



## **Getting Started with Cisco Unified Contact Center Express Cisco Customer Response Solutions**

Premium, Enhanced, and Standard, Release 4.1(1)

*January 2007*

### **Corporate Headquarters**

Cisco Systems, Inc.  
170 West Tasman Drive  
San Jose, CA 95134-1706  
USA  
<http://www.cisco.com>  
Tel: 408 526-4000  
800 553-NETS (6387)  
Fax: 408 526-1400



THE SPECIFICATIONS AND INFORMATION REGARDING THE PRODUCTS IN THIS MANUAL ARE SUBJECT TO CHANGE WITHOUT NOTICE. ALL STATEMENTS, INFORMATION, AND RECOMMENDATIONS IN THIS MANUAL ARE BELIEVED TO BE ACCURATE BUT ARE PRESENTED WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED. USERS MUST TAKE FULL RESPONSIBILITY FOR THEIR APPLICATION OF ANY PRODUCTS.

THE SOFTWARE LICENSE AND LIMITED WARRANTY FOR THE ACCOMPANYING PRODUCT ARE SET FORTH IN THE INFORMATION PACKET THAT SHIPPED WITH THE PRODUCT AND ARE INCORPORATED HEREIN BY THIS REFERENCE. IF YOU ARE UNABLE TO LOCATE THE SOFTWARE LICENSE OR LIMITED WARRANTY, CONTACT YOUR CISCO REPRESENTATIVE FOR A COPY.

The Cisco implementation of TCP header compression is an adaptation of a program developed by the University of California, Berkeley (UCB) as part of UCB public domain version of the UNIX operating system. All rights reserved. Copyright 1981, Regents of the University of California.

NOTWITHSTANDING ANY OTHER WARRANTY HEREIN, ALL DOCUMENT FILES AND SOFTWARE OF THESE SUPPLIERS ARE PROVIDED WITH ALL FAULTS. CISCO AND THE ABOVE-NAMED SUPPLIERS DISCLAIM ALL WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, WITHOUT LIMITATION, THOSE OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OR ARISING FROM A COURSE OF DEALING, USAGE, OR TRADE PRACTICE.

IN NO EVENT SHALL CISCO OR ITS SUPPLIERS BE LIABLE FOR ANY INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES, INCLUDING, WITHOUT LIMITATION, LOST PROFITS OR LOSS OR DAMAGE TO DATA ARISING OUT OF THE USE OR INABILITY TO USE THIS MANUAL, EVEN IF CISCO OR ITS SUPPLIERS HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

CCSP, CCVP, the Cisco Square Bridge logo, Follow Me Browsing, and StackWise are trademarks of Cisco Systems, Inc.; Changing the Way We Work, Live, Play, and Learn, and iQuick Study are service marks of Cisco Systems, Inc.; and Access Registrar, Aironet, ASIST, BPX, Catalyst, CCDA, CCDP, CCIE, CCIP, CCNA, CCNP, Cisco, the Cisco Certified Internetwork Expert logo, Cisco IOS, Cisco Press, Cisco Systems, Cisco Systems Capital, the Cisco Systems logo, Cisco Unity, Empowering the Internet Generation, Enterprise/Solver, EtherChannel, EtherFast, EtherSwitch, Fast Step, FormShare, GigaDrive, GigaStack, HomeLink, Internet Quotient, IOS, IP/TV, iQ Expertise, the iQ logo, iQ Net Readiness Scorecard, LightStream, Linksys, MeetingPlace, MGX, the Networkers logo, Networking Academy, Network Registrar, Packet, PIX, Post-Routing, Pre-Routing, ProConnect, RateMUX, ScriptShare, SlideCast, SMARTnet, StrataView Plus, TeleRouter, The Fastest Way to Increase Your Internet Quotient, and TransPath are registered trademarks of Cisco Systems, Inc. and/or its affiliates in the United States and certain other countries.

All other trademarks mentioned in this document or Website are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (0502R)

Copyright 2004 - 2006 Cisco Systems Inc.

## Table of Contents

Preface .....	1
Purpose .....	1
Audience .....	1
Organization .....	1
Related Documentation .....	2
Obtaining Documentation.....	5
Cisco.com.....	5
Product Documentation DVD.....	5
Ordering Documentation.....	6
Documentation Feedback.....	6
Cisco Product Security Overview.....	6
Reporting Security Problems in Cisco Products .....	7
Obtaining Technical Assistance.....	7
Cisco Technical Support & Documentation Website.....	8
Submitting a Service Request.....	8
Definitions of Service Request Severity.....	9
Obtaining Additional Publications and Information.....	9
<b>Part 1. Unified CCX Overview.....</b>	<b>11</b>
1. About Unified CCX.....	13
Unified CCX New Features in Release 4.1.....	13
Supported Functionalities in Cisco CRS Release 4.1.....	14
Seat and Licensing Usage.....	18
About Installing Multiple Cisco CRS Products on a Server.....	19
Unified CCX Package Descriptions.....	20
Feature Summary for Each Unified CCX Package.....	21
Cisco CRS Subsystems Supported by Unified CCX.....	28
Sample Default Unified CCX Scripts.....	30
2. Features Enabled by Product Licensing.....	33
Cisco CRS Administration Menus Enabled by Product Licensing.....	33
Prompt, Spoken Name Upload, and Plugin Options Enabled by Product Licensing.....	35
Cisco CRS Subsystems Enabled by Product Licensing.....	35
Application Types Enabled by Product Licensing.....	36
Editor Steps Enabled by Product Licensing.....	37
Historical Reports Enabled by Product Licensing.....	38
Real-Time Reports Enabled by Product Licensing for Unified CCX.....	40
3. Unified CCX Architecture.....	43
Available Deployment Models.....	43
Single-Site Deployment.....	44
Multi-Site WAN Deployment with Centralized Call Processing .....	45
Multi-Site WAN Deployment with Distributed Call Processing.....	46
Services from Partners.....	47
Services by Technology.....	47
4. Basic Contact Flow Concepts.....	49
Relationships Between Tasks, Sessions, Contacts, and Channels.....	50
JTAPI Deployment Considerations .....	51
An HTTP Contact Flow .....	54

Important Cisco Unified CallManager Configuration Dependencies.....	54
<b>Part 2. Installing and Configuring Unified CCX with Cisco Unified CallManager.....</b>	<b>57</b>
5. Installing and Configuring Cisco Unified CallManager for Unified CCX.....	59
About Cisco Unified CallManager.....	59
How to Install Cisco Unified CallManager .....	59
How to Configure Cisco Unified CallManager.....	60
Cisco Unified CallManager Configuration Check List.....	60
How to Check Your Phone Configuration in Cisco Unified CallManager .....	62
About Cisco Unified CallManager Extension Mobility Feature.....	62
6. Installing and Configuring Unified CCX.....	63
Installing Unified CCX.....	63
Configuring Unified CCX.....	64
Unified CCX Configuration Check List.....	64
Cisco CRS Application Configuration Check List.....	67
7. Deploying the Sample Script, icd.aef.....	71
Unified CCX Script Overview.....	71
Designing and Configuring Unified CCX Scripts.....	72
Testing your System and the Unified CCX Script.....	72
8. Installing Agent and Supervisor Desktop for Unified CCX.....	73
About Agent and Supervisor Desktops for Unified CCX .....	73
Cisco Agent Desktop Configuration Check List .....	74
How to Install and Configure the Cisco Agent Desktop Applications.....	78
9. Call Monitoring, Call Recording, and Prompts for Unified CCX.....	79
Monitoring Agent Conversations .....	79
Recording Prompts and Agent Conversations .....	80
10. Using Unified CCX Historical Reports.....	81
The Default Unified CCX Historical Reports .....	82
Real-Time Unified CCX Reports.....	83
11. Managing Unified CCX.....	85
Managing Prompt, Grammar, and Document Files.....	85
Managing Cisco CRS Datastores.....	86
Index .....	87

---

## List of Figures

Figure 1: Single-Site Deployment Model.....	45
Figure 2: Multiple-Site Centralized Call Processing with IPCC Express at a Central Site.....	45
Figure 3: Multiple-Site Centralized Call Processing with IPCC Express at a Remote Site.....	46
Figure 4: Multi-Site, Distributed Deployment Model.....	46
Figure 5: Typical IPCC Express Call Flow.....	49
Figure 6: Relationships between Items in Your IPCC Express System.....	51





# Preface

## Purpose

The *Getting Started with Cisco Unified Contact Center Express* book provides high-level steps from a solution perspective on how to understand and configure the Standard, Enhanced, and Premium packages for Cisco Unified Contact Center Express (Unified CCX).

## Audience

The *Getting Started with Cisco Unified Contact Center Express* book is written to ease the deployment process for application designers, system architects, engineers, and Cisco channel partners who wish to enhance the efficiency of their contact center organization and apply best design practices for Unified CCX.

## Organization

This guide consists of the following parts and chapters.

Part/Chapter	Title	Description
Part I	<a href="#">Unified CCX Overview (page 11)</a>	Provides an overview of Unified CCX.
Chapter 1	<a href="#">About Unified CCX (page 13)</a>	Explains key components of Cisco CRS, and describes where Unified CCX fits into the Cisco Customer Contact management portfolio.
Chapter 2	<a href="#">Features Enabled by Product Licensing (page 33)</a>	Provides a comparative list of all the Cisco CRS features enabled by product licensing for each Unified CCX product.
Chapter 3	<a href="#">Unified CCX Architecture (page 43)</a>	Describes the available deployment models for Unified CCX.

Part/Chapter	Title	Description
Chapter 4	<a href="#">Basic Contact Flow Concepts (page 49)</a>	Provides information on Unified CCX concepts, call flows, and configuration dependencies.
<b>Part II</b>	<a href="#">Installing and Configuring Unified CCX with Cisco Unified CallManager (page 57)</a>	Describes how to install and configure Unified CCX with Cisco Unified CallManager.
Chapter 5	<a href="#">Installing and Configuring Cisco Unified CallManager for Unified CCX (page 59)</a>	Provides information on installing and configuring Cisco Unified CallManager for Unified CCX.
Chapter 6	<a href="#">Installing and Configuring Unified CCX (page 63)</a>	Provides information on installing and configuring Unified CCX
Chapter 7	<a href="#">Deploying the Sample Script, icd.aef (page 71)</a>	Provides information on deploying the icd.aef script for Unified CCX.
Chapter 8	<a href="#">Installing Agent and Supervisor Desktop for Unified CCX (page 73)</a>	Provides information on the Unified CCX agent desktop and the supervisor desktop.
Chapter 9	<a href="#">Call Monitoring, Call Recording, and Prompts for Unified CCX (page 79)</a>	Provides information on the dependencies to use the monitoring and recording features in Unified CCX.
Chapter 10	<a href="#">Using Unified CCX Historical Reports (page 81)</a>	Provides information on configuring the database connection for to facilitate historical reports and scheduling details for users.
Chapter 11	<a href="#">Managing Your Unified CCX System (page 85)</a>	Provides information on managing the prompt, grammar, and document files, the central datastore, and Cisco CRS repository.

## Related Documentation

The following web addresses can give you additional information to that provided in this guide on Unified CCX.

**Note:**

- The Web addresses referenced in this guide were accurate at the time this guide was written but might change. If an address does not work, go to Cisco.com and search for the related document at the Search prompt.



- Some of the Web addresses referenced in the following table

**Table 1: Related Web Resources**

For ....	See ....
Cisco Unified Communications phone configuration check list	The <i>Phone Configuration Checklist</i> table in the <a href="#">Cisco Unified CallManager System Guide, Release 4.3(1)</a> <sup>1</sup>
An explanation of how to use the Cisco 7900 series phone	<a href="#">Cisco IP Phone 7960G eLearning Tutorial</a> <sup>2</sup>
Unified CCX products and services, datasheets, case studies, and other documents	<a href="#">Cisco Unified Contact Center Express</a> <sup>3</sup>
How to plan, implement, operate, and optimize Unified Communications - Small, Medium Business (SMB) Process Flow	<i>Unified Communications - Small, Medium Business (SMB) Steps to Success</i> <sup>4</sup>
How to design a Unified CCX	<a href="#">Solution Reference Network Designs (SRND)</a> <sup>5</sup>
How to deploy Unified CCX	<a href="#">Unified CCX Specialist training course</a> <sup>6</sup>
How to install and/or upgrade Unified CCX	<i>Cisco Customer Response Solutions Installation Guide</i> at <a href="#">Cisco Unified Contact Center Express Install and Upgrade Guides</a> <sup>7</sup>
How to develop and program Cisco CRS Scripts	<i>Cisco CRS Scripting and Development Series</i> manuals at <a href="#">Cisco Unified Contact Center Express Programming Guides</a> <sup>8</sup>

1) [http://www.cisco.com/en/US/partner/products/sw/voicesw/ps556/prod\\_maintenance\\_guides\\_list.html](http://www.cisco.com/en/US/partner/products/sw/voicesw/ps556/prod_maintenance_guides_list.html)

2) [http://www.cisco.com/en/US/products/hw/phones/ps379/products\\_data\\_sheet09186a00800d7975.html](http://www.cisco.com/en/US/products/hw/phones/ps379/products_data_sheet09186a00800d7975.html)

3) <http://www.cisco.com/en/US/products/sw/custcosw/ps1846/index.html>

4) [http://www.cisco.com/en/US/partner/products/sw/voicesw/ps556/prod\\_maintenance\\_guides\\_list.html](http://www.cisco.com/en/US/partner/products/sw/voicesw/ps556/prod_maintenance_guides_list.html)

5) [http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/products\\_implementation\\_design\\_guides\\_list.html](http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/products_implementation_design_guides_list.html)

6) [http://www.cisco.com/en/US/learning/le3/le2/le41/le79/le52/learning\\_certification\\_type\\_home\\_extra\\_level.html](http://www.cisco.com/en/US/learning/le3/le2/le41/le79/le52/learning_certification_type_home_extra_level.html)

7) [http://www.cisco.com/en/US/products/sw/custcosw/ps1846/prod\\_installation\\_guides\\_list.html](http://www.cisco.com/en/US/products/sw/custcosw/ps1846/prod_installation_guides_list.html)

8) [http://www.cisco.com/en/US/products/sw/custcosw/ps1846/products\\_programming\\_reference\\_guides\\_list.html](http://www.cisco.com/en/US/products/sw/custcosw/ps1846/products_programming_reference_guides_list.html)

## Related Documentation

For ....	See ....
How to troubleshoot Unified CCX	<a href="#">Cisco Unified Contact Center Express Troubleshoot and Alerts</a> <sup>9</sup>
Technical Support	<ul style="list-style-type: none"> <li>• <a href="#">Technical Support</a><sup>9</sup></li> <li>• <a href="#">Support</a><sup>9</sup></li> <li>• <a href="#">Voice and Unified Communications Support Resources</a><sup>9</sup></li> </ul>
Release Notes, Technical Notes, Field Notices, and Software Compatibility and Interoperability Information	<ul style="list-style-type: none"> <li>• <a href="#">Integrated Systems Documentation</a><sup>9</sup></li> <li>• <a href="#">Interoperability Portal</a><sup>9</sup></li> <li>• <a href="#">Cisco Unified Contact Center Express Troubleshooting Technical Notes</a><sup>9</sup></li> <li>• <a href="#">Cisco Unified Contact Center Express Field Notices</a><sup>9</sup></li> </ul>

Table 2: Related Documentation

For information on ....	See ....
Voice and Unified Communications Support Resources	<a href="#">Cisco Unified Communications and Voice Products</a> <sup>10</sup>
Cisco Unified CallManager	<a href="#">Cisco Unified CallManager Introduction</a> <sup>11</sup> <a href="#">Cisco Unified CallManager Documentation Index</a> <sup>12</sup>

9) [http://www.cisco.com/en/US/products/sw/custcosw/ps1846/tsd\\_products\\_support\\_troubleshoot\\_and\\_alerts.html](http://www.cisco.com/en/US/products/sw/custcosw/ps1846/tsd_products_support_troubleshoot_and_alerts.html)

9) <http://tools.cisco.com/Support/mytechsupport/index.jsp>

9) <http://www.cisco.com/en/US/support/index.html>

9) [http://www.cisco.com/en/US/partner/products/sw/voicesw/tsd\\_products\\_support\\_category\\_home.html](http://www.cisco.com/en/US/partner/products/sw/voicesw/tsd_products_support_category_home.html)

9) [http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1844/tsd\\_products\\_support\\_integrated\\_systems\\_documentation\\_list.html](http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1844/tsd_products_support_integrated_systems_documentation_list.html)

9) <http://www.cisco.com/go/interoperability>

9) [http://www.cisco.com/en/US/products/sw/custcosw/ps1846/prod\\_tech\\_notes\\_list.html](http://www.cisco.com/en/US/products/sw/custcosw/ps1846/prod_tech_notes_list.html)

9) [http://www.cisco.com/en/US/products/sw/custcosw/ps1846/prod\\_field\\_notices\\_list.html](http://www.cisco.com/en/US/products/sw/custcosw/ps1846/prod_field_notices_list.html)

10) [http://www.cisco.com/en/US/partner/products/sw/voicesw/tsd\\_products\\_support\\_category\\_home.html](http://www.cisco.com/en/US/partner/products/sw/voicesw/tsd_products_support_category_home.html)

11) <http://www.cisco.com/en/US/partner/products/sw/voicesw/ps556/index.html>

12) [http://www.cisco.com/en/US/partner/products/sw/voicesw/ps556/tsd\\_products\\_support\\_series\\_home.html](http://www.cisco.com/en/US/partner/products/sw/voicesw/ps556/tsd_products_support_series_home.html)

For information on ....	See ....
Cisco Customer Response Solutions Platform	<a href="#">Cisco Unified Contact Center Express Introduction</a> <sup>13</sup> <a href="#">Cisco Unified Contact Center Express Documentation Index</a> <sup>14</sup> <a href="#">Cisco Unified IP IVR Introduction</a> <sup>15</sup> <a href="#">Cisco Unified CRS Documentation Index</a> <sup>16</sup>

## Obtaining Documentation

Cisco documentation and additional literature are available on Cisco.com. Cisco also provides several ways to obtain technical assistance and other technical resources. These sections explain how to obtain technical information from Cisco Systems.

### Cisco.com

You can access the Cisco website at this URL:

<http://www.cisco.com>

You can access the most current Cisco documentation at this URL:

[Support Documentation](http://www.cisco.com/kobayashi/support/tac/documentation.html) (<http://www.cisco.com/kobayashi/support/tac/documentation.html>)

You can access international Cisco websites at this URL:

[http://www.cisco.com/public/countries\\_languages.shtml](http://www.cisco.com/public/countries_languages.shtml)

### Product Documentation DVD

Cisco documentation and additional literature are available in the Product Documentation DVD package, which may have shipped with your product. The Product Documentation DVD is updated regularly and may be more current than printed documentation.

The Product Documentation DVD is a comprehensive library of technical product documentation on portable media. The DVD enables you to access multiple versions of hardware and software installation, configuration, and command guides for Cisco products and to view technical documentation in HTML. With the DVD, you have access to the same documentation that is

13) <http://cisco.com/en/US/products/sw/custcosw/ps1846/index.html>

14) [http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/tsd\\_products\\_support\\_series\\_home.html](http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/tsd_products_support_series_home.html)

15) <http://cisco.com/en/US/products/sw/custcosw/ps3651/index.html>

16) [http://cisco.com/en/US/products/sw/custcosw/ps3651/tsd\\_products\\_support\\_series\\_home.html](http://cisco.com/en/US/products/sw/custcosw/ps3651/tsd_products_support_series_home.html)

found on the Cisco website without being connected to the Internet. Certain products also have .pdf versions of the documentation available.

The Product Documentation DVD is available as a single unit or as a subscription. Registered Cisco.com users (Cisco direct customers) can order a Product Documentation DVD from the Ordering tool or Cisco Marketplace.

[Cisco Ordering Root Page](http://www.cisco.com/en/US/partner/ordering/) (<http://www.cisco.com/en/US/partner/ordering/>)

[Cisco Marketplace](http://www.cisco.com/cgi-bin/marketplace/welcome.pl) (<http://www.cisco.com/cgi-bin/marketplace/welcome.pl>)

## Ordering Documentation

Beginning June 30, 2005, registered Cisco.com users may order Cisco documentation at the Product Documentation Store in the Cisco Marketplace at this URL:

[Cisco Marketplace](http://www.cisco.com/cgi-bin/marketplace/welcome.pl) (<http://www.cisco.com/cgi-bin/marketplace/welcome.pl>)

**Note:** Nonregistered Cisco.com users can order documentation through a local account representative by calling Cisco Customer Service (California, USA) at 408 526-7208 or, elsewhere in North America, by calling 1 800 553-NETS (6387).

## Documentation Feedback

You can rate and provide feedback about Cisco technical documents by completing the online feedback form that appears with the technical documents on Cisco.com.

You can rate and provide feedback about Cisco technical documents by completing the online feedback form that appears with the technical documents on Cisco.com.

You can submit comments by using the response card (if present) behind the front cover of your document or by writing to the following address:

Cisco Systems Attn: Customer Document Ordering 170 West Tasman Drive San Jose, CA 95134-9883

We appreciate your comments.

