Getting Started with Unified Contact Center Express Cisco Customer Response Solutions

Premium, Enhanced, and Standard, Release 5.0(1)

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Table of Contents

Preface 1
Purpose 1
Audience 1
Organization 1
Related Documentation 3
Obtaining Documentation....5
Cisco.com....5
Product Documentation DVD....6
Ordering Documentation....6
Documentation Feedback....6
Cisco Product Security Overview....6
Reporting Security Problems in Cisco Products 7
Obtaining Technical Assistance....8
Cisco Technical Support & Documentation Website....8
Submitting a Service Request....8
Definitions of Service Request Severity....9
Obtaining Additional Publications and Information....9

Part 1. Unified CCX Overview....11

1. About Unified CCX....13
Unified CCX New Features in Release 5.0....13
Seat and Licensing Usage....20
About Installing Multiple Cisco CRS Products on a Server....21
Unified CCX Package Descriptions....22
Feature Summary for Each Unified CCX Package....23
Cisco CRS Subsystems Supported by Unified CCX....31
Sample Default Unified CCX Scripts....33

2. Features Enabled by Product Licensing....35
Cisco CRS Administration Menus Enabled by Product Licensing....35
Prompt, Spoken Name Upload, and Plugin Options Enabled by Product Licensing....38
Cisco CRS Subsystems Enabled by Product Licensing....38
Application Types Enabled by Product Licensing....39
Editor Steps Enabled by Product Licensing....40
Historical Reports Enabled by Product Licensing....41
Real-Time Reports Enabled by Product Licensing for Unified CCX....44

3. Unified CCX Architecture....47
Available Deployment Models....47
Single-Site Deployments....48
Services from Partners....49
Cisco Advanced Services....49

4. Basic Contact Flow Concepts for Unified CCX Deployments....51
Relationships Between Tasks, Sessions, Contacts, and Channels....53
Unified CM Telephony Deployment Considerations 54
An HTTP Contact Flow 56
Important Unified CM Configuration Dependencies....57
Important Outbound Configuration Dependencies....58
Important Unified CME Configuration Dependencies....59

Part 2. Installing and Configuring Unified CCX with Unified CM....61

5. Installing and Configuring Unified CM for Unified CCX....63
About the Unified CM....63
How to Install Unified CM....63
How to Configure Unified CM....64
Unified CM Configuration Check List....64
Outbound Configuration Check List....66
How to Check Your Phone Configuration in Unified CM....67
About the Unified CM Extension Mobility Feature....67

Part 3. Installing and Configuring Unified CME for Unified CCX....69

6. Installing and Configuring Unified CME for Unified CCX....71
About Unified CME....71
Support Information and Guidelines to Interoperate with Unified CME....72
How to Install and Configure Unified CME....73
Unified CCX Configuration Check List for Unified CME....74

Part 4. Installing and Provisioning Cisco CRS....77

7. Installing and Configuring Unified CCX....79
Cisco CRS Application Configuration Check List....79

8. Deploying the Sample Script, icd.aef....83
Unified CCX Script Overview....83
Designing and Configuring Unified CCX Scripts....84
Testing your System and the Unified CCX Script....84

9. Installing Agent and Supervisor Desktop for Unified CCX....85
About Agent and Supervisor Desktops for Unified CCX....85
About Routing and CSQs....86
Cisco Agent Desktop Configuration Check List....86
How to Install and Configure the Cisco Agent Desktop Applications....90

10. Monitoring and Recording Features for Unified CCX....91
Remote Monitoring....91
CSD Monitoring....92
Recording Agent Conversations....92
Recording Prompts....92

11. Using Unified CCX Historical Reports....95
The Default Unified CCX Historical Reports....96
Real-Time Unified CCX Reports....97

12. Managing Unified CCX....99
Managing Prompt, Grammar, and Document Files....99
Managing Cisco CRS Datastores....100

Index....101

List of Figures

Figure 1: Single-Site Deployment Model--Unified CM....48
Figure 2: Single-Site Deployment Model--Unified CME....49
Figure 3: Typical IPCC Express Call Flow....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 Premium, Enhanced, and Standard 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 packages.

Organization

This guide consists of the following parts and chapters.

Part/Chapter	Title	Description
Part I	Unified CCX Overview (page 11)	Provides an overview of Unified CCX.
Chapter 1	About Unified CCX (page 13)	Explains key components of Cisco CRS, and describes where Unified CCX fits into the Cisco Customer Contact management portfolio.

Part/Chapter	Title	Description
Chapter 2	Features Enabled by Product Licensing (page 35)	Provides a comparative list of all the Cisco CRS features enabled by product licensing for each Unified CCX package.
Chapter 3	Unified CCX Architecture (page 47)	Describes the available deployment model for this Unified CCX package.
Chapter 4	Basic Contact Flow Concepts (page 51)	Provides information on Unified CCX concepts, call flows, and configuration dependencies.
Part II	Installing and Configuring Unified CCX with Unified CM (page 61)	Describes how to install and configure Unified CCX with Cisco Unified Communications Manager (Unified CM).
Chapter 5	Installing and Configuring Unified CM for Unified CCX (page 63)	Provides information on installing and configuring the Unified CM for Unified CCX.
Part III	Installing and Configuring Unified CME for Unified CCX (page 69)	Describes how to install and configure Unified CME for Unified CCX.
Chapter 6	Installing and Configuring Unified CME for Unified CCX (page 71)	Provides information on installing and configuring Unified CME for Unified CCX.
Part IV	Installing and Provisioning Cisco CRS (page 61)	Describes how to install and configure Unified CCX with Cisco Unified Communications Manager (Unified CM).
Chapter 7	Installing and Configuring Unified CCX (page 79)	Provides information on installing and configuring Unified CCX.
Chapter 8	Deploying the Sample Script, icd.aef (page 83)	Provides information on deploying the icd.aef script for Unified CCX.
Chapter 9	Installing Agent and Supervisor Desktop for Unified CCX (page 85)	Provides information on the Unified CCX agent and supervisor desktops.
Chapter 10	Call Monitoring, Call Recording, and Prompt Recording for Unified CCX (page 91)	Provides information on the dependencies to use the monitoring and recording features in Unified CCX.

Part/Chapter	Title	Description
Chapter 11	Unified CCX Historical Reports (page 95)	Provides information on configuring the database connection for to facilitate historical reports and scheduling details for users.
Chapter 12	Managing Your Unified CCX System (page 99)	Provides information on managing the prompt, grammar, and document files, the central datastore, and Cisco CRS repository.

Related Documentation

The following web addresses provide additional information 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 ....
the Unified Communications phone configuration check list	The *Phone Configuration Checklist* section in the Cisco Unified Communications Phones chapter of the *Unified CM System Guide, Release 6.0(1)* at**http://www.cisco.com/en/US/products/sw/voicesw/ps556/prod_maintenance_guides_list.html#anchor1**
SIP Phone Support	**Cisco SIP Phone 7960 Software**[2] **Note:** Refer to the *Cisco CRS Software and Hardware Compatibility Matrix* for a complete list of agent phones supported this release. The latest version of this matrix is available at the following website: **http://www.cisco.com/application/pdf/en/us/guest/products/ps1846/c1683/ccmigration_09186a008077cb33.pdf**
An explanation on using the Cisco 7900 series phone	**Cisco 7900 Series Phones at**[3]

2) http://www.cisco.com/en/US/partner/products/sw/voicesw/ps2156/index.html

3) http://www.cisco.com/en/US/products/hw/phones/ps379/index.html

For	See ....
Unified CCX products and services, datasheets, case studies, and other documents	**Unified CCX Product Literature**[4]
Cisco Unified Contact Center Express Co-Resident Bundle with Cisco Unified CallManager	**Q & A**[5]
Best practices, case studies, success stories, and customizable templates	**Partner Central Steps to Success**[6]
How to perform Speed Deployments with Solution Reference Network Design (SRND) Guides	**SRND Resources**[7]
Skills and knowledge required to plan, design, implement, and operate	**Unified CCX Specialist training course**[8]
How to install or upgrade Unified CCX	*Cisco CRS Installation Guide, Release 5.0(1)* at **Unified CCX Install and Upgrade Guides**[9]
How to develop and program Cisco CRS Scripts	*Cisco CRS Scripting and Development Series* manuals at **Unified CCX End-User Guides at**[10]
How to troubleshoot Unified CCX	**Unified CCX Troubleshoot and Alerts at**[11]
Technical Support and Documentation	**Unified CCX Technical Support and Documentation at**[12]
Software compatibility information	**Cisco Unified Communications Systems Test at**[13]

4) http://www.cisco.com/en/US/products/sw/custcosw/ps1846/prod_literature.html

5) http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/products_promotion0900aecd8029cff2.html

6) http://www.cisco.com/web/partners/support/steps-to-success/index.html

7) http://www.cisco.com/en/US/netsol/ns656/networking_solutions_program_category_home.html

8) http://www.cisco.com/en/US/learning/le3/le2/le41/le79/le52/learning_certification_type_home_extra_level.html

9) http://www.cisco.com/en/US/products/sw/custcosw/ps1846/prod_installation_guides_list.html

10) http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/products_user_guide_list.html

11) http://www.cisco.com/en/US/products/sw/custcosw/ps1846/tsd_products_support_troubleshoot_and_alerts.html

12) http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/tsd_products_support_series_home.html

13) http://www.cisco.com/en/US/products/ps6884/tsd_products_integrated_systems_documentation09186a0080621410.html

For	See ....
Interoperability information	**Interoperability Portal at**[14]
Field Notices	**Unified CCX Field Notices at**[15]
Translated Documents	**Unified CCX Translated End User Guides at**[16]

Table 2: Related Documentation

For information on	See ....
Cisco Unified Communications and Voice Products	**Cisco Unified Communications and Voice Products** [17]
Unified CM	**Unified CM**[18]
Cisco Customer Response Solutions	**Unified CCX**[19]

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 most current Cisco documentation at this URL:

http://www.cisco.com/techsupport

You can access the Cisco website at this URL:

http://www.cisco.com

You can access international Cisco websites at this URL:

14) http://www.cisco.com/en/US/netsol/ns728/networking_solutions_program_category_home.html

15) http://www.cisco.com/en/US/products/sw/custcosw/ps1846/prod_field_notices_list.html

16) http://www.cisco.com/en/US/products/sw/custcosw/ps1846/tsd_products_support_translated_end_user_guides_list.html

17) http://www.cisco.com/en/US/products/sw/voicesw/index.html

18) http://www.cisco.com/en/US/products/sw/voicesw/ps556/index.html

19) http://cisco.com/en/US/products/sw/custcosw/ps1846/index.html

http://www.cisco.com/public/countries_languages.shtml

Product Documentation DVD

The Product Documentation DVD is a comprehensive library of technical product documentation on a portable medium. The DVD enables you to access multiple versions of installation, configuration, and command guides for Cisco hardware and software products. With the DVD, you have access to the same HTML documentation that is 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 (product number DOC-DOCDVD= or DOC-DOCDVD=SUB) from Cisco Marketplace at this URL:

http://www.cisco.com/go/marketplace/

Ordering Documentation

Registered Cisco.com users may order Cisco documentation at the Product Documentation Store in the Cisco Marketplace at this URL::

http://www.cisco.com/go/marketplace/

Nonregistered Cisco.com users can order technical documentation from 8:00 a.m. to 5:00 p.m. (0800 to 1700) PDT by calling 1 866 463-3487 in the United States and Canada, or elsewhere by calling 011 408 519-5055. You can also order documentation by e-mail at **tech-doc-store-mkpl@external.cisco.com** or by fax at 1 408 519-5001 in the United States and Canada, or elsewhere at 011 408 519-5001.

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 submit comments about Cisco documentation 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 Security Vulnerability Policy portal at this URL:

http://www.cisco.com/en/US/products/products_security_vulnerability_policy.html

From this site, you will find information about how to:

- 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 advisories and notices for Cisco products is available at this URL:

http://www.cisco.com/go/psirt

To see security advisories, security notices, and security responses as they are updated in real time, you can subscribe to the Product Security Incident Response Team Really Simple Syndication (PSIRT RSS) feed. Information about how to subscribe to the PSIRT RSS feed is found at this URL:

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:

- For Emergencies only: 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.

- For Nonemergencies: 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 (for example, GnuPG) to encrypt any sensitive information that you send to Cisco. PSIRT can work with information that has been encrypted with PGP versions 2.x through 9.x.

Never use a revoked or an expired encryption key. The correct public key to use in your correspondence with PSIRT is the one linked in the Contact Summary section of the Security Vulnerability Policy page at this URL:

http://www.cisco.com/en/US/products/products_security_vulnerability_policy.html

The link on this page has the current PGP key ID in use.

If you do not have or use PGP, contact PSIRT at the aforementioned e-mail addresses or phone numbers before sending any sensitive material to find other means of encrypting the data.

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:

http://www.cisco.com/techsupport

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:

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 & Documentation 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 TAC Service Request Tool is located at this URL:

http://www.cisco.com/techsupport/servicerequest

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:

http://www.cisco.com/techsupport/contacts

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 Product Quick Reference Guide* is a handy, compact reference tool that includes brief product overviews, key features, sample part numbers, and abbreviated technical specifications for many Cisco products that are sold through channel partners. It is updated twice a year and includes the latest Cisco offerings. To order and find out more about the Cisco Product Quick Reference Guide, go to this URL:

http://www.cisco.com/go/guide

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

  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:

  http://www.ciscopress.com

- *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:

  http://www.cisco.com/packet

- *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:

  http://www.cisco.com/go/iqmagazine

- *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:

  http://www.cisco.com/ipj

- Networking products offered by Cisco Systems, as well as customer support services, can be obtained at this URL:

  http://www.cisco.com/en/US/products/index.html

- Networking Professionals Connection is an interactive website for networking professionals to share questions, suggestions, and information about networking products and technologies with Cisco experts and other networking professionals. Join a discussion at this URL:

  http://www.cisco.com/discuss/networking

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

  http://www.cisco.com/en/US/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 up to 300 agents.

