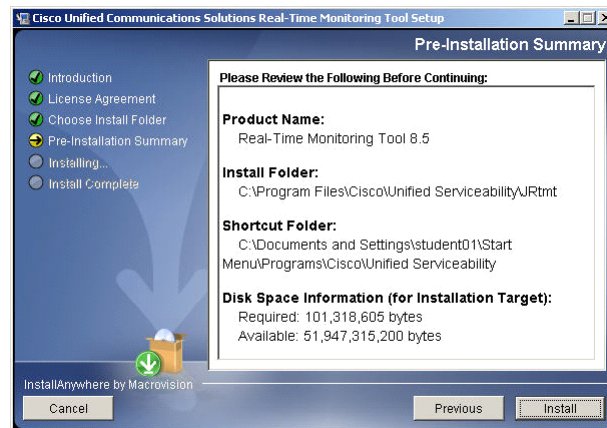
- Use default or choose another installation folder, and click **Next**.



Use the default folder or choose another installation folder, and then click **Next**.

Installing Cisco Unified RTMT (Cont.)

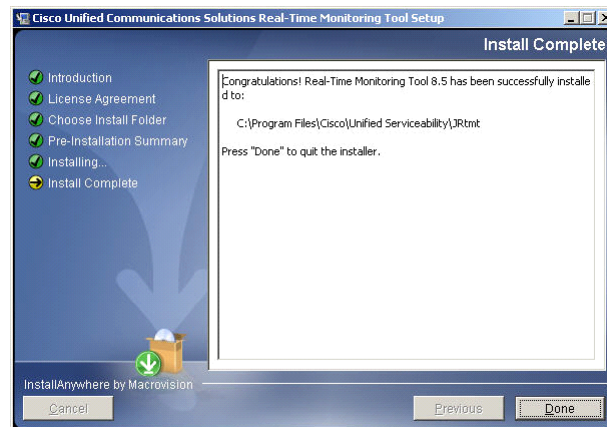
- View Pre-Installation Summary. Click **Install**.



Check the summary for installation choices, and then click **Install**.

Installing Cisco Unified RTMT (Cont.)

- Installation is complete. Click **Done**.

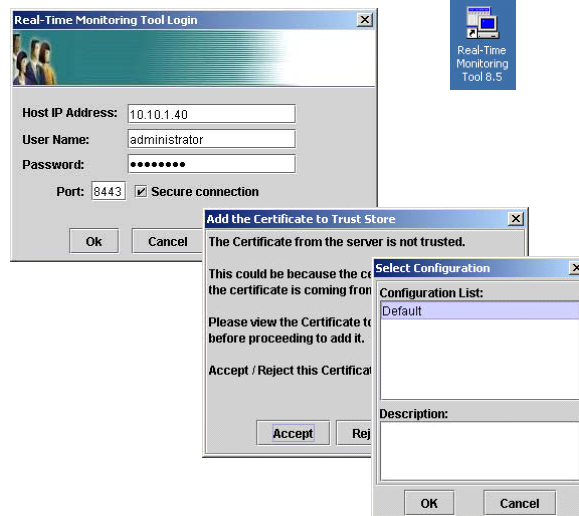


Click **Done** when the installation is completed.

Cisco Unified RTMT Login

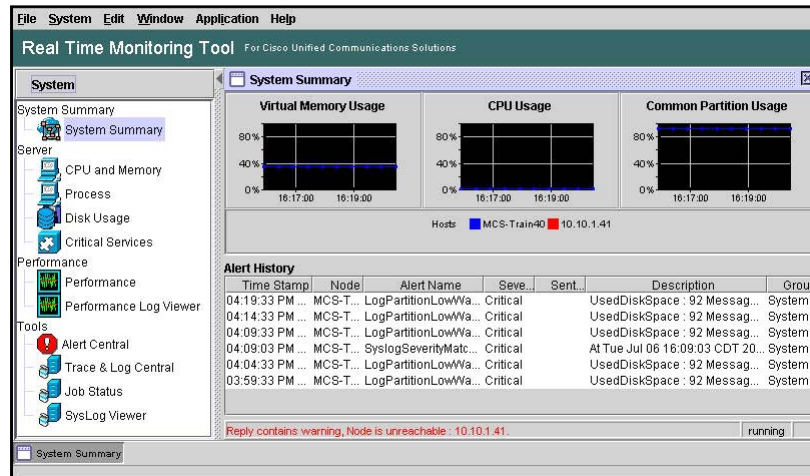
Log into Cisco Unified RTMT:

- Run program.
- Use platform Application User account to log in.
- Accept certificate if required.
- Choose configuration.



Use the icon on the desktop or navigate to **Start > Programs > Cisco > Unified Serviceability > Real-Time Monitoring Tool** to run the application. Accept the certificate and then choose the configuration desired to get started. Once you have logged in, you can access **System > Tools > Trace > Import Certificates** to import the certificate and avoid the certificate acceptance step in the future.

Cisco Unified RTMT Login (Cont.)



This figure shows the default configuration view when opening Cisco Unified RTMT. RTMT includes a default configuration called Default. The first time that you use Cisco Unified RTMT, it uses the Default profile and displays the System Summary page in the Monitor pane.

You can configure Cisco Unified RTMT to display the information that interests you, such as different performance counters for different features, in the monitor pane of Cisco Unified RTMT and save the framework of your configuration in a profile. You can then restore the profile at a later time during the same session or the next time that you log into Cisco Unified RTMT. By creating multiple profiles to display unique information, you can quickly display different information by switching profiles.

Performance Monitoring

Cisco Unified CCX provides performance monitoring counters (called PerfMon counters) for application performance monitoring. The PerfMon counters help expose critical performance values, making it possible to track application performance in real time.

Performance Monitoring Overview

- Cisco Unified CCX provides predefined performance objects and performance tools for creating your own performance monitoring views.
- Predefined performance objects
- Performance tools

The screenshot shows the 'System' summary page in Cisco Unified CCX. It is organized into four main sections: 'System Summary' (containing 'System Summary'), 'Server' (containing 'CPU and Memory', 'Process', 'Disk Usage', and 'Critical Services'), 'Performance' (containing 'Performance' and 'Performance Log Viewer'), and 'Tools' (containing 'Alert Central', 'Trace & Log Central', 'Job Status', and 'SysLog Viewer'). Red arrows from the text on the left point to the 'Performance' and 'Tools' sections.

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The PerfMon counters contain counter-based information, such as the name and index of the counter, the scale, the type, subcounters to set when setting a counter, the current values, and a map containing counter instance data. Each performance counter instance object contains instance-based data, like the instance ID and current values.

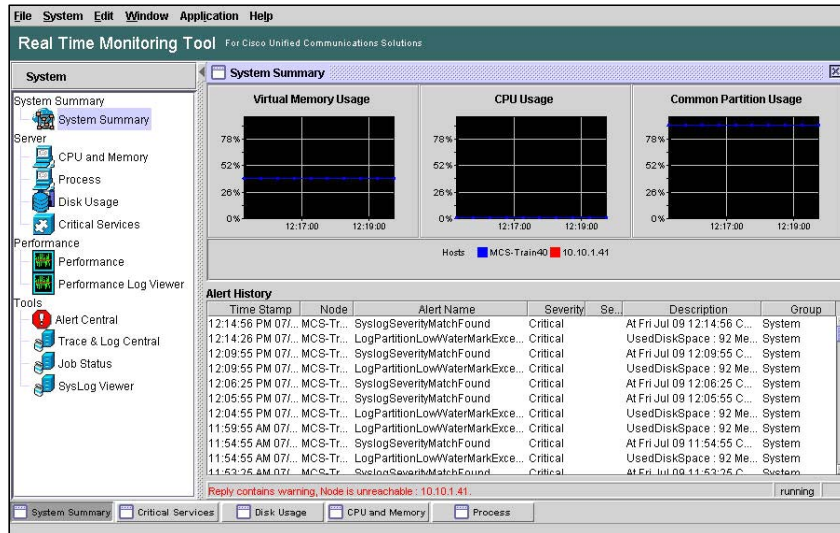
You can monitor the performance of the components of the system and the components for the application on the system by choosing the counters for any object by using Cisco Unified RTMT. The counters for each object display when the folder expands.

You can log PerfMon counters locally on the computer and use the performance log viewer in Cisco Unified RTMT to display the PerfMon CSV log files that you collected or the Real-time Information Server Data Collection (RISDC) PerfMon logs.

Predefined Performance Objects

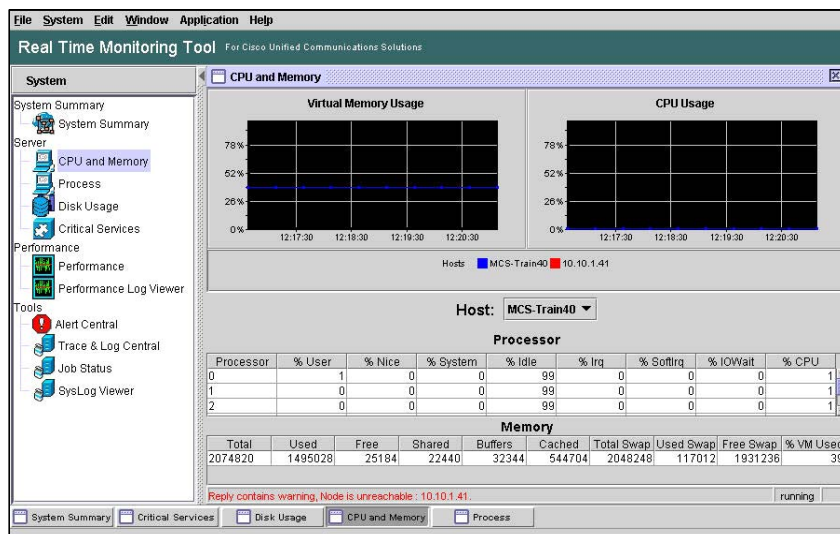
This subtopic describes the predefined performance objects.

System Summary



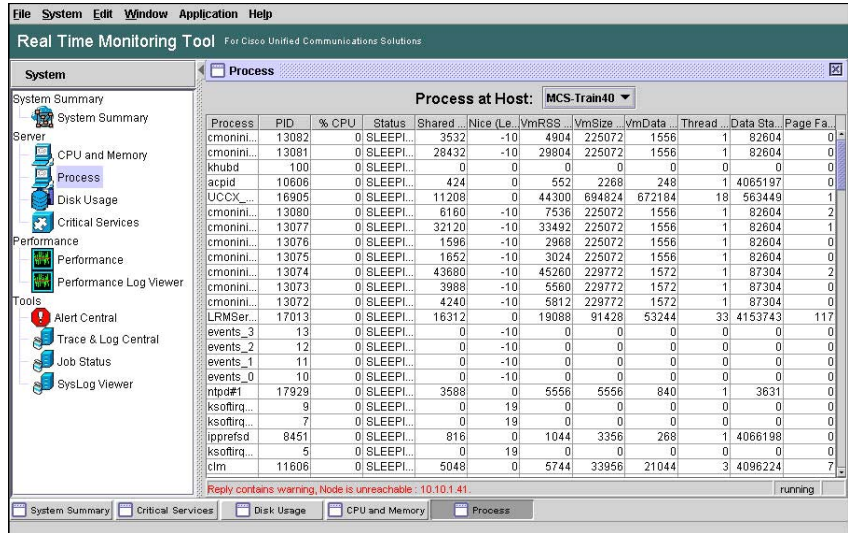
The System Summary displays information on virtual memory usage, CPU usage, common partition usage, and the Alert History log.