## Cisco Product Security Overview

Cisco provides a free online portal at this URL: [Security Vulnerability Policy](http://www.cisco.com/en/US/products/products_security_vulnerability_policy.html) ([http://www.cisco.com/en/US/products/products\\_security\\_vulnerability\\_policy.html](http://www.cisco.com/en/US/products/products_security_vulnerability_policy.html))

From this site, you can perform these tasks:

- Report security vulnerabilities in Cisco products.
- Obtain assistance with security incidents that involve Cisco products.
- Register to receive security information from Cisco.

A current list of security notices for Cisco products is available at this URL: [Security Advisories](http://www.cisco.com/go/psirt) (<http://www.cisco.com/go/psirt> )

If you prefer to see advisories and notices as they are updated in real time, you can access a Product Security Incident Response Team Really Simple Syndication (PSIRT RSS) feed from this URL: [PSIRT RSS Feed](http://www.cisco.com/en/US/products/products_psirt_rss_feed.html) ([http://www.cisco.com/en/US/products/products\\_psirt\\_rss\\_feed.html](http://www.cisco.com/en/US/products/products_psirt_rss_feed.html))

## Reporting Security Problems in Cisco Products

Cisco is committed to delivering secure products. We test our products internally before we release them, and we strive to correct all vulnerabilities quickly. If you think that you might have identified a vulnerability in a Cisco product, contact PSIRT:

- Emergencies - [security-alert@cisco.com](mailto:security-alert@cisco.com)

An emergency is either a condition in which a system is under active attack or a condition for which a severe and urgent security vulnerability should be reported. All other conditions are considered nonemergencies.

- Nonemergencies - [psirt@cisco.com](mailto:psirt@cisco.com)

In an emergency, you can also reach PSIRT by telephone:

- 1 877 228-7302
- 1 408 525-6532

**Note:** We encourage you to use Pretty Good Privacy (PGP) or a compatible product to encrypt any sensitive information that you send to Cisco. PSIRT can work from encrypted information that is compatible with PGP versions 2.x through 8.x. Never use a revoked or an expired encryption key. The correct public key to use in your correspondence with PSIRT is the one that has the most recent creation date in this public key server list: [OpenPGP Public Key Server Commands](http://pgp.mit.edu:11371/) ( <http://pgp.mit.edu:11371/>)

## Obtaining Technical Assistance

Cisco Technical Support provides 24-hour-a-day award-winning technical assistance. The Cisco Technical Support & Documentation website on Cisco.com features extensive online support

resources. In addition, if you have a valid Cisco service contract, Cisco Technical Assistance Center (TAC) engineers provide telephone support. If you do not have a valid Cisco service contract, contact your reseller.

## Cisco Technical Support & Documentation Website

The Cisco Technical Support & Documentation website provides online documents and tools for troubleshooting and resolving technical issues with Cisco products and technologies. The website is available 24 hours a day, at this URL:

**[Support](http://www.cisco.com/en/US/customer/support/index.html)** (<http://www.cisco.com/en/US/customer/support/index.html>)

Access to all tools on the Cisco Technical Support & Documentation website requires a Cisco.com user ID and password. If you have a valid service contract but do not have a user ID or password, you can register at this URL:

**[Cisco.com Registration](http://tools.cisco.com/RPF/register/register.do)** (<http://tools.cisco.com/RPF/register/register.do>)

**Note:** Use the Cisco Product Identification (CPI) tool to locate your product serial number before submitting a web or phone request for service. You can access the CPI tool from the Cisco Technical Support Website by clicking the **Tools & Resources Tools**. Choose **Cisco Product Identification Tool** from the Alphabetical Index drop-down list, or click the **Cisco Product Identification Tool** RMAs. The CPI tool offers three search options: by product ID or model name; by tree view; or for certain products, by copying and pasting **show** command output. Search results show an illustration of your product with the serial number label location highlighted. Locate the serial number label on your product and record the information before placing a service call.

## Submitting a Service Request

Using the online TAC Service Request Tool is the fastest way to open S3 and S4 service requests. (S3 and S4 service requests are those in which your network is minimally impaired or for which you require product information.) After you describe your situation, the TAC Service Request Tool provides recommended solutions. If your issue is not resolved using the recommended resources, your service request is assigned to a Cisco TAC engineer. The new service request tool is located at this URL:

**[Technical Support & Documentation TAC Service Request Tool](http://tools.cisco.com/ServiceRequestTool/create/launch.do)** (<http://tools.cisco.com/ServiceRequestTool/create/launch.do>)

For S1 or S2 service requests or if you do not have Internet access, contact the Cisco TAC by telephone. (S1 or S2 service requests are those in which your production network is down or severely degraded.) Cisco TAC engineers are assigned immediately to S1 and S2 service requests to help keep your business operations running smoothly

To open a service request by telephone, use one of the following numbers:

- Asia-Pacific: +61 2 8446 7411 (Australia: 1 800 805 227)
- EMEA: +32 2 704 55 55
- USA: 1 800 553-2447

For a complete list of Cisco TAC contacts, go to this URL:

**[Contact Technical Support](http://www.cisco.com/kobayashi/support/tac/contacts.shtml)** (<http://www.cisco.com/kobayashi/support/tac/contacts.shtml>)

## Definitions of Service Request Severity

To ensure that all service requests are reported in a standard format, Cisco has established severity definitions.

Severity 1 (S1) -- Your network is down, or there is a critical impact to your business operations. You and Cisco will commit all necessary resources around the clock to resolve the situation.

Severity 2 (S2) -- Operation of an existing network is severely degraded, or significant aspects of your business operation are negatively affected by inadequate performance of Cisco products. You and Cisco will commit full-time resources during normal business hours to resolve the situation.

Severity 3 (S3) -- Operational performance of your network is impaired, but most business operations remain functional. You and Cisco will commit resources during normal business hours to restore service to satisfactory levels.

Severity 4 (S4) -- You require information or assistance with Cisco product capabilities, installation, or configuration. There is little or no effect on your business operations.

## Obtaining Additional Publications and Information

Information about Cisco products, technologies, and network solutions is available from various online and printed sources.

- Cisco Marketplace provides a variety of Cisco books, reference guides, and logo merchandise. Visit Cisco Marketplace, the company store, at this URL:

**[Cisco Marketplace](http://www.cisco.com/go/marketplace/)** (<http://www.cisco.com/go/marketplace/>)

- Cisco Press publishes a wide range of general networking, training and certification titles. Both new and experienced users will benefit from these publications. For current Cisco Press titles and other information, go to Cisco Press at this URL:

[Welcome to ciscopress.com](http://www.ciscopress.com/index.asp?rl=1) (http://www.ciscopress.com/index.asp?rl=1)

- *Packet* magazine is the Cisco Systems technical user magazine for maximizing Internet and networking investments. Each quarter, Packet delivers coverage of the latest industry trends, technology breakthroughs, and Cisco products and solutions, as well as network deployment and troubleshooting tips, configuration examples, customer case studies, certification and training information, and links to scores of in-depth online resources. You can access Packet magazine at this URL:

[Networking Professionals Magazine](http://www.cisco.com/web/about/ac123/ac114/about_cisco_packet_magazine.html) (http://www.cisco.com/web/about/ac123/ac114/about\_cisco\_packet\_magazine.html)

- *iQ Magazine* is the quarterly publication from Cisco Systems designed to help growing companies learn how they can use technology to increase revenue, streamline their business, and expand services. The publication identifies the challenges facing these companies and the technologies to help solve them, using real-world case studies and business strategies to help readers make sound technology investment decisions. You can access iQ Magazine at this URL:

[iQ MAGAZINE](http://www.cisco.com/web/about/ac123/iqmagazine/index.html) (http://www.cisco.com/web/about/ac123/iqmagazine/index.html)

- *Internet Protocol Journal* is a quarterly journal published by Cisco Systems for engineering professionals involved in designing, developing, and operating public and private internets and intranets. You can access the Internet Protocol Journal at this URL:

[The Internet Protocol Journal](http://www.cisco.com/web/about/ac123/ac147/about_cisco_the_internet_protocol_journal.html) (http://www.cisco.com/web/about/ac123/ac147/about\_cisco\_the\_internet\_protocol\_journal.html)

- World-class networking training is available from Cisco. You can view current offerings at this URL:

[Training & Events](http://www.cisco.com/web/learning/index.html) (http://www.cisco.com/web/learning/index.html)



---

# Part 1: Unified CCX Overview

Cisco Unified Contact Center Express (Unified CCX) uses the Cisco Customer Response Solutions (CRS) platform to provide a multimedia (voice, data, and web) IP-enabled customer-care application environment that provides an integrated contact center with support for 300 agents.

The Cisco CRS platform is a technology platform used by Unified CCX across several of its customer interaction management products including Cisco Unified Contact Center Enterprise (Unified CCE), Cisco Unified IP Interactive Voice Response (Unified IP IVR) and Cisco Unified Queue Manager (Unified QM). Cisco CRS uses an open architecture that supports industry standards. You can integrate your applications with a wide variety of technologies and products such as enterprise databases and Unified CCX agent desktop.

**Note:** Unified QM and Unified IP IVR are described in the *Getting Started with Unified IP IVR* guide.

This part explains the key components of Cisco CRS, and describes where Unified CCX fits into the Cisco Customer Contact Management Portfolio.





# Chapter 1

## About Unified CCX

---

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), Interactive Voice Response (IVR), and Computer Telephony Integration (CTI) virtual contact center solution with support for up to 300 agents and 300 IVR ports. An IVR port refers to a basic self-service port for the Standard and Enhanced packages and a premium self-service port the Premium package.

This section contains the following topics:

- [Unified CCX New Features in Release 4.1, page 13](#)
- [Supported Functionalities in Cisco CRS Release 4.1, page 14](#)
- [Seat and Licensing Usage, page 18](#)
- [About Installing Multiple Cisco CRS Products on a Server, page 19](#)
- [Unified CCX Package Descriptions, page 20](#)
- [Feature Summary for Each Unified CCX Package, page 21](#)
- [Cisco CRS Subsystems Supported by Unified CCX, page 28](#)
- [Sample Default Unified CCX Scripts, page 30](#)

## Unified CCX New Features in Release 4.1

CRS 4.1 continues the product solution of an entry and mid-market voice-based contact center for Cisco Unified Communications. This section explains the new features in Cisco CRS Release 4.1.

Unified CCX has the following new features in CRS Release 4.1(1):

- **Support for Microsoft Windows 2003.** The Cisco CRS platform now runs on Windows 2003, the latest operating system (OS) from Microsoft. This OS contains new features including a more secure environment.
- **Product name changes on the user interface to the new “Unified” names.**

Prior to Cisco CRS platform, Release 4.1, the releases were branded as follows:

- The Unified CCX product was branded as Cisco IP Contact Center Express (Cisco IPCC Express).
- The Unified IP IVR product was branded as Cisco IP Interactive Voice Response (Cisco IP IVR).
- The Unified QM product was branded as Cisco IP Queue Manager (Cisco IP QM).

Starting with Cisco CRS platform, Release 4.1(1), the following new names apply:

- Cisco IPCC Express is renamed Cisco Unified Contact Center Express (abbreviated as Unified CCX).
- Cisco IP IVR is renamed Cisco Unified IP IVR (abbreviated as Unified IP IVR).
- Cisco IP Queue Manager is renamed Cisco Unified Queue Manager (abbreviated as Unified QM).

This manual, the Cisco CRS 4.1 documentation set, and the user interface references these products by the new names.

- **Support for external use of the CTI Protocol.** The Unified CCX Computer Telephony Integration (CTI) Protocol is a set of rules and message definitions for enabling a client to receive telephony information and control telephony functions through Unified CCX such as making and receiving voice calls and caller identification. Cisco CRS supports the Unified CCX CTI Protocol beginning with CRS, Release 4.1(1). See the *Unified CCX CTI Protocol Developer Guide* for more information.
- **Upgrade from CRS 3.x > 4.1 and from CRS 4.0 > 4.1** You can upgrade directly from Cisco CRS 3.x to Cisco CRS 4.1, and from Cisco CRS 4.0 to Cisco CRS 4.1. See the *Cisco CRS Installation Guide* for detailed instructions.

## Supported Functionalities in Cisco CRS Release 4.1

This section identifies and explains the major functionalities in Release 4.1

Unified CCX has the following functionalities:

- Routing

The routing functionality has the following features:

- Application /database integration
- Call-by-call routing
- Call re-routing based on wait time.

- Conditional routing based on time of day, day of week, and holidays
- Conditional routing based on calls in queue
- Conditional routing based on caller origin
- Conditional routing based on dialed number
- Conditional routing based on caller entered digits
- Database-driven call handling load balancing

- Queuing

The queuing functionality has the following features:

- Priority routing
- Skill-based routing

- Desktop

The desktop functionality has the following features:

- Personal and system phone directories
- Work flow automation/Task buttons
- Popping 3rd party applications on events
- Record and archive calls
- Work agent state for after call wrap-up activity
- Chat with supervisor/agents using instant messaging
- Call activity log of incoming and outgoing calls
- Agent activity view in real time
- Agent and skill group statistics
- Scrolling messages broadcast to agents
- Silent monitoring of an agent's call
- Agent guidance during a call
- Capture and archive call audio

- CRS Log Collection Tool

The CRS Log Collection Tool provides the ability to collect all log files from the CRS server into one zip file. The tool also provides the ability to write the zip file to a local or network drive. For complete tracing configuration or CRS Log Collection tool information and procedures, refer to the *Cisco Customer Response Solutions Servicing and Troubleshooting Guide*.

- Unified IP IVR call treatment

The Unified IP IVR call treatment functionality has the following features:

- Prompt and collect
- XML/HTTP client support
- VoiceXML (in support of ASR)
- Database Integration
- HTTP Server Support
- Real-time notification
- ASR
- TTS

- Administration

Unified CCX has a web-based administration with the following features:

- Shared administration with Cisco Unified CallManager so you can reuse telephony provisioning information
- Remote login using the URL so you can administer from anywhere on the enterprise WAN
- GUI-based configuration
- Native interfaces including Extensible Markup Language (XML), Open Database Connectivity (ODBC), and Lightweight Directory Access Protocol (LDAP)
- Directory Sharing with Cisco Unified CallManager

- Support for Cisco's Customer Interaction Network.

The Customer Interaction Network is Cisco's distributed, enterprise-wide, globally capable, and highly available Cisco Unified Communications network architecture for customer contact interaction management.

- ACD integration with the Unified Intelligent Contact Management Enterprise (Unified ICME) by way of the Unified IPCC Gateway. The Unified IPCC Gateway is a Peripheral Gateway (PG) which is configured on the Unified ICME software and is coresident on the CRS server. This feature allows integrating Unified CCX as an ACD into the Customer Interaction Network enabled by Unified ICME and allows users to take advantage of the

enterprise-wide routing functionality of Unified ICME. See the *The Cisco IPCC Gateway Deployment Guide*.

- A CTI protocol supports the integration of Unified CCX Release 4.1 with Unified ICME Release 7.2.

- High Availability (automatic failover) .

Cisco CRS provides high availability and automatic failover capability through the use of two servers, the active server and the standby server.

- The active server provides all system services and resources.
- No services or resources are available from the standby server.
- Both servers are synchronized when administrative changes are made on the active server.
- If the active server fails, there is automatic failover to the standby server.

**Warning: You can deploy over Wide Area Network (WAN) expansion servers on which only the Monitoring component or on which only the Monitoring and Recording components are installed. All other servers in the cluster must be deployed on the same LAN.**

- Clusters.

The Cisco CRS cluster consists of one or more servers (nodes) that run Cisco CRS components in your Cisco CRS deployment.

- If you deploy Cisco CRS components on a single server, the Cisco CRS cluster (often referred to as cluster in this manual) consists of that server.
- If you deploy Cisco CRS on multiple servers, the cluster includes the Cisco CRS server, expansion servers, and standby servers on which you installed Cisco CRS.
- The CRS cluster can support up to two CRS Servers, one designated as the active CRS Server and the other designated as the standby CRS Server for high availability purposes.
- A cluster can also include one or more expansion servers.

- Expansion Server. You can increase the capacity of your Cisco CRS deployment by activating the database, monitoring, and recording components on various additional servers in the Cisco CRS cluster. Such an additional server is called an expansion server.
- Desktop Monitoring. With desktop monitoring enabled, the software on the agent desktop handles recording and monitoring requests for that agent. This is possible only on desktops that are physically connected to the network through a hard phone or a soft phone.
- Maximum 300 agents. Provides scalability for up to 300 agents.
- Agent-based routing. Calls might be routed to any agent by specifying the agent ID.

**Note:** Agent-based queuing is not supported in this release.

- Auto-exit from Wrap-Up Timer. Agents might be automatically moved out of work state after the time specified by the administrator; auto-available setting (Agent Attribute) defines next state (ready or not ready)
- Skill-based routing enhancements. Skill based routing enhancements for skills in Customer Service Queues (CSQs).

Skills can be weighted or ordered as follows:

- Ordered Skills: When resources are selected, a comparison is done based on the competency level of the first skill in the list. If there is a tie, then the next skill within the order is used.
- Weighted Skills: Each competency level is multiplied by the skill's associated weight (from 1 to 1000), and a final comparison is done on the sum of weighted competencies.

**Note:** To check for the current versions of the preceding software supported by your version of Unified CCX, refer to the *Cisco CRS Software and Hardware Compatibility Matrix*. You can access it on the Web at [Unified CCX and Unified IP IVR](http://www.cisco.com/univercd/cc/td/doc/product/voice/sw_ap_to/index.htm) ([http://www.cisco.com/univercd/cc/td/doc/product/voice/sw\\_ap\\_to/index.htm](http://www.cisco.com/univercd/cc/td/doc/product/voice/sw_ap_to/index.htm))

## Seat and Licensing Usage

A seat provides all the licenses required for all combinations of deployed features. A seat includes two Unified IP IVR ports, an agent, a supervisor, a supervisor logging in as an agent, an IP phone agent, a historical report client, or a recording license.

**Note:** Recording licenses are only available with Unified CCX Enhanced or Premium.

Each Unified CCX Standard seat is licensed for concurrent use of one standard agent or one standard supervisor or one standard supervisor (a supervisor with a Unified CCX standard license) logging in as an agent. It includes a concurrent license use of one standard historical reporting session.

Each Unified CCX Enhanced seat is licensed for concurrent use of one enhanced agent or one enhanced supervisor or one enhanced supervisor (a supervisor with a Unified CCX enhanced license) logging in as an agent. It includes a concurrent license use of one enhanced historical reporting session and one call recording or playback license.

Each Unified CCX Premium seat is licensed for concurrent use of one premium agent or one premium supervisor or one premium supervisor (a supervisor with a Unified CCX premium license) logging in as an agent. It includes a concurrent license use of one premium historical reporting session and one call recording or playback license (same as Unified CCX enhanced license).

**Note:**

The total number of seats is calculated as follows:



Total seats = Total concurrent agents + Total concurrent supervisors

**Note:** Additional Unified CCX Premium seats must be purchased when the number of concurrent Unified IP IVR ports required is larger than twice the number of seats as computed above.

You must purchase additional Unified CCX seats if the following situations apply:

- When the number of concurrent historical reporting sessions exceeds the number of seats as computed above.
- When the number of concurrent call recording or playback sessions exceeds the number of seats as computed above.

When using Unified CCX package licenses, consider the following factors:

1. Unified CCX packages are sold and licensed on a concurrent use basis. For example, if you have two shifts of 50 agents, you only need to purchase 50 agent licenses (not 100 licenses) for multiple users on a single specific PC.
2. For standalone systems, the number of Unified IP IVR ports is dependent on the number of purchased seat licenses.
3. All supported Cisco CRS languages are included in all Unified CCX packages. You must install them as required.

Unified CCX products have different Unified IP IVR capabilities depending on the product purchased. Unified CCX Standard and Enhanced products include a basic prompt and collect Unified IP IVR functionality that provides call queue points, custom messaging and prompting, music on hold, and the ability to collect and process telephone keypad key presses made by the customer in response to Unified IP IVR prompts. Unified CCX Premium provides a full featured Unified IP IVR port with database integration that enables integrated Unified IP IVR self-service applications with optional ASR and TTS as well as data directed ACD routing and screen pops.

**Note:** Refer to the [Promotional Bundle Details](http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/prod_promotions_list.html) ([http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/prod\\_promotions\\_list.html](http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/prod_promotions_list.html)) for information regarding capacity for Unified CCX deployments running on the same server as Cisco Unified CallManager.

## About Installing Multiple Cisco CRS Products on a Server

All Cisco CRS product packages are mutually exclusive. This means that only one of them can be installed at any point in time on a Cisco Media Convergence Server (MCS) or compatible

partner servers. If more than one is installed, then priority is given to the package with the highest number at the left in the following list:

1. Extended Services (for example, the free Cisco Unified CallManager AutoAttendant)
2. Unified QM
3. Unified IP IVR software
4. Unified CCX Standard
5. Unified CCX Enhanced
6. Unified CCX Premium

For example, the Unified CCX Standard package has a higher priority than Unified IP IVR, and if both are installed on the same Cisco CRS server, you will only be able to use the Unified CCX Standard package.