The Cisco CRS platform is a technology platform used by Cisco across several of its customer interaction management products including Unified CCX, Cisco Unified IP IVR (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 Cisco Unified IP IVR* guide. This guide is available at the following website: **http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/prod_installation_guides_list.html**

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

This section contains the following topics:

- Unified CCX New Features in Release 5.0, page 13
- Seat and Licensing Usage, page 20
- About Installing Multiple Cisco CRS Products on a Server, page 21
- Unified CCX Package Descriptions, page 22
- Feature Summary for Each Unified CCX Package, page 23
- Cisco CRS Subsystems Supported by Unified CCX, page 31
- Sample Default Unified CCX Scripts, page 33

Unified CCX New Features in Release 5.0

This section explains the new features in Release 5.0.

Unified CCX has the following new features in CRS Release 5.0(1):

- **New naming conventions:** This guide uses the following naming conventions in this documentation set for Cisco CRS 5.0:
  - Cisco Unified Communications Manager was previously known as Cisco Unified CallManager. This guide uses Cisco Unified Communications Manager at the first occurrence and Unified CM for later occurrences.

- Cisco Unified Communications Manager Express was previously known as Cisco Unified CallManager Express. This guide uses Cisco Unified Communications Manager Express at the first occurrence and Unified CME for later occurrences.

- The term RM JTAPI user is henceforth referred to as RmCm provider.

- The term JTAPI is henceforth referred to as Unified CM Telephony. Unified CM Telephony manages the connection between Unified CM CTI Manager and the CRS Engine.

- **Cisco Unified CCX Outbound Preview Dialer (Outbound):** Effective Cisco CRS Release 5.0, the Cisco Unified CCX Outbound Preview Dialer (Outbound) feature is available in the Unified CM version of the Unified CCX product. The Outbound feature requires the Outbound license along with the Unified CCX Premium license. With this feature, you can maintain high agent productivity by configuring contact centers for automated Outbound activities and allow agents who are not busy with inbound calls to perform Outbound calls.

  The Outbound feature is not available in the Unified CCX Standard version, Unified CCX Enhanced version, Unified CME deployment of Unified CCX, Unified IP IVR, and Unified QM.

  Note: For more information, see the **Cisco CRS Administration Guide** (http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/products_installation_and_configuration_guides_list.html).

- **Cisco TelePresence Virtual Agent Solution:** The Cisco TelePresence application enables enterprises to create a live, face-to-face interaction with customers over the network. This solution allows rapid deployment of a virtual contact center infrastructure, Agents using Cisco TelePresence are referred to as virtual agents in this guide. Virtual agents connect to callers using Unified CCX thus incorporating ACD, CAD, CTI, and Unified IP IVR with Cisco Unified CM and providing the entire solution on one server.

  Note: Note For more information on the Cisco TelePresence solution, see **Cisco TelePresence** (http://www.cisco.com/en/US/products/ps7060/index.html). For more information, see the **Cisco CRS Administration Guide** (http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/products_installation_and_configuration_guides_list.html).

- **Unified CME interoperability:** The Cisco Unified Communications Manager Express (Unified CME) provides interoperability between Unified CCX and Unified CME, call routing using SIP-based route point, keep alive session management, Support of Cisco Agent Desktop for use with Unified CME, and the ability to store the users locally in the CRS database. Unified CME Telephony manages the SIP connection between Unified CME and the CRS Engine. The Unified CME Telephony subsystem controls the Unified CME telephony resources for the CRS system.

  Note: . For more information on Unified CME interoperability tasks with Unified CCX, see **Cisco Unified Communications Manager Express System Administrator Guide** (http://www.cisco.com/en/US/products/sw/voicesw/ps4625/products_configuration_guide_book09186a00807c5776.html). For more information on the Unified CME installation, see the **Cisco CRS Installation Guide** (http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/prod_installation_guides_list.html). For more information, see the **Cisco CRS Administration Guide** (http://www.cisco.com/en/US/

partner/products/sw/custcosw/ps1846/products_installation_and_configuration_guides_list.html).

  - Unified CME product for Unified CCX supports single-node deployments, Unified CCX as a whole and as a child to Unified CCE (as a parent), Unified IP IVR, Unified EIM and the Unified WIM, and Limited CAD/CSD Functionality

  - Unified CME product for Unified CCX does not support Unified QM, High Availability (only single node support), Outbound preview dialer, and Remote monitoring

- **Deployment Models:** Effective Cisco CRS Release 5.0(1) two product deployments are available for the Cisco CRS platform:

  - The Unified CM product supports both single-node and two-node (high availability) deployments.

  - The Unified CME product only supports a single-node deployment.

  The deployment model is transparent to the CRS installer as the clustering for Unified CM is performed through the CRS Administration using the Cisco CRS setup wizard

  Note: For installation details, see the **Cisco CRS Installation Guide** (http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/prod_installation_guides_list.html).

- **Migration Status:** Effective Cisco CRS Release 5.0, you can verify the status of a migration from one release to another using the Migration Status option. As this option is only introduced in Cisco CRS Release 5.0, you will only be able to view the status information in this page when you migrate from this release to another.

  Note: For more information, see the **Cisco CRS Administration Guide** (http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/products_installation_and_configuration_guides_list.html).

- **Unified CM Telephony Client Updates:** Effective Cisco CRS Release 5.0, the following information applies to the Unified CM Telephony Client.

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

  - During the resynchronizing process, an additional check (effective Cisco CRS Release 5.0) ensures that the Unified CM Telephony client (also called the Cisco JTAPI Client) versions are the same between the clients installed on the CRS node and the Unified CM Telephony client installer. If the CRS platform detects a mismatch, it displays the inconsistencies. You can correct the errors by triggering the Unified CM Telephony client installed on this node.

Note: For more information, see the **Cisco CRS Administration Guide** (http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/products_installation_and_configuration_guides_list.html).

- **Network Time Protocol (NTP) Configuration:** Effective Cisco CRS Release 5.0, NTP configuration is available in the Unified CM Configuration web page. The NTP host name or IP address is typically derived from the Unified CM, but can be pointed to another NTP Server if desired. If this information is not provided during the installation setup, you can provide it when configuring the CRS Administration. If you provide a valid host name or IP address of the NTP server, the NTP service synchronizes the client time to that of the NTP server.

  Note: For installation details, see the **Cisco CRS Installation Guide** (http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/prod_installation_guides_list.html). For configuration details, see the **Cisco CRS Administration Guide** (http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/products_installation_and_configuration_guides_list.html).

- **User Management:** In earlier versions of Cisco CRS, many user parameters like user ID, password, and pin were configured from the Unified CM Administrator. Some Cisco CRS-related user parameters were configured through the CRS Administration. Effective Cisco CRS, Release 5.0, all Cisco CRS user roles (capabilities) are consolidated into one User Configuration area. In Cisco CRS versions supporting Unified CME, the user configuration and management is entirely done by Cisco CRS. Therefore, in addition to consolidating all user management under one menu, Cisco CRS users are managed from within the same menu.

  The user information for each product is stored in different locations:

  – The Unified CM user details are stored in the Unified CM database.

  – The Unified CME user details are stored in the Cisco CRS Database.

  Note: For more information, see the **Cisco CRS Administration Guide** (http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/products_installation_and_configuration_guides_list.html)

- **Supervisor capabilities:** Effective Cisco CRS 5.0, supervisors can additionally modify and view skills, view the list of all teams for which this user is the supervisor, view the skills, CSQs, and resource groups configured in this system, view and manage resources, and configure the teams managed by the supervisor.

  Depending on the license allowed, Cisco CRS Supervisors have the following privileges:

  – Download and install the Real Time Reporting client and Historical Reporting client to view reports.

  – View agents and CSQ being monitored. This is only for a remote Supervisor.

  – Download and install the Supervisor Desktop and the Agent Desktop.

– View the list of all Teams for which this user is the Supervisor.

– Configure the Teams managed by the Supervisor.

– View the Skills, CSQs and Resource Groups configured in this system.

– View and manage all the resources.

Note: For more information, see the **Cisco CRS Administration Guide** (http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/products_installation_and_configuration_guides_list.html)

- **Historical Reporting User:** User Management page

  Note: For more information, see the **Cisco CRS Administration Guide** (http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/products_installation_and_configuration_guides_list.html)

- **License Menu Option:** Effective CRS 5.0, the License Information menu option is available from the main menu under the **System** menu option. The initial license configuration is part of the Setup Wizard procedure (during installation). The uploaded licenses define the feature set for a CRS system.

  Software for all the Cisco CRS feature components are loaded on the system during installation. However, no feature is available for use until its component are licensed and activated.

  Note: For more information on the Setup Wizard, see the **Cisco CRS Installation Guide** (http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/prod_installation_guides_list.html). For more information on adding additional licenses to Unified CCX, see the **Cisco CRS Administration Guide** (http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/products_installation_and_configuration_guides_list.html)

- **Additions to the CRS Administration GUI:** Effective Cisco CRS 5.0, the following additions are available in the CRS Administration GUI.

  – **Displaying Details for Advanced Configuration:** This release introduces the concept of advanced configuration with the **Show More** and **Show Less** options. On the applicable pages, all configuration details can be displayed or reduced based on user preferences and requirements. A page by default displays fewer parameters. Parameters configured with default values and not requiring modification or user input are now available in the advanced configuration section. You can access this advanced configuration section by clicking the **Show More** button at the bottom of the page. When you click this button, the extra parameters become visible and the button changes to Show Less. When you click the **Show Less** button, the page reverts to its original list of parameters.

  – **Restore Default Button:** A few web pages (for example, the Trace Configuration web page) contain a **Restore Default** button. This button allows you to revert to the software set defaults for each parameter on this page.

  - **Configuration Wizards** Two wizards are available in the main menu: the **Application Wizard** and the **RmCm Wizard**. To improve the usability and configuration process, these wizards walk you through the configuration pages in the required order and help ease the configuration process for these two features. You can access these wizards from a new main menu option called **Wizards**. In each Wizard webpage, you are provided with a list of procedures in the left pane and a description of each procedure in the main pane. At the top of the page, you have the option to exit the wizard at any time, go to the next step as required, or click the **Skip** button to go to any other step

- **CRS Admin Utility:** Effective Cisco CRS 5.0, the CRS Admin Utility only works on the bootstrap server. Only run the CRS Admin Utility on the bootstrap server. Only the bootstrap server has the required bootstrap data storage tool installed. This tool is required to update password for the CRS Admin Utility.

  Note: For more information, see the **Cisco CRS Administration Guide** (http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/products_installation_and_configuration_guides_list.html)

- **Backup and Restore Application:** Effective Cisco CRS Release 5.0, the Backup and Restore application for Cisco CRS is embedded in the Cisco CRS Administrator. You do not need to install it separately in a remote server.

Caution: Cisco CRS 5.0 does not support integration with the Disaster Recovery Framework which is based on the Linux platform.

Caution: The BARS software which was used in Cisco CRS 4.5 is not supported in Cisco CRS 5.0.

The Backup and Restore application performs the following tasks:

- Saves all settings configured through the Backup and Restore Configuration web page in the CRS Administration GUI.
- Authenticates the credentials that you provide during the backup and restore configuration process.
- Creates a trace for each task.
- Backs up the Cisco CRS databases and configurations.
- Restores the data that was backed up.
- Provides a status of the backup and restore operation on the CRS Administration GUI.

Note: For configuration details, see the **Cisco CRS Administration Guide** (http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/products_installation_and_configuration_guides_list.html.). Refer to the **Cisco CRS Servicing**

and Troubleshooting Guide (http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/prod_troubleshooting_guides_list.html)for details on handling error situations.

- **Media Termination Groups:** Effective Cisco CRS 5.0, if a CTI port group is selected to support media termination and if the number of channels are identical to both groups, then the CTI port group is automatically created in the background. This auto creation feature eliminates the manual CTI port group creation process. If you elect to override media termination, then the call control channel chooses the media termination automatically. If you wish to select a new dialog group then you can have more than one media termination option. The options are used in the order displayed in the drop-down list

  Note: For configuration details, see the **Cisco CRS Administration Guide** (http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/products_installation_and_configuration_guides_list.html.).

- **Wrap-up:** Contact centers use wrap-up data to track the frequency of activities or to identify the account to which a call is charged, and other similar situations. Like reason codes, wrap-up data descriptions are set up by your system administrator to reflect the needs of your contact center. By default this feature is disabled. If the wrap-up data feature is enabled in Cisco Desktop Administration, the agent will see a pop-up window when he moves to work state in which he can select the appropriate description that sums up the call outcome. See the *Cisco Desktop Administrator User Guide* for more information.

- **Cisco Interaction Manager (Multichannel):**The multichannel products listed below use the MS SQL 2000 database (installed in a mixed mode authentication). To generate combined historical reports, Cisco CRS requires access details for the Unified EIM/Unified WIM database (host name or IP address of the server, database name, database user, and database password). Effective Cisco CRS Release 5.0, multichannel reports are available in the Unified CM version of the Unified CCX product. This addition requires the Multichannel license along with the Unified Premium license.