CPU and Memory



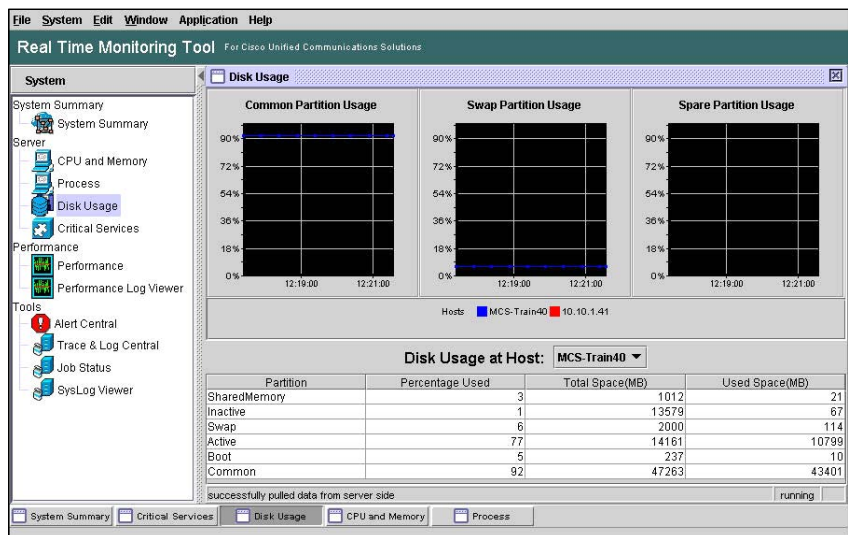
CPU and Memory displays information on CPU usage and virtual memory usage for the server. Use the Host field to choose the server desired.

Processes



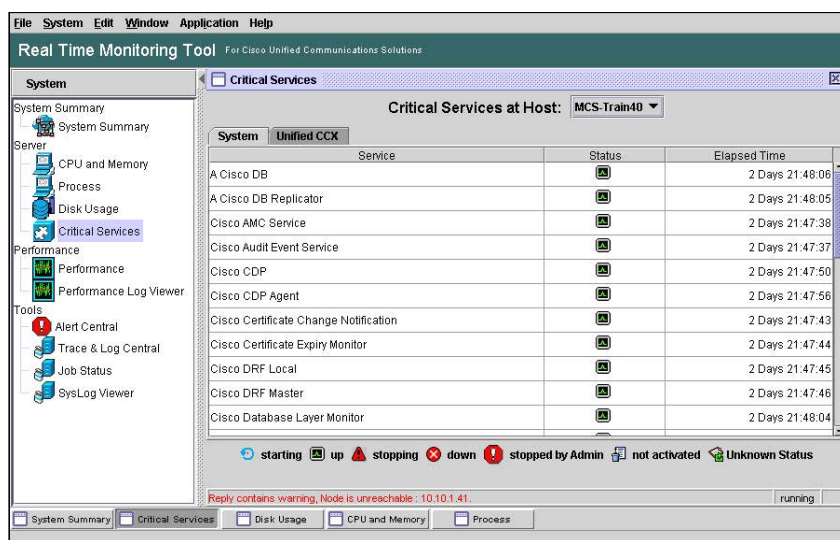
Process displays information on the processes that are running on the server. Use the Process at Host field to choose the server desired.

Disk Usage



Disk Usage displays information on disk usage on the server. Use the Disk Usage at Host field to choose the desired server.

Critical Services



Critical Services displays the name of the critical service, the status, (whether the service is up, down, activated, stopped by the administrator, starting, stopping, or in an unknown state), and the elapsed time during which the services have existed in a particular state for the server or for a particular server in a cluster (if applicable).

- To display system critical services, click the **System** tab.
- To display Cisco Unified CCX critical services, click the **Unified CCX** tab.
- To monitor critical services for a specific server on the tab, choose the server from the host drop-down list and click the critical services tab in which you are interested.

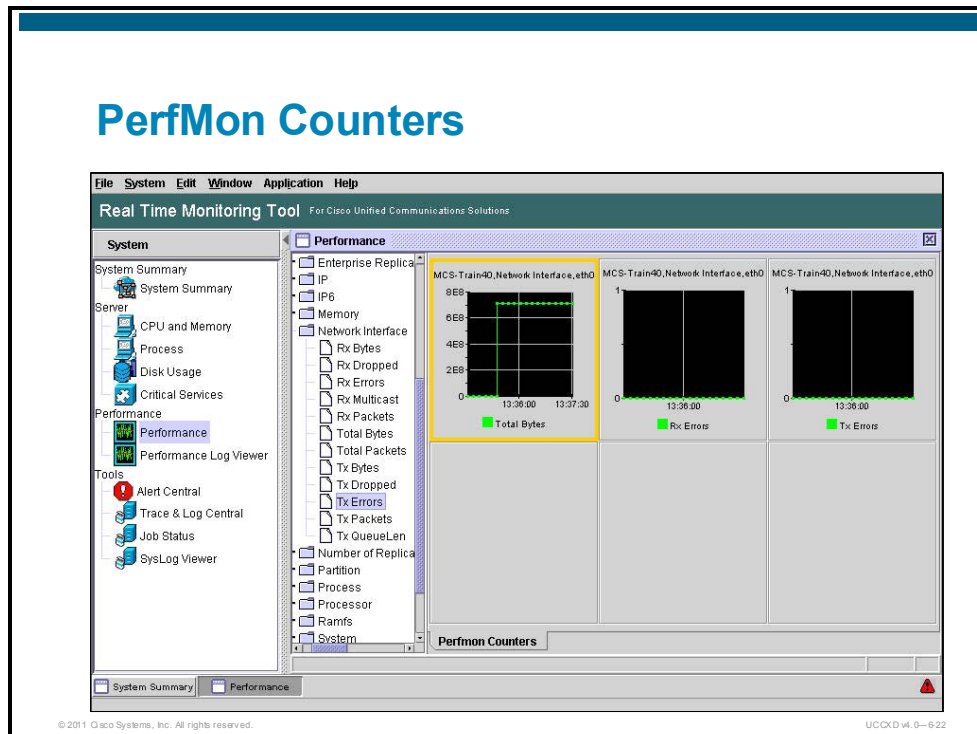
If the critical service status indicates that the administrator stopped the service, the administrator performed a task that intentionally stopped the service. For example, the service stopped because the administrator backed up or restored Cisco Unified CCX, performed an upgrade, stopped the service in Cisco Unified CCX Serviceability or in the command-line interface (CLI), and so on.

If the critical service status displays as unknown state, the system cannot determine the state of the service.

Note Cisco Unified RTMT will not support displaying the partial running status of a service in the initial release of Cisco Unified CCX 8.0(1). This means that a service will display as “up” (running) under Critical Services even if some of its subsystems are down. The partial status of the Cisco Unified CCX services can only be viewed from the Cisco Unified CCX Serviceability Administration interface.

Performance Tools

This subtopic describes using performance tools to add your own performance-monitoring views.

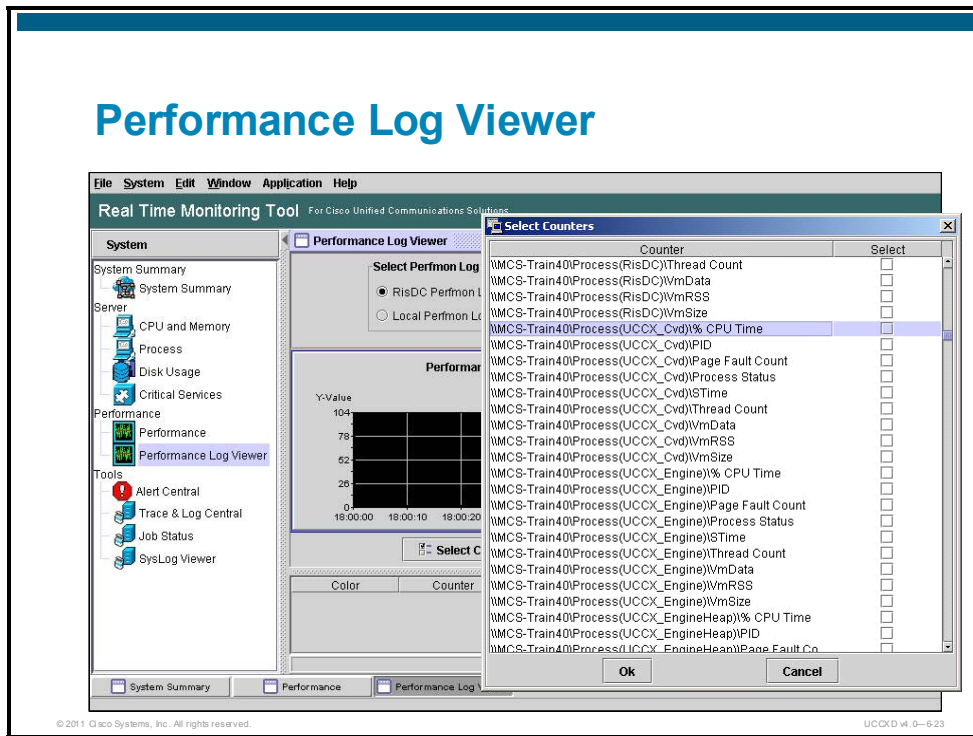


You can use queries to select and display PerfMon counters. You can organize the PerfMon counters to display a set of feature-based counters and save it in what is called a category. Categories, such as the PerfMon counters seen in the figure, are viewed as separate tabs in the display. After you save your RTMT profile, you can quickly access the counters in which you are interested.

Cisco Unified RTMT displays PerfMon counters in chart or table format. The chart format displays the PerfMon counter information by using line charts. For each category tab that you create, you can display up to six charts in the RTMT Performance Monitoring pane with up to three counters in one chart. After you create a category, you cannot change the display from a chart format to a table format, or vice versa.

You can display up to three counters in one chart in the RTMT Performance Monitoring pane. To add another counter in a chart, click the counter and drag it to the RTMT Performance Monitoring pane. Repeat again to add up to three counters.

Performance Log Viewer



You can view data from the PerfMon CSV log by using the Performance Log Viewer in Cisco Unified RTMT or by using the Microsoft Performance tool.

The Performance Log Viewer displays data for counters from PerfMon CSV log files in a graphical format. You can use the performance log viewer to display data from the local PerfMon logs that you collected, or you can display the data from the RISDC PerfMon logs. The local PerfMon logs comprise data from counters that you choose and store locally on your computer.

Alert Central

This topic describes alert messages and notifications that are set up in Alert Central.

