# Unified CCX Reference Designs


- Introduction to the Unified CCX Solution Reference Designs, on page 1
- Unified CCX General Rules for Design, on page 2
- Reference Designs, on page 3
- Other Design Considerations , on page 4


# Introduction to the Unified CCX Solution Reference Designs

This chapter discusses the reference designs that are available for Unified CCX. Use the Cisco Collaboration Sizing Tool to help you determine the number and types of servers required for any supported deployment model and call processing requirements. Before using that tool, it is necessary to have an understanding of what deployment model you desire.

Cisco Unified Intelligence Center and Cisco Finesse are deployed on the same Virtual Machine (VM) with Unified CCX and support all the Unified CCX reference designs.

The following table depicts the reference designs that are supported in Unified CCX. These models have no bearing on which specific server model is used. The Cisco Collaboration Sizing Tool identifies the minimum server model required. This chapter provides general rules for design and considerations and limitations for each of these reference designs. This information allows a Unified CCX system planner or designer to understand what other similar reference designs are supported. This also helps to understand how to determine the best solution for a given set of requirements.

***Table 1: Unified CCX Reference Designs***

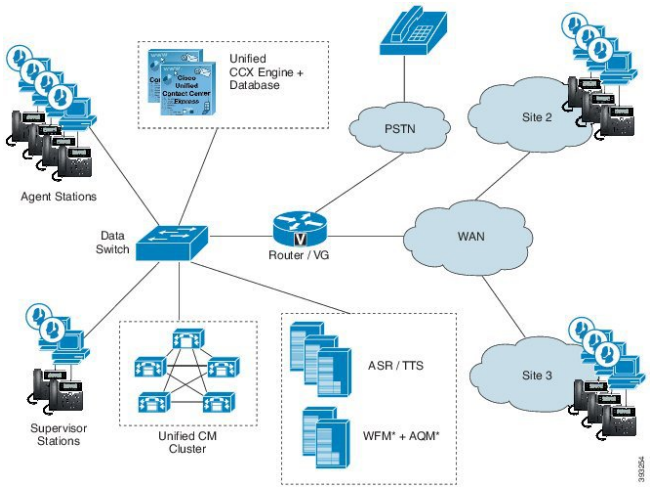
| Unified CCX Reference Design | Unified CCX Components on Server 1 | Unified CCX Components on Server 2 |
|---|---|---|
| Single-Server Non-High Availability Deployment Model—Unified Communication Manager Integration | Engine, Database, Recording, Monitoring, Reporting, Desktop, Cisco Identity Service components | — |
| Two-Server High Availability Deployment Model—Unified Communication Manager Integration | Engine, Database, Recording, Monitoring, Reporting, Desktop, Cisco Identity Service components | Engine, Database, Recording, Monitoring, Reporting, Desktop, Cisco Identity Service components |

**Note** Unified CCX deployment model integrated with Unified CME is not supported in 9.0(1) and higher versions.

The following figure depicts the deployment when integrating Unified CCX with Unified Communications Manager. In this deployment, optional Unified CCX components shown with an asterisk (*) can be added. These components are:

- Cisco Unified Work Force Management and Cisco Unified Advanced Quality Manager.

***Figure 1: Deployment Model of Unified CCX Integrated with Unified Communication Manager***




**Note** ASR and TTS can be added in Unified CCX integrated with Unified Communication Manager. ASR and TTS software is not provided by Cisco. This software must be purchased from other vendors. These vendors can provide design and server sizing requirements for their software.

# Unified CCX General Rules for Design

The following rules apply when designing a Unified CCX deployment:

- When deploying for high availability (HA), the Unified CCX servers can be located in the same campus LAN to provide server redundancy. The Cisco Unified CCX servers can also be located in different sites separated by WAN to provide spatial redundancy.

**Note** For HA over LAN deployment, heartbeats are sent every half a second and failover occurs if five consecutive heartbeats are missed. For HA over WAN deployment, heartbeats are sent every second and failover occurs if missing ten consecutive heartbeats. These values are not configurable.

- You can locate the Unified Communications Manager servers that run CTI Managers with which Unified CCX communicates in the same campus LAN. In Unified CCX servers that are deployed over WAN, for better site redundancy, deploy local Unified Communications Manager server at both sites.
- The Recording component must be redundant, if recording is used in a high availability deployment.
- All agents for a Unified CCX deployment must be using phones that register to the same Unified CM cluster. Calls can be received from devices and callers on another Unified CM cluster (using intercluster trunks).
- Unified CCX software versions must be the same for both the master and standby nodes in a high availability deployment.
- Unified CCX solution works with a combination of software and hardware components, providing an open and flexible environment for customers to execute complex scripts, custom codes, documents, and so on. Overloading any of the software and hardware components such as virtual memory and CPU could impact the solution performance. Review and optimize the scripts, custom codes, and documents before they are loaded to the production setup. Also constantly monitor the system component and hardware attributes like disk space and CPU utilization.