  – **Cisco Unified E-Mail Interaction Manager (Unified EIM):** Unified EIM increases agent productivity through a powerful, visual workflow designer that helps create the e-mail handling process. Using the required service level agreement (SLA) triggers, you can automate email routing and monitoring. This e-mail collaboration provides full HTML support for both inbound and outbound communications, the ability to attach larger files from the agent desktop is supported, and powerful content-parsing capabilities in the product enable auto-suggestions from the knowledge base.

  – **Cisco Unified Web Interaction Manager (Unified WIM):** Unified WIM ensures that your online customers are connected easily and seamlessly to the right agent every time. It also provides powerful file-sharing capabilities which allows agents to easily share files residing on their desktop. Advanced co-browsing capabilities allow agents and the customers to fill out forms together, field by field, even highlighting specific areas of a form or Web page for additional clarity.

Note: For more information on configuration details for Unified CCX, see the **Cisco CRS Administration Guide** (http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/products_installation_and_configuration_guides_list.html). For more information on Unified EIM, see the **Cisco Unified E-Mail Interaction Manager website** (http://www.cisco.com/en/US/partner/products/ps7236/tsd_products_support_series_home.html). For more

information on Unified WIM, see the **Cisco Unified Web Interaction Manager website** (http://www.cisco.com/en/US/partner/products/ps7233/tsd_products_support_series_home.html)

- **Cisco Unified Workforce Optimization:** An optional application bundle for the Cisco CRS platform consisting of the Quality Management application (to record and replay customer contacts for dispute resolution or to measure and improve customer contact quality) and the Workforce Management application (to efficiently manage contact center staff and resources to meet customer service level objectives). Both applications integrate with Cisco Unified CCX by accessing historical data records for configuration and reporting, and by accessing real time information on contacts and agent states.

  Both applications are only available with the Unified CM deployment model in Cisco CRS.

  Note: For more information on configuration details for Unified CCX, see the **Cisco CRS Administration Guide** (http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/products_installation_and_configuration_guides_list.html). For more information, see the **Cisco Unified Workforce Optimization website** (http://www.cisco.com/en/US/partner/products/ps8293/tsd_products_support_series_home.html)

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/en/US/partner/products/sw/custcosw/ps1846/products_device_support_tables_list.html)

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, Cisco Unified Communications phone agent, a historical reports client, or a recording license.

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

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

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. The Unified CCX Standard and Enhanced products include a basic prompt and collect Unified IP IVR function 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 **Unified CCX Deployment Model** (http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/prod_promotions_list.html)for information regarding capacity constraints for Unified CCX deployments.

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 then one is installed, then priority is given to the package with the highest number at the left in the following list:

1. Unified QM
2. Unified IP IVR software
3. Unified CCX Standard
4. Unified CCX Enhanced
5. 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 basic Unified CCX configurations for informal call centers not requiring skills based routing. Does not include a Java license.
- 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 third-party application. It includes all functions of Unified CCX Standard, plus support for skills-based routing and priority queuing. Includes a Java license enabling custom Java extensions and wrap-up data support for both Unified CM and Unified CME deployments in Cisco CRS.
- Unified CCX Premium includes all the functions 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 script from a web page), custom Java extensions, e-Notification services, and support for ASR and TTS from Cisco certified partners (Nuance). Includes a Java license enabling custom Java extensions, wrap-up data support, and multichannel support for both deployments. Includes Outbound and Workforce Optimization support for Unified CM deployments only.

All Unified CCX solutions are tightly integrated with Unified CM.

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	Unified CM 6.0 and later	Unified CM 6.0 and later	Unified CM 6.0 and later
	Operating systems	Windows 2003 Server and Advanced Server	Windows 2003 Server and Advanced Server	Windows 2003 Server and Advanced Server
	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 Cisco Unified Communications 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	Feature Details	Premium	Enhanced	Standard
	Maximum number of configurable agents	Unlimited	Unlimited	Unlimited
	Maximum number of concurrent agents	300	300	300
	Maximum number of active agents (inbound + outbound)	300	300	300
	Maximum number of active Outbound campaigns	15	Not applicable	Not applicable
	Maximum number of CSQs per Outbound campaign	10	Not applicable	Not applicable
	Maximum number of active contacts per Outbound campaign	10,000	Not applicable	Not applicable
	Maximum number of supervisor positions	32	32	32
	Maximum number of CSQs	150	150	150
	Maximum number of agents per CSQs	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

Feature	Feature Details	Premium	Enhanced	Standard
	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)
Integrated Unified IP IVR features with server software	Play messages to callers—music	Included using Unified CM Music On Hold server or .wav file	Included using Unified CM Music On Hold server or .wav file	Included using Unified CM 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 Media Resource Control Protocol (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 third-party services	Not available	Not available

Feature	Feature Details	Premium	Enhanced	Standard
	VoiceXML (VXML) for AST, TTS, and DTMF	Included	Not available	Not available
	Read data from HTTP and XML pages	Included	Included	Included
	Run defined script using HTTP request	Included	Not available	Not available
	Integrated self-service application support	Included	Not available	Not available
Integrated CTI/screen pop features with Unified CCX seat license	Pop ANI/DNIS and customer defined script 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	script automation/task buttons	Included	Included	Not available
	Popping third-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

Feature	Feature Details	Premium	Enhanced	Standard
	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 Cisco Unified Communications--Cisco Unified Communications Phone not required for agents	Included	Included	Included
	Agent state buttons	Included	Included	Included
Integrated Cisco Unified Communications Phone-Based Agent Desktop features with Unified CCX Seat License	Refer to the **Cisco CRS Compatibility Matrix**[20] for the latest list of supported phones.	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

20) http://www.cisco.com/application/pdf/en/us/guest/products/ps1846/c1225/ccmigration_09186a00803d82f5.pdf

Feature	Feature Details	Premium	Enhanced	Standard
	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 Unified Communications phone not required for agent phone	Included	Included	Included
	Log out agent	Included	Included	Included
	Make agent ready	Included	Included	Included
	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

Feature	Feature Details	Premium	Enhanced	Standard
	Called number summary activity report	Included	Included	Included
	Common skill Contact Service Queue (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
	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	Available with the Quality Management application	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
	Unified EIM support	Included	Not available	Not available
	Unified WIM support	Included	Not available	Not available

Feature	Feature Details	Premium	Enhanced	Standard
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 third-party MIBs	Included	Included	Included
	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	Included	Included	Included
	Unified messaging support	Optional (Cisco Unity)	Optional (Cisco Unity)	Optional (Cisco Unity)

This table lists the Cisco CRS features for Cisco CRS 5.0 supported in each Unified CCX package.

Feature	Premium	Enhanced	Standard	Deployment
[1]Inbound Voice HA	Yes	Yes	Yes	Unified CM
Outbound	Yes, with Outbound license	No	No	Unified CM
Wrap-up code and reports	Yes	Yes	No	Both

1) Applicable to Unified CM deployment, Unified CME deployment, or both deployments.

Unified EIM (Basic)	Yes, with Multichannel license	No	No	Both
Unified EIM (Advanced)	Yes, with Multichannel license	No	No	Both
Unified WIM (Basic)	Yes, with Multichannel license	No	No	Both
Unified WIM (Advanced)	Yes, with Multichannel license	No	No	Both
Cisco Unified Workforce Optimization	Yes	No	No	Unified CM

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)	Configures CMT dialog control groups, which can be used to handle simple DTMF data collected from dialog interactions with customers. The Cisco Media subsystem uses dialog groups to organize and share resources among applications. 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.	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. Also provides ODBC support—Unified CCX can access Microsoft Structured Query Language (SQL) servers and other databases. Refer to the **Cisco CRS Compatibility Matrix**[21] for the latest versions of the database supported databases.	Yes	No	No
E-mail	Adds components to the Cisco CRS Engine that allows it to send e-mail messages	Yes	No	No

21) http://www.cisco.com/application/pdf/en/us/guest/products/ps1846/c1225/ccmigration_09186a00803d82f5.pdf

Subsystem Type	Purpose	Premium	Enhanced	Standard
Enterprise server data	Allows scripts written in Cisco CRS Release 5.0 to populate Enterprise Data fields in Cisco CRS Release 5.0.	Yes	Yes	Yes
HTTP	Adds components to the Cisco CRS Engine that allow it to respond to HTTP requests.	Yes	No	No
Unified CM Telephony	Manages the connection between the Unified CM, CTI Manager, and the Cisco CRS Engine.	Yes	Yes	Yes
Unified CME Telephony	Manages the connection between Unified CME and the Cisco CRS Engine.	Yes	Yes	Yes
Outbound (additional license)	Configures the contact center for automated Outbound activities and allows agents who are not busy with inbound calls to perform Outbound calls	Yes	No	No
MRCP ASR • ASR server software (required) • ASR ports (at least one is required) **Note:** • 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. • 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 installation. You can install additional supported languages after the initial CRS installation. The certified Cisco ASR vendors are Nuance.	Allows a script to respond to voice input in addition to DTMF. This allows a caller to verbally convey information to the system for processing instead of pressing keys on a touch-tone telephone.	Yes (optional)	No	No

Subsystem Type	Purpose	Premium	Enhanced	Standard
MRCP TTS • TTS server software (required) • TTS ports (at least one is required) **Note:** Multi-language TTS support must be purchased from a certified Cisco TTS vendor	Composes voice prompts that are generated in real time from text, such as speaking the words in the text of an e-mail message. 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. Although the TTS technology has improved greatly since its inception, the tone still sounds computer generated.	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 function.	Yes	No	No
VoIP monitor	Enables remote recording and monitoring.	Yes	Yes	No

Sample Default Unified CCX Scripts

From Cisco CRS Release 5.0, uploaded scripts are stored in the Repository Datastore (RDS) database, along with prompts, grammars, and documents files. Prior to Release 5.0, the RDS database only contained the prompts, grammars, and documents files. The scripts can also be grouped into folders and subfolders. When user scripts are uploaded into repository, they get synchronized to the local disk and are accessed from there.

This release also provides CRS script templates (stored as .aef files). You can access these templates from both the Cisco CRS server and from the Cisco.com web site 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). You can use them to create applications without performing any script development, or you can use them as models for your own customized scripts.

A sample script cannot be modified at any time. The included script templates are bundled with the CRS system solely as samples, and are not supported by Cisco Systems. The icd.aef script is a basic Unified CCX script. It establishes a simple call queue and routes callers to a group of agents as the agents become available.

The Cisco CRS Scripting and Development Series includes the following documents

- Volume 1, Getting Started with Cisco CRS Scripting
- Volume 2, Cisco CRS Editor Reference
- Volume 3, Cisco CRS Expression Language Reference

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 35
- Prompt, Spoken Name Upload, and Plugin Options Enabled by Product Licensing, page 38
- Cisco CRS Subsystems Enabled by Product Licensing, page 38
- Application Types Enabled by Product Licensing, page 39
- Editor Steps Enabled by Product Licensing, page 40
- Historical Reports Enabled by Product Licensing, page 41
- Real-Time Reports Enabled by Product Licensing for Unified CCX, page 44

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.

Cisco CRS Administrator Main Menu	Menu Items	Premium	Enhanced	Standard	Deployments[2]
System	Unified CM Telephony	Yes	Yes	Yes	Unified CM
	Unified CME Telephony	Yes	Yes	Yes	Unified CME
	Control Center	Yes	Yes	Yes	Both

2) Applicable to Unified CM deployment, Unified CME deployment, or both deployments.

Cisco CRS Administrator Main Menu	Menu Items	Premium	Enhanced	Standard	Deployments[2]
	Datastore Control Center (agent, historical, repository, configuration)	Yes	Yes	Yes	Both
	System Parameters	Yes	Yes	Yes	Both
	Custom File Configuration	Yes	Yes	Yes (except classpath for custom classes)	Both
	Alarm Configuration	Yes	Yes	Yes	Both
	Tracing	Yes	Yes	Yes	Both
	License Information	Yes	Yes	Yes	Both
	Language Information	Yes	Yes	Yes	Both
	Logout	Yes	Yes	Yes	Both
Applications	Application Management	Yes	Yes	Yes	Both
	Script Management	Yes	Yes	Yes	Both
	Prompt Management	Yes	Yes	Yes	Both
	Grammar Management	Yes	Yes	Yes	Both
	Document Management	Yes	Yes	Yes	Both
	AAR Management	Yes	Yes	Yes	Both
Subsystems	Unified CM Telephony	Yes	Yes	Yes	Unified CM
	Unified CME Telephony	Yes	Yes	Yes	Unified CME
	Database	Yes	No	No	Both

2) Applicable to Unified CM deployment, Unified CME deployment, or both deployments.