Alert Central

- Alerts are used to notify administrators when predefined conditions meet some threshold.
- Alert categories:
 - System
 - Unified CCX
 - Custom
- Use Alert Central to:
 - View alerts
 - Set alert properties
 - Enable and disable alerts
 - Set up email for notification
 - Configure alert actions

System	Unified CCX	Custom
Alert Name		
AuthenticationFailed	Enabled	Yes
CiscoDRFFailure	Enabled	N/A
CoreDumpFileFound	Enabled	N/A
CpuPegging	Enabled	Yes
CriticalServiceDown	Enabled	Yes
HardwareFailure	Clear Alert	ed N/A
LogFileSearch	Clear All Alerts	ed N/A
LogPartitionHigh	Disable Alert	ed N/A
LogPartitionLow	Remove Alert	ed Yes
LowActivePartition	Alert Detail	ed Yes
LowAvailableV	Set Alert/Properties...	ed Yes
LowInactivePar	Reset Alert to Default Config	ed No
LowSwapPartit		ed N/A
SparePartition		ed N/A
SparePartitionLowWaterMarkExceeded	Enabled	N/A

The system generates alert messages to notify administrators when a predefined condition is met, such as when an activated service transitions from in service to out of service or vice versa. The system can send alerts as email/e-page alerts.

Cisco Unified RTMT, which supports alert defining, setting, and viewing, contains preconfigured and user-defined alerts. Although you can perform configuration tasks for both types, you cannot delete preconfigured alerts, whereas you can add and delete user-defined alerts.

System Alerts

Alert Name	Enabled	In Safe R.	Alert Act.	Last Alert Raised	System Cleared
AuthenticationFailed	Enabled	Yes	Default	N/A	N/A
CiscoDRFFailure	Enabled	N/A	Default	N/A	N/A
CoreDumpFileFound	Enabled	N/A	Default	N/A	N/A
CpuPegging	Enabled	Yes	Default	N/A	N/A
CriticalServiceDown	Enabled	Yes	Default	N/A	N/A
HardwareFailure	Enabled	N/A	Default	N/A	N/A
LogFileSearchStringFound	Enabled	N/A	Default	N/A	N/A
LogPartitionHighWaterMarkExceeded	Enabled	N/A	Default	N/A	N/A
LogPartitionLowWaterMarkExceeded	Enabled	N/A	Default	02:42:30 PM 07/09	N/A
LowActivePartitionAvailableDiskSpace	Enabled	Yes	Default	N/A	N/A
LowAvailableVirtualMemory	Enabled	Yes	Default	N/A	N/A
LowInactivePartitionAvailableDiskSpace	Enabled	Yes	Default	N/A	N/A
LowSwapPartitionAvailableDiskSpace	Enabled	Yes	Default	N/A	N/A
ServerDown	Enabled	No	Default	02:37:30 PM 07/09	N/A
SparePartitionHighWaterMarkExceeded	Enabled	N/A	Default	N/A	N/A
SparePartitionLowWaterMarkExceeded	Enabled	N/A	Default	N/A	N/A
SyslogSeverityMatchFound	Enabled	N/A	Default	02:46:00 PM 07/09	N/A
SwineStringMatchFound	Enabled	N/A	Default	N/A	N/A

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Click the **System** tab to view system alerts.

Cisco Unified CCX Alerts

Alert Name	Enabled	In Safe Range	Alert Action	Last Alert Raised
DB CRA % Space Used	Enabled	Yes	Default	N/A
DBReplicationStopped	Enabled	N/A	Default	N/A
HistoricalDataWrittenToFiles	Enabled	N/A	Default	N/A
PurgeInvoked	Enabled	N/A	Default	N/A
UnifiedCCXEngineMemoryUsageHigh	Enabled	Yes	Default	N/A

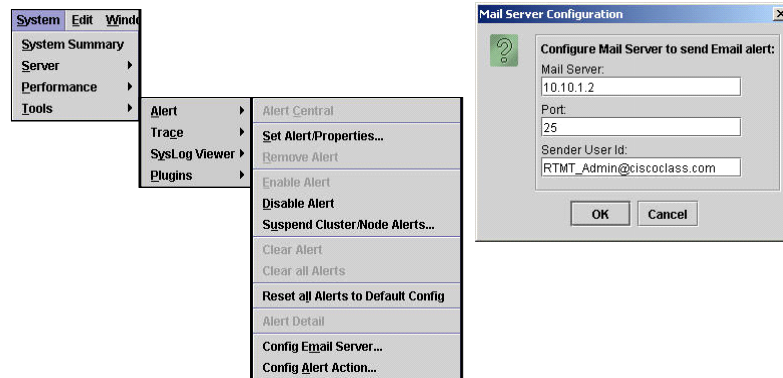
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Click the **Unified CCX** tab to view those alerts specific to Cisco Unified CCX.

Configure Email Server

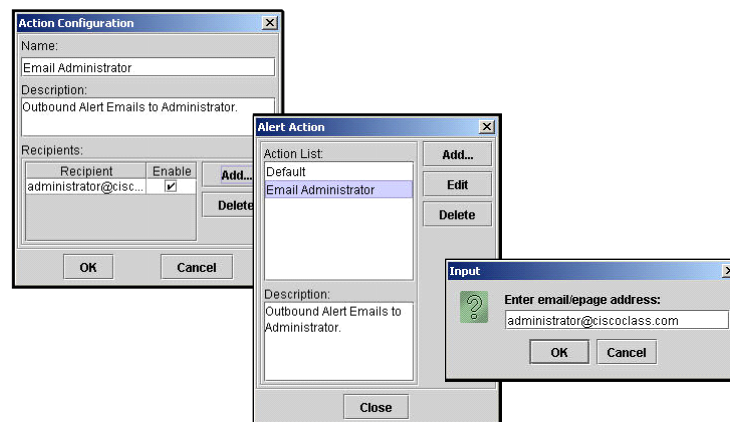
- To configure the outbound email server, navigate to **System > Tools > Alert > Config Email Server**.



Cisco Unified RTMT needs knowledge of an email server for sending outbound email alerts. Navigate to **System > Tools > Alerts > Config Email Server** for the dialog box to enter this information.

Email Notification

- To set up email notification, navigate to **System > Tools > Alert > Config Alert Action**, and configure an Alert Action.



To set up email or e-page addresses for Cisco Unified RTMT to use, navigate to **System > Tools > Alerts > Config Alert Action**.

Setting Alert Properties and Actions

- Right-click an alert and choose **Set Alert/Properties**.

The screenshot displays two overlapping dialog boxes from the Cisco Unified Contact Center Express (UCCX) interface. The 'Alert Properties: General' dialog box is in the foreground, showing the alert name 'DB CRA % Space Used', severity 'Critical', and a list of servers with checkboxes to enable the alert. The 'Alert Properties: Threshold' dialog box is in the background, showing a threshold slider set at 80%.

Alert Properties: General

Name: DB CRA % Space Used

☒ Enable Alert Severity: Critical

Enable/Disable this alert on following server(s):

Server	Enable
10.10.1.41	☒
MCS-Train40	☒

Description:
The percentage of used space in the Unified CCX database, db_cra. The database, db_cra, contains the Unified CCX historical and configuration data.

Recommended Action:
Purge data using the manual purge process to reclaim space.

< Back Next > Cancel

Alert Properties: Threshold

Threshold:
Trigger alert when following condition meet:
Percentage of the Used DB Space is above the configured threshold. (80 %)

0 100

< Back Next > Cancel

To access and edit alert properties, highlight and right-click the alert and choose properties.

Setting Alert Properties and Actions (Cont.)

The screenshot displays three overlapping dialog boxes from the Cisco Unified Contact Center Express (UCCX) interface. The 'Alert Properties: Frequency & Schedule' dialog box is in the foreground, showing frequency and schedule settings. The 'Alert Properties: Email Notification' dialog box is in the background, showing email notification settings. The 'Alert Action' dialog box is in the foreground, showing a list of actions and a description field.

Alert Properties: Frequency & Schedule

Frequency

When value exceed/below configured threshold:

☐ Trigger alert on every poll

☒ Trigger up to 3 (3) alerts within 30 (30) minutes

Schedule

Alert will be triggered in following period:

☒ Trigger Alert when it occurs. (Non-Stop Monitoring)

☐ Trigger Alert everyday (Scheduled Monitoring) between:

Start Time: 03:26 PM and End Time: 03

< Back Next > Cancel

Alert Properties: Email Notification

☒ Enable Email

Trigger Alert Action:

Email Administrator

Configure...

User-defined email text:

Alert Action

Action List:

- Default
- Email Administrator

Add... Edit Delete

Description:

Close

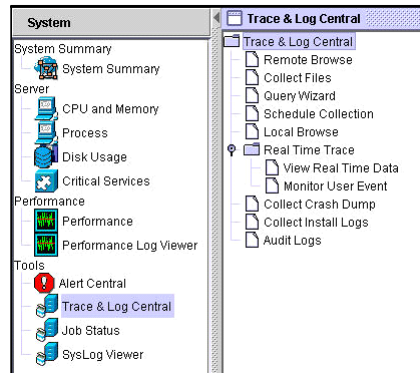
Navigate to the Alert Properties windows and set them appropriately.

Trace and Log Central

This topic describes Trace and Log Central.

Trace and Log Central Overview

- Trace and Log Central allows you to:
 - Browse and view log files
 - Filter, schedule, and collect log files
 - View logs in real time
 - Collect installation files
 - Collect crash dumps
 - Audit logs



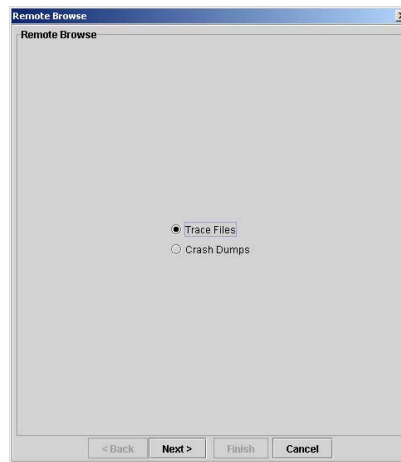
The Trace and Log Central feature in Cisco Unified RTMT allows you to configure on-demand trace collection for a specific date range or an absolute time. You can collect trace files that contain search criteria that you specify and save the trace collection criteria for later use, schedule one recurring trace collection, and download the trace files to a Secure FTP (SFTP) or FTP server on your network, or collect a crash dump file.

After you collect the files, you can view them in the appropriate viewer within Cisco Unified RTMT. You can also view traces on the server without downloading the trace files by using the Remote Browse feature. You can open the trace files by either selecting the internal viewer provided with Cisco Unified RTMT or by choosing an appropriate program as an external viewer.

Viewing Log Files

Remote Browse

- Use Remote Browse to view log files on the Cisco Unified CCX server.
- Double-click **Remote Browse**, choose **Trace Files** or **Crash Dumps**, and click **Next**.



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UCCXD v4.0-6.34

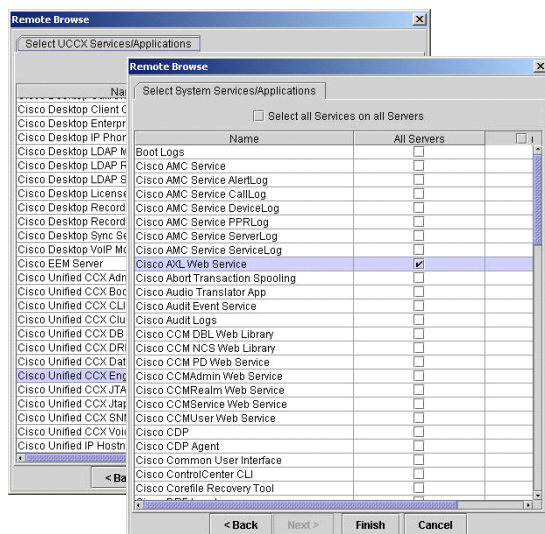
After the Cisco Unified CCX system has generated trace files, you can view them on the server by using the viewers within the RTMT. You can also use the Remote Browse feature to download the traces that also can be viewed from Cisco Unified RTMT to your local machine.