## Unified CCX Package Descriptions

Unified CCX is available in three versions:

- Unified CCX Standard includes the Editor steps necessary for creating Unified CCX configurations for informal call centers not requiring skills based routing.
- Unified CCX Enhanced adds significant new capability in ACD, desktop, and CTI functions with support for skill and competency based routing, priority queuing, support for historical reporting on these enhanced features, additional enhanced features in both agent and supervisor desktop and support for using and popping data to any Windows based 3rd party application.
- Unified CCX Premium includes all the functionality provided by Unified CCX Enhanced and in addition adds full Unified IP IVR support integration, including database integration, Voice eXtensible Markup Language (VoiceXML), HTML web triggers (ability to run any workflow from a web page), custom Java extensions, e-Notification services, and support for ASR and TTS from Cisco certified partners.

All Unified CCX solutions are tightly integrated with Cisco Unified Communications and Cisco Unified CallManager.

Unified CCX Standard can be upgraded to Unified CCX Enhanced or Premium and Unified CCX Enhanced can be upgraded to Unified CCX Premium. Upgrading from one Unified CCX product to another requires a new install of the new product. For example, to convert Unified CCX Standard to Unified CCX Enhanced, you need to reinstall Unified CCX only if all the Enhanced components are not installed and then add the new Enhanced license from the Cisco CRS Control Center web page (from the Cisco CRS administration menu bar, select **System > Control Center > License Information > Add Licenses**).

## Feature Summary for Each Unified CCX Package

This table lists the Cisco CRS features supported in each Unified CCX package.

Feature	Feature Details	Premium	Enhanced	Standard
General system features with server software	Hardware configuration	Cisco MCS and Cisco approved partner servers	Cisco MCS and Cisco approved partner servers	Cisco MCS and Cisco approved partner servers
	Software configuration	Microsoft Windows client-server software	Microsoft Windows client-server software	Microsoft Windows client-server software
	Vendor systems	Cisco Unified CallManager 4.1 and later	Cisco Unified CallManager 4.1 and later	Cisco Unified CallManager 4.1 and later
	Operating systems	Windows 2003 Server and Advanced Server	Windows 2003 Server and Advanced Server	Windows 2003 Server and Advanced Server
	Redundancy	High availability with automatic fail-over	High availability with automatic fail-over	Not available
	Maximum number of analog trunks	Unlimited (no software limitations)	Unlimited (no software limitations)	Unlimited (no software limitations)
	Maximum number of digital trunks	Unlimited (no software limitations)	Unlimited (no software limitations)	Unlimited (no software limitations)
	Maximum number of IP trunks	Unlimited (no software limitations)	Unlimited (no software limitations)	Unlimited (no software limitations)
	Maximum number of trunk groups	Unlimited (no software limitations)	Unlimited (no software limitations)	Unlimited (no software limitations)
	Call conferencing	Included	Included	Included
	Agent interdialing	Included	Included	Included
	Direct Outward Dialing (DOD)	Included	Included	Included
Integrated ACD features with server software	Custom scripting using Unified CCX Drag and Drop Editor	Included	Included	Included

## Feature Summary for Each Unified CCX Package

Feature	Feature Details	Premium	Enhanced	Standard
	Maximum number of configurable and active agents <sup>1</sup>	300	300	300
	Maximum number of supervisor positions	32	32	32
	Maximum number of agent groups	75	75	75
	Maximum number of agents per group	300	300	300
	ANI	Included	Included	Included
	DNIS	Included	Included	Included
	Route on skill	Included	Included	Not available
	Route on skill competency	Included	Included	Not available
	Conditional routing (time of day, day of week, custom variables, etc)	Included	Included	Included
	Overflow, interflow, intraflow routing	Included	Included	Included
	Custom Routing based on enterprise data (priority routing)	Included	Not available	Not available
	Dynamic priority queuing	Included	Included	Not available
	Maximum number of definable skill groups	150	150	Not available
	Maximum number of skills per agent	50	50	Not available
	Maximum number of routing programs	Unlimited (no software limitations)	Unlimited (no software limitations)	Unlimited (no software limitations)
	Maximum number of steps per routing program	Unlimited (no software limitations)	Unlimited (no software limitations)	Unlimited (no software limitations)

1) The number of active agents (logged in at any time) depends on the number of licenses permitted. You can configure more agents while only the licensed number of agents can be active.

Feature	Feature Details	Premium	Enhanced	Standard
Integrated Unified IP IVR features with server software	Play messages to callers—music	Included using Cisco Unified CallManager Music On Hold server or .wav file	Included using Cisco Unified CallManager Music On Hold server or .wav file	Included using Cisco Unified CallManager Music On Hold server or .wav file
	Play messages to callers—prompts	Included using .wav file	Included using .wav file	Included using .wav file
	Play messages to callers—combine prompts, music and messages	Included fully customizable	Included fully customizable	Included fully customizable
	Capture and process caller Dual Tone Multifrequency (DTMF) input	Included	Included	Included
	Capture and process caller DTMF input under VXML control	Included	Not available	Not available
	Automated attendant support	Included fully customizable	Included fully customizable	Included fully customizable
	Database integration	Included	Not available	Not available
	ASR	Optional using MRCP (order from Nuance)	Not available	Not available
	TTS	Optional using MRCP (order from Nuance)	Not available	Not available
	Real-time notification services (email, paging, fax)	Included--paging and fax required 3rd party services	Not available	Not available
	VoiceXML (VXML) for AST, TTS, and DTMF	Included	Not available	Not available
	Read data from HTTP and XML pages	Included	Included	Included
	Run defined workflow using HTTP request	Included	Not available	Not available
	Integrated self-service application support	Included	Not available	Not available

## Feature Summary for Each Unified CCX Package

Feature	Feature Details	Premium	Enhanced	Standard
Integrated CTI/screen pop features with IPPC Express seat license	Pop ANI/DNIS and customer defined workflow data into the enterprise data window	Included	Included	Included
	Automatically start any Microsoft Windows compatible application	Included	Included	Not available
	Send information to any Microsoft Windows compatible application	Included	Not available	Not available
	Provide database dip in support of screen pop	Included	Not available	Not available
Integrated PC-based agent desktop features with Unified CCX seat license	Workflow automation/task buttons	Included	Included	Not available
	Popping 3rd party applications on events	Included	Included	Not available
	Recording and archiving of calls	Included	Included	Not available
	"Work" agent state for after call wrap-up activity	Included	Included	Not available
	"Chat" with supervisor or agents using instant messaging	Included	Included	Included
	Call log tracks call activity of incoming and outgoing calls	Included	Included	Included
	Agent log tracks agent state changes and other information	Included	Included	Included
	PC desktop control of agent/supervisor phone with phone directory	Included	Included	Included
	Support for Cisco Unified Communications--Cisco IP Phone not required for agents	Included	Included	Included

Feature	Feature Details	Premium	Enhanced	Standard
	Agent state buttons	Included	Included	Included
Integrated IP Phone-Based Agent Desktop features with Unified CCX Seat License	7970/7971/7960/7940 IP Phones only	Included	Included	Included
	Log in/out	Included	Included	Included
	Ready/not ready	Included	Included	Included
	Supervisor desktop	Included	Included	Included
	Shows agent phone state	Included	Included	Included
	Agent can initiate on-demand recording	Included	Included	Not available
	Supervisor can silent monitor, barge-in, and intercept calls	Included	Included	Not available
Integrated PC-based supervisor desktop features with Unified CCX seat license	View agent activity in real time	Included	Included	Included
	View agent and skill group statistics	Included	Included	Included
	Chat—send text messages to any or all agents	Included	Included	Included
	Marquee—broadcast scrolling messages to agent	Included	Included	Included
	Support for IP communicator--Cisco IP phone not required for agent phone	Included	Included	Included
	Log out agent	Included	Included	Included
	Make agent ready	Included	Included	Included

## Feature Summary for Each Unified CCX Package

Feature	Feature Details	Premium	Enhanced	Standard
	Coaching—provide agent guidance through chat	Included	Included	Included
	Silent monitoring—listen in on an agent's call	Included	Included	Not available
	Barge in—join in on an agent's conversation	Included	Included	Not available
	Intercept—Take a call from an agent	Included	Included	Not available
	Record—capture and archive call audio	Included	Included	Not available
Integrated historical reporting with Unified CCX seat license	Abandoned call detail activity report	Included	Included	Included
	Agent detail report	Included	Included	Included
	Agent login/logout activity report	Included	Included	Included
	Agent state summary report (by agent)	Included	Included	Included
	Agent summary report	Included	Included	Included
	Call custom variables report	Included	Included	Included
	Called number summary activity report	Included	Included	Included
	Common skill CSQ activity report	Included	Included	Not available
	CSQ activity report (by CSQ)	Included	Included	Included
	CSQ activity report (by interval)	Included	Included	Included
	CSQ activity report	Included	Included	Included
	CSQ service level report	Included	Included	Included
	Detailed call-by-call Contact Call Detail Record (CCDR) report	Included	Included	Included



Feature	Feature Details	Premium	Enhanced	Standard
	Detailed call, CSQ agent report	Included	Included	Included
	Priority summary activity report	Included	Included	Not available
	Skill routing activity report	Included	Included	Not available
	Unified IP IVR application performance analysis report	Included	Included	Included
	Unified IP IVR traffic analysis report	Included	Included	Included
Recording with Unified CCX seat license	On demand agent recording	Included	Included	Not available
	On demand supervisor recording	Included	Included	Not available
	"Always On" site recording	Not available--contact Cisco Contact Center recording partners	Not available--contact Cisco Contact Center recording partners	Not available--contact Cisco Contact Center recording partners
Multichannel available only through Cisco professional services	Universal queuing support	Available using Cisco Professional Services	Available using Cisco Professional Services	Not available
	Cisco E-mail manager option support	Available using Cisco Professional Services	Available using Cisco Professional Services	Not available
	Cisco Collaboration Server (web chat, Web call back)	Available using Cisco Professional Services	Available using Cisco Professional Services	Not available
Administration	Browser based: administer from anywhere on your WAN	Included	Included	Included
	Web-enabled real-time reporting client	Included	Included	Included
	Full integration with Cisco NMS including SNMP support and alarm service	Included	Included	Included
	Support for 3rd party MIBs	Included	Included	Included

## Cisco CRS Subsystems Supported by Unified CCX

Feature	Feature Details	Premium	Enhanced	Standard
	Support for Cisco Campus Manager and Resource Management Essentials	Included	Included	Included
	Tracing and local logging	Included	Included	Included
Voice mail integration	Voice messaging interface	Optional (Cisco Unity)	Optional (Cisco Unity)	Optional (Cisco Unity)
	Maximum number of voice mailboxes supported	2,500	2,500	2,500
	Maximum number of voice storage hours	Unlimited (storage limitation hard disk dependent)	Unlimited (storage limitation hard disk dependent)	Unlimited (storage limitation hard disk dependent)
	Support for other vendor voice mail	Yes	Yes	Yes
	Unified messaging support	Optional (Cisco Unity)	Optional (Cisco Unity)	Optional (Cisco Unity)

## Cisco CRS Subsystems Supported by Unified CCX

The following table lists all the Cisco CRS subsystems supported by Unified CCX.

Subsystem Type	Purpose	Premium	Enhanced	Standard
Cisco Media Termination (CMT)	<p>Configures CMT dialog control groups, which can be used to handle simple DTMF data collected from dialog interactions with customers.</p> <p>The Cisco Media subsystem uses dialog groups to organize and share resources among applications.</p> <p>A dialog group is a pool of dialog channels in which each channel is used to perform dialog interactions with a caller, during which the caller responds to automated prompts by pressing buttons on a touch-tone phone.</p>	Yes	Yes	Yes
Core Real-Time Report (RTR)	Provides real-time statistics for contacts, sessions, and applications.	Yes	Yes	Yes
Database	Handles the connections between the Cisco CRS server and the Unified CCX database.	Yes	No	No

Subsystem Type	Purpose	Premium	Enhanced	Standard
	<p>Also provides ODBC support—Unified CCX can access Microsoft Structured Query Language (SQL) servers and Oracle, Sybase, and IBM DB2 databases.</p> <p>Refer to the <a href="#">Cisco CRS Compatibility Guide</a><sup>17</sup> for the latest versions of the database software that are supported.</p>			
E-mail	Adds components to the Cisco CRS Engine that allows it to send e-mail messages	Yes	No	No
Enterprise server data	Allows scripts written in Cisco CRS Release 3.x to populate Enterprise Data fields in Cisco CRS Release 4.1.	Yes	Yes	Yes
HTTP	Adds components to the Cisco CRS Engine that allow it to respond to HTTP requests.	Yes	No	No
Java Telephony Application Programming Interface (JTAPI)	Manages the connection between the Cisco Unified CallManager, CTI Manager, and the Cisco CRS Engine.	Yes	Yes	Yes
<b>MRCP ASR</b> <ul style="list-style-type: none"> <li>ASR server software (required)</li> <li>ASR ports (at least one is required)</li> </ul> <p><b>Note:</b></p> <ul style="list-style-type: none"> <li>The number of ASR ports must be less than or equal to the number of Unified IP IVR ports. If there are more ASR ports than Unified IP IVR ports, then the excess ports are automatically disabled.</li> <li>Multi-language ASR support must be purchased from a certified Cisco ASR vendor. This support is restricted by the Cisco CRS languages that are selected during the Cisco CRS</li> </ul>	<p>Allows a script to respond to voice input in addition to DTMF.</p> <p>This allows a caller to verbally convey information to the system for processing instead of pressing keys on a touch-tone telephone.</p>	Yes (optional)	No	No

17) [http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/products\\_device\\_support\\_tables\\_list.html](http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/products_device_support_tables_list.html)

## Sample Default Unified CCX Scripts

Subsystem Type	Purpose	Premium	Enhanced	Standard
installation. You can install additional supported languages after the initial CRS installation. The certified Cisco ASR vendors are Nuance and ScanSoft.				
<b>MRCP TTS</b> <ul style="list-style-type: none"> <li>TTS server software (required)</li> <li>TTS ports (at least one is required)</li> </ul> <b>Note:</b> Multi-language TTS support must be purchased from a certified Cisco TTS vendor	<p>Composes voice prompts that are generated in real time from text, such as speaking the words in the text of an e-mail message.</p> <p>TTS is primarily used to convey information obtained from a database or other source that is non-repetitive. Examples of such information include name and address verification.</p> <p>Although the TTS technology has improved greatly since its inception, the tone still sounds computer generated.</p>	Yes (optional)	No	No
Resource Manager-Contact Manager (RmCm)	Allows Unified CCX to monitor agent phones, control agent states, route and queue calls, and manage the historical reporting feature.	Yes	Yes	Yes
Voice browser	Manages the voice browser functionality.	Yes	No	No
VoIP monitor	Enables remote recording and monitoring.	Yes	Yes	No

## Sample Default Unified CCX Scripts

The table below describes the sample scripts automatically included with your Unified CCX system.

**Note:** Refer to the Unified CCX Script Repository at [http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/prod\\_architectures\\_list.html](http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/prod_architectures_list.html) for additional examples.

Sample Script	Description
aa.aef	Allows a caller to call a CallManager user by entering an extension number or the first few characters of an associated user name. If MRCP ASR is enabled, the caller might simply speak the extension or the user name.
icd.aef	This basic Unified CCX script establishes a simple call queue and routes callers to a group of agents as the agents become available.

Sample Script	Description
SNU.aef	Enables Cisco Unified CallManager users to call in, authenticate their identities, and replace their spoken names with newly recorded announcements on their telephones
voicebrowser.aef	Uses MRCP ASR functionality to allow a caller to access information from VoiceXML-enabled web sites.

---

**Sample Default Unified CCX Scripts**



# Chapter 2

## Features Enabled by Product Licensing

The following sections describe the various features separately enabled by product licensing for Unified CCX.

For a list of all license-enabled features for all Cisco CRS products, refer to the *Cisco CRS Administration Guide*.

This section contains the following topics:

- [Cisco CRS Administration Menus Enabled by Product Licensing, page 33](#)
- [Prompt, Spoken Name Upload, and Plugin Options Enabled by Product Licensing, page 35](#)
- [Cisco CRS Subsystems Enabled by Product Licensing, page 35](#)
- [Application Types Enabled by Product Licensing, page 36](#)
- [Editor Steps Enabled by Product Licensing, page 37](#)
- [Historical Reports Enabled by Product Licensing, page 38](#)
- [Real-Time Reports Enabled by Product Licensing for Unified CCX, page 40](#)

### Cisco CRS Administration Menus Enabled by Product Licensing

A Yes in the following table means that the related menu item is enabled for the license package identified in that column.

<b>Cisco CRS Administration Main Menu</b>	<b>Menu Items</b>	<b>Premium</b>	<b>Enhanced</b>	<b>Standard</b>
<b>System</b>	LDAP Information	Yes	Yes	Yes
	Control Center	Yes	Yes	Yes
	Datastore Control Center (agent, historical, repository, configuration)	Yes	Yes	Yes
	System Parameters	Yes	Yes	Yes

## Cisco CRS Administration Menus Enabled by Product Licensing

<b>Cisco CRS Administration Main Menu</b>	<b>Menu Items</b>	<b>Premium</b>	<b>Enhanced</b>	<b>Standard</b>
	Custom File Configuration	Yes	Yes	Yes (except classpath for custom classes)
	Alarm and Tracing	Yes	Yes	Yes
	Logout	Yes	Yes	Yes
<b>Applications</b>	Application Management	Yes	Yes	Yes
	Script Management	Yes	Yes	Yes
	Prompt Management	Yes	Yes	Yes
	Grammar Management	Yes	Yes	Yes
	Document Management	Yes	Yes	Yes
	AAR Management	Yes	Yes	Yes
<b>Subsystems</b>	JTAPI	Yes	Yes	Yes
	Database	Yes	No	No
	HTTP	Yes	No	No
	ICM	No	No	No
	RmCm	Yes	Yes	Yes
	E-mail	Yes	No	No
	Cisco Media	Yes	Yes	Yes
	MRCP ASR	Yes	No	No
	MRCP TTS	Yes	No	No
<b>Tools</b>	Alarm Definition	Yes	Yes	Yes
	Plug-ins	Yes	Yes	Yes
	Real-Time Reporting	Yes	Yes	Yes



<b>Cisco CRS Administration Main Menu</b>	<b>Menu Items</b>	<b>Premium</b>	<b>Enhanced</b>	<b>Standard</b>
	Real-Time Snapshot (RTS) Configuration	Yes	Yes	Yes
	Historical Reporting	Yes	Yes	Yes
	User Management	Yes	Yes	Yes
	Troubleshooting Tips	Yes	Yes	Yes
<b>Help</b>	Contents and Index	Yes	Yes	Yes
	For this Page	Yes	Yes	Yes
	About	Yes	Yes	Yes

## Prompt, Spoken Name Upload, and Plugin Options Enabled by Product Licensing

The following table lists the availability of Cisco CRS options not listed in the preceding menu list.

<b>Option</b>	<b>Premium</b>	<b>Enhanced</b>	<b>Standard</b>
Prompt management	Yes	Yes	Yes
Spoken name upload	Yes	Yes	No
plugin editor	Yes	Yes	Yes
Plugin SDK	Yes	No	No
Plugin – historical reporting client (1)	Yes	Yes	Yes
Cisco Desktop Product suite	Yes	Yes	Yes

## Cisco CRS Subsystems Enabled by Product Licensing

The following table lists the availability of Cisco CRS subsystems and possible MRCP additions that are automatically started with each license package.

## Application Types Enabled by Product Licensing

Subsystem	Premium	Enhanced	Standard	MRCP ASR (Add on)	MRCP TTS (Add on)
Application	Yes	Yes	Yes	Not applicable	Not applicable
MRCP ASR	Yes	No	No	Yes	Not applicable
Cisco Media Termination	Yes	Yes	Yes	Not applicable	Not applicable
Core reporting	Yes	Yes	Yes	Not applicable	Not applicable
Database	Yes	No	No	Not applicable	Not applicable
E-Mail	Yes	No	No	Not applicable	Not applicable
Enterprise server data	No	No	No	Not applicable	Not applicable
HTTP	Yes	No	No	Not applicable	Not applicable
ICM system	No	No	No	Not applicable	Not applicable
JTAPI	Yes	Yes	Yes	Not applicable	Not applicable
RmCm	Yes	Yes	Yes	Not applicable	Not applicable
MRCP TTS	Yes	No	No	Not applicable	Yes
Voice browser	Yes	Yes	No	Yes  <b>Note:</b> The Voice Browser subsystem is available only if Nuance ASR is enabled.	Not applicable
VoIP Monitor	Yes	Yes	No	Not applicable	Not applicable

## Application Types Enabled by Product Licensing

The following table describes the application types available with each license package. You can view each application type by accessing the **Application > Mgmt > Add a New Application > Application Type** dropdown list.

Application Type	Premium	Enhanced	Standard
Cisco Script Application	Yes	Yes	Yes
Busy	Yes	Yes	Yes

Application Type	Premium	Enhanced	Standard
Ring No Answer	Yes	Yes	Yes
Unified ICME system post routing when deployed with Unified ICME and Unified IPCC Gateway PG <sup>2</sup>	Yes	Yes	Yes
Unified ICME system translation routing when deployed with Unified ICME and Unified IPCC Gateway PG <sup>3</sup>	Yes	Yes	Yes

## Editor Steps Enabled by Product Licensing

The following table lists the Unified CCX packages with the Step Editor workflow steps enabled in each.