Cisco CRS Administrator Main Menu	Menu Items	Premium	Enhanced	Standard	Deployments[2]
	HTTP	Yes	No	No	Both
	Unified ICME	No	No	No	Unified CM
	RmCm	Yes	Yes	Yes	Both
	Outbound (additional license)	Yes	No	No	Unified CM
	eMail	Yes	No	No	Both
	Cisco Media	Yes	Yes	Yes	Both
	MRCP ASR	Yes	No	No	Both
	MRCP TTS	Yes	No	No	Both
Wizards	Application Wizard	Yes	Yes	Yes	Both
	RmCm Wizard	Yes	Yes	Yes	Both
Tools	Alarm Definition	Yes	Yes	Yes	Both
	Plug-ins	Yes	Yes	Yes	Both
	Real-Time Reporting	Yes	Yes	Yes	Both
	Real-Time Snapshot (RTS) Configuration	Yes	Yes	Yes	Both
	Historical Reporting	Yes	Yes	Yes	Both
	Multichannel for Unified EIM and Unified WIM	Yes	No	No	Both
	User Management	Yes	Yes	Yes	Both
	Troubleshooting Tips	Yes	Yes	Yes	Both
Help	Contents and Index	Yes	Yes	Yes	Both
	For this Page	Yes	Yes	Yes	Both
	CRS Documentation on Cisco.com	Yes	Yes	Yes	Both

2) Applicable to Unified CM deployment, Unified CME deployment, or both deployments.

Cisco CRS Administrator Main Menu	Menu Items	Premium	Enhanced	Standard	Deployments[2]
	About	Yes	Yes	Yes	Both

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.

Option	Premium	Enhanced	Standard	Deployment[3]
Prompt management	Yes	Yes	Yes	Both
Spoken name upload	Yes	Yes	No	Both
plugin editor	Yes	Yes	Yes	Both
Plugin – historical reporting client (1)	Yes	Yes	Yes	Both
Cisco Desktop Product suite	Yes	Yes	Yes	Both

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.

Subsystem	Premium	Enhanced	Standard	MRCP ASR (Add on)	MRCP TTS (Add on)	Deployment[4]
Application	Yes	Yes	Yes	Not applicable	Not applicable	Both
MRCP ASR	Yes	No	No	Yes	Not applicable	Both
Cisco Media Termination	Yes	Yes	Yes	Not applicable	Not applicable	Both
Core reporting	Yes	Yes	Yes	Not applicable	Not applicable	Both

2) Applicable to Unified CM deployment, Unified CME deployment, or both deployments.

3) Applicable to Unified CM deployment, Unified CME deployment, or both deployments.

4) Applicable to Unified CM deployment, Unified CME deployment, or both deployments.

Subsystem	Premium	Enhanced	Standard	MRCP ASR (Add on)	MRCP TTS (Add on)	Deployment[4]
Database	Yes	No	No	Not applicable	Not applicable	Both
E-Mail	Yes	No	No	Not applicable	Not applicable	Both
Enterprise server data	Yes	Yes	Yes	Not applicable	Not applicable	Both
HTTP	Yes	No	No	Not applicable	Not applicable	Both
Unified ICME system	Yes	No	No	Not applicable	Not applicable	Unified CM
Unified CM Telephony	Yes	Yes	Yes	Not applicable	Not applicable	Unified CM
Unified CME Telephony	Yes	Yes	Yes	Not applicable	Not applicable	Unified CME
Outbound (additional license)	Yes	No	No	Not applicable	Not applicable	Unified CM
RmCm	Yes	Yes	Yes	Not applicable	Not applicable	Both
MRCP TTS	Yes	No	No	Not applicable	Yes	Both
Voice browser	Yes	Yes	No	Yes **Note:** The Voice Browser subsystem is available only if Nuance ASR is enabled.	Not applicable	Both
VoIP Monitor	Yes	Yes	No	Not applicable	Not applicable	Both

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.

4) Applicable to Unified CM deployment, Unified CME deployment, or both deployments.

Application Type	Premium	Enhanced	Standard	Deployment[5]
Cisco Script Application	Yes	Yes	Yes	Both
Busy	Yes	Yes	Yes	Both
Ring No Answer	Yes	Yes	Yes	Both

Editor Steps Enabled by Product Licensing

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

Script Step	Premium	Enhanced	Standard	Deployment[6]
General	Yes	Yes	Yes	Both
Session	Yes	Yes	Yes	Both
Contact	Yes	Yes	Yes	Both
Call Contact	Yes	Yes	Yes	Both
Email Contact	Yes	No	No	Both
HTTP Contact	Yes	No	No	Both
Media [7] [8]	Yes	Yes	Yes	Both
User	Yes	Yes	Yes	Both
Prompt [9]	Yes	Yes	Yes	Both
Grammar	Yes	Yes	Yes	Both
Document	Yes	Yes	Yes	Both

5) Applicable to Unified CM deployment, Unified CME deployment, or both deployments.

6) Applicable to Unified CM deployment, Unified CME deployment, or both deployments.

7) The "Voice Browser" step is not available with the Standard and Enhanced packages.

8) The "Voice Browser" step is not available with the Standard and Enhanced packages.

9) The "Create TTS Prompt" step is not available with the Standard and Enhanced packages.

Script Step	Premium	Enhanced	Standard	Deployment[6]
Database	Yes	No	No	Both
Unified CCX [10]	Yes	Yes	Yes	Both
Unified ICME ACD integration when deployed with Unified ICME and Unified CCX Gateway PG.	Yes	Yes	Yes	Unified CM
Java	Yes	Yes	No	Both

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	Deployment[11]
Abandoned Call Detail Activity Report	Information about calls not answered by an agent and the caller hangs up or is disconnected.	Yes	Yes	Yes	Both
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	Both
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	Both
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	Both
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	Both

6) Applicable to Unified CM deployment, Unified CME deployment, or both deployments.

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

11) Applicable to Unified CM deployment, Unified CME deployment, or both deployments

Report Name	Report Description	Premium	Enhanced	Standard	Deployment[11]
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	Both
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	Both
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	Both
Agent Summary Report	Information about agent activities, including call and agent state activities.	Yes	Yes	Yes	Both
Application Performance Analysis Report	Information about calls received by each Cisco Unified CCX product.	Yes	Yes	Yes	Both
Call Custom Variables Report	Information about custom variables set in the Unified CCX script associated with this call.	Yes	Yes	Yes	Both
Called Number Summary Activity Report	Information about each number dialed to Unified CCX and agents by an inside or outside caller.	Yes	Yes	Yes	Both
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	Both
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	Both

11) Applicable to Unified CM deployment, Unified CME deployment, or both deployments

Report Name	Report Description	Premium	Enhanced	Standard	Deployment[11]
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	Both
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 handled by scripts in other contact service queues.	Yes	Yes	Yes	Both
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	Both
Detailed Call by Call CCDR Report	Information about the contact call detail record (CCDR) stored in the Cisco CRS database.	Yes	Yes	Yes	Both
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	Both
Remote Monitoring Detail Report	Information about the agent monitoring activities of supervisors.	Yes	No	No	Both
Traffic Analysis Report	Information about incoming calls to the Cisco CRS system for each day in the report range.	Yes	Yes	Yes	Both
Priority Summary Activity Report[12] [13]	Information for each call priority.	Yes	Yes	No	Both
Outbound Agent Detail Performance Report	Detailed information about each agent and also contains Outbound campaign call details for each agent	Yes, with the Outbound license	No	No	Unified CM

11) Applicable to Unified CM deployment, Unified CME deployment, or both deployments

12) This report is part of the Unified CCX Enhanced historical report that is only available with the Unified CCX Enhanced and Premium packages.

13) This report is part of the Unified CCX Enhanced historical report that is only available with the Unified CCX Enhanced and Premium packages.

Report Name	Report Description	Premium	Enhanced	Standard	Deployment[11]
Outbound Campaign Summary Report	Summary information about the Outbound campaign statistics for a specified period	Yes, with the Outbound license	No	No	Unified CM
Agent Wrap-up Data Detail Report	Detailed information about each wrap-up data	Yes	Yes	No	Both
Agent Wrap-up Data Summary Report	Summary information about details entered by the agent after the agent enters the work state associated with the wrap-up feature	Yes	Yes	No	Both
Multichannel Agent Contact Summary Report	Summary information about inbound and outbound e-mail and chat	Yes, with the Multichannel license	No	No	Both
Multichannel Agent Login Logout Activity Report	Detail information about the multichannel (e-mail and chat) activities of each agent	Yes, with the Multichannel license	No	No	Both
Multichannel CSQ Activity Report	Summary information of calls, e-mails, and chats presented to, handled by, abandoned from, and dequeued from each CSQ	Yes, with the Multichannel license	No	No	Both

Real-Time Reports Enabled by Product Licensing for Unified CCX

Unified CCX has two kinds of real-time reports: those provided by Cisco Supervisor Desktop (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. **Note:** Calls made by the Outbound subsystem will not be displayed in the Contact Summary Real Time Report.
Contacts	Provides information about currently active contacts.

11) Applicable to Unified CM deployment, Unified CME deployment, or both deployments

Report Name	Report Description
CSQ, Unified CCX 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 CCX Stats	Provides information about Unified CCX resources and calls. This report is available only if Unified CCX has been configured.
Resource Unified CCX 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*

Real-Time Reports Enabled by Product Licensing for Unified CCX

Chapter 3

Unified CCX Architecture

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

This section contains the following topics:

- Available Deployment Models, page 47
- Single-Site Deployments, page 48
- Services from Partners, page 49
- Cisco Advanced Services, page 49

Available Deployment Models

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

For more information on the deployment model for this Unified CCX, refer to the design guide for Unified CCX at **Solution Reference Network Designs** (http://www.cisco.com/warp/public/779/largeent/it/ese/srnd.html).

The following are brief descriptions of key items for a Unified CCX deployment:

- **Voice Gateway.** Connects the Cisco 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.

- **Unified CM.** Provides the features that are required to implement Cisco Unified Communications phones, manages gateways, and directs voice over Cisco Unified Communications traffic to the Cisco CRS system. You must purchase Unified CM separately.

- **Unified CME.** Enables interoperability with between Cisco CRS and Unified CME. This interoperability allows configuration query and update between Unified CCX and Unified CME, SIP-based simple and supplementary call control services including call routing between Unified CME and Unified CCX using SIP-based route point, Unified CCX keep alive session

management of Unified CME, Unified CCX device and call monitoring of agent lines and call activities in Unified CME, and Support of Unified CCX Cisco Agent Desktop for use with Unified CME.

- **Unified CCX.** Contains the Cisco CRS Engine that runs Unified CCX.
- The following optional, dedicated servers:
  - **MRCP TTS.** A dedicated, vendor-specific (Nuance) server that converts text into speech and plays it back to the caller.
  - **MRCP ASR.** A dedicated, vendor-specific (Nuance) server that performs real-time ASR.

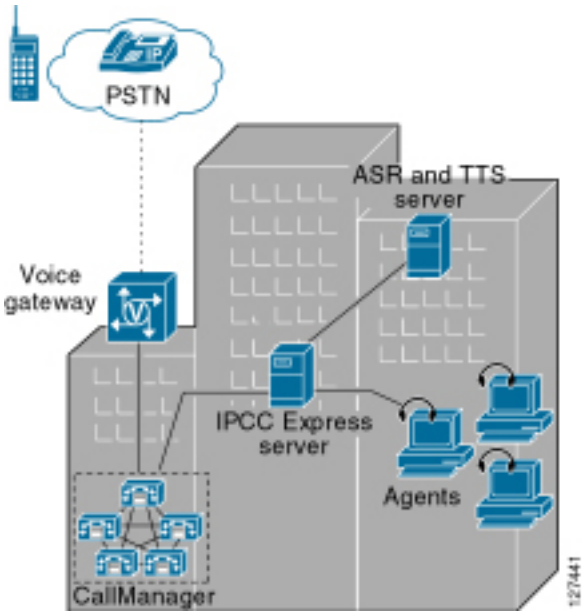
Single-Site Deployments

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

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 Cisco Unified Communications Phone Agent XML server that supports clients running on Cisco phones) and CTI services (all ACD, Unified IP IVR, and CTI features as well as optional features such as ASR and TTS).

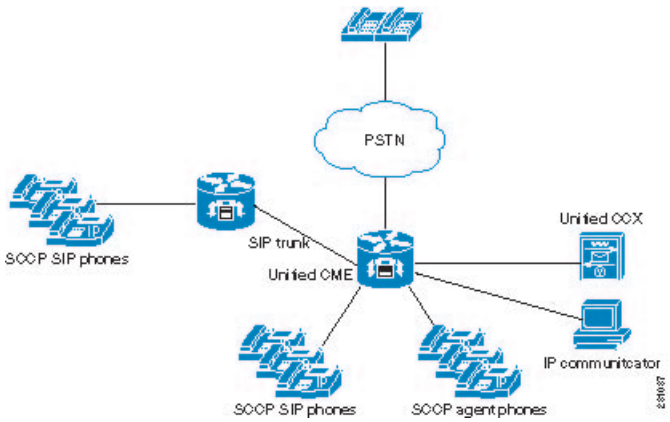
In the following figure, the Unified CCX server telephony subsystem connects to the Unified CM server. This Unified CM server also runs the CTI Manager service that handles the CTI call processing requests from Unified CCX.

Figure 1: Single-Site Deployment Model--Unified CM



In the following figure, the Unified CCX subsystem connects to the Unified CME server to provide a contact center product that interoperates with Unified CME, using CME-homed phones as agent devices.

Figure 2: Single-Site Deployment Model--Unified CME



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) website. Customers at small and medium sized business who want the convenience of online ordering can use Cisco's Online Partners.

Cisco Advanced Services

Cisco Advanced Services incorporates a unique three-tiered program offering a real world life cycle process to help you achieve your business objectives. Depending on individual operational, maintenance, and network level requirements, each customer has unique support requirements throughout the network life cycle of planning, designing, implementing, operating, and optimizing the network (PDIOO).A full list of Cisco Advanced Services can be found on **Advanced Services** (http://www.cisco.com/en/US/products/svcs/ps11/services_segment_category_home.html) category.