To start, double-click **Remote Browse** and choose **Trace Files**.

Viewing Log Files (Cont.)

Remote Browse (Cont.)

- Choose one or more UCCX Services/Applications, and click **Next**.
- Choose one or more System Services/Applications, and click **Finish**.



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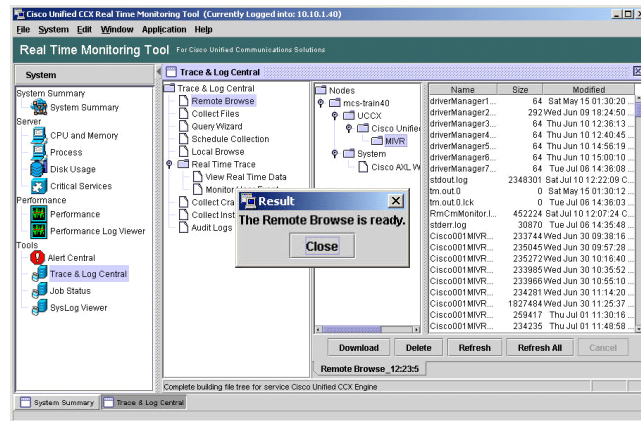
UCCXD v4.0-6.35

The next couple of screens allow you to choose the traces you want.

Viewing Log Files (Cont.)

Remote Browse (Cont.)

- Use navigation pane to drill down to files.

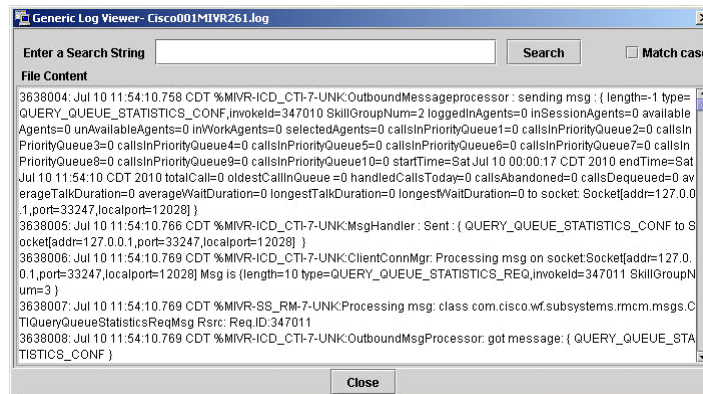


Once you have completed the previous task, you can drill down to see a listing of the trace files you selected.

Viewing Log Files (Cont.)

Remote Browse (Cont.)

- Right-click or double-click a file to open and view.

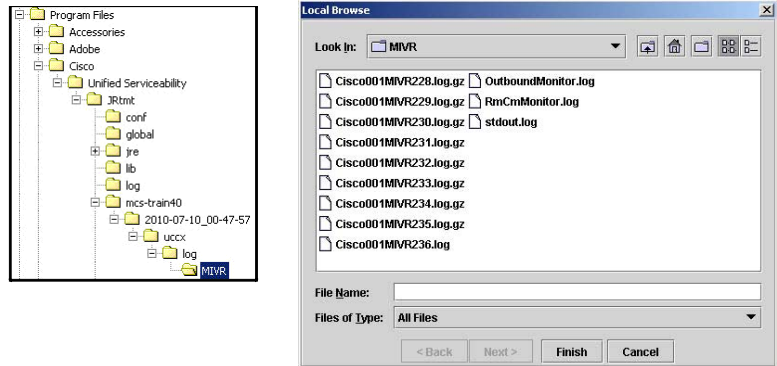


Double-click the files to open and view them.

Viewing Log Files (Cont.)

Local Browse

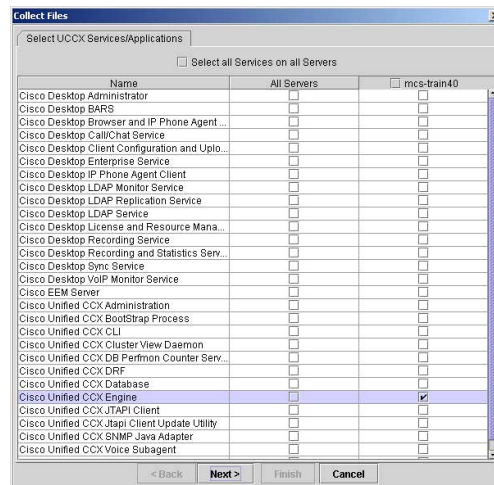
- You can view log files that have been downloaded to your local machine.
- Double-click **Local Browse** to access local files.



After you have collected trace files and downloaded them to your local machine, you can view them with a text editor that can handle UNIX variant line terminators such as WordPad. You can also view them by using the viewers within Cisco Unified RTMT.

Collect Files

- You can collect log files and have them downloaded to your local machine.
- Double-click **Collect Files** to start.
- Choose **UCCX Services/Applications**, and click **Next**.

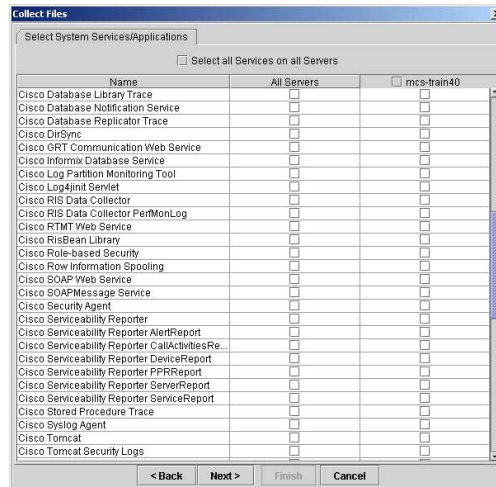


Use the Collect Files option in Trace and Log Central to collect traces for services, applications, and system logs on the server or on one or more servers in the cluster. You specify date and time range for which you want to collect traces, the directory in which to download the trace files, whether to delete the collected files from the server, and so on.

To start, double-click **Collect Files**.

Collect Files (Cont.)

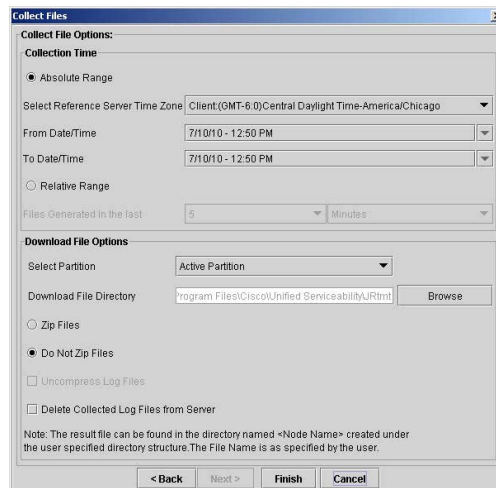
- Choose **System Services/Applications**, and click **Next**.



Choose the traces you want to collect.

Collect Files (Cont.)

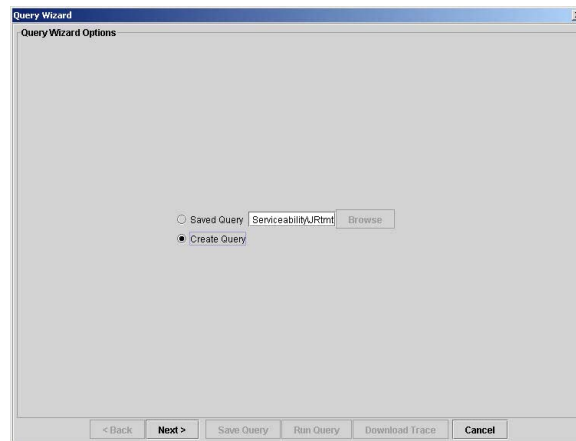
- Choose time range and download options, and click **Finish**.



Choose the time range and other download options. Notice that you are collecting files that are pre-existing on Cisco Unified CCX—not traces that will occur in the future.

Query Wizard

- Double-click **Query Wizard** to create or access an existing query.



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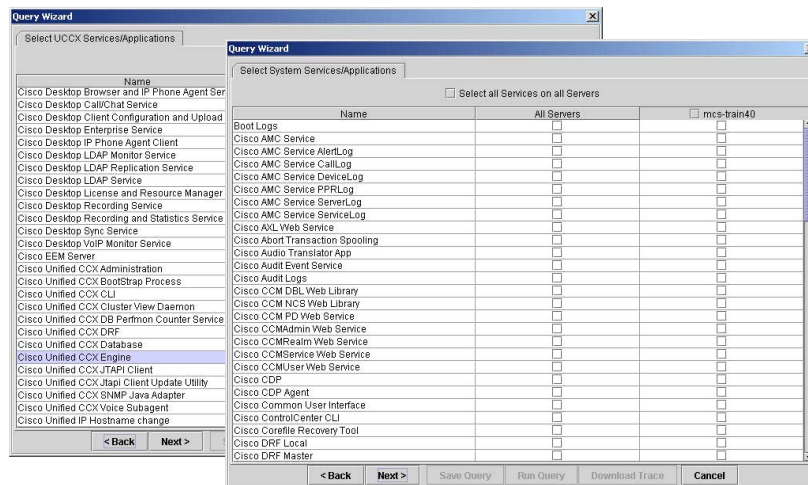
UCCXD v4.0-642

The Trace Collection Query Wizard allows you to collect and download trace files that contain search criteria that you specify as well as to save trace collection criteria for later use.

To start, double-click **Query Wizard** and choose to create a new query.

Query Wizard (Cont.)

- Choose traces to query.



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UCCXD v4.0-643

Choose the traces you want to query from.

Query Wizard (Cont.)

- Choose time, search, and call-processing impact options.

The Query Wizard dialog box is shown with the following options:

- Query File Options:**
 - ☐ All Available Traces
 - ☐ Absolute Range
 - Select Reference Server Time Zone: Client (GMT-6:0) Central Daylight Time-America/Chicago
 - From Date/Time: 7/10/10 - 1:22 PM
 - To Date/Time: 7/10/10 - 1:22 PM
 - ☒ Relative Range
 - Files Generated in the last: 5 Minutes
- Search Options:**
 - Search String: cisco
 - ☐ Case Sensitive
- Call Processing Impact Options:**
 - Select Impact Level: Low

At the bottom, there is a note: "This query operation may impact Call Processing. Select the appropriate level. Low -- Least impact on call processing, but slower response time. High -- Higher impact on call processing, but better response time." Below the note are buttons: < Back, Next >, Save Query, Run Query, Download Trace, and Cancel.

Choose a time range and search options.

Query Wizard (Cont.)

- Choose browse, collect, or schedule download action options.
- Depending on options taken, you can save the query, run the query, or download the trace.