Workflow Step	Premium	Enhanced	Standard
General	Yes	Yes	Yes
Session	Yes	Yes	Yes
Contact	Yes	Yes	Yes
Call Contact	Yes	Yes	Yes
Email Contact	Yes	No	No
HTTP Contact	Yes	No	No
Media <sup>4 5</sup>	Yes	Yes	Yes
User	Yes	Yes	Yes
Prompt <sup>6</sup>	Yes	Yes	Yes

- 2) Supported with the IPCC Gateway solution.
- 3) Supported with the IPCC Gateway solution.
- 4) The "Voice Browser" step is not available with the Standard and Enhanced packages.
- 5) The "Voice Browser" step is not available with the Standard and Enhanced packages.
- 6) The "Create TTS Prompt" step is not available with the Standard and Enhanced packages.

## Historical Reports Enabled by Product Licensing

Workflow Step	Premium	Enhanced	Standard
Grammar	Yes	Yes	Yes
Document	Yes	Yes	Yes
Database	Yes	No	No
Unified CCX <sup>7</sup>	Yes	Yes	Yes
Unified ICME ACD integration when deployed with Unified ICME and Unified IPCC Gateway PG.	Yes	Yes	Yes
Java	Yes	Yes	Yes

## Historical Reports Enabled by Product Licensing

The following table lists the historical reports that come with the Unified CCX packages.

Report Name	Report Description	Premium	Enhanced	Standard
Abandoned Call Detail Activity Report	Information about calls not answered by an agent and the caller hangs up or is disconnected.	Yes	Yes	Yes
Agent Call Summary Report	Information about each inbound and outbound call for each agent with the average time spent in Talk state, Work state, and on hold state.	Yes	Yes	Yes
Agent Detail Report	Information about each call picked up and/or made by an agent when it is dialed to a route point number.	Yes	Yes	Yes
Agent Login Logout Activity Report	Information about the login and logout activities for each agent with the date, time, reason code, duration of each session, and the total time for all sessions.	Yes	Yes	Yes
Agent Not Ready Reason Code Summary Report	Information about the length of time each agent spent in Not Ready state with the reason codes for each interval.	Yes	Yes	Yes

7) The "Set Priority", "Start Monitor", "Stop Monitor", and "CreateCSQSpokenNamePromptSteps" are not available with the Standard and Enhanced packages.

Report Name	Report Description	Premium	Enhanced	Standard
Agent State Detail Report	Information about when each agent changed from one state to another with the date, time, state name, reason code, and the length of time in each state.	Yes	Yes	Yes
Agent State Summary Report (by Agent)	Information about the time spent (grouped by agent) by each agent in the Not Ready, Ready, Reserved, Talk, and Work states with the logged in times and interval details (if specified).	Yes	Yes	Yes
Agent State Summary Report (by Interval)	Information about the time spent (grouped by interval) by each agent in the Not Ready, Ready, Reserved, Talk, and Work states with the logged in times and interval details.	Yes	Yes	Yes
Agent Summary Report	Information about agent activities, including call and agent state activities.	Yes	Yes	Yes
Application Performance Analysis Report	Information about calls received by each Unified CCX product.	Yes	Yes	Yes
Call Custom Variables Report	Information about custom variables set in the Unified CCX workflow associated with this call.	Yes	Yes	Yes
Called Number Summary Activity Report	Information about each number dialed to Unified CCX and agents by an inside or outside caller.	Yes	Yes	Yes
Common Skill Contact Service Queue Activity Report (by Interval)	Information about calls presented, handled, and abandoned for each group of contact service queues along with interval details.	Yes	Yes	Yes
Contact Service Queue Activity Report (by CSQ)	Information about service levels, the number and percentage of calls presented, handled, abandoned, and dequeued along with the interval details (if specified).	Yes	Yes	Yes
Contact Service Queue Activity Report (by Interval)	Information about service levels, the number and percentage of calls presented, handled, abandoned, and dequeued along with details for each interval.	Yes	Yes	Yes
Contact Service Queue Activity Report	A summary of calls presented to, handled by, abandoned from, and dequeued from each contact service queue along with calls	Yes	Yes	Yes

**Real-Time Reports Enabled by Product Licensing for Unified CCX**

Report Name	Report Description	Premium	Enhanced	Standard
	handled by workflows in other contact service queues.			
Contact Service Queue Call Distribution Summary Report	The number and percentage of calls handled and dequeued in four different user-configurable time intervals.	Yes	Yes	Yes
Detailed Call by Call CCDR Report	Information about the contact call detail record (CCDR) stored in the Cisco CRS database.	Yes	Yes	Yes
Detailed Call, CSQ, Agent Report	Information about the contact service queue to which a call was routed and the agent handling the call.	Yes	Yes	Yes
Remote Monitoring Detail Report	Information about the agent monitoring activities of supervisors.	Yes	No	No
Traffic Analysis Report	Information about incoming calls to the Cisco CRS system for each day in the report range.	Yes	Yes	Yes
Priority Summary Activity Report <sup>8 9</sup>	Information for each call priority.	Yes	Yes	No

## Real-Time Reports Enabled by Product Licensing for Unified CCX

Unified CCX has two kinds of real-time reports: those provided by CSD and those provided by administration. The following table applies to administration.

Report Name	Report Description
Application Tasks	Provides information about currently active applications.
Application Task Summary	Provides a summary of specific applications' activity.
Applications	Provides a list of all applications loaded on the Cisco CRS server.
Contact Summary	Provides information for call contacts, e-mail contacts, and HTTP contacts. Also provides the total number of contacts.
Contacts	Provides information about currently active contacts.

8) This report is part of the IPCC Express Enhanced historical report that is only available with the IPCC Express Enhanced and Premium packages.

9) This report is part of the IPCC Express Enhanced historical report that is only available with the IPCC Express Enhanced and Premium packages.

Report Name	Report Description
CSQ Unified Contact Center Express Stats	Provides information about CSQ activity. This report is available only if Unified CCX has been configured.
Datasource Usage	Provides information about configured datasource names (DSNs).
CRS Engine Tasks	Provides information about currently active Engine tasks.
Overall Unified Contact Center Express Stats	Provides information about Unified CCX resources and calls. This report is available only if Unified CCX has been configured.
Resource Unified Contact Center Express Stats	Provides information about Unified CCX resources activity.
Sessions	Provides information on all active sessions.

For procedural information on running real-time reports, refer to the *Cisco CRS Administration Guide*







# Chapter 3

## Unified CCX Architecture

---

This section briefly describes the deployment models that you can use with Unified CCX.

This section contains the following topics:

- [Available Deployment Models, page 43](#)
- [Single-Site Deployment, page 44](#)
- [Multi-Site WAN Deployment with Centralized Call Processing , page 45](#)
- [Multi-Site WAN Deployment with Distributed Call Processing, page 46](#)
- [Services from Partners, page 47](#)
- [Services by Technology, page 47](#)

### Available Deployment Models

Unified CCX can be deployed anywhere in your Unified Communications network on Cisco MCSs or Cisco approved, customer-provided servers.

The following four figures illustrate the different ways you might deploy Unified CCX:

- Single-site deployment
- Multi-Site WAN Deployment with Centralized Call Processing
- Multi-Site WAN Deployment with Distributed Call Processing

For more information on Unified CCX deployment models, refer to the design guide for Unified CCX at [Solution Reference Network Designs](http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/products_implementation_design_guides_list.html) ([http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/products\\_implementation\\_design\\_guides\\_list.html](http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/products_implementation_design_guides_list.html)).

The following are brief descriptions of key items in each deployment:

- **Voice Gateway.** Connects the Unified Communications network to the Public Switched Telephone Network (PSTN) and to other private telephone systems. You purchase gateways separately. Both inbound and outbound calls to the PSTN travel through the gateway.
- **Cisco Unified CallManager.** Provides the features that are required to implement IP phones, manage gateways, provides failover and redundancy service for the telephony system, and directs VoIP traffic to the Cisco CRS system. You must purchase Cisco Unified CallManager separately.
- **Unified CCX.** Contains the Cisco CRS Engine that runs Unified CCX.
- The following optional, dedicated servers:
  - **Recording and Monitoring.** A dedicated server that provides recording and call monitoring for Unified CCX Enhanced and Premium.
  - **MRCP TTS.** A dedicated, vendor-specific (ScanSoft or Nuance) server that converts text into speech and plays it back to the caller.
  - **MRCP ASR.** A dedicated, vendor-specific (ScanSoft or Nuance) server that performs real-time ASR.
  - **Database.** A dedicated server that stores Cisco CRS database for the Configuration Datastore (CDS), Historical Datastore (HDS), Repository Datastore (RDS), and Agent Datastore (ADS).
- **Cisco CRS Script Repository.** Refers to the directory storing the Cisco CRS application scripts. Storing application scripts in a specific directory allows you to load application scripts on any Cisco CRS Server in the network.

## Single-Site Deployment

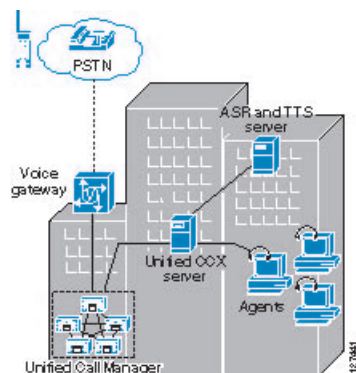
A single-site deployment is a Unified CCX contact center deployment with at most one Unified CCX primary server.

A single-site deployment has the following options:

- A single Unified CCX server deployment model where all Unified CCX features and functions run on a single server including the Cisco CRS Engine (the agent and supervisor desktops and the IP Phone Agent XML server that supports clients running on Cisco 7940 or 7960 phones) and CTI services (all ACD, Unified IP IVR, and CTI features as well as optional features such as ASR and TTS).
- A multiple Unified CCX server deployment model where the primary Unified CCX server is augmented by one or more distributed servers (historical reporting, monitoring, TTS, and ASR databases).

In the following figure, the Unified CCX primary server telephony subsystem connects to one of the Cisco Unified CallManager servers in the cluster. This Cisco Unified CallManager server also runs the CTI Manager service that handles the CTI call processing requests from Unified CCX.

Figure 1: Single-Site Deployment Model



## Multi-Site WAN Deployment with Centralized Call Processing

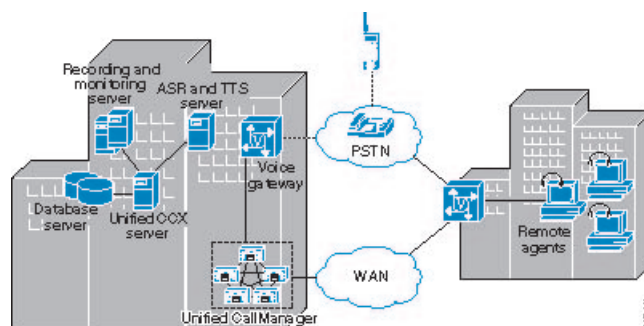
**Warning:** You can deploy over WAN expansion servers on which only the **Monitoring component** or on which only the **Monitoring and Recording components** are installed. **All other servers in the cluster must be deployed on the same LAN.**

A multiple-site WAN deployment with centralized call processing has the following options:

- Unified CCX located at a central site.

In the following figure, all call processing and Unified CCX servers are located at a central site. Phones and Unified CCX agents are distributed at remote branches. Phones and other call processing endpoints interface to Cisco Unified CallManager over an IP WAN link (for example, Frame-Relay). CTI and RTP traffic pass over the IP WAN link between the central and remote sites.

Figure 2: Multiple-Site Centralized Call Processing with IPCC Express at a Central Site

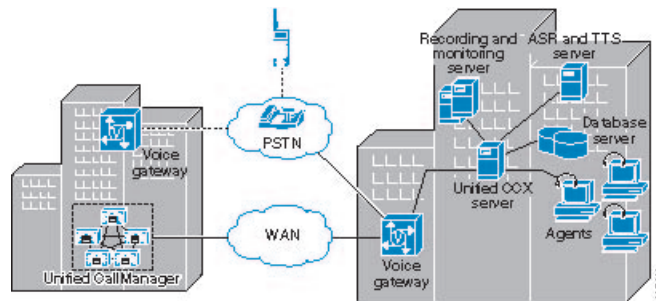


- Unified CCX located at a remote site.

## Multi-Site WAN Deployment with Distributed Call Processing

In the following figure, Unified CCX is installed at the remote site while the Cisco Unified CallManager cluster is at the central site. The primary benefit of this configuration is that it saves backhauling of the call from the central site.

Figure 3: Multiple-Site Centralized Call Processing with IPCC Express at a Remote Site

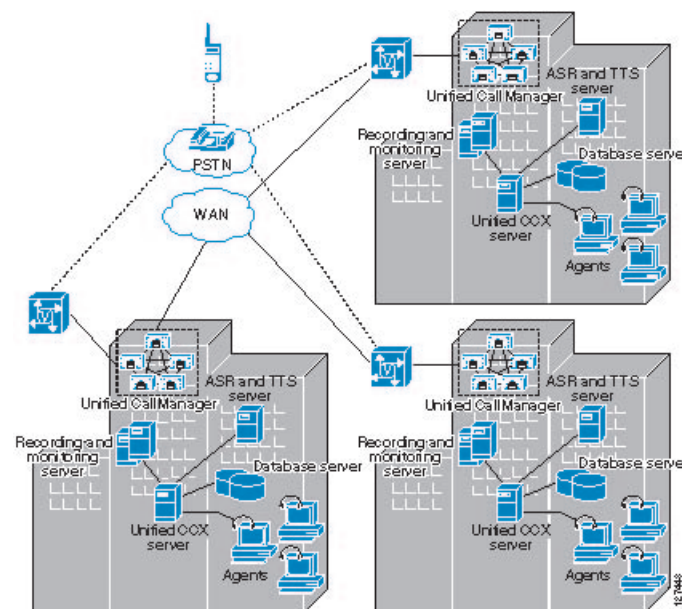


## Multi-Site WAN Deployment with Distributed Call Processing

**Warning: You can deploy over WAN expansion servers on which only the Monitoring component or on which only the Monitoring and Recording components are installed. All other servers in the cluster must be deployed on the same LAN.**

In a distributed call processing deployment, each site has its own Cisco Unified CallManager server clusters. In the following figure, the contact center at each remote site is treated as a separate single-site deployment. Therefore, you can apply single-site design considerations to each site in this model.

Figure 4: Multi-Site, Distributed Deployment Model



## Services from Partners

Ordering from a Cisco-authorized online partner provides convenience for those customers that know which products best fit their needs and require immediate delivery. If your needs require onsite design, installation and ongoing support, a local reseller in your area could provide those value-added services. There are multiple places to order Cisco products online. Customers with Direct Purchasing agreements can order direct from Cisco. There are also numerous channel partners that transact e-commerce on their web site for Cisco products. A full list of global Cisco Partners can be found on [Cisco's Partner Locator](http://tools.cisco.com/WWChannels/LOCATR/jsp/partner_locator.jsp) ([http://tools.cisco.com/WWChannels/LOCATR/jsp/partner\\_locator.jsp](http://tools.cisco.com/WWChannels/LOCATR/jsp/partner_locator.jsp)) website. Customers at small and medium sized business who want the convenience of online ordering can use Cisco's Online Partners.

## Services by Technology

The Cisco Advanced Services portfolio has been streamlined to make it easier for you to obtain the support you need for Cisco Advanced Technologies. The new Cisco Advanced Services architecture restructures and simplifies the Cisco Advanced Services portfolio. Advanced Services like Technical Application Support, Network Application Integration Support and Network Optimization Support have been repackaged as fixed deliverable, fixed price planning and design, and optimization services. Using the Cisco Lifecycle Services approach, Cisco and its partners provide a broad portfolio of services that address all aspects of deploying, operating, and optimizing your network to help increase business value and return on investment. [Services by Technology](http://www.cisco.com/en/US/partner/products/svcs/ps2961/serv_category_home.html) ([http://www.cisco.com/en/US/partner/products/svcs/ps2961/serv\\_category\\_home.html](http://www.cisco.com/en/US/partner/products/svcs/ps2961/serv_category_home.html)) category.





skilled agents are available, so the application flow executes the queue loop logic until an agent becomes available.

5. An appropriately skilled agent becomes available.
6. The agent is selected/reserved by the Unified CCX server and this triggers the call to be transferred to the agent's phone and subsequently causes the agent's phone to ring (using Cisco Unified CallManager signaling). In addition, the Unified CCX server delivers a screen pop to the selected agent's desktop and enables the answer button on the agent's desktop.
7. The agent answers the call, which initiates the establishment of an RTP VoIP data stream between the agent's phone and the voice gateway port.

This section contains the following topics:

- [Relationships Between Tasks, Sessions, Contacts, and Channels, page 50](#)
- [JTAPI Deployment Considerations , page 51](#)
- [An HTTP Contact Flow , page 54](#)
- [Important Cisco Unified CallManager Configuration Dependencies, page 54](#)

## Relationships Between Tasks, Sessions, Contacts, and Channels

When installing and configuring Unified CCX, you must understand the concepts, call flows, and configuration dependencies explained in this section:

- **Task.** Cisco CRS receives the incoming contact (call) signal on a *trigger*, which is then assigned an *application*. The application can be a workflow application, a Java application, a routing application, or an post-routing application. When Cisco CRS accepts the contact, the application starts an application task. The application task in turn invokes an instance of a script associated with the application.
- **Session.** A session tracks *contacts* as they move around the system. This enables information to be shared among contacts that are related to the same session.

When a contact is received (inbound) or initiated (outbound), Cisco CRS checks to see if an existing session already exists with that contact's Implementation ID. The Implementation ID is the Cisco Unified CallManager Global Call ID plus the Cisco Unified CallManager node (GCID/<node>). If a session already exists for the contact, Cisco CRS associates it with that session. If no session already exists for the contact, Cisco CRS automatically creates one.

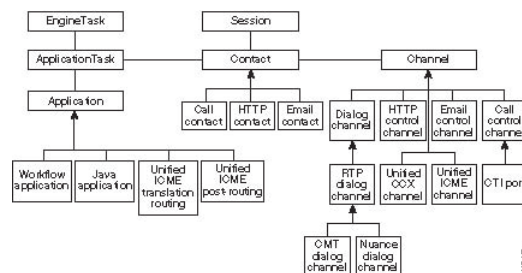


After the contact ends, the session remains idle in memory for a default period of 30 minutes before being automatically deleted.

- **Contact.** A contact can be a Call, an HTTP request, or an e-mail. A contact carries attributes such as creation time, state, language, and so on.
- **Channel.** Each type of contact has its own channel. Channels are allocated and associated with contacts as needed and are used to perform actions on contacts.

These dependencies are illustrated in the following diagram.

Figure 6: Relationships between Items in Your IPCC Express System



## JTAPI Deployment Considerations

The CTI route point associated with the user enables Cisco Unified CallManager to query the pertinent external application for routing instruction. Different route point's can query different applications (CRS, ICM, or 3rd Party applications) through JTAPI and TAPI. The trigger (route point or dialed number) is mapped to a CTI port group in the Cisco CRS configuration. The Cisco CRS system chooses an available CTI port in this port group and returns that CTI Port number to Cisco Unified CallManager so it can setup a call to that CTI port. The Cisco Unified CallManager then makes a call to that CTI port making it ring and the accept step at the beginning of the application answers the call by taking the CTI port off hook. Until the accept step is executed, the caller hears ringing. If no CTI port is available in that port group, then the Cisco CRS system answers the CallManager with the all routes busy response, which triggers the Cisco Unified CallManager to use its forward on busy logic configured for that CTI route point.

When deploying your system, you must understand the following about call flows and Cisco Unified CallManager configuration dependencies that can impact call flow:

- How is a call presented to the Cisco CRS system?

An incoming call is given to the Cisco CRS system on a trigger (CTI Route Point, **Caller > CTI Route Point**). The trigger signals the Cisco CRS system through JTAPI that there is an incoming call.

Cisco CRS rejects the call if the Max Session limit has been hit for the trigger or the application to which the trigger is assigned.

Rejected calls can be broadly classified as follows:

- Calls exceeding the limits configured in the system. These limits (max session limit or max application sessions) can be set based on the expected traffic, license purchased, or machine power.
- Calls resulting in error situations. For example, timeouts in call event processing in the CallManager or CTI layers.

These categories are reported in the Aborted and Rejected Call Detail Report's Contact Disposition field and through Real Time Reporting aggregate data.

If there are available sessions, based on the Call Control Group assigned to the trigger, Cisco CRS searches for an available CTI Port to receive the call. If it finds an available port, it sends a request to Cisco Unified CallManager through JTAPI/CTI requesting that the caller be rerouted from the CTI Route Point to the CTI Port.

This takes place as a JTAPI Redirect request. For this to be successful, the Cisco CallManager's Default setting for Calling Search Space (Redirecting Party, or in this case, the CTI Route Point) must be able to place the call to the selected CTI Port.

- Why is the CTI Route Point associated with a CallManager user?

For the Cisco CRS system to know that a call is coming, it must have control of the line carrying the call. This is done through a Cisco Unified CallManager user. The Cisco Unified CallManager user is associated with the CTI Route Point as a device that the Cisco Unified CallManager user controls.

When a trigger is assigned to an application in the Cisco CRS system, the JTAPI subsystem knows that it must take control of that line using the JTAPI Client installed on the Cisco CRS system. Once it has control of the line, JTAPI monitors that line for events as well as performing call-control operations on that line.