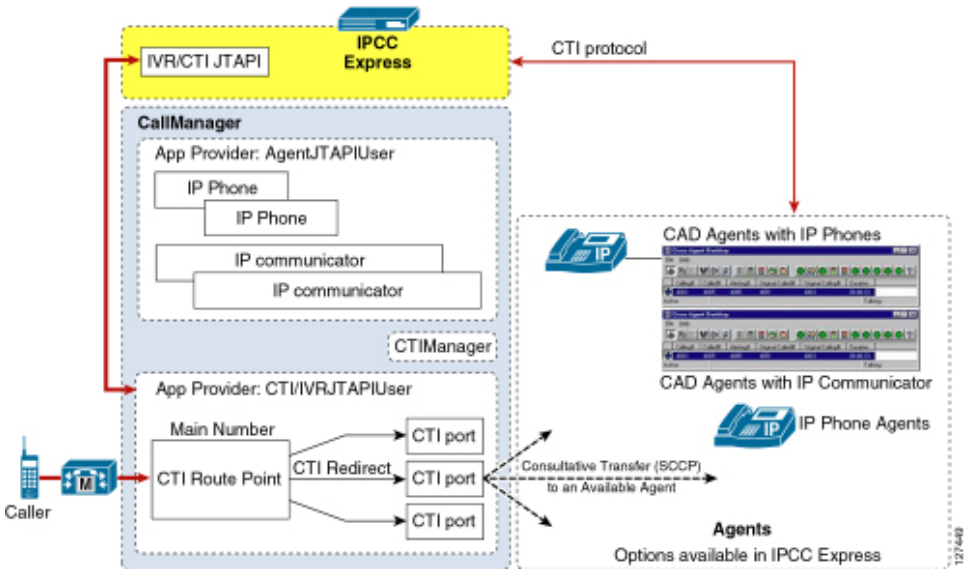
Chapter 4

Basic Contact Flow Concepts for Unified CCX Deployments

When installing and configuring your Unified CCX system, you must understand the concepts, call flows, and configuration dependencies described in this chapter.

The following diagram shows how various applications in your Cisco CRS system work together.

Figure 3: Typical IPCC Express Call Flow



The basic inbound Unified CCX call flow process is identified below:

1. A call arrives at voice gateway.
2. The voice gateway routes the call based on direction from the Unified CM (using H.323 or MGCP).
3. The Unified CM is configured for the dialed number to be routed by Unified CCX so a route request is sent to the Unified CCX server (using Unified CM Telephony).
4. Based upon the dialed number, the Unified CCX server selects an available CTI port and initiates the configured script. The first step in the work flow (accept) initiates the establishment of an Real-time Transport Protocol (RTP) VoIP data stream between the CTI port on the Unified CCX server and the VG port. In this scenario, we are assuming no appropriately 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 Unified CM 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.

The basic outbound Unified CCX call flow process is identified below:

1. A call arrives at voice gateway.
2. The administrator schedules Campaigns using the Cisco CRS Administration GUI and imports contact records to the DialingList table.
3. When Outbound agents become available, the CRS Outbound Subsystem retrieves records from the DialingList table. For each record, the CRS Outbound Subsystem selects an agent based on CSQ(s) assigned to the Campaign
4. The record is presented to the agent through the Cisco Agent Desktop. The agent can choose to “Accept”, “Reject”, or “Skip” the record.

   Note: This is a preview call on the Cisco Agent Desktop only and the agent’s phone does not ring.
5. If agent Accepts, the Outbound call is placed using the agents’ phone.
6. The call is classified as Voice by default. The agent has the option to reclassify the call as appropriate (FAX, Answering machine,…)
7. The contact record in DialingList is table is updated with the appropriate call classification.

The basic Unified CCX call flow process for Unified CME Deployments is identified below:

1. A call arrives at a trigger (route point) on Unified CME. This trigger is identified by its dialed number (DN).
2. Unified CME notifies Unified CME Telephony subsystem on Unified CCX about the call.
3. The Unified CME Telephony subsystem finds an available channel from the default call control group.
4. Based on the trigger DN, the Unified CME Telephony subsystem invokes the appropriate script to handle the call.
5. The invoked script answers the call and executes the steps in the script.
6. To transfer the call to an agent, the script queues up for a CSQ.
7. If no agent is available, the call is queued.
8. If an agent is available, the call is transferred to the agent and the agent phone rings.
9. Once the agent answers, the agent and caller are connected and the transfer is completed .

This section contains the following topics:

- Relationships Between Tasks, Sessions, Contacts, and Channels, page 53
- Unified CM Telephony Deployment Considerations , page 54
- An HTTP Contact Flow , page 56
- Important Unified CM Configuration Dependencies, page 57
- Important Outbound Configuration Dependencies, page 58
- Important Unified CME Configuration Dependencies, page 59

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 script 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 Unified CM Global Call ID plus the Unified CM 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.

Unified CM Telephony Deployment Considerations

The CTI route point associated with the user enables the Unified CM to query the pertinent external application for routing instruction. Different route point's can query different applications (Cisco CRS, Unified ICME, or third-party applications) through Unified CM Telephony. 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 the Unified CM so it can setup a call to that CTI port. The Unified CM 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 Unified CM with the all routes busy response, which triggers the Unified CM 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 the Unified CM 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 Unified CM Telephony 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.

  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 the Unified CM through Unified CM Telephony/CTI requesting that the caller be rerouted from the CTI Route Point to the CTI Port.

  This takes place as a Unified CM Telephony Redirect request. For this to be successful, the Unified CM's Default setting for Calling Search Space (CSS) must be able to place the call to the selected CTI Port (redirecting party, or in this case, the CTI Route Point) .

- Why is the CTI Route Point associated with a Unified CM 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 Unified CM user. The Unified CM user is associated with the CTI Route Point as a device that the Unified CM user controls.

When a trigger is assigned to an application in the Cisco CRS system, the Unified CM Telephony subsystem knows that it must take control of that line using the Unified CM Telephony client installed on the Cisco CRS system. Once it has control of the line, Unified CM Telephony 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: Unified CM Telephony and HTTP.

  – If an application is started by dialing a phone number, it must have a Unified CM Telephony trigger.

  – If an application is started by entering a URL, it must have an HTTP trigger.

  If an application is triggered by calling a Unified CM Telephony trigger:

  .a The Cisco CRS system looks for an available CTI Port in the Unified CM Telephony Call Control Group assigned to the trigger.

  .b Cisco CRS then requests the Unified CM 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 Unified CM Telephony 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).

  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 the Unified CM without answering it.

    Terminate. Disconnects the Contact.

  - **Redirect**. Requests that the Unified CM 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 the Unified CM 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 Unified CM Configuration Dependencies

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

You must be aware of the following:

- **Repository Datastore**. The RDS resides on the CRS server in the MSDE or SQL2K database. It holds the prompts, grammars, documents, and scripts used by the system.
- **CTI Ports and Route Points**. When configuring CRS in the CRS Application Administration web page, you must enter the information that Cisco CRS uses to configure CTI Ports and route points in the Unified CM.
- **Unified CM Telephony User**. When Unified CCX starts up, it establishes it's Unified CM Telephony communication session with Unified CM. The Unified CM Telephony user ID and password are used by Unified CM to authenticate the request to begin a Unified CM Telephony communication session. The Unified CM Telephony user ID and password are configured into Unified CM automatically as part of the Unified CCX installation process.
- **Redirects**. The Cisco CRS platform can instruct Unified CM to redirect calls to another destination. Redirects are essentially a blind transfer. When a new call arrives at Unified CM and is routed to a CTI route point, the Cisco CRS platform selects an idle CTI port and implicitly instructs the Unified CM 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 CSS 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 (CSS) determine the partitions that calling devices, including Cisco Unified Communications phones (SCCP or SIP), 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 CSS for the device and the CSS for the directory number get used together. The directory number CSS takes precedence over the device CSS.

  Refer to **Partitions and CSS** (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 the maximum amount of bandwidth that one call is allowed to consume. While this indirectly affects what codec is used when media negotiation happens between the two parties, the Region configuration simply dictates the highest bandwidth codec permissible. Depending on the configuration of the two parties, other lower-bandwidth codecs might be negotiated during media negotiation.

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/en/US/partner/products/sw/voicesw/ps556/products_administration_guide_chapter09186a00801ecf73.html) 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/en/US/partner/products/sw/voicesw/ps556/products_administration_guide_chapter09186a00801ecf72.html) for more information.

- **Media Connections**. Media connections to the Cisco CRS system are either all G.711 or all G.729. This means that the Unified CM 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.

Important Outbound Configuration Dependencies

The Outbound feature provides Outbound dialing functionality in addition to existing Unified CCX inbound capabilities. This feature allows agents who are not busy with inbound calls to handle Outbound calls. With the Outbound feature, customer calls are placed using the Cisco Unified Communications by way of the Unified CM for call control.

You must be aware of the following:

- **License requirements**. Requires Outbound license along with the Unified CCX Premium license
- **Deployment availability**. The Outbound feature is only available with Unified CM deployments.
- **Area code mapping**. The system is pre-configured with the area code and time zone mappings for only the area codes within North America. You must manually enter the time zone mapping for international area codes into the system using the CRS Administration GUI.
- **Do Not Call list**. The United States Do Not Call list is not supported and must be filtered out manually before uploading. You must use your own tools to expunge Do Not Call numbers from their Contact List table.
- **High availability requirements**. For high availability deployments, all Cisco CRS and database nodes must already be in service for any campaigns to run.
- **IP Phone Agent**. The IP Phone Agent is not supported
- **CAD workflows**. CAD workflows will be disabled for outbound calls.
- **10,000 contacts**. Contacts can only be uploaded in batches of 10,000.
- **Time zone usage**. The contact's time zone is used as an indication of when the system can place an outbound call to that contact.

For detailed information on these requirements and for configuration details, refer to the **Cisco CRS Administration Guide** (http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/products_installation_and_configuration_guides_list.html).

Important Unified CME Configuration Dependencies

Licenses are installed for the first time in the Cisco CRS setup wizard. Once you have uploaded the licenses, the Unified CME Telephony Call Control Group is automatically created.

You must be aware of the following:

- **License.** The Unified CME Telephony subsystem is available if your system has a license installed for one of the following Cisco product packages: Unified IP IVR, Unified CCX Standard, Unified CCX Enhanced, or Unified CCX Premium.
- **Trigger (route point)**. In the Unified CME Telephony subsystem the concept of CTI Ports does not exist. When a call is offered at a CME Telephony Route Point, the route point accepts the call. The call is not transferred to a CTI Port.
- **G711 Codec prompts**. The Unified CME Telephony subsystem only supports G711 codec prompts.
- **User Database**. Unified CME Telephony users are stored locally in the CRS Database.
- **IP Phone Agent**. Unified IP Phone Agents are limited to one Cisco CRS platform for each Unified CME product.
- **Agent Devices**. The Unified CME Telephony subsystem only supports SCCP Phones as agent devices.

For detailed information on these requirements and for configuration details, refer to the **Cisco CRS Administration Guide** (http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/products_installation_and_configuration_guides_list.html).

Part 2: Installing and Configuring Unified CCX with Unified CM

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

Configure the Unified CCX system components in the following order:

1. Install and configure Unified CM and register your Cisco Unified Communications phones (SCCP or SIP) with the Unified CM.
2. Install and setup your Cisco Unified Telecommunications phones (SCCP or SIP).
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 Unified CM for Unified CCX

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

This section contains the following topics:

- About the Unified CM, page 63
- How to Install Unified CM , page 63
- How to Configure Unified CM, page 64
- Unified CM Configuration Check List, page 64
- Outbound Configuration Check List, page 66
- How to Check Your Phone Configuration in Unified CM , page 67
- About the Unified CM Extension Mobility Feature, page 67

About the Unified CM

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

Warning: Unified CM uses the Linux operating system and cannot be installed on the same server as Cisco CRS.

How to Install Unified CM

Follow the step-by-step installation instructions for Unified CM included in the *Installing Unified CM Guide*. There are no Cisco IPCC-specific installation prerequisites or instructions for Unified

CM. You can find this guide and the other guides mentioned in the following list and table at the **Unified CM documentation Web site** (http://www.cisco.com/en/US/products/sw/voicesw/ps556/tsd_products_support_series_home.html).

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

Prior to proceeding with configuration, ensure that:

- A Unified CM instance has been created on the Unified CM server.
- All Unified CM services and third-party services required by Unified CM are running.
- The Bulk Administration Tool has been installed on the Unified CM.
- Identify the users in the Unified CM with administration privileges in Cisco CRS. If these users do not exist in the Unified CM, then you must create those users in the Unified CM.

For the Unified CM documentation available on the Web, see**Unified CM Documentation** (http://www.cisco.com/en/US/products/sw/voicesw/ps556/index.html).

See Also

Cisco Installing Unified CM Guide
Bulk Administration Tool Guide for Cisco Unified CM
Cisco Unified CM Administration Guide
Cisco Unified CM Features and Service Guide

How to Configure Unified CM

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

Most of the Unified CM configuration tasks are performed from the Unified CM Administration utility. Unified CM Administration is installed on all Unified CM servers. To access Unified CM Administration enter **http://<CM_servername>/ccmadmin** in a Web browser.