The Query Wizard dialog box is shown with the following options:

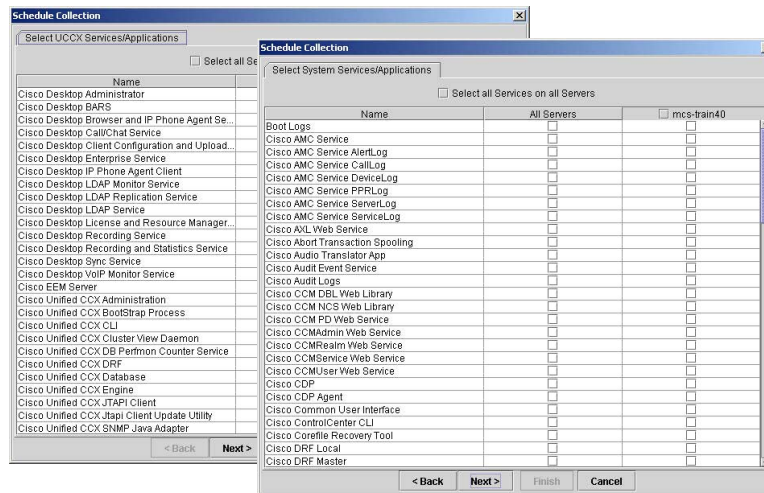
- ☐ Trace Browse
- ☐ On Demand Trace Collection
 - Download File Directory: J:\Files\Cisco\Unified_Senteeability\AJR\Int\ Browse
 - ☐ Zip Files
 - ☐ Uncompress Log Files
 - ☐ Delete Collected Log Files from Server
- ☒ Schedule Download
 - Schedule Start Date/Time: 7/10/10 - 1:22 PM
 - Schedule End Date/Time: 7/10/10 - 1:22 PM
 - ☐ Configure Trace Server

At the bottom are buttons: < Back, Next >, Save Query, Run Query, Download Trace, and Cancel.

From this screen, you can choose to browse, collect, or schedule a download. You can also save the query, run the query, and download the trace files.

Schedule Collection

- Double-click **Schedule Collection** and choose logs to collect.

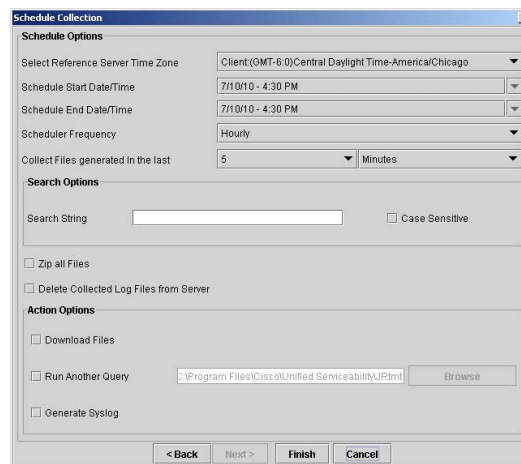


You can use the Schedule Collection option of the Trace and Log Central feature to schedule up to ten concurrent trace collections (six of which can be run concurrently) and to download the trace files to an SFTP or FTP server on your network, run another saved query, or generate a syslog file. To change a scheduled collection after you have entered it in the system, you must delete the scheduled collection and add a new collection event.

To start, double-click **Schedule Collection** and choose the traces for collection.

Schedule Collection (Cont.)

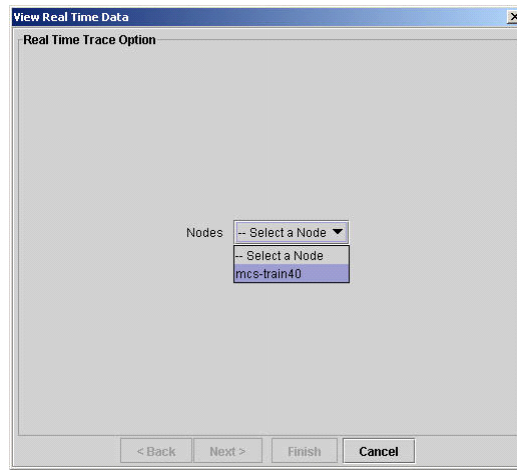
- Choose Schedule, Search, and Action options, and click **Finish**.



Make the appropriate schedule options and search options, and then choose the actions you desire.

View Real-Time Data

- Double-click **View Real Time Data**, and choose node to view.



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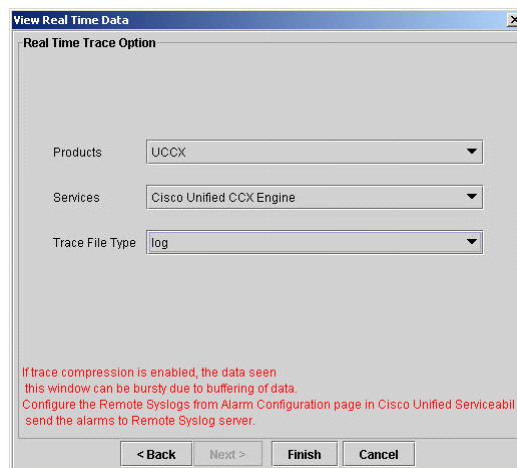
UCCX v4.0-6.48

The Real Time Trace Option of the Trace and Log Central feature in Cisco Unified RTMT allows you to view the current trace file written on the server for each application. If the system has begun writing a trace file, the real-time trace starts reading the file from the point where you began monitoring rather than at the beginning of the trace file. You cannot read any previous content.

To start, double-click **View Real Time Data** and choose the node for trace viewing.

View Real-Time Data (Cont.)

- Choose Product, Service, and Trace File Type, and click **Finish**.



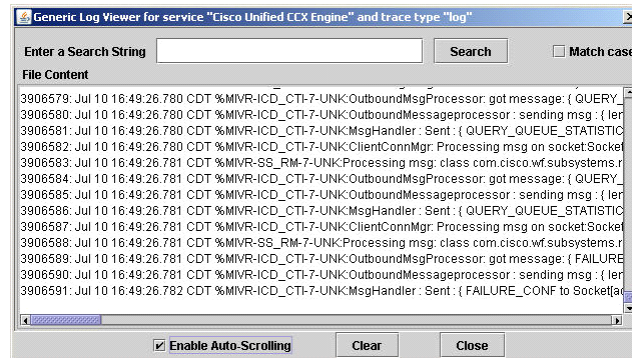
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UCCX v4.0-6.48

Choose the product, service, and trace log type.

View Real-Time Data (Cont.)

- View logs in real time.



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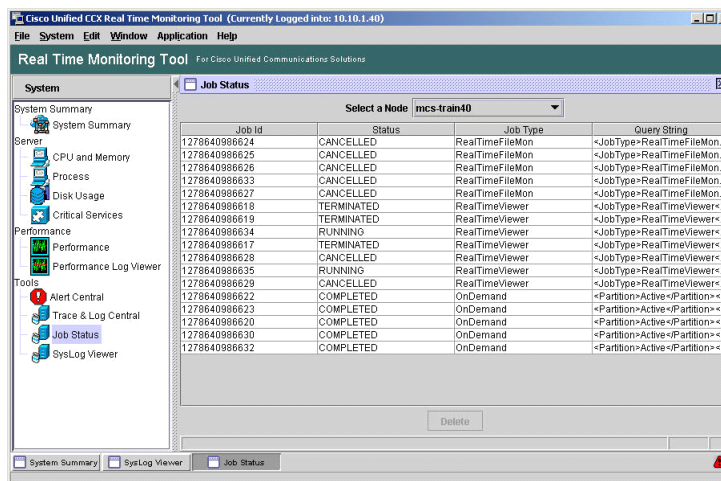
UCCXD v4.0-6.50

A new window will open and display logs as they are written. You can enable autoscroll if desired.

Another feature of viewing real-time data is called Monitor User Event. This feature is accessed from the Real Time Trace option in the navigation pane and is used to create an alert action that can occur while you are displaying real-time data. Before using this feature, you will need to configure a "LogFileSearchStringFound" alert based on a string value.

Job Status

- View status of jobs by node.



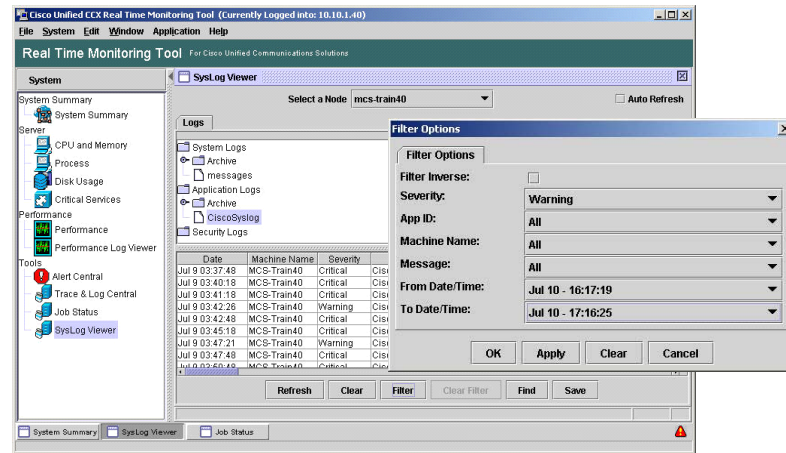
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UCCXD v4.0-6.51

To view a list or to delete scheduled collections, double-click the Job Status icon. Other jobs and their status can be viewed and deleted here as well.

SysLog Viewer

- Double-click **SysLog Viewer** and choose logs to view.
- Use filter options if desired.



Use the SysLog Viewer to view system logs. Choose the category and filter options desired.

Summary

This topic summarizes the key points discussed in this lesson.

Summary

- Cisco Unified RTMT is used to access performance information, set alert properties, and manipulate trace logs. RTMT is customized for each product that uses the Cisco Unified Communications Operating System. Therefore, each product will have its own RTMT and must be downloaded and installed from that particular product server.
- Performance monitoring allows you to set and view system and application level performance attributes. There are several predefined performance views, but you can also create your own customized views.
- Alerts are predefined error messages that can be used to notify system administrators when certain conditions occur. Many alerts are based on error conditions, but there are others that can be set to alert on threshold conditions so that administrators can be alerted before an actual error event occurs.
- Use Trace Log Central to view, collect, schedule, and download logs generated by Cisco Unified CCX.

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UCCXD v4.0-6.53

Cisco Unified Analysis Manager

Overview

Cisco Unified Analysis Manager, a tool included with the Cisco Unified Real-Time Monitoring Tool (RTMT), is used to perform troubleshooting operations. When Cisco Unified Analysis Manager is launched, it can collect troubleshooting information from your system to provide an avenue for error correction. You can use this information to perform your own troubleshooting operations or to send the information to Cisco Technical Assistance for analysis.