- How does the Cisco CRS system determine which CTI Port to use?

A Cisco CRS application requires a trigger. The trigger type determines whether or not a port is required.

There are two types of triggers: JTAPI and HTTP.

- If an application is started by dialing a phone number, it must have a JTAPI trigger.
- If an application is started by entering a URL, it must have an HTTP trigger.

- What is the process for a JTAPI trigger?

If an application is triggered by calling a JTAPI trigger:

- a The Cisco CRS system looks for an available CTI Port in the JTAPI Call Control Group assigned to the trigger.
- b Cisco CRS then requests Cisco Unified CallManager to redirect the caller to the desired CTI Port.

- .c The call is presented to the CTI port.
- .d Cisco CRS accepts the call on the CTI Port, the call rings on the CTI Port, and a Cisco CRS script decides how to handle the call.
- Why does the JTAPI trigger need to have primary and/or secondary dialog groups assigned to it?

For the Cisco CRS system to establish a media connection to a caller, Cisco CRS must allocate a Media Channel for that call. When Cisco CRS accepts a call on a CTI port, it looks for an available Media Channel in the primary dialog group. The primary dialog group may be an ASR channel. But if none is available, then the secondary dialog group may be a normal Cisco Media Channel (DTMF only).

Primary (required) and secondary (optional) dialog groups provide redundancy. If you do not use ASR/TTS, you will be using the Cisco Media Group which does not have the secondary dialog group option.

- What are the Cisco CRS script call control choices?

The call control step choices are:

- **Accept.** Answers the call and establishes a media connection. This is based on the Primary and Secondary dialog groups assigned to the trigger. It can be either the Cisco Media Dialog Group or ASR.
- **Reject.** Rejects the call and returns it to Cisco Unified CallManager without answering it.
- **Terminate.** Disconnects the Contact.
- **Redirect.** Requests that Cisco Unified CallManager reroute the caller to another destination.
- How are Redirects done?

Redirects can be done in several ways:

- When Cisco CRS requests that a caller be rerouted from a CTI Route Point to a CTI Port.
- When a Cisco CRS script executes a Call Redirect step.

Once the Cisco CRS system requests a Redirect and Cisco Unified CallManager accepts it, the redirecting CTI Port is released and returned to the idle port list.

## An HTTP Contact Flow

When an HTTP request is presented to Cisco CRS:

1. The HTTP trigger is assigned to an application.
2. When the URL trigger is hit, an application task is started.
3. The application is assigned to a script and the script starts.
4. An HTTP control channel is allocated.
5. The script performs steps on the triggering contact.

Possible step choices are:

- **Get HTTP contact information.** Obtain Header Information, Parameters, Cookies and Environment Attributes and assign them to local variables.
- **Send a response.** Send a Document Object as a response to the calling browser.
- **Send a JSP reply.** Send a response to the calling browser based on a JSP template. This step allows for the mapping of local variables to keywords in the template.
- **HTTP redirect.** Allows a calling browser to be redirected to a different URL.

## Important Cisco Unified CallManager Configuration Dependencies

The Unified CCX software tells Cisco Unified CallManager how to distribute calls. For both products to work together correctly, you must therefore understand how calls are set up when you configure Cisco Unified CallManager devices.

You must be aware of the following:

- **LDAP.** The LDAP directory defined in Cisco Unified CallManager has to be the same one defined in Unified CCX. This directory is configured when you install Cisco Unified CallManager.

Both Cisco Unified CallManager and Cisco CRS use the LDAP directory to store authentication and authorization information about users of Cisco Unified CallManager applications, which interface with Cisco Unified CallManager.

- **CTI Ports and Route Points.** The information that Cisco CRS uses to configure CTI Ports and route points in Cisco Unified CallManager. The CTI ports and route points defined through the Cisco CRS Administration application are the same.
- **JTAPI User.** When Unified CCX starts up, it establishes its JTAPI communication session with Cisco Unified CallManager. The JTAPI user ID and password are used by CallManager to authenticate the request to begin a JTAPI communication session. The JTAPI user ID and password are configured into Cisco Unified CallManager automatically as part of the Unified CCX installation process. In a redundant Unified CCX system, you will have two JTAPI user IDs and passwords.
- **Redirects.** The Cisco CRS platform can instruct Cisco Unified CallManager to redirect calls to another destination. Redirects are essentially a blind transfer. When a new call arrives at Cisco Unified CallManager and is routed to a CTI route point, the Cisco CRS platform selects an idle CTI port and implicitly instructs Cisco Unified CallManager to redirect the call from the CTI route point device to the selected CTI port device. The redirect step in the application editor allows calls to be explicitly redirected to another destination. In either scenario, the destination needs to be in the same calling search space as the CTI ports and CTI route points.
- **Destination.** A redirect will fail if the redirecting device (CTI Port) lacks a CSS that contains the partition bound to the destination.
- **Calling Search Space.** Calling search spaces determine the partitions that calling devices, including IP phones and gateways, can search when attempting to complete a call. A collection of partitions are searched to determine how a dialed number must be routed. The calling search space for the device and the calling search space for the directory number get used together. The directory number CSS takes precedence over the device CSS.

**Warning:** In the past, users mistakenly assigned the route points to a Partition in the gateway's calling search space, but assigned the CTI Ports to a different partition that was not in the gateway's CSS. This configuration will fail and the caller will hear silence followed by a busy signal about 4 seconds later. This is because the CallManager, on receiving the redirect request, uses the calling search space of the calling device (and not the CSS of the device requesting the redirect). To avoid this problem, be sure to apply the call search space to all the CTI Ports that contain the partition assigned to the Unified CCX agent's dialed number. The partition applied to the Unified CCX agent's dialed number must be in the call search space applied to the CTI ports.

Refer to [Partitions and Calling Search Spaces](http://www.cisco.com/en/US/products/sw/voicesw/ps556/products_administration_guide_chapter09186a00801821ec.html#10870) ([http://www.cisco.com/en/US/products/sw/voicesw/ps556/products\\_administration\\_guide\\_chapter09186a00801821ec.html#10870](http://www.cisco.com/en/US/products/sw/voicesw/ps556/products_administration_guide_chapter09186a00801821ec.html#10870)) for more information.

- **Device Regions.** The calling and the called devices' regions determine at which bandwidth the connection is made. Regions determine the maximum bandwidth codec that is allowed for calls both intra- and inter-region, not the codec itself. In the case of the Cisco CRS servers CTI Ports, if the connection to calling or called device cannot be made at the Cisco CRS servers installed bandwidth, then a Transcoder channel must be available.

**Warning:** If you install CRS with the default codec (G.711), your region configuration must allow calls into the region assigned to the CTI Ports at G.711. Otherwise, calls across the WAN are forced to G.729 in the region configuration, which causes the call to fail.

Refer to [Regions Configuration](http://www.cisco.com/univercd/cc/td/doc/product/voice/c_callmg/4_0/sys_ad/4_0_1/ccmcfg/b02regio.htm) (http://www.cisco.com/univercd/cc/td/doc/product/voice/c\_callmg/4\_0/sys\_ad/4\_0\_1/ccmcfg/b02regio.htm ) for more information.

- **Device Locations.** In the event that one or more of the devices are in a location, if sufficient bandwidth is not available, the requested call-control operation will fail.

Refer to [Location Configuration](http://www.cisco.com/univercd/cc/td/doc/product/voice/c_callmg/4_0/sys_ad/4_0_1/ccmcfg/b02locat.htm) (http://www.cisco.com/univercd/cc/td/doc/product/voice/c\_callmg/4\_0/sys\_ad/4\_0\_1/ccmcfg/b02locat.htm) for more information.

- **Media Connections.** Media connections to the Cisco CRS system are either all G.711 or all G.729. This means that Cisco Unified CallManager region configuration must allow for connections between devices and the Cisco CRS server's CTI Ports with the appropriate Codec. If not, then Transcoder channels MUST be configured and available. You do this at the appropriate matching Codec at Cisco CRS installation time.
- **Connection path device (Codec).** When you create a region, you specify the codec that can be used for calls between devices within that region, and between that region and other regions. The system uses regions also for applications that only support a specific codec; for example, an application that only uses G.711.

---

# Part 2: Installing and Configuring Unified CCX with Cisco Unified CallManager

This part describes how to install and configure Unified CCX with the Cisco Unified CallManager.

Configure the Unified CCX system components in the following order:

1. Install and setup your Cisco IP phones.
2. Install and configure Cisco Unified CallManager and register your IP phones with Cisco Unified CallManager.
3. Install and configure the Cisco CRS application engine with a licensed Unified CCX package.
4. Configure your script applications.
5. Load your scripts into the Cisco CRS repository and test them.







# Chapter 5

## Installing and Configuring Cisco Unified CallManager for Unified CCX

---

This section describes how to install and configure Cisco Unified CallManager for Unified CCX.

This section contains the following topics:

- [About Cisco Unified CallManager, page 59](#)
- [How to Install Cisco Unified CallManager , page 59](#)
- [How to Configure Cisco Unified CallManager, page 60](#)
- [Cisco Unified CallManager Configuration Check List, page 60](#)
- [How to Check Your Phone Configuration in Cisco Unified CallManager , page 62](#)
- [About Cisco Unified CallManager Extension Mobility Feature, page 62](#)

### About Cisco Unified CallManager

Cisco Unified CallManager provides features for which organizations have traditionally used PBX systems. Cisco Unified CallManager uses open standards, such as TCP/IP, H.323 standards (for packet-based multimedia communications systems), and Media Gateway Control Protocol (MGCP). Cisco Unified CallManager allows deployment of voice applications and the integration of telephony systems with Intranet applications. The Cisco Unified CallManager software must be installed on the Cisco MCS.

### How to Install Cisco Unified CallManager

Follow the step-by-step installation instructions for Cisco Unified CallManager included in the *Installing Cisco Unified CallManager Guide*. There are no Unified CCX-specific installation prerequisites or instructions for Cisco Unified CallManager. You can find this guide and the other guides mentioned in the following list and table at the [Cisco Unified CallManager documentation](http://www.cisco.com/en/US/partner/products/sw/voicesw/ps556/tsd_products_support_series_home.html) ([http://www.cisco.com/en/US/partner/products/sw/voicesw/ps556/tsd\\_products\\_support\\_series\\_home.html](http://www.cisco.com/en/US/partner/products/sw/voicesw/ps556/tsd_products_support_series_home.html)).

## How to Configure Cisco Unified CallManager

Once Cisco Unified CallManager installation is complete, configure Cisco Unified CallManager as described in the next section.

Prior to proceeding with configuration, ensure that:

- A Cisco Unified CallManager instance has been created on the Cisco Unified CallManager server.
- All Cisco Unified CallManager services and 3rd party services required by Cisco Unified CallManager are running.
- The Bulk Administration Tool has been installed on Cisco Unified CallManager.
- Identify users in the Cisco Unified CallManager LDAP directory that is assigned administration privileges in Cisco CRS. If these users do not exist in Cisco Unified CallManager LDAP directory, then you must create those users in Cisco Unified CallManager.

For Cisco Unified CallManager documentation available on the Web, see [Cisco Unified CallManager documentation](http://www.cisco.com/en/US/partner/products/sw/voicesw/ps556/tsd_products_support_series_home.html) ([http://www.cisco.com/en/US/partner/products/sw/voicesw/ps556/tsd\\_products\\_support\\_series\\_home.html](http://www.cisco.com/en/US/partner/products/sw/voicesw/ps556/tsd_products_support_series_home.html)).

### See Also

*Installing Cisco Unified CallManager Guide*  
*Bulk Administration Tool Guide for Cisco Unified CallManager*  
*Cisco Unified CallManager Administration Guide*  
*Cisco Unified CallManager Features and Service Guide*

## How to Configure Cisco Unified CallManager

For instructions on configuring Cisco Unified CallManager, refer to the configuration instructions in the *Cisco Unified CallManager Administration Guide*.

Most of the Cisco Unified CallManager configuration tasks are performed from the Cisco Unified CallManager Administration utility. Cisco Unified CallManager Administration is installed on all Cisco Unified CallManager servers. To access Cisco Unified CallManager Administration, select **Start > Programs > Cisco Unified CallManager > Administration**. Or, in a Web browser, enter **`http://<callmanager_servername>/ccmadmin`**.

## Cisco Unified CallManager Configuration Check List

When configuring Cisco Unified CallManager, complete the tasks described in the following table to configure Cisco Unified CallManager for use with Unified CCX.

Task	Purpose	Configuration Location
1. Create Cisco Unified CallManager users that will	Provides a user account for Unified CCX to connect with Cisco Unified CallManager.	User Configuration page.

Task	Purpose	Configuration Location
later be assigned administrative privileges in the CRS Administration software.	<b>Note:</b> <ul style="list-style-type: none"> <li>You will need to remember the user IDs and passwords for when you install and configure Unified CCX.</li> <li>The user ID should not be longer than 31 alphanumeric characters. Although a user ID in Cisco Unified CallManager can contain up to 128 alphanumeric characters, in a Cisco CRS system, a user ID can be no longer than 31 alphanumeric characters.</li> </ul>	From the Cisco Unified CallManager Administration page menu bar, select <b>User &gt; Add a New User</b> .
2. Configure the appropriate regions for the sites.	Specifies the Codecs to be used by calls between devices in that region and other regions.	Region Configuration page  From the Cisco Unified CallManager Administration page menu bar, select <b>System &gt; Region</b> and then in the upper, right corner of the window, click the <b>Add a New Region</b> link.
3. Configure the locations for the sites.	Implements Call Admission Control which regulates voice quality by limiting the available bandwidth for calls.	Location Configuration page.  From the Cisco Unified CallManager Administration page menu bar, select <b>System &gt; Location</b> and then in the upper, right corner of the window, click the <b>Add a New Location</b> link.
4. Configure the devices with the previously configured regions.	Specifies the voice Codec to be used for calls in the regions with the devices.	Device Pool Configuration page.  From the Cisco Unified CallManager Administration page menu bar, select <b>System &gt; Device Pool</b> and then in the upper, right corner of the window, click the <b>Add a New Device Pool</b> link.
5. Configure the Cisco Unified CallManager Group for the devices.	Specifies the Cisco Unified CallManager group to provide redundancy and to assign to devices in this device pool.	Device Pool Configuration page.
6. Associate the phones with the appropriate device pool.	Defines characteristics for devices, such as region, date/time group, failover behavior, and others.	Phone Configuration page.

**Note:** You must set the configuration on each agent IP phone so that it can locate and connect to Cisco Unified CallManager. This procedure varies by site according to the customer's network configuration.

## How to Check Your Phone Configuration in Cisco Unified CallManager

---

**Step 1** Using a Web browser, open **Cisco Unified CallManager Administration/CCMADMIN**

**Note:** You can also navigate to this screen from the Start menu on your desktop by selecting **Start > Programs > Cisco Unified CallManager > Cisco Unified CallManager Administration**.

**Step 2** From the Device menu, select **Phone**.

**Step 3** In the Find and List Phones page, make sure the last text box is blank and click **Find**.

This will list all the IP phones connected to your system plus the CTI ports and Call Control groups automatically created in Cisco Unified CallManager when you configured the Cisco CRS application.

---

## About Cisco Unified CallManager Extension Mobility Feature

Cisco Unified CallManager provides an extension mobility feature that lets users access their Cisco IP phone configuration, including line appearances, services, and speed dials, from other Cisco IP phones. If you enable extension mobility, agents can share the same IP phone and retain their personal settings. In the Unified CCX system, IP phones with extension mobility have the same behavior and features as regular IP phones. Procedures for enabling extension mobility are not described in this guide. For instructions, refer to the *Cisco Unified CallManager Features and Service Guide*.



# Chapter 6

## Installing and Configuring Unified CCX

---

After you have configured Cisco Unified CallManager, install and configure Unified CCX.

This section contains the following topics:

- [Installing Unified CCX, page 63](#)
- [Configuring Unified CCX, page 64](#)
- [Unified CCX Configuration Check List, page 64](#)
- [Cisco CRS Application Configuration Check List, page 67](#)

### Installing Unified CCX

To install Unified CCX, you must install Cisco CRS and select the Unified CCX product package during the installation.

The Cisco CRS installation procedure contains three steps:

1. **Installation:** Loads the Cisco CRS software onto your system.
2. **Cluster Setup:** Activates Cisco CRS license files, collects required Cisco Unified CallManager LDAP information, and establishes a Cisco CRS administrator. This procedure is done once for each cluster.
3. **Server Setup:** Enables the specific Cisco CRS components that will run on a particular server. Also determines if a server will function as a standby server for high availability. This procedure is done for each Cisco CRS node in a cluster, including the one on which you perform the cluster setup.

Once these installation and setup procedures are done, you will have access to the complete set of Cisco CRS administration features that are licensed for your Cisco CRS product.

For installation instructions, including the planning of your Unified CCX installation, a pre-installation check list, and an installation and setup check list, refer to the *Cisco Customer Response Solutions Installation Guide* at the [Unified CCX documentation](#) (<http://>

## Configuring Unified CCX

[www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/tsd\\_products\\_support\\_series\\_home.html](http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/tsd_products_support_series_home.html)).

## Configuring Unified CCX

After you install and perform the initial set up of Unified CCX, use the Cisco CRS administration web interface to perform a variety of additional set up and configuration tasks.

These tasks include:

- Configuring Cisco CRS to work with Cisco Unified CallManager
- Configuring the required subsystems
- Configuring Cisco CRS for Unified CCX

You can access the Cisco CRS administration web interface from a server on which Cisco CRS is installed or from a client system with access to your network.

From a web browser on any computer in your network, enter the following URL: **http://servername/AppAdmin** where **servername** is the host name or IP address of the Cisco CRS node.

For detailed instructions about configuring Cisco CRS and Unified CCX, refer to the *Cisco CRS Administration Guide* at [Configuration Guides](http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/products_installation_and_configuration_guides_list.html) ([http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/products\\_installation\\_and\\_configuration\\_guides\\_list.html](http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/products_installation_and_configuration_guides_list.html)). The procedure locations referenced in the table are found in the Release 4.1(1) of the administration guide.

See [Unified CCX documentation](http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/tsd_products_support_series_home.html) ([http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/tsd\\_products\\_support\\_series\\_home.html](http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/tsd_products_support_series_home.html)) for the latest Cisco CRS documentation.

## Unified CCX Configuration Check List

Do the following tasks in the given order.