Unified CM Configuration Check List

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

Task	Purpose	Configuration Location
1. Create Unified CM users that will later be assigned	Provides a user account for Unified CCX to connect with the Unified CM.	User Configuration page. From the Unified CM Administration page menu bar, select **User Management** > **End User** and then click the **Add New** button.

Task	Purpose	Configuration Location
administrative privileges in the CRS Administration software.	**Note:** • You will need to remember the user IDs and passwords for when you install and configure Unified CCX. • The user ID should not be longer than 31 alphanumeric characters. Although a user ID in the Unified CM can contain up to 128 alphanumeric characters, in a Cisco CRS system, a user ID can be no longer than 31 alphanumeric characters.	
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 Unified CM Administration page menu bar, select **System > Region** and then in the upper, right corner of the window, click the **Add a New Region** 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 Unified CM Administration page menu bar, select **System > Location** and then in the upper, right corner of the window, click the **Add a New Location** 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 Unified CM Administration page menu bar, select **System > Device Pool** and then in the upper, right corner of the window, click the **Add a New Device Pool** link.
5. Configure the Unified CM Group for the devices.	Specifies the Unified CM group 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 Cisco Unified Communications so that it can locate and connect to Unified CM. This procedure varies by site according to the customer's network configuration.

Outbound Configuration Check List

The Outbound subsystem consists of the following components:

- CRS Administration: Enables the Outbound subsystem configuration, creates campaigns, and imports contacts to generate the dialing list.
- Outbound subsystem: Is responsible for managing campaigns, maintaining the Outbound system configurations, managing the dialing list, reserving agents, making Outbound calls, updating the call data in the dialing list based on the outcome of the call, and deciding which contact records to retrieve from a campaign.

The Outbound subsystem views campaigns as logical entities that group a set of contacts together in a dialing list. Campaigns deliver outgoing calls to agents. Agents are assigned to campaigns using CSQs.

Step	Task	For instructions, see
1a	Configure RmCM.	The *Configuring the RmCm Provider* section in the **Cisco CRS Administration Guide**[22].
1b	Create CSQs.	The *Creating a CSQ* section in the *Cisco CRS Administration Guide*.
1c	Assign resources to CSQ.	The *Resource Skill Selection Criteria Within a CSQ* section in the *Cisco CRS Administration Guide*.
2	Upload the Outbound option license.	The *Verifying the RmCm and Outbound Subsystems* and the *Viewing License Information* sections in the *Cisco CRS Administration Guide*.
3	Verify that the RmCm and Outbound subsystems are IN SERVICE.	The *Verifying the RmCm and Outbound Subsystems* section in the *Cisco CRS Administration Guide*.
4	Configure the general properties of the Outbound subsystem.	The *Configuring General Outbound Properties* section in the *Cisco CRS Administration Guide*.
5	Configure customer dialing time range as determined by the regulations of the required region	The *How Is a Contact's Local Time Determined?* section in the *Cisco CRS Administration Guide*.
6	Configure the dialing prefixes for your geographic area.	The *How the Outbound Option Works with Area Codes* section in the *Cisco CRS Administration Guide*.
7	Assign the CSQs and the percentage of each CSQ to be used for Outbound.	The *Allocating CSQ Agent Pool Percentages*, the , *Handling Configuration Updates*section, and the *Configuring Contact Service Queues*section in the *Cisco CRS Administration Guide*.
8	Create campaigns.	The *Adding a New Campaign* section in the *Cisco CRS Administration Guide*

22) http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/products_installation_and_configuration_guides_list.html

Step	Task	For instructions, see
9	Import contacts for each campaign.	The *Importing Contacts for a Campaign* section in the *Cisco CRS Administration Guide*
10	Enable campaigns.	The *Enabling Campaigns* section in the *Cisco CRS Administration Guide*
11	If the dialing list contains contacts outside of North America or if Unified CCX is installed outside of North America, manually add the area codes and their corresponding time zones of the regions	The *Adding Area Codes* section in the *Cisco CRS Administration Guide*
12	Enable direct preview in Cisco Desktop Administrator.	The *Cisco Desktop Administrator User's Guide*.
13	Setup communication with the agent's desktop.	The *Setting-up Communications with the Agent's Desktop*section in the *Cisco CRS Administration Guide*
14	Agents log in and get ready to receive Outbound calls (agents must belong to CSQs assigned to Outbound).	The *Agents Receive Outbound Calls*section in the *Cisco CRS Administration Guide*

How to Check Your Phone Configuration in Unified CM

Step 1 From a Web browser, open **Unified CM Administration**/CCMADMIN

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 Cisco Unified Communications phones connected to your system plus the CTI ports and Call Control groups automatically created in Unified CM when you configured the Cisco CRS application.

About the Unified CM Extension Mobility Feature

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

Part 3: Installing and Configuring Unified CME for Unified CCX

This part describes how to install and configure Unified CME for Unified CME.

Chapter 6

Installing and Configuring Unified CME for Unified CCX

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

This section contains the following topics:

- About Unified CME, page 71
- Support Information and Guidelines to Interoperate with Unified CME , page 72
- How to Install and Configure Unified CME, page 73
- Unified CCX Configuration Check List for Unified CME, page 74

About Unified CME

Effective Cisco CRS Release 5.0, Unified CCX enables interoperability with Unified CME Release 4.2.

After you complete the initial setup of Cisco CRS (see **Cisco Customer Response Solutions Installation Guide** (http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/prod_installation_guides_list.html)), you will have identified the information that Cisco CRS requires to provision Unified CME for Unified CCX. You can modify the Unified CME information from Cisco CRS.

The interoperability with Unified CME allows for the following functions:

- Configuration query and update between Unified CCX and Unified CME.
- SIP-based simple and supplementary call control services including call routing between Unified CME and Unified CCX using SIP-based route point.
- Unified CCX keep alive session management of Unified CME.
- Unified CCX device and call monitoring of agent lines and call activities in Unified CME.
- Support of Unified CCX5.0 Cisco Agent Desktop for use with Unified CME.

Support Information and Guidelines to Interoperate with Unified CME

The following Cisco CRS features are supported by the Unified CME product for Unified CCX:

- Unified CCX as a whole and as a child to Unified CCE (as a parent)
- Unified IP IVR
- Unified EIM and the Unified WIM
- Limited CAD Functionality
- Limited CSD Functionality

The following Cisco CRS features are not supported by the Unified CME offering:

- Unified QM
- High Availability (only single node support)
- Outbound preview dialer
- Remote monitoring
- Quality Management and Workforce Management applications

The following guidelines apply when using the Unified CME product for Cisco CRS:

- In the Unified CME Telephony subsystem the concept of CTI Ports does not exist. When a call is offered at a CME Telephony Route Point, the route point accepts the call. The call is not transferred to a CTI Port.
- The Unified CME Telephony subsystem only supports G711 codec prompts.
- Unified CME Telephony users are stored locally in the CRS Database
- Unified IP Phone Agents are limited to one Cisco CRS platform for each Unified CME product
- The Unified CME Telephony subsystem supports only SCCP Phones as agent devices.

How to Install and Configure Unified CME

The following table identifies the tasks to configure interoperability between Cisco CRS and Unified CME.

Table 3: Tasks to Configure Interoperability between Cisco CRS and Unified CME

Step	Task	Name of Document
1	Verify that the appropriate version of Unified CME is installed on the router.	See the *Configuring Interoperability with External Services* chapter and the *Installing and Upgrading Cisco Unified CME Software* chapter in the **Cisco Unified Communications Manager Express, Release 4.2 System Administrator Guide** [23].
2	Configure the Unified CME router. **Note:** Note down the AXL user ID, password, and the router's IP address	
3	Configure Unified CME to enable interoperability with Cisco Unified CCX.	
4	Install Unified CCX for Unified CME.	See the **Cisco CRS Installation Guide**[24]
5	Launch the setup wizard on CRS and go through the setup for the Unified CME. **Note:** When setup launches, you are asked for the AXL user ID and password that you created in Unified CME. You also need to enter the router IP address.	
6	Configure Unified CME Telephony Subsystem to enable interoperability with Unified CCX.	See the **Cisco CRS Administration Guide**[25]

23) http://www.cisco.com/en/US/products/sw/voicesw/ps4625/products_configuration_guide_book09186a00807c5776.html

24) http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/prod_installation_guides_list.html

25) http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/products_installation_and_configuration_guides_list.html

Step	Task	Name of Document
7	Create users and assign the agent capability to these users in Cisco CRS.	**Note:** These two steps are explained in greater detail in the next section.

Unified CCX Configuration Check List for Unified CME

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

Note: Licenses are installed for the first time in the Cisco CRS setup wizard. Once you have uploaded the licenses, the Unified CME Telephony Call Control Group is automatically created.

Table 4: Tasks Performed in Unified CCX

Task	Purpose	Configuration Location
1. Obtain the AXL authentication details for the Cisco CRS setup wizard.	During the Cisco CRS setup process, the administrator provides the Unified CME IP address and hostname(s) and the Administrative XML Layer (AXL) authentication (user ID and password) information. You can change this information at any time as required from Cisco CRS. If you do change the information, you must provide the IP address of the AXL server to which you will move this server.	Cisco CRS setup wizard. See Chapter 6, Performing the Initial Setup of Cisco CRS in the **Cisco CRS Installation Guide**[26]
2. Configure the AXL User in Cisco CRS	**Note:** The Unified CME Telephony subsystem is available if your system has a license installed for one of the following Cisco product packages: Unified IP IVR, Unified CCX Standard, Unified CCX Enhanced, or Unified CCX Premium. You can change previously-configured Unified CME setup information from Cisco CRS.	See *Chapter 5: Provisioning Unified CCX for Unified CME* in the **Cisco CRS Administration Guide**[27]
3. Provision the Unified CME Telephony Subsystem.	The Unified CME Telephony subsystem sends and receives call-related messages from Unified CME.	See the *Provisioning Unified CCX for Unified CME*chapter in the **Cisco CRS Administration Guide**[28]

26) http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/prod_installation_guides_list.html

27) http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/products_installation_and_configuration_guides_list.html

28) http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/products_installation_and_configuration_guides_list.html

Task	Purpose	Configuration Location
3a. Validate Unified CME and Cisco CRS versions.	Use the validate tool when the configuration in Cisco CRS and Unified CME are not synchronized.	
3b. Configure a Unified CME Telephony Provider, if not already configured. Specify the server on which Unified CME is running, and provide a Unified CME user ID and password.	The Unified CME Telephony provider opens a logical session with Unified CME to detect the state of the connection.	
3c. Provision Unified CME Telephony call control groups.	The Unified CME Telephony call control group is automatically added based on license. It is created when you upload the license.	
3d. Provision a Unified CME Telephony trigger. Unified CME Telephony triggers invoke application scripts in response to incoming contacts.	Unified CME Telephony triggers define the route point to which a directory number is associated.	
4. Provisioning the RmCm Provider to allow the RmCm Subsystem to be in service.	The Unified CCX Resource Manager (RM) uses a Unified CM/Unified CME Telephony user (called the RmCm Provider) to monitor agent phones, control agent states, and route and queue calls. **Note:** For unified CME, the concept of RmCm user does not exist. The AXL Service provider account is used to preform this task.	See the *Configuring the RmCm Provider* section in the **Cisco CRS Administration Guide**[29]
5. Creating resource groups. **Note:** This step can be handled by the RmCm Wizard in the CRS Administration GUI.	Resource groups are collections of agents that your CSQ uses to handle incoming calls. To use resource group-based CSQs, you must specify a resource group.	See the *Configuring Resource Groups* section in the **Cisco CRS Administration Guide**[30]
6. Creating skills—if you are using Unified CCX Enhanced or Premium.	**Note:** The Skills hyperlink is available only if you are using Unified CCX Enhanced or Premium license packages.	See the *Configuring Skills* section in the **Cisco CRS Administration Guide**[31]

29) http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/products_installation_and_configuration_guides_list.html

30) http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/products_installation_and_configuration_guides_list.html

31) http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/products_installation_and_configuration_guides_list.html

Task	Purpose	Configuration Location
Note: This step can be handled by the RmCm Wizard in the CRS Administration GUI.	T 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.	
7. Assigning agents to resource groups and assigning skills to agents. **Note:** This step can be handled by the RmCm Wizard in the CRS Administration GUI.	Once Cisco Unified Communications users are defined as agents, the list of agents and their associated Unified CCX Extensions are displayed in the **RmCm > Resources** page. These agents are also called resources. After you create a resource group, you can assign agents (resources) to that group.	See the *Configuring Agents* section in the **Cisco CRS Administration Guide**[32]
8. Creating Contact Service Queues. **Note:** This step can be handled by the RmCm Wizard in the CRS Administration GUI.	You assign agents to a CSQ by associating a resource group or skills to the CSQ. Agents in the selected resource group or having the selected skills are assigned to the CSQ.	See the *Configuring Contact Service Queues* section in the **Cisco CRS Administration Guide**[33]
9. Provisioning agent-based routing—if you are using Unified CCX Enhanced or Premium.	Agent-based routing provides the ability to send a call to a specific agent, rather than any agent available in a CSQ.	See the *Configuring Agent-Based Routing* section in the **Cisco CRS Administration Guide**[34]
10. Creating teams and assigning agents to teams. **Note:** This step can be handled by the RmCm Wizard in the CRS Administration GUI.	A default team is automatically created by the system and cannot be deleted. If agents are not assigned to any team, they belong to the default team. When an agent is assigned to a team, the team's supervisor can barge-in and/or intercept any call being handled by the agent.	See the *Configuring Teams* section in the **Cisco CRS Administration Guide**[35]

32) http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/products_installation_and_configuration_guides_list.html

33) http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/products_installation_and_configuration_guides_list.html

34) http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/products_installation_and_configuration_guides_list.html

35) http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/products_installation_and_configuration_guides_list.html

Part 4: Installing and Provisioning Cisco CRS

This part describes the tasks specific to Cisco CRS. These tasks are common to both the Unified CM and Unified CME deployments.