Objectives

Upon completing this lesson, you will be able to recognize the basic properties and capabilities of Cisco Unified Analysis Manager. This ability includes being able to meet these objectives:

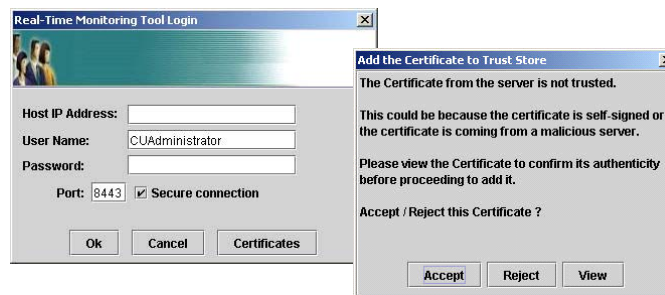
- Install Cisco Unified Analysis Manager
- Describe the Inventory components of Cisco Unified Analysis Manager
- Describe the Tools components of Cisco Unified Analysis Manager
- Describe the Administration components of Cisco Unified Analysis Manager

Cisco Unified Analysis Manager Overview

This topic provides an overview of Cisco Unified Analysis Manager.

Cisco Unified Analysis Manager Overview

- You must install the RTMT for Cisco Unified Communications Manager on a separate machine.
- Cisco Unified Analysis Manager is included in Cisco Unified RTMT as a separate navigation option.
- Log into the RTMT.



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UCCXD v4.0--6.4

The Cisco Unified Analysis Manager application is installed as a component of Cisco Unified RTMT when you install the RTMT software from Cisco Unified Communications Manager. The Cisco Unified Analysis Manager interface is accessed from the RTMT main menu and quick launch channel.

Once it is installed, the application can identify the supported Unified Communications products and applications that you have in your system, troubleshoot call failures across these applications, and collect trace and log files.

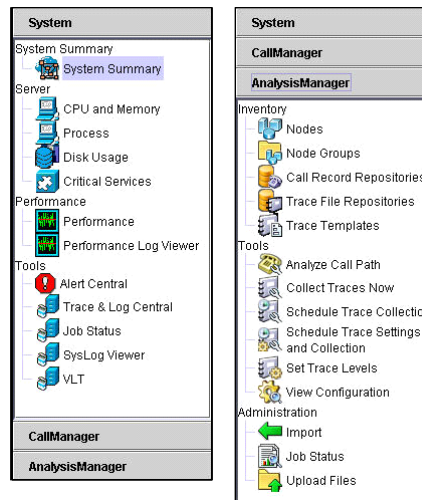
Cisco Unified Analysis Manager will support the following products:

- Cisco Unified Communications Manager Version 8.0(1)
- Cisco Unified Contact Center Enterprise (CCE) Version 8.0(1)
- Cisco Unified Contact Center Express (CCX) Version 8.0(1)
- Cisco IOS Voice Gateways (37xx, 28xx, 38xx, 5350XM, 5400XM) IOS Release PI 11
- Cisco Unity Connection Version 8.0(1)
- Cisco Unified Presence Version 8.0(2)

Cisco Unified Analysis Manager Overview (Cont.)

- Cisco Unified Communications Manager RTMT comes with three navigation tabs:

- System
- CallManager
- AnalysisManager

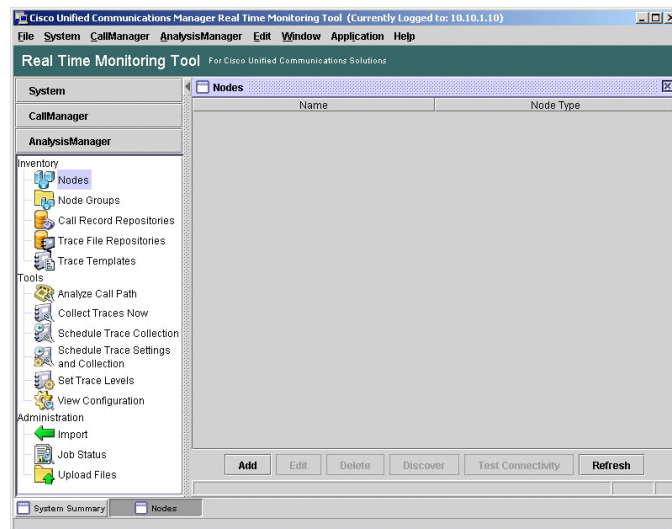


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UCCXD v4.0-6-5

The figure shows the three different navigation tabs when the Cisco Unified RTMT application is installed from Cisco Unified Communications Manager.

Cisco Unified Analysis Manager Overview (Cont.)



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The three primary components of the Cisco Unified Analysis Manager interface are:

- **Administration:** The System component lets you import device and group configuration from an external file and provide a status of jobs run by Cisco Unified Analysis Manager.
- **Inventory:** The Inventory component is used to identify all the devices in your system that can be accessed and analyzed by Cisco Unified Analysis Manager.
- **Tools:** The Tools component contains all the functions that Cisco Unified Analysis Manager supports. This includes configuring trace settings, collecting logs, and viewing configurations.

Inventory

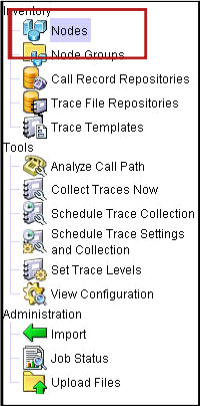
This topic describes the Inventory section of Cisco Unified Analysis Manager.

Inventory

Nodes

- Displays a list of configured nodes.
- To configure nodes, you can:
 - Import node information from a configuration file.
 - Create manually.
 - Discover from a seed node.

Name	Node Type
10.10.1.40	Unified CCX
10.10.1.10	Unified CM



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Once configured, a supported node is added to the Cisco Unified Analysis Manager database and will appear on the supported Cisco Unified Analysis Manager node list. You can identify a Unified Analysis Manager node in one of three ways:

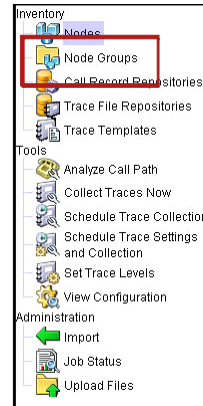
- Importing node and group configuration from a configuration file.
- Manually entering node and group information with the Analysis Manager screens.
- Discovering Analysis Manager Nodes from a seed node. A seed node is one that can return information about all the nodes within a deployment. Once discovered, the nodes can then be added to the node inventory. This option saves you from manually entering details of these nodes.

For Cisco Unified Communications Manager, the first node (publisher) is the seed node. For Cisco Unified Customer Voice Portal (CVP), the Cisco Unified CVP Operations, Administration, Maintenance, and Provisioning (OAMP) server is the seed node.

Inventory (Cont.)

Node Groups

- Create node groups so that a user can group functions to multiple nodes at a time.

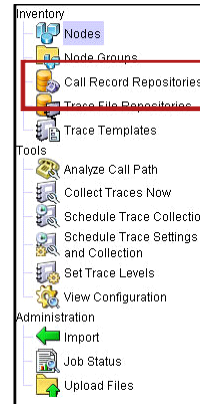


Within Cisco Unified Analysis Manager, you can create groups and add nodes to these groups. Once the nodes are added to a group, the user can perform a set of functions (for example, Trace Collection and Trace settings) at a group level. A single node can belong to multiple groups. Nested groups are not supported. Copying a group is not supported.

Inventory (Cont.)

Call Record Repositories

- The Call Record Repositories option allows you to define call record servers for the nodes managed by Cisco Unified Analysis Manager.



The Call Record Repositories option allows you to perform add, edit, and delete operations on call record servers for the Cisco Unified Analysis Manager. Managed nodes typically use the call record server to store the call data in a database. The Cisco Unified Analysis Manager can then connect to the Call Record Server to get detailed call data.

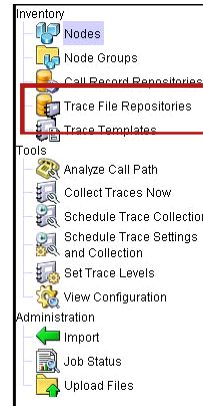
You can use the Call Record Server option to perform the following functions:

- **Add:** The Add button allows you to enter a new server manually.
- **Edit:** The Edit button allows you to edit a server that has already been configured.
- **Delete:** The Delete button allows you to delete one or more servers.
- **Test Connectivity:** The Test Connectivity button allows you to test connectivity to a server using the configured access information.

Inventory (Cont.)

Trace File Repositories

- The Trace File Repositories option allows you to define trace file servers for the nodes managed by Cisco Unified Analysis Manager.



The Trace File Repositories option allows you to perform add, edit, and delete operations on trace file servers for Cisco Unified Analysis Manager. Managed nodes typically use the trace file server to offload its trace and log files. Cisco Unified Analysis Manager can then connect to the trace file server to collect logs and traces.

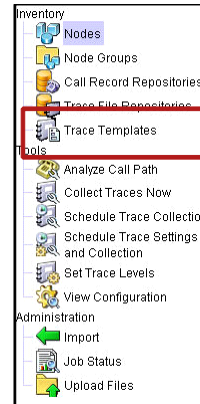
You can use the Trace File Server option to perform the following functions:

- **Add:** The Add button allows you to enter a new server manually.
- **Edit:** The Edit button allows you to edit a server that has already been configured.
- **Delete:** The Delete button allows you to delete one or more servers.
- **Test Connectivity:** The Test Connectivity button allows you to test connectivity to a server using the configured access information.

Inventory (Cont.)

Trace Templates

- Create and use templates as a shortcut for selecting components to change trace levels.
- Set new trace levels and collect traces and logs.



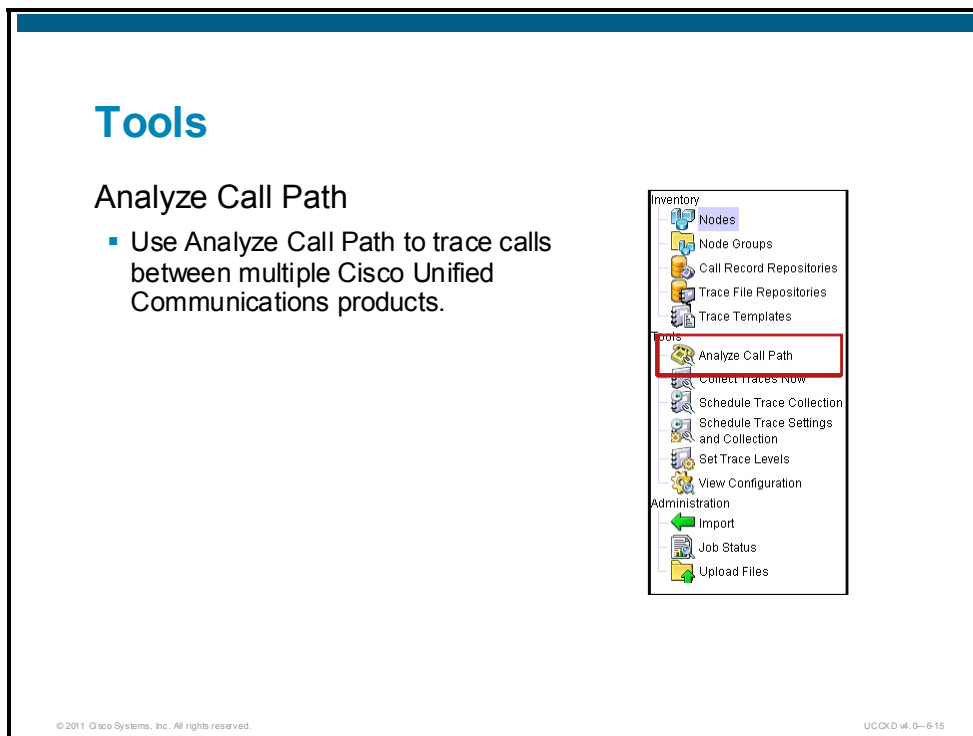
If you have a large number of nodes in a group, Cisco Unified Analysis Manager provides templates as a shortcut for selecting components to change trace levels. You can also use templates to establish the new trace levels for nodes and collecting logs and trace files.