Task	Purpose and Notes	Configuration Location	Procedure Location
1. Configure the JTAPI subsystem on Cisco CRS.	<p>The Cisco CRS engine uses the JTAPI subsystem to send and receive calls from Cisco Unified CallManager.</p> <p><b>Note:</b></p> <ul style="list-style-type: none"> <li>• For the JTAPI Provider, enter the IP address(es) or hostname(s) of the Cisco Unified CallManager machine.</li> </ul>	<p>JTAPI Configuration page.</p> <p>From the Cisco CRS Administration web page menu bar, select <b>Subsystems &gt; JTAPI</b>. Then select <b>JTAPI provider</b> in the option list on the left.</p>	<p>The Configuring a JTAPI Provider section in the <i>Cisco Customer Response Solutions Administration Guide</i>.</p>

Task	Purpose and Notes	Configuration Location	Procedure Location
	<ul style="list-style-type: none"> <li>The User Prefix is the user prefix of the user to be created in Cisco Unified CallManager with which the Route Points and CTI Ports in the system have to be associated.</li> <li>Make sure the users (&lt;User prefix&gt; + "_" + nodeid) are NOT defined in Cisco Unified CallManager.</li> <li>On clicking <b>Update</b>, JTAPI users are created in Cisco Unified CallManager. Depending on how many Cisco CRS engines are enabled in the cluster, those many JTAPI users are created.</li> </ul>		
2. Provision a JTAPI Call Control Group.	<p>The Cisco CRS system uses JTAPI call control groups to pool together a series of CTI ports, which the system uses to serve calls as they arrive at the Cisco CRS server.</p> <p><b>Note:</b> Cisco CRS automatically adds the needed CTI ports port assignments and the specified call control groups to the Cisco Unified CallManager database when you click <b>Update</b>.</p>	<p>JTAPI Call Control Group Configuration page.</p> <p>From the Cisco CRS Administration web page menu bar, select <b>Subsystems</b> &gt; <b>JTAPI</b>. Then select <b>JTAPI Call Control Group</b> in the option list on the left.</p>	<p>The Provisioning JTAPI Call Control Groups section in the <i>Cisco Customer Response Solutions Administration Guide</i>.</p>
3. Check to make sure the JTAPI information in Cisco CRS and Cisco Unified CallManager is synchronized. If it is not synchronized, resynchronize it.	<p>To make sure the JTAPI configuration data entered in Cisco Unified CallManager through Cisco CRS is synchronized with the JTAPI configuration data in Cisco Unified CallManager for every server in both the Cisco Unified CallManager cluster and the Cisco CRS cluster.</p> <p><b>Note:</b> The check and Synchronize option generates a report describing the status of JTAPI information (JTAPI Users, Port Groups, and Triggers).</p>	<p>The JTAPI Resynchronize dialog box.</p> <p>From the Cisco CRS administration web page menu bar, select <b>Subsystems</b> &gt; <b>JTAPI</b>. Then select <b>Resynchronize</b> in the option list on the left.</p>	<p>The Provisioning JTAPI Call Control Groups section in the <i>Cisco Customer Response Solutions Administration Guide</i>.</p>
4. Provision the Cisco Media Termination Subsystem.	<p>Specifies the media you need for your system.</p> <p>You can choose different types of media, from a simple type of media capable of supporting prompts and DTMF (Cisco Media Termination) to a more complex and rich type of media capable of</p>	<p>Cisco Media Termination Dialog Group Configuration page.</p> <p>From the Cisco CRS administration web page menu bar, select <b>Subsystems</b> &gt; <b>Cisco Media</b> and then in the upper, right corner of the window,</p>	<p>The Provisioning the Cisco Media Subsystem section in the <i>Cisco Customer Response Solutions Administration Guide</i>.</p>

## Unified CCX Configuration Check List

Task	Purpose and Notes	Configuration Location	Procedure Location
	<p>supporting ASR. It is even possible to provision calls without media.</p> <p>Furthermore, media resources are licensed and sold as Unified IP IVR ports. You can provision more channels than you are licensed for; however, at run-time, licensing is enforced to prevent calls from being accepted by the system, as this would violate your licensing agreements.</p>	click the <b>Add a New CMT Dialog Control Group</b> link.	
<b>5.</b> Provision and configure any other Cisco CRS subsystems that you will use.	Expands the functionality of your Unified CCX system.	This task includes the following 3 tasks and depends on whether or not you have bought licenses for subsystems and have installed them when you installed Cisco CRS.	The Provisioning ASR and TTS section in the <i>Cisco Customer Response Solutions Administration Guide</i> .
<b>5.1</b> Provision an MRCP Automated ASR subsystem.	<p>Allows users to navigate through a menu of options by speaking instead of pressing keys on a touch-tone telephone.</p> <p><b>Note:</b> Cisco CRS supports several vendors from which you can buy this software.</p>	<p>MRCP ASR Configuration web page</p> <p>In the Cisco CRS administration web page, select <b>Subsystems &gt; MRCP ASR</b>.</p>	
<b>5.2</b> Provision an MRCP TTS subsystem.	<p>Converts text (UNICODE) into spoken words in order to provide a user with information or prompt a user to respond to an action.</p> <p><b>Note:</b> Cisco CRS supports several vendors from which you can buy this software.</p>	<p>MRCP TTS Configuration web page</p> <p>In the Cisco CRS administration web page, select <b>Subsystems &gt; MRCP TTS</b>.</p>	
<b>5.3</b> Provision the HTTP subsystem.	<p>Enables Unified CCX to respond to requests from a variety of web clients, including computers and IP phones.</p> <p><b>Note:</b> If you are not using HTTP applications, you do not need to provision the HTTP subsystem.</p>	<p>HTTP Trigger Configuration web page</p> <p>From the Cisco CRS administration menu bar, choose <b>Subsystems &gt; HTTP</b>, and click the <b>Add a New HTTP Trigger</b> link.</p>	The Provisioning the HTTP Subsystem section in the <i>Cisco Customer Response Solutions Administration Guide</i> .
<b>5.4</b> Provision the database subsystem.	<p>Enables Cisco CRS applications to interact with database servers in order to make database information accessible to contacts.</p> <p>For example, if you want customers to be able to dial in to automatically get account</p>	The ODBC Data Source Administrator window and the Database Subsystem Configuration web page	The Provisioning the Database Subsystem section in the <i>Cisco Customer Response Solutions Administration Guide</i> .



Task	Purpose and Notes	Configuration Location	Procedure Location
	information, you would need this subsystem.  <b>Note:</b> If you are not using Cisco CRS applications that require access to databases, you do not need to provision the Database subsystem.	This involves two procedures:  <ul style="list-style-type: none"> <li>On the script server, select <b>Start &gt; Programs &gt; Administrative Tools &gt; Data Sources (ODBC)</b>.</li> <li>From the Cisco CRS administration menu bar, select <b>Subsystems &gt; Database</b>.</li> </ul>	
<b>5.5</b> Provision the e-mail subsystem.	Communicates with your e-mail server and enables Unified CCX to create and send email (Premium package only).  <b>Note:</b> If you are not using e-mail applications, you do not need to provision the e-mail subsystem.	From the Cisco CRS administration menu bar, select <b>Subsystems &gt; eMail</b> .	The Provisioning the e-mail Subsystem section in the <i>Cisco Customer Response Solutions Administration Guide</i> .
<b>6.</b> Start the Application Engine	The Application Engine is the execution vehicle for Unified CCX flows or scripts.  <b>Note:</b> The application engine runs when you install Cisco CRS. However, you need to restart the engine after you configure your subsystems.	Cisco CRS Control Center web page.  From the Cisco CRS administration menu bar, select <b>System &gt; Control Center</b> .	The Starting, Stopping, and Restarting Cisco CRS Services section in the <i>Cisco Customer Response Solutions Administration Guide</i> .
<b>7.</b> Install and configure the applications that you will use with Cisco CRS (as needed).	Enable Unified CCX.	This task is subdivided into 5 tasks summarized in the <i>Cisco CRS Application Configuration Check List</i> .	The <a href="#">Cisco CRS Application Configuration Check List</a> (page 67).

## Cisco CRS Application Configuration Check List

Unified CCX require Unified CCX scripts. For instructions on creating and editing scripts, refer to the Cisco Customer Response Solutions Script Developer Series documentation at the [Unified CCX documentation](http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/tsd_products_support_series_home.html) ([http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/tsd\\_products\\_support\\_series\\_home.html](http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/tsd_products_support_series_home.html)).

To configure your applications for Unified CCX, do the following tasks in the given order.

## Cisco CRS Application Configuration Check List

Task	Purpose and Notes	Configuration Location	Procedure Location
1. If needed, edit the script and create the prompts required by the script.	To customize the script for your needs.  <b>Note:</b> By double clicking on an uploaded script listed in the Cisco CRS Script Management page, you can open the script with the Cisco CRS Editor.	Cisco CRS script editor and Cisco CRS administration.	The <i>Cisco CRS Scripting and Developer Series</i> documentation.  Managing Scripts, Prompts, Grammars, and Documents in the <i>Cisco Customer Response Solutions Administration Guide</i> .
2. Upload the script and upload any prompts needed for the script.	To put the needed scripts and prompts in the Cisco CRS repository so that they are available for use in a Cisco CRS application.	Cisco CRS Script Management page  From the Cisco CRS administration menu bar, select <b>Applications &gt; Script Management</b> . Then in the Script Management page, click <b>Upload New Scripts</b> .	The Uploading a Script section in the <i>Cisco Customer Response Solutions Administration Guide</i> .
3. Add the application.	To perform a telephony task through Cisco CRS, you need a Cisco CRS application.  Adding an application involves giving it a name, assigning it a script, and defining any application variables.  An example application that comes with Unified CCX is the <b>AutoAttendant</b>  The script for the Unified CCX is <b>icd.aef</b> .	Cisco CRS Application Configuration page.  From the Cisco CRS administration web page menu bar, select <b>Applications &gt; Application Management</b> and then in the upper, right corner of the window, click the <b>Add New Application link</b> link.  Next, Under Application Type, select <b>Cisco Script Application</b> and click <b>Next</b> .	The Configure a Cisco Script Application section in the <i>Cisco Customer Response Solutions Administration Guide</i> .
3.1. Give the application a name and assign the script to the application.	To make the application available for use.	Cisco CRS Script Application web page.	The Configure a Cisco Script Application section in the <i>Cisco Customer Response Solutions Administration Guide</i> .
3.2. Customize the application parameters.	On the Application page, if there are variables, you can customize the application by the definitions (values) you give the variables.  If you are using a Cisco supplied script, you might want to customize the application prompts. For example,	Cisco CRS Script Application web page.	The Configure a Cisco Script Application section in the <i>Cisco Customer Response Solutions Administration Guide</i> .

Task	Purpose and Notes	Configuration Location	Procedure Location
	you can record and upload your own prompts.		
4. Add the application trigger.	<p>Enable the application to respond to JTAPI calls and/or HTTP requests.</p> <p><b>Note:</b> When you configure JTAPI triggers, you need to specify the CTI Route Point attributes used by the trigger. For example, device pool, location, and voice mail profile.</p>	<p>Cisco CRS Add Application Triggers web page.</p> <p>From the script configuration page of the application for which you want to add a trigger, click the <b>Add New Trigger</b> link.</p>	<p>The Add Application Triggers section in the <i>Cisco Customer Response Solutions Administration Guide</i>.</p>
5. Test the application.	<p>Make sure it works.</p> <p><b>Note:</b> Before the Unified CCX system can receive calls, the Cisco CRS engine must be running.</p>	<p>From one of your phones, phone the number specified by the trigger. Or if you have an HTTP trigger, from your computer, e-mail the specified Web address.</p>	<p>Your application specific documentation.</p>





# Chapter 7

## Deploying the Sample Script, icd.aef

---

The Unified CCX script is referred to as the Integrated Contact Distribution (ICD)<sup>10</sup> script, icd.aef. The icd.aef script accepts a call, plays a welcoming prompt, and then either connects the caller to an available resource or queues the call until a resource becomes available. While queued, the caller periodically hears a prompt explaining that the call is still in the queue and still waiting for an available resource. When the resource becomes available, the script connects the call.

The icd.aef script is included with your Cisco CRS editor package. Be sure to verify that the script works with your system. For information on the variables and steps for the icd.aef script, refer to [The Basic Unified CCX Script](http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/products_user_guide_list.html) ([http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/products\\_user\\_guide\\_list.html](http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/products_user_guide_list.html)) section in the *Cisco CRS Scripting and Development Series: Volume 1, Getting Started with Scripts*.

This section contains the following topics:

- [Unified CCX Script Overview, page 71](#)
- [Designing and Configuring Unified CCX Scripts, page 72](#)
- [Testing your System and the Unified CCX Script, page 72](#)

### Unified CCX Script Overview

The icd.aef script is available with any Unified CCX package. It establishes a simple call queue and routes callers to a group of agents as the agents become available.

You can use the Cisco CRS Editor to create any number of Unified CCX scripts to provide options to queue telephone calls and connect them to available resources.

10) ICD was an earlier name for Unified CCX.

The icd.aef script does the following:

- Accepts a call.
- Plays a welcoming prompt.
- Does one of the following:
  - Connects the caller to an agent (if configured).
  - Queues the call and periodically plays a prompt to the caller.

## Designing and Configuring Unified CCX Scripts

For instructions on creating or modifying an Unified CCX script, see [Designing Unified CCX Scripts](http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/products_user_guide_list.html) ([http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/products\\_user\\_guide\\_list.html](http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/products_user_guide_list.html)) section in the *Cisco CRS Scripting and Development Series: Volume 1, Getting Started with Scripts*.

Follow the instructions for configuring Unified CCX in the [Unified CCX Configuration Check List \(page 67\)](#). The sysadmin must create an application that uses the icd.aef script, configure that application, and then configure a JTAPI trigger (CTI route point) for the application.

A JTAPI trigger responds to calls that arrive on a specific route point by selecting telephony and media resources to serve the call and invoking an application script to handle the call.

## Testing your System and the Unified CCX Script

Verify that your system and the Cisco AutoAttendant application work.

- 
- |               |   |
|---------------|---|
| <b>Step 1</b> | Select one of the phone numbers configured in Cisco Unified CallManager and dial that phone number to see if you get the correct phone. If you get the correct phone, the Cisco Unified CallManager is working. |
| <b>Step 2</b> | On one of your IP phones, phone the JTAPI trigger.  |
- If you get the welcome prompt, then the icd.aef script is working.
-



# Chapter 8

## Installing Agent and Supervisor Desktop for Unified CCX

---

Agents use the Cisco Agent Desktop (CAD) to login to the Unified CCX server and control their ACD state, control incoming and outgoing calls, chat with supervisors and other agents on their team, view their own real-time statistics, and view their own recent call activity.

Supervisors use the Cisco Supervisor Desktop (CSD) to view real-time queue and agent statistics, view recent call activity for agents, change agent states, chat with agents, and send marquee messages to all agents on the selected team. With the Enhanced or Premium packages, the supervisor can also barge-in or intercept ACD calls, silently monitor agents, and record agent calls.

**Note:** See the [Cisco Supervisor Desktop User Guide](http://www.cisco.com/univercd/cc/td/doc/product/voice/sw_ap_to/apps_4_0/english/supers/csd611ug.pdf) ([http://www.cisco.com/univercd/cc/td/doc/product/voice/sw\\_ap\\_to/apps\\_4\\_0/english/supers/csd611ug.pdf](http://www.cisco.com/univercd/cc/td/doc/product/voice/sw_ap_to/apps_4_0/english/supers/csd611ug.pdf)) for more information on silent monitoring.

This section contains the following topics:

- [About Agent and Supervisor Desktops for Unified CCX](#) , page 73
- [Cisco Agent Desktop Configuration Check List](#) , page 74
- [How to Install and Configure the Cisco Agent Desktop Applications](#), page 78

### About Agent and Supervisor Desktops for Unified CCX

The Cisco CRS system uses the agent and supervisor desktops to provide resource distribution and queuing to call centers.

**Note:** Before an agent logs in, the agent must be assigned to a phone or device profile that contains their Unified CCX extension. The Unified CCX extension must be unique and cannot be duplicated anywhere else in the CallManager cluster, regardless of any partition configuration. You can assign an agent's Unified CCX extension to one of the following: Cisco IP phone or extension mobility device profile

## Cisco Agent Desktop Configuration Check List

An agent has the following user interface options:

- Use CAD with a Cisco IP phone
- Use CAD with the Cisco IP Communicator
- IP Phone Agent (no software required on the agent's PC)

An agent can participate in two types of routing:

- CSQ is an application program that places incoming calls in a queue and distributes them to the appropriate set of agents as the agents become available. Each CSQ controls incoming Unified CCX calls and determines where an incoming call is placed in the queue and to which agent the call is sent. Each CSQ selects resources from an associated resource pool that you define.

When an agent becomes available to take a call, the system chooses a queued call from one of the CSQs whose resource pool includes the agent, and routes that call to that agent.

- Agent-based routing provides the ability to send a call to a specific agent, rather than any agent available in a CSQ. This type of routing does not support queuing.

## Cisco Agent Desktop Configuration Check List

To configure your agent desktop for Unified CCX, do the following tasks in the given order.

Task	Purpose and Notes	Configuration Location	Procedure Location
<b>1.</b> Assign Unified CCX extensions for users who are Unified CCX agents.	To enable Unified CCX to communicate with Cisco Unified CallManager, you first need to assign extensions for these agents.  <b>Note:</b> If you delete a Cisco CRS user with Administrative rights from Cisco Unified CallManager, the user will not be able to log into the Cisco CRS administration web interface.	From the Cisco Unified CallManager Administration menu bar, choose <b>User &gt; Add a New User</b> . Then select <b>Back to User List</b> and choose the user from the list. Select the <b>Device Association</b> hyperlink, and check the Enable CTI Applications box. Be sure to click <b>Update</b> to apply the changes.	The Configuring CallManager for Unified CCX section in the <i>Cisco Customer Response Solutions Administration Guide</i> .
<b>2.</b> Provision the RM JTAPI provider.	The Resource Manager (RM) of the Unified CCX system is a component of the Unified CCX subsystem. It uses a Cisco Unified CallManager JTAPI user (called a JTAPI provider) to monitor agent phones, control agent states, and route and queue calls. When you use Cisco CRS to configure a RM JTAPI	From the Cisco CRS administration web page menu bar, select <b>Subsystems &gt; RmCm</b> . Then specify the RM JTAPI provider(s), User ID, and Password/Confirm Password fields and choose <b>Update</b> to apply the changes. Enter the CallManager User ID and Password and click <b>Logon</b> .	The Provisioning the RM JTAPI provider section in the <i>Cisco Customer Response Solutions Administration Guide</i> .



Task	Purpose and Notes	Configuration Location	Procedure Location
	<p>provider, Cisco CRS automatically adds the information in CallManager.</p> <p><b>Note:</b> For every agent/resource created in CallManager, make sure that the agent extension is also associated with an RM JTAPI provider. You do this from the CallManager User Page for the RM JTAPI provider. In other words, even though you create the RM JTAPI User in Cisco CRS Administration, you still need to use the CallManager interface to associate the RM JTAPI User with an agent extension.</p>		
<b>3.</b> Configure Unified CCX supervisors	<p>You must enable the appropriate agents to act as supervisors. The User Management menu option allows you to assign access levels to CRS system administrators and supervisors. When you configure a CRS supervisor, you are configuring users who can access the CRS Supervisor web pages. You are not creating a supervisor for Unified CCX.</p> <p><b>Note:</b> The Unified CCX supervisor must be configured as an agent even if that agent will not answer ACD calls.</p>	From the Cisco CRS administration web page menu bar, select <b>Tools &gt; User Management</b> . Select a user ID in the CMUsers list, and choose the list to which this user ID must be assigned. Click <b>Update</b> to apply the changes.	The User Management Menu Option section in the <i>Cisco Customer Response Solutions Administration Guide</i> .
<b>4.</b> Create resource groups.  <b>Note:</b> This step is required with the Unified CCX Standard product. It is optional for the Unified CCX Enhanced and Premium products.	Resource groups are collections of agents that your CSQ uses to handle incoming Unified CCX calls. To use resource group-based CSQs, you must specify a resource group.	From the Cisco CRS administration web page menu bar, choose <b>Subsystems &gt; RmCm</b> and click the <b>Resource Groups</b> link. Then select the <b>Add a New Resource Group</b> link. In the Resource Group Name field, enter a resource group name. identify the resource group, and click <b>Add</b> .	The Creating, Modifying, and Deleting Resource Groups section in the <i>Cisco Customer Response Solutions Administration Guide</i> .
<b>5.</b> Create skills  This step applies only if you are using Unified CCX Enhanced or Premium.	<p>Skills are customer-definable labels assigned to agents. The two Unified CCX Enhanced packages can route incoming calls to agents who have the necessary skill or sets of skill to handle the call.</p> <p><b>Note:</b> Do not create skills exceeding the recommended values for the Cisco MCS</p>	From the Cisco CRS administration menu bar, choose <b>Subsystems RmCm</b> . Click the <b>Skills</b> hyperlink and select the <b>Add a New Skill</b> hyperlink. In the Skill Name field, enter a description of a relevant skill and click <b>Add</b> .	The Creating, Modifying, and Deleting Skills section in the <i>Cisco Customer Response Solutions Administration Guide</i> .

## Cisco Agent Desktop Configuration Check List

Task	Purpose and Notes	Configuration Location	Procedure Location
	on which the Cisco CRS is installed. For more information, refer to the <a href="#">Unified CCX Data Sheets</a> <sup>17</sup> .		
<b>6.</b> Assign agents to resource groups and skills to agents.  <b>Note:</b> It is not necessary to assign an agent to a resource group with Unified CCX. If you have one of these packages, only perform this step if you want to use resource group-based CSQs.	Agents that handle calls are called resources. You must create a resource group, and then assign agents (resources) to that group. If you have the Unified CCX Enhanced package, you can create and add skills to agents. You can also select the competence level of the agent(s) in assigned skills. Competence level indicates the agent's level of expertise in that skill (1 indicating beginner and 10 indicating expert). You can assign resource groups and skills to agents either individually or in bulk. The bulk option enables you to assign skills and resources groups to many agents at the same time. You can assign up to 50 skills to agents.	From the Cisco CRS administration menu bar, choose <b>Subsystems &gt; RmCm</b> . On the Unified CCX Configuration navigation bar, click the <b>Resources</b> hyperlink. Click the name of the agent in the Resource Name column and assign the requirements for each field. Click <b>Update</b> to apply the changes.	The Assigning Resource Groups and Skills to Agents section in the <i>Cisco Customer Response Solutions Administration Guide</i> .
<b>7.</b> Create CSQs.	The CSQ controls incoming Unified CCX calls by determining where an incoming call is placed in the queue and to which agent the call is sent. After you assign an agent to a resource group and/or skills, you must assign agents to a CSQ by associating a resource group or skills to the CSQ.	From the Cisco CRS administration menu bar, choose <b>Subsystems &gt; RmCm</b> . On the Unified CCX Configuration navigation bar, click the <b>Contact Service Queues</b> hyperlink. Click the Add a new Contact Service Queue hyperlink and assign the requirements for each field. Click <b>Next</b> to select the required Resource Selection Criteria. Click <b>Add</b> to apply changes and update the system.	The Creating, Modifying, and Deleting Contact Service Queue section in the <i>Cisco Customer Response Solutions Administration Guide</i> .
<b>8.</b> Provision remote monitoring.  This step applies only if you are using Unified CCX Premium and necessary if are using the remote monitoring feature.	Remote monitoring allows a supervisor to call into any site where the supervisor has a Cisco Unified CallManager user profile and monitor an agent's conversation. When you, as a supervisor, monitor a conversation, you can hear all parties on the call. The parties will have no indication that you are monitoring the call. You cannot join the call or be heard by the parties. You can monitor a call by choosing a resource (agent) or a CSQ.	From the Cisco CRS administration menu bar, choose <b>Applications &gt; Application Management</b> . Click the <b>Add a New Application</b> hyperlink and choose <b>Next</b> from the drop-down menu and select the required resource Selection Criteria. Click <b>Add</b> to apply changes and update the system.	The Configuring and Using Remote Monitoring section in the <i>Cisco Customer Response Solutions Administration Guide</i> .