Note: The Remote Monitoring section only applies to Cisco CRS Deployments with Unified CM.

Chapter 7

Installing and Configuring Unified CCX

After you have configured Unified CM, install and configure Unified CCX.

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 web site** (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.

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. **Note:** 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 *Cisco CRS Scripting and Developer Series* documentation. Managing Scripts, Prompts, Grammars, and Documents in the *Cisco Customer Response Solutions Administration Guide*.
2. Upload the script and upload any prompts needed for the script. **Note:** This step can be handled by the	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 **Applications > Script**	The Uploading a Script section in the *Cisco Customer Response Solutions Administration Guide*.

Task	Purpose and Notes	Configuration Location	Procedure Location
Application Wizard in the CRS Administration GUI.		**Management** . Then in the Script Management page, click **Upload New Scripts**.	
3. Add the application. **Note:** This step can be handled by the Application Wizard in the CRS Administration GUI.	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 **AutoAttendant** The script for the Unified CCX is **icd.aef**.	Cisco CRS Application Configuration page. From the Cisco CRS administration web page menu bar, select **Applications > Application Management** and then in the upper, right corner of the window, click the **Add New Application link** link. Next, Under Application Type, select **Cisco Script Application** and click **Next**.	The Configure a Cisco Script Application section in the *Cisco Customer Response Solutions Administration Guide*.
3.1. Give the application a name and assign the script to the application. **Note:** This step can be handled by the Application Wizard in the CRS Administration GUI.	To make the application available for use.	Cisco CRS Script Application web page.	The Configure a Cisco Script Application section in the *Cisco Customer Response Solutions Administration Guide*.
3.2. Customize the application parameters. **Note:** This step can be handled by the Application Wizard in the CRS Administration GUI.	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, you can record and upload your own prompts.	Cisco CRS Script Application web page.	The Configure a Cisco Script Application section in the *Cisco Customer Response Solutions Administration Guide*.
4. Add the application trigger. **Note:** This step can be handled by the Application Wizard in the CRS Administration GUI.	Enable the application to respond to Unified CM Telephony calls and/or HTTP requests. **Note:** When you configure Unified CM Telephony triggers, you need to specify the CTI Route Point attributes used by the trigger. For	Cisco CRS Add Application Triggers web page. From the script configuration page of the application for which you want to add a trigger, click the **Add New Trigger** link.	The Add Application Triggers section in the *Cisco Customer Response Solutions Administration Guide*.

Task	Purpose and Notes	Configuration Location	Procedure Location
	example, device pool, location, and voice mail profile.		
5. Test the application.	Make sure it works. **Note:** Before the Cisco Unified CCX system can receive calls, the Cisco CRS engine must be running.	From one of your phones, phone the number specified by the trigger. Or if you have an HTTP trigger, use a standard Web browser to go to the URL for the HTTP trigger	Your application specific documentation.

Chapter 8

Deploying the Sample Script, icd.aef

The Unified CCX script is referred to as the Integrated Contact Distribution (ICD) 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 scripts 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/application/pdf/en/us/guest/products/ps4829/c2001/ccmigration_09186a00800dc6ca.pdf)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 83
- Designing and Configuring Unified CCX Scripts, page 84
- Testing your System and the Unified CCX Script, page 84

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 agents in a group 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.

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/products/sw/custcosw/ps1846/products_programming_reference_guide_chapter09186a00800c49da.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 79). The sysadmin must create an application that uses the icd.aef script, configure that application, and then configure a Unified CM Telephony trigger (CTI route point) for the application.

A Unified CM Telephony 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.

Step 1 Select one of the phone numbers configured in Unified CM and dial that phone number to see if you get the correct phone. If you get the correct phone, the Unified CM is working.

Step 2 On one of your IP phones, pone the Unified CM Telephony trigger.

If you get the welcome prompt, then the icd.aef script is working.

Chapter 9

Installing Agent and Supervisor Desktop for Unified CCX

Agents use the Cisco Agent Desktop (commonly referred to as 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 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.

This section contains the following topics:

- About Agent and Supervisor Desktops for Unified CCX , page 85
- About Routing and CSQs, page 86
- Cisco Agent Desktop Configuration Check List , page 86
- How to Install and Configure the Cisco Agent Desktop Applications, page 90

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 Unified CM cluster, regardless of any partition configuration. You can assign an agent's Unified CCX extension to a Cisco Unified Communications phone or extension mobility device profile.

An agent has the following user interface options:

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

About Routing and CSQs

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.

  Each CSQ is bound to either a Resource Group or a list of one or more Resource Skills. Agents are assigned to a Resource Group and/or one or more Resource Skills. Therefore, your choices in CSQ and Agent Configuration determine the pool of agents that are qualified to receive the call. 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. You can choose various combinations of resource skills or resource group mappings when configuring CSQs. If you choose to map a resource group to a CSQ, you cannot map any other resource groups or skills to that same CSQ. Also, you cannot use that same resource group for other CSQ's.

- 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
1. Assign Unified CCX extensions for users who are Unified CCX agents. **Note:** This step can be handled by the RmCm Wizard in the CRS Administration GUI.	To enable Unified CCX to communicate with Unified CM, you first need to assign extensions for these agents. **Note:** If you delete a Cisco CRS user with Administrative rights from Unified CM, the user will not be able to log into the Cisco CRS administration web interface.	From the Unified CM Administration menu bar, choose **User Management > End User**. If the agent already has a defined user record, click the **Find** button to select it. Otherwise, click the **Add New** button to create a new user record for the agent and fill in the required fields. Then, use the Unified CCX Extension field	The Configuring Unified CM for Unified CCX section in the *Cisco Customer Response Solutions Administration Guide*.

Task	Purpose and Notes	Configuration Location	Procedure Location
		to configure the extension that the agent will use to receive Unified CCX calls	
2. Configure Unified CCX supervisors **Note:** This step can be handled by the RmCm Wizard in the CRS Administration GUI.	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. **Note:** A Unified CCX supervisor must be configured as an agent even if that agent will not answer ACD calls.	From the Cisco CRS administration web page menu bar, select **Tools > User Management** . Select a user ID in the CMUsers list. and choose the list to which this user ID must be assigned. Click **Update** to apply the changes.	The User Management Menu Option section in the *Cisco Customer Response Solutions Administration Guide*.
3. Create resource groups. This step is required with the Unified CCX Standard. It is optional for the Unified CCX Enhanced and Premium. **Note:** This step can be handled by the RmCm Wizard in the CRS Administration GUI.	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 **Subsystems > RmCm** and click the **Resource Groups** link. Then select the **Add a New Resource Group** link. In the Resource Group Name field, enter a resource group name. identify the resource group, and click **Add**.	The Creating, Modifying, and Deleting Resource Groups section in the *Cisco Customer Response Solutions Administration Guide*.
4. Create skills This step applies only if you are using Unified CCX Enhanced or Premium. **Note:** This step can be handled by the RmCm Wizard in the CRS Administration GUI.	Skills are customer-definable labels assigned to agents. The Unified CCX Enhanced and Premium packages can route incoming calls to agents who have the necessary skill or sets of skill to handle the call. **Note:** Do not create skills exceeding the recommended values for the Cisco MCS on which the Cisco CRS is installed. For more information, refer to the **Unified CCX Data Sheets**[26].	From the Cisco CRS administration menu bar, choose **Subsystems RmCm**. Click the **Skills** hyperlink and select the **Add a New Skill** hyperlink. In the Skill Name field, enter a description of a relevant skill and click **Add**.	The Creating, Modifying, and Deleting Skills section in the *Cisco Customer Response Solutions Administration Guide.*

26) http://www.cisco.com/en/US/products/sw/custcosw/ps1846/prod_literature.html

Task	Purpose and Notes	Configuration Location	Procedure Location
5. Assign agents to resource groups and skills to agents. It is not necessary to assign an agent to a resource group with Unified CCX Enhanced or Premium. If you have one of these packages, only perform this step if you want to use resource group-based CSQs. **Note:** This step can be handled by the RmCm Wizard in the CRS Administration GUI.	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 **Subsystems > RmCm**. On the Unified CCX Configuration navigation bar, click the **Resources** hyperlink. Click the name of the agent in the Resource Name column and assign the requirements for each field. Click **Update** to apply the changes.	The Assigning Resource Groups and Skills to Agents section in the *Cisco Customer Response Solutions Administration Guide*.
6. Create CSQs. **Note:** This step can be handled by the RmCm Wizard in the CRS Administration GUI.	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 **Subsystems > RmCm**. On the Unified CCX Configuration navigation bar, click the **Contact Service Queues** hyperlink. Click the Add a new Contact Service Queue hyperlink and assign the requirements for each field. Click **Next** to select the required Resource Selection Criteria. Click **Add** to apply changes and update the system.	The Creating, Modifying, and Deleting Contact Service Queue section in the *Cisco Customer Response Solutions Administration Guide*.
7. 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 Unified CM 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 an CSQ. **Note:** For CSQ monitoring, the supervisor cannot start monitoring	From the Cisco CRS administration menu bar, choose **Applications > Application Management**.Click the **Add a New Application** hyperlink and choose **Next** from the drop-down menu and select the required resource Selection Criteria. Click **Add** to apply changes and update the system.	The Configuring and Using Remote Monitoring section in the *Cisco Customer Response Solutions Administration Guide*.

Task	Purpose and Notes	Configuration Location	Procedure Location
	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.		
8. 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 **Subsystems > RmCm**. On the Unified CCX Configuration navigation bar, click the **Agent Based Routing Settings** hyperlink and assign the requirements for each field. Click **Update** to apply the changes.	The Configuring Agent-Based Routing section in the *Cisco Customer Response Solutions Administration Guide*.
9. Create teams. **Note:** This step can be handled by the RmCm Wizard in the CRS Administration GUI.	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. **Note:** A team can additionally have one or more secondary supervisors.	From the Cisco CRS administration menu bar, choose **Subsystems > RmCm**. On the Unified CCX Configuration navigation bar, click the **Teams** hyperlink and click the **Add a new Team** hyperlink and assign the requirements for each field. Click **Update** to apply the changes.	The Creating, Modifying, and Deleting Teams section in the *Cisco Customer Response Solutions Administration Guide*.
10. Start Assign agents to teams. **Note:** This step can be handled by the RmCm Wizard in the CRS Administration GUI.	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 **Subsystems > RmCm**. On the Unified CCX Configuration navigation bar, click the **Teams** hyperlink and click the **Add a new Team** 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 **Update** to apply the changes.	The Creating, Modifying, and Deleting Teams section in the *Cisco Customer Response Solutions Administration Guide*.

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 function 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 Cisco Unified Communications 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.	**Note:** Refer to the **Cisco CAD Installation Guide**[26].	From the web browser.	The Installing Agent Desktop section and the Installing Supervisor Desktop section in the *Cisco CAD Installation Guide*.
2. Start the agent desktop.	**Note:** 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 **Start > Programs > Cisco > Desktop > Agent**. The login screen appears. Enter your agent desktop ID, password, and extension in the appropriate fields, then click **OK** or press Enter.	The Starting Agent Desktop section in the *Cisco Agent Desktop User's Guide*.
3. Handle calls	You can use a hard Cisco Unified Communications 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 *Cisco Agent Desktop User's Guide*.

26) http://www.cisco.com/en/US/partner/products/sw/custcosw/ps1846/prod_installation_guides_list.html

Chapter 10

Monitoring and Recording Features 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:

- Remote Monitoring , page 91
- CSD Monitoring , page 92
- Recording Agent Conversations , page 92
- Recording Prompts, page 92

Remote Monitoring

Note: The Remote Monitoring section only applies to Cisco CRS Deployments with Unified CM.

Remote monitoring allows a supervisor to call into any site where the supervisor has a Unified CM 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.

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

- 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.

CSD Monitoring

Supervisors can monitor an agent's call using the Cisco Supervisor Desktop (CSD).

Refer to the *Supervisor Desktop Functions* section in the *Cisco Supervisor Desktop User Guide*for detailed configuration information.

Note: CSD Monitoring is available with Unified CCX Enhanced and Premium.

Recording Agent Conversations

Depending on the type of user (agent or supervisor) you can perform multiple functions 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*.

Recording Prompts

Through Cisco CRS Administration Media Configuration, you can create and modify the prompts that your scripts use. You can also upload spoken names for each person in the organization, so callers receive spoken names rather than spelled-out names when the automated attendant is asking the caller to confirm which party they want.

You can use any sound recording software to record a prompt if the software can save the prompt in the required file format. You can record a different prompt for each instance of a script.

Refer to the **Cisco CRS Scripting and Development Series documents** (http://www.cisco.com/en/US/products/sw/custcosw/ps1846/products_user_guide_list.html) for more information on recording prompts.