You can use the Templates option to perform the following functions:

- **Add:** The Add button allows you to create a new template. When adding a template you should note that you are doing so for node types and not actual nodes. For a given node type, there is a known fixed set of components and services.
- **Edit:** The Edit button allows you to edit an existing template.
- **Clone:** The Clone button allows you to save an existing template as a new template without replacing the original one.
- **Delete:** The Delete button allows you to delete a template.
- **Import:** Use the Import button to import predefined templates from a flat file.
- **Export:** Use the Export button to export a template to a flat file.

Tools

This topic describes the tools available with Cisco Unified Analysis Manager.



The Analyze Call Path tool allows you to trace a call between multiple Cisco Unified Communications products. In order to trace a call using the Analyze Call Path tool, a node must be defined in Cisco Unified Analysis Manager and the node must belong to a group.

The following helpful hints apply when configuring the Analyze Call Path for Cisco Unified Communications Manager and Cisco Unified Communications Manager Business Edition:

- **Version Support:** Cisco Unified Analysis Manager supports Version 8.0(1) and above for Cisco Unified Communications Manager.
- **Call Record Server:** For Cisco Unified Communications Manager, use the first node (publisher) as the Call Record Server with the HTTPS protocol and the default port 8443.
- **User Group and Access Permissions:** Users should belong to a user group whose role contains read and update permissions required to access call records for the following resources:
 - SOAP Call Record APIs
 - SOAP Control Center APIs
 - SOAP Diagnostic Portal Database Service
 - SOAP Log Collection API
 - SOAP Performance Information APIs
 - SOAP Real-time Information and Control Center APIs
- **Configuring NTP:** Each product installed in the solution should be configured to point to the same set of external Network Time Protocol (NTP) clock sources.

- **Enable Call Record Logging:** In Cisco Unified Communications Manager Administration, go to the Service Parameter Configuration window and choose the Cisco CallManager Service. Enable the CDR Enabled Flag and the CDR Log Calls with Zero Duration Flag parameters.
- **CDR CAR Loader:** Ensure that your CDR Analysis and Reporting (CAR) Loader is set to Continuous Loading 24/7.

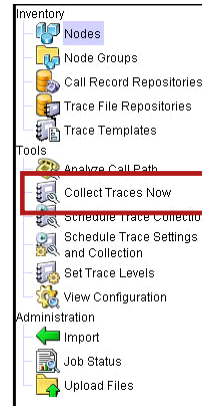
The following helpful hints apply when configuring the Analyze Call Path for Cisco Unified CCX:

- **Version Support:** Cisco Unified Analysis Manager supports Cisco Unified CCX version 8.0(1) and later.
- **Call Record Server:** The Call Record Server used for Cisco Unified CCX is either, or both in the case of a high-availability system, of the Cisco Unified CCX nodes.
- **Default user for adding Cisco Unified CCX Call Record Server:** The Informix user for adding and connecting to Cisco Unified CCX Call Record Server is uccxsct. You can reset the default installation time password for the above user in the Cisco Unified CCX Application Administration > Tools > Password Management page. Typically, the Cisco Unified CCX administrator will reset to the desired password and pass it on to the Cisco Unified Analysis Manager administrator.
- **User Group and Access Permissions:** Cisco Unified CCX does not require any additional user group and access permission to access call records. The access permissions of the uccxsct user are set by the Cisco Unified CCX installation for read access to specific tables. No external settings are required.
- **Configuring NTP:** To configure NTP for Cisco Unified CCX, go to **OS Administration > Settings > NTP Server**.
- **Enable Call Record Logging:** Cisco Unified CCX always generates call records by default, so no configuration is required to enable logging of call records.

Tools (Cont.)

Collect Traces Now

- Use Collect Traces Now to collect existing traces.



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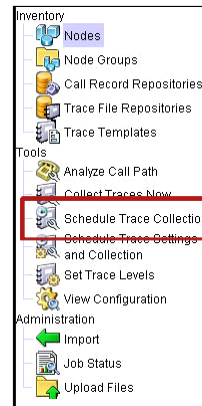
UCCXD v4.0-6.16

The Collect Traces Now option allows you to collect trace files based on a selection of services on a device or group of devices for any period of time that has occurred in the past.

Tools (Cont.)

Schedule Trace Collection

- Use Schedule Trace Collection to schedule future trace collection.



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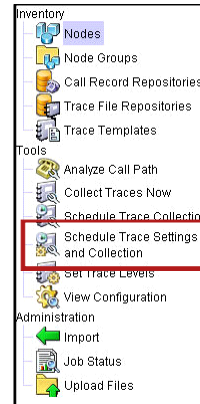
UCCXD v4.0-6.17

Use the Schedule Trace Collection option if you want to collect trace files for any period of time from the present into the future.

Tools (Cont.)

Schedule Trace Settings and Collection

- Use this option to schedule future trace collections while also having customized trace settings for that collection.
- Modified trace settings are restored to default after collection.

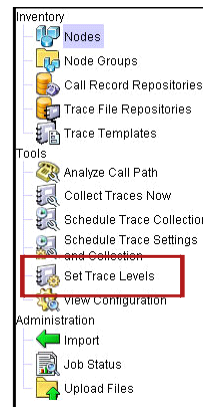


Use the Schedule Trace Settings and Collection option if you want to collect trace files for any period of time from the present into the future and to specify the trace levels to be used during the scheduled time. If you change trace settings with this option, trace levels are restored to their default settings after the collection period is over.

Tools (Cont.)

Set Trace Levels

- Modify trace levels by device groups or individually.



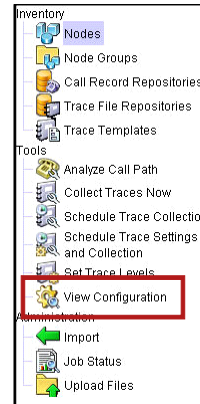
Use the Set Trace Level option to assign trace levels for a group of devices or individual devices. You can assign trace levels using a template or you can customize trace levels. Trace levels can be set for the following Cisco Unified Communications components:

- Cisco Unified Communications Manager
- Cisco Unified Presence
- Cisco Unity Connection
- Cisco Unified Contact Center Express

Tools (Cont.)

View Configuration

- View node configurations.



Use the View Configuration option to view configuration information related to a node. You can collect the version and configuration information and view it in a browser or save the results.

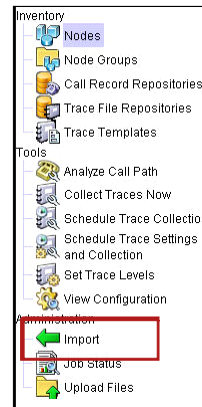
Administration

This topic describes the administration functions of Cisco Unified Analysis Manager.

Administration

Import

- Use this function to import device and group configuration from a .csv file.



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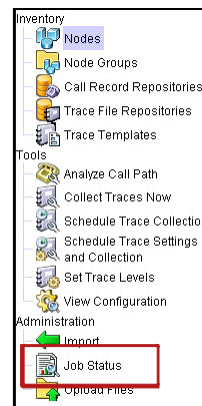
UCCXD v4.0-6.22

This option allows you to import device and group configuration from a .csv file into the Cisco Unified Analysis Manager.

Administration (Cont.)

Job Status

- Use this function to display status of scheduled trace setting and log collection jobs.



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This function allows you to display status of scheduled trace setting and log collection jobs. Jobs can be scheduled using the Cisco Unified Analysis Manager tools. Once a device is added to a group, you can schedule trace setting and log collections jobs on the device.

A scheduled job is linked to the machine it is configured on, and the job cannot be run on a different machine. If the machine on which a job was scheduled is not usable for any reason, the old job can be cloned and saved as a new job with new parameters to be run on the new machine.

Jobs running on a device can have one of the following states:

- **Scheduled:** A job is scheduled within Cisco Unified Analysis Manager; however, it has not started.
- **Running:** A job is currently either setting traces or collecting logs.
- **Completed:** A job is done.
- **Pending:** A job has completed one run of collecting logs and is waiting to start the next run.
- **Aborted:** A job has stopped abnormally due to an unexpected error.
- **Cancelled:** A job has stopped due to a cancel operation by the user.

The Job Status screen gives a system view of all the jobs in Unified Analysis Manager. For jobs that have multiple runs, the status and time of the last run is also shown in this page.

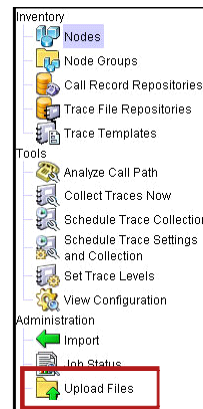
The following operations can be performed on a job:

- **View Details:** Use this option to get a more detailed view of the job.
- **Cancel:** Use this option to cancel a job. The cancel operation can only be done on the machine that the job is running or scheduled on. This option cannot be used for jobs that are in the Completed/Aborted/Canceled state.
- **Clone:** Use this option to select any job and save it as a new job. The job being cloned from can be in any state. This option allows you to change any attribute of the job before saving. Cloning a job does not impact the attributes of the job being cloned.

Administration (Cont.)

Upload Files

- Use this function to transfer files to a configured FTP server and send an email to interested parties.



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This option allows you to transfer files to a configured FTP server and send an email to interested parties. You can also use this option to transfer some files to another machine so others can view them.

Summary

This topic summarizes the key points discussed in this lesson.

Summary

- Cisco Unified Analysis Manager is an added component when installing RTMT from Cisco Unified Communications Manager.
- Use the components under Inventory to add Cisco Unified Communications product nodes to Cisco Unified Analysis Manager. You will also set up call record and trace repositories here as well.
- Use the components under Tools to analyze call paths, schedule and collect trace files, and manipulate trace settings.
- Use the components under Administration to upload configuration files, view job status, and transfer files to an FTP server.

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Disaster Recovery System

Overview

This lesson provides an overview of the Disaster Recovery System (DRS), describes how to use the DRS, and provides procedures for completing various backup- and restore-related tasks.

Objectives

Upon completing this lesson, you will be able to describe the components of the DRS and perform a backup. This ability includes being able to meet these objectives:

- Describe the DRS
- Describe how to perform a backup
- Summarize the restoration process

DRS Overview

This topic describes the DRS.

DRS Overview

What is the DRS?

- The DRS is a backup and restore utility used for Cisco Unified CCX and other Cisco Unified Communications applications.
- Use the DRS to:
 - Designate backup locations
 - Schedule backups
 - Perform manual backups
 - Restore data to Cisco Unified CCX from a backup
- Backup location options:
 - Tape drive
 - SFTP server

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The DRS, which can be invoked from Cisco Unified Contact Center Express (CCX) Administration, provides full data backup and restore capabilities for all servers in a Cisco Unified CCX cluster. The DRS allows you to perform regularly scheduled automatic or user-invoked data backups and to restore data after a failure.