17) [http://www.cisco.com/en/US/products/sw/custcosw/ps1846/products\\_data\\_sheets\\_list.html](http://www.cisco.com/en/US/products/sw/custcosw/ps1846/products_data_sheets_list.html)

Task	Purpose and Notes	Configuration Location	Procedure Location
	<b>Note:</b> For CSQ monitoring, the supervisor cannot start monitoring the call after it connects to the agent; the call must reach the agent after supervision begins. For agent monitoring, supervision can begin after the call connects to the agent.		
<b>9.</b> Provision agent-based routing.  This step applies only if you are using Unified CCX Enhanced or Premium and if you are using agent-based routing.	Agent-based routing provides the ability to send a call to a specific agent, rather than any agent available in a CSQ. Use this option to configure system-wide parameters in an agent-based routing application.	From the Cisco CRS administration menu bar, choose <b>Subsystems &gt; RmCm</b> . On the Unified CCX Configuration navigation bar, click the <b>Agent Based Routing Settings</b> hyperlink and assign the requirements for each field. Click <b>Update</b> to apply the changes.	The Configuring Agent-Based Routing section in the <i>Cisco Customer Response Solutions Administration Guide</i> .
<b>10.</b> Create teams.	A team is a group of agents who report to the same supervisor. When an agent is assigned to a team, their supervisor can barge-in and/or intercept any call being handled by any agent within this team. A supervisor can also monitor any CSQs that are assigned to this team. A team must have one primary supervisor.  <b>Note:</b> A team can additionally have one or more secondary supervisors.	From the Cisco CRS administration menu bar, choose <b>Subsystems &gt; RmCm</b> . On the Unified CCX Configuration navigation bar, click the <b>Teams</b> hyperlink and click the <b>Add a new Team</b> hyperlink and assign the requirements for each field. Click <b>Update</b> to apply the changes.	The Creating, Modifying, and Deleting Teams section in the <i>Cisco Customer Response Solutions Administration Guide</i> .
<b>11.</b> Start Assign agents to teams.	All agents belong to a default team. A default team is created automatically by the system; you cannot delete it.	From the Cisco CRS administration menu bar, choose <b>Subsystems &gt; RmCm</b> . On the Unified CCX Configuration navigation bar, click the <b>Teams</b> hyperlink and click the <b>Add a new Team</b> hyperlink and click a name in the Team Name column. Select an agent name in the Resources Assigned to other Teams list and use the arrow icon to move it into the Assigned Resources list and click <b>Update</b> to apply the changes.	The Creating, Modifying, and Deleting Teams section in the <i>Cisco Customer Response Solutions Administration Guide</i> .

## How to Install and Configure the Cisco Agent Desktop Applications

This section provides installation and configuration information for the Cisco agent and supervisor desktop in your contact center after the Cisco CRS platform is installed and configured. Upon successful installation into a properly-configured Unified CCX environment, the basic functionality of agent and supervisor desktops are ready to use with no further configuration required.

Before you install the agent desktop, you need a web browser and the following information:

- The IP address of the Cisco CRS server.
- The user name and password to access the Cisco CRS User Options web page (the same user name and password you use to access Cisco Agent Desktop).
- The destination folder on the user's PC in which you will install the application.
- The extension of the user's Unified CCX phone.

Task	Purpose and Notes	Configuration Location	Procedure Location
1. Install the agent and supervisor desktop.	<b>Note:</b> Refer to the <a href="#">CAD Installation Guide</a> <sup>17</sup> .	From the web browser.	The Installing Agent Desktop section and the Installing Supervisor Desktop section in the <i>CAD Installation Guide</i> .
2. Start the agent desktop.	<b>Note:</b> Agents are not tied to a specific workstation—they can log into agent desktop at any workstation by entering their unique desktop ID and password.	To start the agent desktop click <b>Start &gt; Programs &gt; Cisco &gt; Desktop &gt; Agent</b> . The login screen appears. Enter your agent desktop ID, password, and extension in the appropriate fields, then click <b>OK</b> or press Enter.	The Starting Agent Desktop section in the <i>Cisco Agent Desktop User's Guide</i> .
3. Handle calls	You can use a hard IP phone or Cisco IP Communicator to handle calls.	You can answer calls, make a call, conference other callers, or transfer a call.	The Handling Calls section in the <i>Cisco Agent Desktop User's Guide</i> .

17) [http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/prod\\_installation\\_guides\\_list.html](http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/prod_installation_guides_list.html)



# Chapter 9

## Call Monitoring, Call Recording, and Prompts for Unified CCX

---

The Unified CCX call statistics, recording, and monitoring server maintains Unified CCX call statistics and provides recording and call monitoring functions for the for Unified CCX Enhanced and Premium packages. This chapter provides information on the dependencies to use the monitoring and recording features in Unified CCX.

This section contains the following topics:

- [Monitoring Agent Conversations , page 79](#)
- [Recording Prompts and Agent Conversations , page 80](#)

### Monitoring Agent Conversations

Remote monitoring allows a supervisor to call into any site where the supervisor has a Cisco Unified CallManager user profile and monitor an agent's conversation. You must configure remote monitoring applications when you want to use remote monitoring.

When you, as a supervisor, monitor a conversation, you can hear all parties on the call. The parties will have no indication that you are monitoring the call. You cannot join the call or be heard by the parties.

With remote monitoring, you can choose to monitor a call in either of these ways:

- By resource (agent)—In this case, you identify the resource by agent extension.
- By CSQ—In this case, you will monitor the call of an agent who belongs to the CSQ. When you monitor by CSQ, you select the CSQ from a menu.

Refer to the Configure a Remote Monitoring Application section in the *Cisco Customer Response Solutions Administration Guide* for detailed configuration information.

**Note:** Remote Monitoring is only available with the Unified CCX Premium.

## Recording Prompts and Agent Conversations

Depending on the type of user (agent or supervisor) you can perform multiple function using Unified CCX.

The following recording functions are included in Unified CCX:

- Agents can record a customer call.

See the Desktop Configuration section in the *Cisco Desktop Administrator User's Guide* and the Dashboard Pane section in the *Cisco Agent Desktop User's Guide*.

- Supervisors can record an agent's call.

See the Supervisor Desktop Functions section in the *Cisco Supervisor Desktop User's Guide*.



# Chapter 10

## Using Unified CCX Historical Reports

---

You can use a web browser to administer the Cisco CRS Engine and your Cisco CRS applications from any computer on the network. You can use the Cisco CRS administration web interface to start and stop the Cisco CRS Engine, configure system parameters, monitor Cisco CRS Engine activity, and view real-time and historical reports that include total system activity and application statistics. This chapter provides information on configuring the database connection for to facilitate historical reports and scheduling details for users.

**Note:** The Unified CCX database is separate from the customer database. A customer database needs to be purchased separately and stores basic client information such as name, telephone, type, and so forth. In order to query a database from a Unified CCX workflow, you need to have purchased premium licensing. Refer to the [Cisco CRS Hardware and Software Compatibility Guide](http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/products_device_support_tables_list.html) ([http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/products\\_device\\_support\\_tables\\_list.html](http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/products_device_support_tables_list.html)) for the list of supported database servers.

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

- 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 (CSVs).
- Prepare custom reports using a variety of generally available 3rd party applications that are designed to create reports from databases.

**Warning:** You cannot run historical reports using the web browser. The historical report client viewer is a stand-alone Windows-based application. You must first download the plugin for client viewer from Cisco CRS, install it on a client machine (on a machine other

than the CRS server), and then run reports from the client viewer. Refer to the *Cisco CRS Historical Reports User Guide* for more information.

Setting up Cisco CRS for historical reporting consists of three tasks:

1. Configuring limits for client/scheduler database connections.
2. Specifying users who can use historical reporting.
3. Defining purge configuration and scheduling.

Refer to the Historical Reporting Configuration section in the *Cisco Customer Response Solutions Administration Guide* for detailed configuration information.

Also refer to the Managing Cisco CRS Historical Reporting section in the *Cisco Customer Response Solutions Historical Reports User Guide*.

**Note:** The maximum number of historical reporting sessions that can be supported in the Unified CCX cannot be greater than the number of seats. The default is 0 for all Unified CCX license packages (Standard, Enhanced, and Premium). The maximum number of historical reporting connections varies by server type and deployment topology but cannot be higher than 15.

This section contains the following topics:

- [The Default Unified CCX Historical Reports](#), page 82
- [Real-Time Unified CCX Reports](#), page 83

## The Default Unified CCX Historical Reports

The `hrcConfig.ini` file contains general configuration information for the Cisco CRS Historical Reports client system. Refer to the `hrcConfig.ini` configuration File section in the *Cisco Customer Response Solutions Historical Reports User Guide* for more information.

By default, each historical report contains one or more charts that display specific information in the report. You can choose whether to include or omit charts. Refer to the Including Charts with a Report section in the *Cisco Customer Response Solutions Historical Reports User Guide* for more information.

By default, the Cisco CRS Historical Reports client saves Report Settings files on your computer in the Cisco CRS Historical Reports\Reports directory, which is under the directory in which you installed the Cisco CRS Historical Reports system. (By default, the system installs in the Program Files directory.) The client gives a Report Settings file the name `report.chc`, where `report` is the name of the report for which you are saving settings. You can change the default directory and the base file name for a Report Settings file. The file name must have the extension `.chc`. Refer to the Saving Report Setting section in the *Cisco Customer Response Solutions Historical Reports User Guide*.



## Real-Time Unified CCX Reports

When the Cisco CRS system is configured and functioning, you can run reports to monitor real-time activity directly from the agent and supervisor desktops.

Refer to the Reporting on Real-Time Cisco CRS Data section in the *Cisco Customer Response Solutions Administration Guide* .

## Real-Time Unified CCX Reports



# Chapter 11

## Managing Unified CCX

---

When you have provisioned the telephony and media resources, the Unified CCX subsystem, additional subsystems (if required) and configured Cisco script applications, then you can manage the following files:

- Prompt, Grammar, and Document Files
- Central, datastore, Cisco CRS repository

This section contains the following topics:

- [Managing Prompt, Grammar, and Document Files, page 85](#)
- [Managing Cisco CRS Datastores, page 86](#)

### Managing Prompt, Grammar, and Document Files

Cisco CRS applications might use auxiliary files that interact with callers, such as scripts, pre-recorded prompts, grammars, and custom Java classes. Depending on each implementation, Cisco CRS applications use some or all of the following file types:

- **Prompts.** Many applications make use of pre-recorded prompts, stored as .wav files, which are played back to callers in order to provide information and elicit caller response.
- **Grammars.** The Cisco CRS system uses specific grammars when recognizing and responding to caller response to prompts. A grammar is a specific set of all possible spoken phrases and/or DTMF digits to be recognized by Cisco CRS applications and acted upon during run time.
- **Documents.** Documents might consist of .txt, .doc, .jsp, or .html files. Documents can also include custom classes and Java Archive (JAR) files that allow you to customize the performance of your Cisco CRS system. Several system-level prompt, grammar, and document files are loaded during Cisco CRS installation. However, any file you create needs to be made available to the Cisco CRS engine before a Cisco CRS application can use them. This is done



## A - C - D - E - F - G - H - I - J - L - M - N - P - R - S - T - V - X

---

### A

#### ACD

Automatic Call Distribution. A feature that automatically routes incoming calls to the next available or longest idle agent or attendant in a line hunt group.

#### Active server

The CRS server that is normally up and running. The active server provides all CRS system services and resources. This server is synchronized with all the other servers in the CRS cluster when administrative changes are made.

#### Alarm

Signals that declare the run-time status and state of the Cisco CRS system and provide information for troubleshooting. Alarms can be forwarded to a Syslog server, to an SNMP trap subagent, or to a Windows Event Log.

#### Alarm Catalog

A file that contains alarm definitions.

#### Alarm definition

A list of alarms and their properties. The definition for each alarm includes the alarm name, a description, an explanation, recommended actions, and related information.

#### Alarm Message

An alarm name followed by the reason for the alarm or the module name.

## Alarm Service

A Windows service that receives alarms from the Cisco CRS Engine and its subsystems.

## Application

In general, an application is a program that helps you accomplish a specific task; for example, a word processing program, a spreadsheet program, or an FTP client. Applications should be distinguished from system programs, which control the computer and run applications, and utilities, which are small assistance programs. In Cisco CRS, an application represents a configured combination of one or more triggers, a script, and the values for any parameter in that script.

## Application Engine

A group of Java beans that can be combined in many ways to create applications such as Cisco Unified IP IVR. The Application Engine is the execution vehicle for all CRS based applications including Cisco Unified Contact Center Express, Cisco Unified IP IVR, and Cisco Unified Queue Manager scripts.

## ASR

Automatic Speech Recognition. A technology that allows users of IVR systems to speak entries rather than enter numbers on a keypad.

## Automatic Call Distribution

See ACD.

## Automatic Speech Recognition

See ASR.

---

## C

### Call control group

Allows you to control how the Cisco CRS system uses CTI ports.

### Call queuing

A method of handling calls until they can be answered by an agent.

## CDP

Cisco Discovery Protocol. Media- and protocol-independent device-discovery protocol that runs on all Cisco-manufactured equipment including routers, access servers, bridges, and switches. Using CDP, a device can advertise its existence to other devices and receive information about other devices on the same LAN or on the remote side of a WAN. CDP runs on all media that support SNAP, including LANs, Frame Relay, and ATM media.

## Cisco CRS Alarm Service

A Windows service automatically installed as part of Cisco CRS installation that receives alarms about system events from the Cisco CRS Engine and its subsystems. These alarms are defined in XML format in files called catalogs, which are set up as part of the Cisco CRS installation process.

## CISCO-CCM-MIB

Cisco Unified CallManager Management Information Base. Exports the data in the Cisco Unified CallManager database and other data sources. Examples of data exports include Cisco Unified CallManager group tables, region tables, time zone group tables, phone detail tables, gateway information tables, and status traps.

## Cisco CRS

Cisco Customer Response Solutions. A platform that offers integrated application functionality, including Cisco Unified Contact Center Express for contact center functionality such as ACD, CTI, IVR, Cisco Unified IP IVR for call treatment and self-help automation, and Cisco Unified QM, an option for an IP Contact Center that provides call treatment to calls in queue.

## Cisco CRS Editor

A Windows tool with which application designers create new scripts or modify existing scripts. The visual scripting tool allows designers to drag and drop call-flow steps from a palette into the main design window.

## Cisco CRS Engine

Execution vehicle for CRS scripts. The Cisco CRS Engine can run multiple scripts simultaneously. On startup, the CRS Engine loads all scripts and configuration information from the CRS configuration datastore server. Individual scripts can be

updated in real time and manually pushed to the Cisco CRS Engine without restarting the engine. Scripts that are running when a download occurs will not be affected by updates; they will run to completion with the pre-update logic. One Cisco Unified CallManager can support multiple Cisco CRS engines, but the Cisco CRS engines bind to only one Cisco Unified CallManager.

In CRS 4.1, one Cisco Unified CallManager supports many CRS Clusters (and not just one engine) and one CRS cluster, which may contain up to 2 CRS Engines, binds to one Cisco Unified CallManager.

### **Cisco Unified Contact Center Enterprise (Unified CCE)**

Unified CCE can also handle traditional ACD calls and functions as a virtual ACD. Capabilities of Unified CCE include intelligent multichannel contact routing, ACD functionality, network-to-desktop CTI, IVR integration, call queuing, and consolidated reporting.

### **Cisco Unified Contact Center Express (Unified CCX )**

Unified CCX is an application that uses the Cisco Customer Response Solutions (CRS) platform to provide a multimedia (voice, data, and web) IP-enabled customer-care environment to enhance the efficiency of contact center. Unified CCX is available in Unified CCX Standard, Unified CCX Enhanced, and Unified CCX Premium packages.

### **Cisco Unified Contact Center Express (Unified CCX) Call Monitoring Server**

Dedicated server that provides for call monitoring.

### **Cisco Unified Contact Center Express (Unified CCX) Call Statistics, Recording, and Monitoring Server**

Dedicated server that maintains Cisco Unified Contact Center Express call statistics and that provides for recording and call monitoring for Cisco Unified Contact Center Express Enhanced.

### **Cisco Unified Intelligent Contact Management Enterprise (Unified ICME)**

The Cisco Unified Contact Center Enterprise component that is responsible for making routing decisions and performing ACD functions. In CRS 4.x, with the IPCC Gateway PG, Unified CCX can be integrated as an ACD with Unified ICME software.

## **Cisco Unified Contact Management Enterprise (Unified ICME) subsystem**

A subsystem of the Cisco Unified IP IVR system that allows that system to interact with Cisco Unified ICM Enterprise software. Unified ICME provides a central control system that directs calls to various human and automated systems, such as Voice Response Units (VRUs) and ACDs.

## **Cisco Unified Queue Manager (QM)**

Unified QM is an IP-based call treatment and solution that provides powerful call-treatment options as part of the Cisco Unified Contact Center solution.

## **Configuration Datastore Server**

The CRS Configuration Datastore Server (CDS) manages and shares configuration, component, and application information within the Cisco CRS cluster and communicates with the Cisco Unified CallManager

## **Cisco Discovery Protocol**

See CDP.

## **Cisco Media Termination**

See CMT.

## **CISCO-VOICE-APPS-MIB**

Cisco Voice Applications Management Information Base. Provides information about supported SNMP traps.

## **CiscoWorks**

CiscoWorks, available as a package separate from CRS, provides a suite of web-based applications for managing Cisco devices. It is the network management system (NMS) of choice for the Cisco CRS system and for other Cisco Unified Communications family of products.

## **Cluster**

The grouping together of a group of servers (computers) into a single unit. If Cisco CRS components are deployed on a single server, the cluster consists of that server. If Cisco CRS components are deployed on multiple servers, the cluster



includes the Cisco CRS server, expansion servers, and standby servers on which you installed Cisco CRS.

## **Cluster Profile**

The Cisco Customer Response Solutions Administration web page (home page) displays information about the cluster profile. A cluster profile includes data relating to the Cisco CRS servers, components, and licenses installed in a cluster.

## **CMT**

Cisco Media Termination. An option to terminate the media on an agent's personal computer.

## **Codec**

Coder/Decoder. A sampling and compression algorithm.

## **Comma-Separated Value**

See CSV.

## **Component**

An installation unit, either hardware or software, that you can install in a CRS system. CRS software components include the CRS Engine, the Database component, the Monitoring component, and the recording component. Hardware components include servers and client computers. You select the components you want when you install the system.

## **Configuration File**

A file containing information for a computer or an application.

## **Contact**

A connection with a remote customer.

## **Contact Service Queue**

See CSQ.

## **CRS Datastores**

Components that allow you to manage and monitor historical, repository, and configuration data across all servers in the Cisco CRS cluster.

## **CSQ**

Contact Service Queue. In Cisco Unified Contact Center Express, a CSQ is a call queue associated with one and only one Cisco Unified CallManager CTI Route Point.

## **CSV**

Comma-separated value. A text file format used as a way of recording database fields.

## **CTI**

Computer Telephony Integration. The name given to the merger of traditional telecommunications (PBX) equipment with computers and computer applications. The use of caller ID to retrieve customer information automatically from a database is an example of a CTI application.

## **CTI Port**

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

## **CTI Port Group**

A group of access points into the Unified Contact Center telephone network.

## **CTI Route Point**

A virtual device that can receive multiple simultaneous calls for the purpose of application-controlled redirection.

## **Customizer**

A window used to configure the properties of a step in the Cisco CRS Editor.

---

## D

### **Datastores**

See CRS Datastores

### **Data type**

In a programming language, a set of data with values having predefined characteristics. Examples include integer, floating point unit number, character, string, and pointer. Usually, a limited number of such data types come built into a language. The language usually specifies the range of values for a given data type, how the values are processed by the computer, and how they are stored.

### **Default script**

A script that gracefully terminates a call in the event of an error in the main script.

### **Deployment scenario**

A set of Cisco CRS features and options on a server or servers.

### **Directory profile**

The directory profile describes the directory structure. It contains the directory host name or IP address, directory port number, directory user (DN), directory password, base context, server type, and configuration profile name. For each Cisco Unified IP IVR system, a directory profile must be created. There are two directories associated with each Cisco Unified IP IVR system: the Configuration Directory and the Repository Directory (called "the Repository").

### **DTMF**

Dual Tone Multi-Frequency. The signal to the telephone company that is generated when you press a key on a telephone keypad. With DTMF, each key you press on your phone generates two tones of specific frequencies. So that a voice cannot imitate the tones, one tone is generated from a high-frequency group of tones and the other from a low-frequency group. Unified CCX telephone keypad presses resulting in DTMF is often used to capture customer input to IVR prompts.

## Dual Tone Multi-Frequency

See DTMF.

---

## E

### Event

An occurrence that is significant to an application and that may call for a response from the application.

### Excel (XLS) format

Format of data in the Microsoft Excel spreadsheet application.

### Expansion server

An additional server, not included in a minimal configuration, that you can add to your Cisco CRS deployment to expand your capacity for handling contacts in the Cisco CRS cluster. For example, you can activate the CRS Database, Monitoring, and Recording components on separate, additional servers.