When deploying Advanced Quality Management and Workforce Management with Unified CCX, consider the following guidelines:

- Advanced Quality Management and Workforce Management must be installed on separate VM from each other and from Unified CCX. No form of coresidency is supported in this release with any other software, such as installing on Unified CCX or installing both Advanced Quality Management and Workforce Management on the same VM.
- Unified CCX does not support the use of third-party applications (for example, using TAPI) to control its devices.
- For more deployment information about Workforce Management and Advanced Quality Management, refer to the *Cisco Workforce Optimization System Configuration Guide* available at here:

  http://www.cisco.com/en/US/products/ps8293/products_implementation_design_guides_list.html

# Reference Designs

The following sections describe the Unified CCX Reference Designs.

## Single-Server Non-High Availability Reference Design

Unified CM integration with Unified CCX on a single-server nonhigh availability is for small deployments. This reference design places a single instance of all the Unified CCX software components on the same server and uses Informix Dynamic Server as the database server.

This reference design allows the Unified CCX Engine to fail over to a backup CTI Manager if the primary CTI Manager fails. CTI ports and CTI route points should be grouped into device pools that have the same primary and secondary server list as those used for JTAPI communications with the CTI Managers.

# Two-Server High Availability Reference Design

This reference design is for small-to medium-sized contact centers requiring high availability. This reference design incorporates redundant Unified CCX engine, database, recording, and monitoring components using Cisco Finesse.

This reference design can support silent monitoring and recording for agents at any WAN-connected site by using desktop monitoring. (See the Unified CCX Compatibility related information located at: http://www.cisco.com/c/en/us/support/customer-collaboration/unified-contact-center-express/products-device-support-tables-list.html for a list of phones that support desktop monitoring.) It can also support SPAN port monitoring for agents on the VLAN segment local to Unified CCX server. This reference design provides redundancy for both recording and silent monitoring for all agents using desktop monitoring (regardless of location) or agents on the local VLAN using SPAN port monitoring. Silent monitoring and recording are not possible for agents who are using the Cisco Finesse IP Phone Agent at remote sites. Similarly, silent monitoring and recording are not possible for agents at remote sites who are using phones that do not support desktop monitoring.

This reference design allows either Unified CCX Engine component to fail over to a backup CTI Manager if the primary server fails. CTI Ports and CTI Route Points should be grouped into device pools that have the same primary and secondary server list as that used for JTAPI communications to the CTI Managers.

**Note** In HA deployments, historical data comes from the database located in the standby engine node. A higher number of historical reporting sessions during operating hours is supported for HA deployments.

# Other Design Considerations

Consider the following when designing your Unified CCX system:

- High availability requires additional disk space, so historical call reporting capacity may be reduced. Historical call reporting capacity also depends upon BHCC, hours of operation per day, and days of operation per week.
- G.711 call recording requires about 1 MB per minute. G.729 call recording requires about 256 KB per minute.
- The following categories of data use hard disk space:
  - Operating system files, Unified CCX software, and Informix Database Management software
  - Unified CCX logs
  - The Unified CCX database (comprised of 4 data stores)
- The Unified CM sizing tools assume devices are evenly distributed across all servers. CTI route points are configured as part of a device pool in the Cisco Unified Communications Manager Server as the primary CTI Manager being used; it may be required to run the Cisco Unified Communications Manager sizing tool on a per-location or per-server basis.
- The Unified CM QSIG (Q Signaling) path replacement feature is not supported for Unified CCX calls.