In case of high availability, the DRS performs a cluster-level backup, which means that it collects backups for all servers in a Cisco Unified CCX cluster to a central location and archives the backup data to a physical storage device.

DRS also restores its own settings (backup device settings and schedule settings) files as part of the platform backup and restore operations (drfDevice.xml and drfSchedule.xml). When the server is restored with these files, you do not need to reconfigure DRS backup devices and schedules.

The DRS includes the following capabilities:

- A user interface for performing backup and restore tasks
- A distributed system architecture for performing backup and restore operations
- Scheduled backups
- Archive backups to a physical tape drive or a remote Secure FTP (SFTP) server

DRS Overview (Cont.)

What is backed up?

- Cluster configurations and applications profiles
- Work flow scripts in the script repository
- Databases (such as Db_cra, db_cra_repository, and FCRasSvr database)
- Configuration data (such as open LDAP and flat files)
- Recording files
- JTAPI configuration (jtapi.ini)
- Trace Collection Tool (TCT)
- User prompts, grammars, and documents

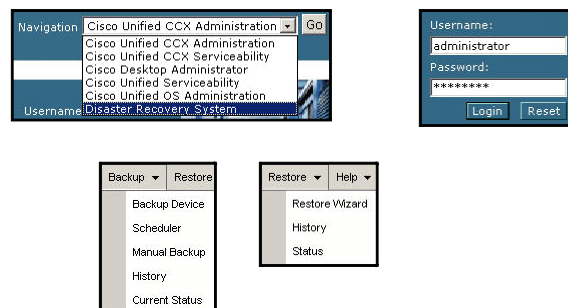
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The figure shows the components backed up for Cisco Unified CCX.

Accessing the DRS

- Access the Administration web page.
- Use Navigation menu to choose **Disaster Recovery System**.
- Use the Cisco Unified CCX platform administration user account credentials to log in.



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Access the DRS from the Administration web pages. Use the platform administration user account to log in.

Performing Backups

This topic describes backup operations.

Performing Backups

Add a Backup Device

The screenshot shows the 'Backup Device' configuration page. At the top right, a dropdown menu is open with 'Backup Device' highlighted. The main form includes a 'Status' section with 'Status: Ready'. Below this is the 'Backup device name' field with the value 'ICM_Server'. The 'Select Destination*' section has two options: 'Tape Device' (disabled with a message 'Tape drive is not supported on a virtual machine') and 'Network Directory' (selected). The 'Network Directory' section contains fields for 'Server name' (csosky1aw1), 'Path name' (\\CCXBackup), 'User name' (administrator), and 'Password' (masked with asterisks). There is also a 'Number of backups to store on Network Directory' dropdown set to '2'. At the bottom are 'Save' and 'Back' buttons.

Before using the DRS, you must configure the locations where you want the backup files to be stored. You can configure up to 10 backup devices.

Performing Backups (Cont.)

Schedule a Backup

The screenshot shows the 'Schedule a Backup' configuration page. At the top right, a dropdown menu is open with 'Scheduler' highlighted. The main form includes a 'Status' section with 'Status: Ready'. Below this is the 'Schedule Name' field with the value 'Daily'. The 'Select Backup Device' section has a dropdown menu with 'ICM_Server' selected. The 'Select Features*' section has a checkbox for 'UCCX' which is unchecked. The 'Start Backup at*' section includes a date picker (2010, Jul, 16) and a time picker (00:00). The 'Frequency*' section has radio buttons for 'Once', 'Daily' (selected), and 'Weekly'. Below these are checkboxes for days of the week: Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, and Sunday. At the bottom are buttons for 'Save', 'Set Default', 'Disable Schedule', 'Enable Schedule', and 'Back'.

You can create up to 10 backup schedules. Each backup schedule has its own set of properties, including a schedule for automatic backups and a storage location.

Performing Backups (Cont.)

Manual Backup

Backup ▾ Restore

Backup Device

Scheduler

Manual Backup

History

Current Status

Select Backup Device

Device Name* ICM_Server

Select Features *

☒ UCCX

The following components are registered with Disaster Recovery System:

Feature	Server	
UCCX	MCS-TRAIN40	UCPREFS
UCCX	MCS-TRAIN40	TCT
UCCX	MCS-TRAIN40	SYSLOGAGT
UCCX	MCS-TRAIN40	UCDB
UCCX	MCS-TRAIN40	CDPAGT
UCCX	MCS-TRAIN40	PLATFORM
UCCX	MCS-TRAIN40	CLM
UCCX	MCS-TRAIN40	CCXCOMPONENT

Start Backup Select All Clear All

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UCCX v4.0--4.10

To start a manual backup, choose **Backup > Manual Backup**. Choose the device to back up to, the product, and then click **Start Backup**.

Performing Backups (Cont.)

Manual Backup—Current Status

Backup ▾ Restore

Backup Device

Scheduler

Manual Backup

History

Current Status

Status

Backup operation in progress for server [MCS-TRAIN40], please wait...

Backup details

Tar Filename: 2010-07-16-12-27-31.tar

Backup Device: NETWORK

Operation: BACKUP

Percentage Complete: 37%

Feature	Server	Component	Status	Result **	Start Time	Log File *
UCCX	MCS-TRAIN40	UCPREFS	100	SUCCESS	Fri Jul 16 12:27:31 CDT 2010	2010-07-16-12-27-31_b_mcs-train40_uccx_ucprefs.log
UCCX	MCS-TRAIN40	TCT	100	SUCCESS	Fri Jul 16 12:27:39 CDT 2010	2010-07-16-12-27-31_b_mcs-train40_uccx_tct.log
UCCX	MCS-TRAIN40	SYSLOGAGT	100	SUCCESS	Fri Jul 16 12:27:39 CDT 2010	2010-07-16-12-27-31_b_mcs-train40_uccx_syslogagt.log
UCCX	MCS-TRAIN40	UCDB	0	Active	Fri Jul 16 12:27:40 CDT 2010	
UCCX	MCS-TRAIN40	CDPAGT	0	---	---	
UCCX	MCS-TRAIN40	PLATFORM	0	---	---	
UCCX	MCS-TRAIN40	CLM	0	---	---	
UCCX	MCS-TRAIN40	CCXCOMPONENT	0	---	---	

Refresh Cancel Backup

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UCCX v4.0--4.11

The web page will automatically present the Current Status page and periodically update. You cannot run more than one backup at a time.

Restoring a Backup

This topic describes restoring a backup.

Restoring a Backup

Restore scenarios:

- Restore a standalone or high-availability server with no software rebuild.
- Restore a standalone server with a software rebuild.
- Restore a high-availability publisher node with a software rebuild.
- Restore a high-availability subscriber node with a software rebuild.
- Restore both high-availability nodes with a software rebuild.

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UCCXD v4.0-4.13

The figure shows the different restore scenarios available when restoring a Cisco Unified CCX system.

Restoring a Backup (Cont.)

Restore a standalone or high-availability server with no software rebuild summary:

- Access the DRS.
- Use the Restore Wizard to start the restore.
- Choose the device and .tar file to restore.
- Choose the UCCX feature for restoration.
- Choose the node (standalone) or nodes (high availability) to restore.
- Start and complete the restoration.
- Reboot cluster.
- From the Administration web page, perform a Data Resync.

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UCCXD v4.0-4.14

The figure provides a summary for restoring a system that does not require a software rebuild.

Restoring a Backup (Cont.)

Restore a standalone server with a software rebuild summary:

- Perform a complete rebuild of the software.
- Access the DRS.
- Use the Restore Wizard to start the restore.
- Choose the device and .tar file to restore.
- Choose the UCCX feature for restoration.
- Choose the node to restore.
- Start and complete the restoration.
- Reboot the server.

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UCCX D v4.0--4.15

The figure provides a summary for restoring a standalone system that requires a software rebuild.

Restoring a Backup (Cont.)

Restore a high-availability publisher node with a software rebuild summary:

- Perform a complete rebuild of the publisher software.
- Access the DRS.
- Use the Restore Wizard to start the restore.
- Choose the device and .tar file to restore.
- Choose the UCCX feature for restoration.
- Choose the publisher node only to restore.
- Start and complete the restoration.
- Run the appropriate CLI commands to force Data Resync between nodes.
- Reboot the cluster.
- Run the CLI command to reset data replication.

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UCCX D v4.0--4.15

The figure provides a summary for restoring a high-availability publisher node that requires a software rebuild.

Restoring a Backup (Cont.)

Restore a high-availability subscriber node with a software rebuild summary:

- Perform a complete rebuild of the publisher software.
- Access the DRS.
- Use the Restore Wizard to start the restore.
- Choose the device and .tar file to restore.
- Choose the UCCX feature for restoration.
- Choose the publisher node only to restore.
- Start and complete the restoration.
- Reboot the server.

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UCCXD v4.0-4.17

The figure provides a summary for restoring a high-availability subscriber node that requires a software rebuild.

Restoring a Backup (Cont.)

Restore both high-availability nodes with a software rebuild summary:

- Perform the steps required to perform a complete rebuild and restoration of the publisher node only for a two-node system. (Running the CLI commands is not required.)
- Reboot the server.
- Perform the steps required to perform a complete rebuild and restoration of the subscriber node only for a two-node system.
- Reboot the second node server.

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UCCXD v4.0-4.18

The figure provides a summary for restoring a complete high-availability system that requires a software rebuild.

Restoring a Backup (Cont.)

General Notes

- If you perform a software rebuild:
 - You must use the same user account and password options created in the last build.
 - Changing any installation options may change the license MAC and could invalidate your license.
- The version of the restore files and the Cisco Unified CCX being restored to must be exactly the same for the restore action to be successful.
- After completing a restoration:
 - Check your services and engine status.
 - You may need to perform a JTAPI Resync to ensure proper communications and database objects correlate with Cisco Unified Communications Manager.
 - Check License Management to ensure your licenses are valid.
- See the *Disaster Recovery System Administration Guide for Cisco Unified Contact Center Express* document for details on the restoration process.

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UCCEX v4.0--4.18

The figure provides some general notes about restoring a Cisco Unified CCX system.

Summary

This topic summarizes the key points discussed in this lesson.

Summary

- The DRS is used to obtain Cisco Unified CCX system data in the form of a backup, which can then be used to restore system data in case of a failure.
- To perform a backup, you must have already designated a backup device (or location). Backups can then be run from a schedule or manually.
- There are several different restoration scenarios available. You can do a simple restore or rebuild one or both Cisco Unified CCX nodes.

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UCCXD v4.0-4.20

Module Summary

This topic summarizes the key points discussed in this module.

Module Summary

- The Cisco Unified CCX RTMT is downloaded and installed from the Cisco Unified CCX server. It is used for performance monitoring and log collection.
- Cisco Unified Analysis Manager is a component of the Cisco Unified RTMT when installed from Cisco Unified Communications Manager. It is primarily a tracing tool that allows you to trace calls between multiple Cisco Unified Communications products that also allows for scheduling and collecting traces.
- The DRS is used to back up and restore a Cisco Unified CCX system when the need arises. You must use a network device utilizing SFTP or a tape drive to back up to or restore from.

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UCCXD v4.0-6-1