### Export

To convert a file from the format of one application to the format of another application, or to move data out of one file and import it into another file.

### Expression

A formula, evaluated when a Cisco CRS script executes, to determine the value of a variable.

---

## F

### Field (also database field)

An item in a database record. For example, Name, City, or Zip Code. A group of fields make up a record.

---

## **G**

### **Grammar**

A set of spoken phrases or DTMF digits that can be recognized by a script.

---

## **H**

### **High Availability**

An optional server in a Cisco CRS deployment that provides failover capability. A high availability server automatically takes over for its corresponding active server within 5 seconds if the active server becomes unavailable.

---

## **I**

### **ICME**

See Unified ICME.

### **Interactive Voice Response**

See IVR.

### **IP Phone Agent**

A Unified CCX agent without a personal computer. The agent logs in, logs out, and changes states using the Cisco IP Phone screen.

### **IVR**

Interactive Voice Response. A system that provides information as recorded messages over telephone lines in response to user input in the form of spoken words or, more commonly, DTMF signaling.

---

## **J**

### **Java Database Connectivity**

See JDBC.

## Java Telephony Application Programming Interface

See JTAPI.

## JDBC

Java Database Connectivity. A Java API that enables Java programs to execute SQL statements, allowing Java programs to interact with any SQL-compliant database. Because nearly all relational DBMSs support SQL, and because Java itself runs on most platforms, JDBC makes it possible to write a single database application that can run on different platforms and can interact with different database management systems (DBMSs). JDBC is similar to Open Data Base Connectivity (ODBC) but is designed specifically for Java programs, whereas ODBC is language-independent.

## JTAPI

Java Telephony Application Programming Interface. A call control model developed by Sun Microsystems.

## JTAPI call control groups

A pooled series of CTI ports that the Cisco CRS system uses to serve calls as they arrive at the Cisco CRS server.

---

## L

### Log file

A file that keeps track of the activity of a computer or an application.

---

## M

### Master service

The service that controls the service-specific function in a CRS cluster where you can have more than one service of the same type. Only one service of a given type can be the master within the CRS Engine component. You cannot configure the master service.

## MCS

Media Convergence Server. A turnkey server platform for Cisco CRS.

## Media Termination

See CMT.

## Management Information Base

See MIB.

## Media Convergence Server

See MCS.

## MIB

Management Information Base. Database of network management information that is used and maintained by a network management protocol, such as SNMP or CMIP. The value of a MIB object can be changed or retrieved using SNMP or CMIP commands, usually through a graphical user interface network management system. MIB objects are organized in a tree structure that includes public (standard) and private (proprietary) branches.

## MRCP

Media Resource Control Protocol. An application level protocol that enables client devices requiring audio/video stream processing to control media service resources like Speech Synthesizers (TTS), Speech Recognizers (ASR), Signal Generators, Signal Detectors, Fax Servers, and so on over a network. This protocol is designed to work with streaming protocols like Real Time Streaming Protocol (RTSP) or Session Initiation Protocol (SIP) which help establish control connections to external media streaming devices, and media delivery mechanisms like Real Time Protocol (RTP).

---

## N

## Node

A computer that is linked to other computers in a network of computers.

---

## P

### Palette

A grouping of steps in the Cisco CRS Editor.

### Pane

A part of a window that is devoted to a specific function.

### PIM

Peripheral Interface Manager. The Cisco proprietary interface between a peripheral device and the Peripheral Gateway.

### Ports

In a communications network, a logical channel identified by its unique port number.

### Post-Routing

Process of making a routing decision after a call reaches a termination point.

### Pre-Routing

Process of making a routing decision before a call reaches a termination point.

### Prompts

A message from a computer that asks the operator to do something, such as enter a command, enter a password, or enter data, or that indicates that the computer is ready to accept input.

### Publisher

The source of data across all servers in the Cisco CRS cluster. The Publisher is the main CRS database. It includes configuration as well as call-flow data. All data is written to this database, with the subscriber database(s) getting the data from the publisher and synchronizing that data with the publisher data.



If the publisher fails, then data is written directly to the subscriber(s) database. When the publisher comes back on line, it synchronizes its data with the data currently in the subscriber(s). When done, it takes over again as publisher.

## **Purge**

To delete both a set of data and all references to the data.

---

## **R**

### **Real-Time Transport Protocol**

See RTP.

### **Record (also database record)**

In a database, a group of fields that make up one complete entry. For example, record about a customer might contain fields for name, address, and telephone number.

## **Repository**

The subdirectory in the configuration datastore where Cisco user scripts are stored. You manage your Cisco user scripts with the Repository Manager.

## **Resource**

Agent enabled to handle Unified Contact Center Express calls.

## **Resource group**

A set of related resources.

## **RTP**

Real-Time Transport Protocol. One of the IPv6 protocols. RTP is designed to provide end-to-end network transport functions for applications transmitting real-time data, such as audio, video, or simulation data, over multicast or unicast network services. RTP provides services such as payload type identification, sequence numbering, time stamping, and delivery monitoring to real-time applications.

---

## S

### Scheduler

A program that resides on a CRS Historical Reports client computer. The Scheduler maintains information about each scheduled report, including when the report should execute and what information the report should contain. The scheduler also executes scheduled reports at their scheduled times, based on the time and date of the CRS Historical Reports client computer.

### Script

A sequence of steps constructed in the Cisco CRS Editor. Scripts are sometimes also called "flows," "call flows" or "work flows" since scripts control the flow of a call.

### Server

A computer that provides services or resources to other computers (called clients) connected to it through a network. CRS has three types of servers: active, standby, and expansion.

### Service

A program, routine, or process that performs a specific system function to support other programs, particularly at a low (close to the hardware) level. In CRS, you can have a master service and a standby service.

### Serviceability

Enables remote network management support for the Cisco CRS system. Serviceability enables this support through CiscoWorks and through any other third-party network management system (NMS) that uses standard protocols.

### Session (historical reporting)

Historical reporting seats are also called historical reporting sessions. Historical reporting sessions (seats) refer to the number of historical reporting clients that can be started at the same time on different client machines.

**Session (script)**

An object that stores information about a caller as they move through a script.

**Simple Network Management Protocol**

See SNMP.

**Skill**

Designated competency of an agent in a given area. Enables agents to handle calls associated with their expertise.

**Skill Based Routing**

The routing of calls to agents with designated skills.

**Snapshot Agent**

Generates a snapshot or image of the current database data.

**SNMP**

Simple Network Management Protocol. The standard protocol for network management software. Using SNMP, programs called SNMP agents monitor devices on the network. Another program collects the data from the agents. The database created by the monitoring operations is called a management information base (MIB).

**SNMP agent**

Simple Network Management Protocol agent. Hardware or software that monitors devices on a network. Data from an SNMP agent, which is contained in a MIB, helps in network management and troubleshooting.

**SNMP service**

A Windows service that provides a framework for SNMP and provides the SNMP agent that interfaces with SNMP subagents.

## **SNMP subagent**

Cisco provides SNMP subagents to support each Cisco MIB. The SNMP service loads the Cisco SNMP subagents and it exchanges SNMP messages with the SNMP subagents. The SNMP service formats information as MIBs and sends this information to a Network Management System (NMS). It also sends traps from the SNMP subagents to the appropriate SNMP trap receivers.

## **Standby server**

The server that takes over for the active server in what is called a failover when (or if) the active server becomes unavailable. Cisco CRS lets you deploy up to two standby servers for high availability. With high availability, if an active server becomes unavailable, the standby server immediately and automatically becomes the active server.

## **Step**

A single element in the CRS Editor that accomplishes a specific function

## **Subfacility**

A traceable software component.

## **Subscriber**

The server in a CRS cluster that receives data from the Publisher server. The Publisher/Subscriber database model enables CRS to provide high-availability (all data to be available on the multiple nodes of the cluster) and failover support.

## **Subscription Agent**

Actively replicates data between the Publisher and Subscriber. Since CRS uses bi-directional replication, the subscription agent replicates data from the Publisher to the Subscriber as well as from the Subscriber to the Publisher.

## **Subsystem**

Extensible modular development environment that performs a particular function.

## Syslog

A Cisco standard that allows for logging of errors across an enterprise. Provides local logging of network events to files. Also provides remote logging to various systems via standard protocols.

---

## T

### Table (also database table)

A presentation of information organized in rows and columns.

### Text-to-Speech

See TTS.

### Trace (also trace file)

A TCP/IP utility that allows you to determine the route packets are taking to a particular host. Trace route works by increasing the "time to live" value of packets and seeing how far they get, until they reach the given destination.

### Trap (also SNMP trap)

A program interrupt, usually caused by some exceptional situation in an application. In most cases, after such an interrupt, the operating system performs some action, then returns control to the application.

### Trigger

Signals that respond to incoming contacts at a specified route point by selecting telephony and media resources to serve the contact and invoking application scripts to handle it. The CRS system uses JTAPI triggers to start responses to telephone calls and HTTP triggers to start responses to HTTP requests. In these cases, telephone numbers and Web addresses (associated with the triggers) act as the triggers.

## TTS

Text-to-Speech. A speech synthesis application that creates a spoken sound version of the text in a document or database.

## **TTS Client**

A component of TTS that must reside on the Cisco CRS server.

## **TTS Server**

A dedicated server that converts text into speech and plays it back to the caller.

---

## **V**

### **Variable**

A placeholder for data.

### **VXML (also VoiceXML)**

Voice Extensible Markup Language. Allows a user to interact with the Internet through voice-recognition technology.

---

## **X**

### **XML**

Extensible Markup Language. A programming language developed by the World Wide Web Consortium that allows Web developers to create customized tags that will organize and deliver efficiently. XML is a metalanguage, containing a set of rules for constructing other markup languages.



through the Cisco CRS cluster's repository datastore, where the prompt, grammar, and document files are created, stored, and updated.

**Note:** The Cisco CRS Server's local disk prompt, grammar, and document files are synchronized with the central repository during Cisco CRS engine startup and during run-time when the Repository datastore is modified. For more information, refer to the *Cisco Customer Response Solutions Administration Guide*.

## Managing Cisco CRS Datastores

Datastores are components that allow you to manage and monitor historical, repository, and configuration data across all servers in the Cisco CRS cluster.

The Datastore Control Center allows you to configure and manage the following data across all servers in the cluster:

- Agent records
- Historical records
- Repository data, such as prompts, grammars and documents
- Configuration data for historical reporting

Access the Datastore Control Center by selecting **Applications > Datastore Control** from the Cisco CRS administration menu bar.

You can use the Datastore Control Center to obtain an overview of the datastores in the cluster and their relationships, manage the datastore read/write access, monitor and control the replication agents (only available for agent, historical, and repository datastores), and activate the Publisher.

**Note:** For more information, refer to the *Cisco Customer Response Solutions Administration Guide*.



# Index

---

## 3rd party

- application events....[24](#)
- fax and paging services....[23](#)
- MIBs....[27](#)

## aa.aef script....[30](#)

## ACD

- features....[21](#)
- single server deployment....[44](#)
- solution....[13](#)
- Unified IP IVR option....[19](#)

## active

- agents....[22](#)
- applications....[40](#)
- contacts....[40](#)
- CRS Engine tasks....[41](#)
- designated server....[17](#)
- server high availability....[17](#)

## after call wrap-up....[24](#)

## agent

- assigning skills....[76](#)
- barge in....[26](#)
- call recording....[80](#)
- coaching....[26](#)
- CSQ monitoring....[79](#)
- datastore....[86](#)
- desktop....[73](#), [83](#)
- groups ....[22](#)
- ID....[17](#)
- intercep calls....[26](#)
- interdialing....[21](#)
- IP phone setup....[61](#)
- make ready....[25](#)

- maximum number....[17](#)
- maximum per group....[22](#)
- phone directory....[24](#)
- queuing....[18](#)
- recording....[27](#)
- recording prompts....[80](#)
- routing....[77](#)
- silent monitoring....[26](#)
- state buttons....[25](#)
- state changes....[24](#)
- supervisor monitoring....[80](#)
- viewing activity....[25](#)

## analog trunks....[21](#)

## ANI

- packages....[22](#)
- workflow data....[24](#)

## application

- adding triggers....[69](#)
- customizing parameters....[68](#)
- tasks....[50](#)

## ASR

- dedicated server....[44](#)
- packages....[23](#)
- provisioning....[66](#)
- support....[29](#)
- Unified IP IVR option....[19](#)

## automated attendant ....[23](#)

## Automatic Call Distribution

- See ACD....[13](#)

## barge-in....[25](#)

## calling search spaces....[52](#), [55](#)

## calls

- activity....[24](#)
- centralized processing....[45](#)
- conferencing....[21](#)

- control choices....53
- distributed processing....46
- handling....78
- recording and archiving....24
- CCDR
  - report....26
- channel actions....51
- Cisco Campus Manager....28
- Cisco CRS Engine....44
- Cisco Desktop Product ....35
- Cisco IP Phones....24
- Cisco MCS
  - Cisco CallManager integration....59
  - deployment....43
  - licensed seats....75
  - multiple installations....19
  - server software....21
- Cisco Media Convergence Server
  - See Cisco MCS....19
- Cisco Media Termination
  - see CMT....28
- Cisco NMS
  - integration....27
- Cisco Unified CallManager....44
  - configuration checklist....60
  - configuration dependencies....51, 54
  - extension mobility....62
  - installing and configuring....59
  - locations....61
  - regions....61
- Cisco Unified Queue Manager
  - See Unified QM....20
- cluster....17
  - setup....63
- CMT
  - dialog control....28
- coaching agents....26
- collaboration server....27
- Computer Telephony Integration
  - See CTL....13
- conditional routing....22
- configurable agents....22
- configuration check list
  - Cisco Unified CallManager....60
  - Unified CCX....64
- contact attributes....51
- Contact Call Detail Record
  - see CCDR....26
- CRS Log Collection tool....15
- CSQ
  - creating....76
- CTI
  - protocol....17
- CTI services....44
- custom
  - application parameters....68
  - file configuration....34
  - Java extensions....20
  - messages and music....23
  - preparing reports....81
  - routing enterprise data....22
  - script....68
  - scripting....21
  - variables....22
  - variables report....39
- customer database....81
- database
  - activating....17
  - dedicated server....44
  - integration....14, 23

- ODBC....[16](#)
- provisioning....[66](#)
- screen pop....[24](#)
- support....[29](#)
- Unified CCX....[81](#)
- Unified ICME integration....[20](#)
- datastores
  - managing....[86](#)
- default codec....[56](#)
- deployment models....[43](#)
- desktop
  - functionality....[15](#)
  - installing....[78](#)
  - monitoring....[17](#)
- device
  - locations....[56](#)
  - regions....[55](#)
- dialog group....[28](#), [53](#)
- digital trunks ....[21](#)
- DNIS
  - packages....[22](#)
  - workflow data....[24](#)
- document files
  - managing....[85](#)
- DTMF
  - capture input....[23](#)
  - Cisco Media Termination....[65](#)
  - data collection....[28](#)
  - managing grammar....[85](#)
  - VXML....[23](#)
- Dual Tone Multifrequency
  - see DTMF....[23](#)
- E-mail
  - contacts....[40](#)
  - CRS Engine....[29](#)
  - manager....[27](#)
  - provisioning....[67](#)
- expansion server
  - capacity....[17](#)
  - clusters....[17](#)
  - WAN deployment....[45](#)
- extension mobility....[62](#)
- grammars
  - managing....[85](#)
- hardware configuration....[21](#)
- high availability
  - automatic failover....[17](#)
- historical reporting
  - packages support....[26](#)
  - plugin....[35](#)
  - tasks....[82](#)
- historical reports
  - availability list....[38](#)
  - client viewer....[81](#)
- hrcConfig.ini file....[82](#)
- HTTP
  - inbound request....[29](#)
  - provisioning....[66](#)
  - trigger....[52](#), [54](#)
- icd.aef script....[30](#)
  - deploying....[71](#)
  - testing....[72](#)
- instant messaging....[24](#)
- Intelligent Contact Management Enterprise
  - See Unified ICME....[16](#)
- Interactive Voice Response
  - See Unified IP IVR....[13](#)
- intercept calls....[25](#), [26](#)
- IP trunks....[21](#)
- Java Telephony Application Programming Interface

- see JTAPI....[29](#)
- JTAPI
  - deployment considerations....[51](#)
  - managing connections....[29](#)
  - provider....[74](#)
  - trigger....[52](#), [72](#)
- license
  - usage....[19](#)
- load balancing....[15](#)
- local logging....[28](#)
- locations....[56](#), [61](#)
- log tracking....[24](#)
- mailboxes
  - maximum number....[28](#)
- Marquee
  - scrolling messages....[25](#)
- media connections....[56](#)
- menu items....[35](#)
- messages
  - sending text....[25](#)
  - to callers....[23](#)
- messaging interface
  - voice....[28](#)
- Microsoft Windows
  - automatic start....[24](#)
- ODBC
  - support....[29](#)
- operating systems....[21](#)
- overflow routing
  - interflow and intraflow....[22](#)
- plugin
  - client viewer....[81](#)
  - editor....[35](#)
  - historical reporting....[35](#)
  - SDK....[35](#)
- ports
  - ASR....[29](#)
  - CTI....[49](#), [51](#), [53](#)
  - TTS....[30](#)
- priority queuing....[22](#)
- product licensing....[33](#)
- prompts
  - creating....[68](#)
  - managing....[35](#), [85](#)
- queuing
  - agent-based....[18](#)
  - functionality....[15](#)
  - priority....[20](#), [22](#)
  - support....[27](#)
- read data
  - XML/HTTP....[23](#)
- real-time
  - notification....[23](#)
  - reporting client....[27](#)
  - reports....[40](#)
  - running reports....[83](#)
- recording....[27](#)
- redirects....[53](#)
- redundancy....[21](#)
- regions....[55](#), [61](#)
- remote monitoring
  - agent conversation....[79](#)
  - provisioning....[76](#)
- resource groups
  - assigning agents....[76](#)
  - creating....[75](#)
- Resource Management Essentials....[28](#)
- Resource Manager-Contact Manager
  - See RmCm....[30](#)
- RmCm

- support....[30](#)
- RM JTAPI provider
  - provisioning....[74](#)
- route points
  - trigger....[51](#)
- routing
  - agent-based....[17](#), [77](#)
  - functionality....[14](#)
  - overflow....[22](#)
  - programs....[22](#)
  - skill-based....[18](#)
  - Unified ICME system....[37](#)
- scalability
  - agents....[17](#)
- screen pop....[24](#)
- script
  - designing and configuring....[72](#)
  - repository....[44](#)
  - samples....[30](#)
  - testing....[72](#)
- seat
  - usage and calculation....[18](#)
- self-service application....[23](#)
- server
  - active....[17](#)
  - designated....[17](#)
  - expansion....[17](#)
  - setup....[63](#)
  - standby....[17](#)
- silent monitoring
  - supervisor....[25](#)
- site recording
  - always on....[27](#)
- skills
  - competency....[22](#)
  - creating....[75](#)
  - definable groups....[22](#)
  - group statistics....[25](#)
  - per agent....[22](#)
  - routing....[22](#)
- SNU.aef script....[31](#)
- software configuration....[21](#)
- spoken name upload....[35](#)
- standby server....[17](#)
- step editor
  - workflow steps....[37](#)
- storage hours
  - voice....[28](#)
- supervisor
  - configuring....[75](#)
  - desktop....[73](#)
  - phone directory....[24](#)
  - positions....[22](#)
  - recording....[27](#)
  - silent monitoring....[25](#)
- support
  - call centers....[73](#)
- teams
  - creating....[77](#)
- tracing ....[28](#)
- tracking sessions....[50](#)
- trigger
  - agent selection....[50](#)
  - assignment....[50](#)
  - dialog group....[53](#)
  - HTTP....[52](#), [66](#)
  - JTAPI....[72](#)
  - JTAPI signal....[51](#)
  - types....[52](#)
- trunks....[21](#)

- TTS
  - dedicated server....[44](#)
  - packages....[23](#)
  - provisioning....[66](#)
  - support....[30](#)
  - Unified IP IVR option....[19](#)
- Unified CCX
  - enhanced....[20](#)
  - feature summary....[21](#)
  - package descriptions....[20](#)
  - priority....[20](#)
- Unified CCX script
  - designing and configuring....[72](#)
  - testing....[72](#)
- Unified Communications....[24](#)
- Unified ICME
  - system post routing....[37](#)
- Unified IPCC Gateway
  - peripheral gateway....[16](#)
- Unified IP IVR
  - call treatment functionality....[16](#)
  - licensed capabilities....[19](#)
  - ports....[66](#)
  - priority....[20](#)
  - supported features....[23](#)
- unified messaging....[28](#)
- Unified QM
  - priority....[20](#)
- uploading scripts....[68](#)
- vendor voice mail
  - support....[28](#)
- voice
  - browser....[30](#)
  - gateway....[44](#)
  - maximum mailboxes....[28](#)
  - messaging interface....[28](#)
  - storage hours....[28](#)
  - voicebrowser.aef script....[31](#)
- VoiceXML
  - see VXML....[23](#)
- VoIP monitor....[30](#)
- VXML
  - control....[23](#)
  - DTMF input....[23](#)
- WAN expansion servers....[46](#)
- web-based administration....[16](#)
- workflow automation....[24](#)
- Wrap-Up Timer
  - auto-exit....[18](#)