- Unified CM Forced Authorization Codes and Client Matter Codes should be turned off for all route patterns in the Unified CM cluster that are used by Unified CCX. Enabling these features for route patterns that are not used by Unified CCX does not affect Unified CCX.
- For a list of unsupported features in Unified CM with Unified CCX, refer to the current release notes for Unified CCX.
- Unified CCX supports different sets of Finesse IP Phones as agent devices on the Unified CM and Unified CM platform; not all agent devices can be used as Finesse IP Phone Agent. For a complete list of supported agent devices, see the Unified CCX Compatibility related information located at: http://www.cisco.com/c/en/us/support/customer-collaboration/unified-contact-center-express/products-device-support-tables-list.html.
- Finesse allows each agent to choose and set a language from the language selector drop-down list on the sign-in page.
- An agent using Cisco Finesse Agent Desktop can log in using Extension Mobility but the agent phone must be in the Unified CM cluster that is used by Unified CCX.
- Sometimes new releases of Unified CM will not support Unified CCX immediately at Unified CM first customer ship (FCS) time. Some organizations may be early adopters of new Unified CM releases and may be delayed from migrating to new Unified CM releases and using new Unified CM features if Unified CCX is installed with that same Unified CM cluster. Therefore, in some situations, it makes sense to have a separate Unified CM cluster for Unified CCX.
- Cisco Jabber runs in two modes: Deskphone Mode and Softphone Mode. Unified CCX only supports Cisco Jabber as an agent device in Softphone Mode.

  **Note** Cisco Jabber is supported for a remote agent.

- Video is now supported if you are using Cisco Jabber as an agent phone. The agent desktop where Jabber is used for video should comply to the Cisco Jabber hardware requirements listed in the *Release Notes for Cisco Jabber for Windows* , located at:

  http://www.cisco.com/c/en/us/support/unified-communications/jabber-windows/products-release-notes-list.html and *Release Notes for Cisco Jabber for Mac* located at: http://www.cisco.com/c/en/us/support/unified-communications/jabber-mac/products-release-notes-list.html

  .
- The following features are not supported if you are using Cisco Jabber as an agent phone:
  - Multiline (ACD and non-ACD)
  - Extension Mobility

# Multiple Cisco Unified CCX Clusters Integrated with a Single Cisco Unified Communications Manager Cluster

You can integrate multiple Unified CCX clusters with a single Cisco Unified Communications Manager cluster.

**Note** There is no limit to the number of Unified CCX clusters supported with a single Unified CM cluster as long as the combined agent phones, CTI ports, and CTI route points that are utilized by all Unified CCX clusters are used to size Unified CM.

- To determine if you need more than one CTI Manager, refer to the *Cisco Unified Communications Solution Reference Network Design (SRND)*, available at http://www.cisco.com/go/ucsrnd.

  If your deployment requires more than one CTI Manager, you load-balance the Unified CCX and other CTI applications across various CTI Managers in the cluster to provide maximum resilience, performance, and redundancy.

  For additional information on CTI Manager, refer to the *Cisco Unified Communications Solution Reference Network Design (SRND)*, available at http://www.cisco.com/go/ucsrnd.

- If more than one Unified CM primary subscriber is required to support your configuration, distribute all agents equally among the Unified CM subscriber nodes. This configuration assumes that the busy-hour call attempts (BHCA) is uniform across all agents.

- Each Unified CCX cluster is standalone and independent from other Unified CCX clusters. There is no communication or synchronization between the Unified CCX clusters. Agents should operate using only one Unified CCX cluster.

  Unified CM Telephony Triggers (CTI Route Points) and CTI ports should be different across Unified CCX clusters.

- In the list of Resources in Unified CCX Administration, each Unified CCX cluster displays all the agents in the Cisco Unified Communications Manager cluster, even though the agents can operate and log in to another Unified CCX cluster.

  This situation requires that the Unified CCX Administrator be aware of which resources are associated with each cluster. The Unified CCX Administrator can mitigate this situation by having a unique naming convention for resources associated with a particular Unified CCX cluster.

- This deployment is not intended to provide Unified CCX redundancy across different Unified CCX clusters. If a Unified CCX cluster fails, the agents that operate in this cluster cannot operate in other Unified CCX clusters. If another Unified CCX cluster is configured to accept the calls that were originally sent to the Unified CCX cluster that failed, there will be no report integration between the Unified CCX clusters.

- This deployment does not change the characteristics and design considerations of each individual Unified CCX cluster. For example, within a Unified CCX cluster, high availability is still supported.

- If more than one Unified CCX cluster is integrated with the same Unified CM cluster, all agents belonging to all the Unified CCX clusters are visible to administrators of all the Unified CCX clusters. The administrator must be aware of the agents belonging to the Unified CCX cluster that the administrator manages and configures.

# Other Reference Designs

### Cisco Remote Expert

For information about the supported Cisco Remote Expert reference designs, see *Cisco Remote Expert Mobile Design Guide* available at:

http://www.cisco.com/c/en/us/solutions/enterprise/design-zone/remote_expert.html