The Cisco CRS Scripting and Development Series includes the following documents

- Volume 1, Getting Started with Cisco CRS Scripting
- Volume 2, Cisco CRS Editor Reference
- Volume 3, Cisco CRS Expression Language Reference

Chapter 11

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 purchased separately and stores basic client information such as name, telephone, type, and so forth. In order to query a database from an Unified CCX script, you need to have purchase premium licensing. Refer to the **Cisco CRS Compatibility Matrix** (http://www.cisco.com/application/pdf/en/us/guest/products/ps1846/c1225/ccmigration_09186a00803d82f5.pdf) 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 third-party applications that are designed to create reports from databases.

Warning: You cannot run historical reports using the web browser. The historical reports 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.

Note: Verify that the Number of HR Session Licenses field (in the System Parameters web page of the CRS Administration GUI) is updated to reflect the licensed value. This value cannot be greater than the number of licensed Unified CCX seats. The default value is 0 for Unified CCX (Standard, Enhanced, and Premium). 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* .

Warning: If the Number of HR Session Licenses field value remains at 0 (default), you may encounter a licensing error and you cannot login to the Historical Reporting Client.

This section contains the following topics:

- The Default Unified CCX Historical Reports , page 96
- Real-Time Unified CCX Reports, page 97

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* .

Chapter 12

Managing Unified CCX

When you have provisioned the telephony and media resources, the Unified CCX subsystem, additional subsystems (if required) and configured the 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 99
- Managing Cisco CRS Datastores, page 100

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 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 in the Cisco CRS cluster.

The Datastore Control Center allows you to configure and manage the following data 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*.

A - C - D - E - F - G - I - J - L - M - N - P - R - S - T - V - W - 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.

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 alarms 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 Unified IP IVR. The Application Engine is the execution vehicle for all Cisco 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.

Campaign

A grouping of contacts for a particular purpose, such as a sales drive or a general announcement to a group of customers. Campaigns are used by Cisco Unified Outbound Preview Dialer to automatically place outgoing calls to a specific list of contacts.

Campaign manager

A Campaign Manager is the main control program of the Cisco Unified Outbound Preview Dialer. It maintains campaigns, dialer configuration, and current campaign data.

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 Communications Manager Management Information Base. Exports the data in the Cisco Unified Communications Manager (Unified CM) database and other data sources. Examples of data exports include Unified CM 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 (Unified CCX) for contact center functionality such as ACD, CTI, IVR, Cisco Unified IP IVR

(Unified IP IVR) for call treatment and self-help automation, and Cisco Unified Queue Manager (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 Cisco CRS scripts. The Cisco CRS Engine can run multiple scripts simultaneously. On startup, the Cisco CRS Engine loads all scripts and configuration information from the Cisco 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 Unified CM can support multiple Cisco CRS engines, but the Cisco CRS engines bind to only one Unified CM.

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

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 (Cisco 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 Unified CCX call statistics and that provides for recording and call monitoring for Unified CCX Enhanced.

Cisco Unified Communications Manager (Unified CM)

The Unified CM software extends enterprise telephony features and capabilities to packet telephony network devices such as IP phones, media processing devices, VoIP gateways, and multimedia applications.

Cisco Unified Communications Manager Express (Unified CME)

Unified CME integrates a core set of key system and small PBX functionality with a wide variety of rich IOS voice features inside Cisco multiservice and integrated services routers. By converging voice and data into a single platform, Cisco CallManager Express streamlines operations and lowers network costs, while increasing productivity.

Cisco Unified E-Mail Interaction Manager (Unified EIM)

Unified EIM increases agent productivity through a powerful, visual workflow designer that helps create the e-mail handling process. Using the required service level agreement (SLA) triggers, you can automate email routing and monitoring. This e-mail collaboration provides full HTML support for both inbound and outbound communications, the ability to attach larger files from the agent desktop is supported, and powerful content-parsing capabilities in the product enable auto-suggestions from the knowledge base.

Cisco Unified Intelligent Contact Management Enterprise (Unified ICME)

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

Cisco Unified Intelligent Contact Management Enterprise (Unified ICME) subsystem

A subsystem of the Unified IP IVR system that allows that system to interact with Unified ICME. 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 Outbound Preview Dialer (Outbound)

Allows agents who are not busy with inbound calls to handle outbound calls, thereby maintaining high level of agent productivity. The Outbound provides the ability to create and schedule Outbound campaigns for Unified CCX. The Contacts to Dial are kept in the Cisco CRS Database. A campaign selects agents from CSQs assigned to it.

Cisco Unified Queue Manager (Unified QM)

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

Cisco Unified Web Interaction Manager (Unified WIM)

Unified WIM ensures that your online customers are connected easily and seamlessly to the right agent every time. It also provides powerful file-sharing capabilities which allows agents to easily share files residing on their desktop. Advanced co-browsing capabilities allow agents and the customers to fill out forms together, field by field, even highlighting specific areas of a form or Web page for additional clarity.

Configuration Datastore Server (CDS)

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

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 Cisco 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

A Cisco CRS cluster consists of a server (node) running Cisco CRS components in your Cisco CRS deployment.

Cluster profile

The Cisco CRS 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.

CM Telephony

The Unified CM Telephony Application Programming Interface.

CM Telephony 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.

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 Cisco CRS system. Cisco CRS software components include the Cisco 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.

Cisco 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 Unified CCX, a CSQ is a call queue associated with one and only one Unified CM 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-pouting capabilities of Unified IP IVR.

CTI Port Group

A group of access points into the Unified CCX 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 Cisco 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.

Dialing list

A file containing a list of customer account numbers, names, and phone numbers that can be imported as contacts for a specific outward bound campaign.

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 Unified IP IVR system, a directory profile must be created. There are two directories associated with each Unified IP IVR system: the Configuration Directory and the Repository Directory (called “the Repository”).

Direct preview dialing mode

A mode of dialing in the Outbound In this mode, Cisco Agent Desktop (CAD) software enables agents to view outbound call requests automatically placed by the system.

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.

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.

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.

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.

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 Cisco 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 Cisco 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.

Media Termination

See CMT.

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.

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 scripts with the Repository Manager.

Resource

Agent enabled to handle Unified CCX 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 Cisco 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 Cisco 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.

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 Cisco 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.

Step

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

Subfacility

A traceable software component.

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 Cisco 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.

Variable

A placeholder for data.

W

Wrap-up

Call-related work performed by an agent after the call is over. An agent performing wrap-up is in either the Work Ready or Work Not Ready state. Often includes entering data, filling out forms and making outbound calls necessary to complete the transaction. The agent is unavailable to receive another inbound call while in this mode.

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.

Index

3rd-party
- application events....*26*
- fax and paging services....*25*
- MIBs....*30*

ACD
- enhanced edition....*22*
- features....*23*
- single server deployment....*48*
- solution....*13*
- Unified IP IVR option....*21*

active
- agents....*24*
- applications....*44*
- contacts....*44*
- CRS Engine tasks....*45*

after call wrap-up....*26*

agent
- assigning skills....*88*
- barge in....*28*
- call recording....*92*
- Cisco Unified Communications....*65*
- coaching....*28*
- CSQ monitoring....*92*
- datastore....*100*
- desktop....*85*, *97*
- intercep calls....*28*
- interdialing....*23*
- make ready....*28*
- phone directory....*27*
- recording....*29*
- recording prompts....*92*
- routing....*89*
- silent monitoring....*28*
- state buttons....*27*
- state changes....*27*
- supervisor monitoring....*92*
- viewing activity....*27*

analog trunks....*23*

ANI
- packages....*24*
- workflow data....*26*

application
- adding triggers....*80*
- customizing parameters....*80*
- tasks....*53*

ASR
- dedicated server....*48*
- packages....*25*
- support....*32*
- Unified IP IVR option....*21*

automated attendant *25*

Automatic Call Distribution
- See ACD....*13*

barge-in....*27*

calling search spaces....*54*, *57*

calls
- activity....*26*
- conferencing....*23*
- control choices....*55*
- handling....*90*
- recording and archiving....*26*

CCDR
- report....*29*

channel actions....*54*

Cisco Campus Manager....*30*

Cisco CRS Engine....*48*

Cisco Desktop Product *38*

Cisco MCS
Cisco CallManager integration....*63*
deployment....*47*
licensed seats....*87*
multiple installations....*21*
server software....*23*
Cisco Media Convergence Server
See Cisco MCS....*21*
Cisco Media Termination
see CMT....*31*
Cisco NMS
integration....*30*
Cisco TelePresence Virtual Agent....*14*
Cisco Unified Communications Manager Express
see Unified CME....*14*
Cisco Unified Communications Phones....*27*
Cisco Unified Queue Manager
See Unified QM....*22*
CMT
dialog control....*31*
coaching agents....*28*
Computer Telephony Integration
See CTI....*13*
concurrent agents....*24*
conditional routing....*24*
configurable agents....*24*
configuration check list
Unified CM....*64*
Unified CME....*74*
contact attributes....*54*
Contact Call Detail Record
see CCDR....*29*
CSQ
creating....*88*
CSQs
maximum....*24*
maximum agents per....*24*
CTI port group....*19*
CTI services....*48*
custom
application parameters....*80*
file configuration....*36*
Java extensions....*22*
messages and music....*25*
preparing reports....*95*
routing enterprise data....*24*
script....*79*
scripting....*23*
variables....*24*
variables report....*42*
customer database....*95*
database
integration....*25*
screen pop....*26*
support....*31*
Unified CCX....*95*
Unified ICME integration....*22*
datastores
managing....*100*
default codec....*58*
desktop
installing....*90*
device
locations....*58*
regions....*57*
dialog group....*31*, *55*
digital trunks *23*
DNIS
packages....*24*
workflow data....*26*

document files
managing....99
DTMF
capture input....25
data collection....31
managing grammar....99
VXML....26
Dual Tone Multifrequency
see DTMF....25
E-mail
contacts....44
CRS Engine....31
extension mobility....67
grammars
managing....99
hardware configuration....23
historical reporting
packages support....28
plugin....38
tasks....96
historical reports
availability list....41
client viewer....96
hrcConfig.ini file....96
HTTP
inbound request....32
trigger....55, 56
icd.aef script
deploying....83
testing....84
instant messaging....26
Interactive Voice Response
See Unified IP IVR....13
intercept calls....27, 28
IP Communicator....27
license
multichannel 19
usage....21
local logging....30
locations....58, 65
log tracking....26
mailboxes
maximum number....30
Marquee
scrolling messages....28
media connections....58
menu items....38
messages
sending text....28
to callers....25
messaging interface
voice....30
Microsoft Windows
automatic start....26
multichannel license....19
ODBC
support....31
operating systems....23
Outbound
active campaigns....24
contacts....24
CSQs per campaign....24
overflow routing
interflow and intraflow....24
PDIOO....49
phones
support....27
plugin
client viewer....96
editor....38

historical reporting....*38*
ports
ASR....*32*
CTI....*52*, *54*, *55*
TTS....*33*
priority queuing....*24*
product licensing....*35*
prompts
creating....*79*
managing....*38*, *99*
queuing
priority....*22*, *24*
support....*29*
read data
XML/HTTP....*26*
real-time
notification....*25*
reporting client....*30*
reports....*44*
running reports....*97*
recording....*29*
redirects....*56*
regions....*57*, *65*
remote monitoring
agent conversation....*91*
provisioning....*88*
resource groups
assigning agents....*88*
creating....*87*
Resource Management Essentials....*30*
Resource Manager-Contact Manager
See RmCm....*33*
RmCm
support....*33*
route points
trigger....*54*
routing
agent-based....*89*
overflow....*24*
programs....*25*
screen pop....*26*
script
designing and configuring....*84*
samples....*33*
testing....*84*
seat
usage and calculation....*20*
self-service application....*26*
silent monitoring
supervisor....*27*
site recording
always on....*29*
skills
competency....*24*
creating....*87*
definable groups....*24*
group statistics....*27*
per agent....*25*
routing....*24*
software configuration....*23*
spoken name upload....*38*
step editor
workflow steps....*40*
storage hours
voice....*30*
supervisor
configuring....*87*
desktop....*85*
phone directory....*27*
positions....*24*

recording....*29*
silent monitoring....*27*
support
call centers....*85*
teams
creating....*89*
tracing *30*
tracking sessions....*53*
trigger
agent selection....*52*
assignment....*53*
dialog group....*56*
HTTP....*55*
types....*55*
Unified CM Telephony....*84*
Unified CM Telephony signal....*54*
trunks....*23*
TTS
dedicated server....*48*
packages....*25*
support....*33*
Unified IP IVR option....*21*
Unified CCX
feature summary....*23*
package descriptions....*22*
summary for Cisco CRS 5.0....*30*
Unified CC X
priority....*22*
Unified CCX script
designing and configuring....*84*
testing....*84*
Unified CM....*47*
configuration checklist....*64*, *74*
configuration dependencies....*54*, *57*
extension mobility....*67*
installing and configuring....*63*, *71*
locations....*65*
regions....*65*
Unified CME....*14*
Unified CME Telephony....*32*
Unified CM Telephony....*32*
deployment considerations....*54*
trigger....*55*, *84*
Unified CM Telephony....*14*
Unified EIM....*29*
Unified IP IVR
licensed capabilities....*21*
priority....*22*
supported features....*25*
unified messaging....*30*
Unified QM
priority....*22*
Unified WIM....*29*
uploading scripts....*79*
vendor voice mai
support....*30*
virtual agent....*14*
voice
browser....*33*
gateway....*47*
maximum mailboxes....*30*
messaging interface....*30*
storage hours....*30*
VoiceXML
see VXML....*26*
VoIP monitor....*33*
VXML
control....*26*
DTMF input....*25*
workflow automation....*26*