



Installation and Upgrade Guide for the Cisco TelePresence Exchange System Release 1.2

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Installation and Upgrade Guide for the Cisco TelePresence Exchange System Release 1.2
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Preface

This preface contains the following sections:

- [Audience](#)
- [Purpose](#)
- [Organization](#)
- [Conventions](#)
- [Related Documentation](#)
- [Obtaining Documentation and Submitting a Service Request](#)

Audience

This guide is for experienced network administrators who are responsible for installing the Cisco TelePresence Exchange System.

Purpose

The *Installation and Upgrade Guide for the Cisco TelePresence Exchange System Release 1.2* provides information about how to prepare for and install the Cisco TelePresence Exchange System.

Organization

This guide includes the following chapters and appendixes:

Chapter/Appendix	Contents
Preparing for Installation	Describes the activities that you must complete before installing the Cisco TelePresence Exchange System software on virtual machines running on the Cisco Unified Computing System (UCS) hardware.
Installing the Software	Describes how to install the software on virtual machines running on the Cisco Unified Computing System (UCS) hardware.

Chapter/Appendix	Contents
Upgrading the Software on MCS Servers	Describes how to upgrade MCS servers from Release 1.1 to Release 1.2.
Migrating from MCS Servers to Virtual Machines	Describes the process of migrating from a physical machine installation on MCS servers to a virtual machine installation on UCS servers, either while upgrading from Release 1.1 to 1.2, or after you have already upgraded the MCS servers to Release 1.2.
Appendix A: Installation Worksheets	Provides worksheets for compiling the information you need during installation in one place.
Appendix B: Network Design and Routing Configuration for Redundancy	Provides technical details on the network design and routing configuration to support Release 1.2.
Appendix C: Data Migration	Provides information about data migration between Release 1.1 and Release 1.2.

Conventions

This publication uses these conventions to convey instructions and information:

Convention	Indication
bold font	Commands and keywords and user-entered text appear in bold font .
<i>italic font</i>	Document titles, new or emphasized terms, and arguments for which you supply values are in <i>italic font</i> .
[]	Elements in square brackets are optional.
{ x y z }	Required alternative keywords are grouped in braces and separated by vertical bars.
[x y z]	Optional alternative keywords are grouped in brackets and separated by vertical bars.
string	A nonquoted set of characters. Do not use quotation marks around the string or the string will include the quotation marks.
<code>courier font</code>	Terminal sessions and information the system displays appear in <code>courier font</code> .
< >	Nonprinting characters such as passwords or tabs are in angle brackets.
[]	Default responses to system prompts are in square brackets.
!, #	An exclamation point (!) or a pound sign (#) at the beginning of a line of code indicates a comment line.



Note

Means *reader take note*. Notes contain helpful suggestions or references to material not covered in the manual.

**Timesaver**

Means *the described action saves time*. You can save time by performing the action described in the paragraph.

**Tip**

Means *the following information will help you solve a problem*. The tips information might not be troubleshooting or even an action, but could be useful information, similar to a Timesaver.

**Caution**

Means *reader be careful*. In this situation, you might do something that could result in equipment damage or loss of data.

Related Documentation

To access the documentation suite for the Cisco TelePresence Exchange System, go to the following URL: <http://www.cisco.com/go/ctx-docs>

Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, submitting a service request, and gathering additional information, see the monthly *What's New in Cisco Product Documentation*, which also lists all new and revised Cisco technical documentation, at:

<http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html>

Subscribe to the *What's New in Cisco Product Documentation* as an RSS feed and set content to be delivered directly to your desktop using a reader application. The RSS feeds are a free service. Cisco currently supports RSS Version 2.0.



CHAPTER 1

Preparing for Installation

The following sections describe the activities that you must complete before installing the Cisco TelePresence Exchange System software:

- [Preinstallation Checklist, page 1-1](#)
- [Rack Mounting Recommendations, page 1-2](#)
- [Requirements for Installing Cisco TelePresence Exchange System on Virtual Machines, page 1-3](#)
- [VLAN Requirements, page 1-3](#)
- [Network Connectivity Requirements for System Redundancy, page 1-4](#)
- [Gathering Required Information Before Installation, page 1-6](#)
- [Creating the Virtual Machines, page 1-7](#)

Preinstallation Checklist

Preinstallation Tasks	Checkoff
If applicable, rack mount the Cisco TelePresence Exchange System and solution components. For guidelines, see the “Rack Mounting Recommendations” section on page 1-2 .	
Check that the power cords for your servers and monitors are securely attached and plugged in to working power sources. We recommend that you use an uninterruptible power supply (UPS) and dual power sources.	
Set up and prepare the physical UCS servers on which the Cisco TelePresence Exchange System virtual machines will be installed, according to the “Requirements for Installing Cisco TelePresence Exchange System on Virtual Machines” section on page 1-3 .	
Plan the VLAN configuration on the requirements for the Cisco TelePresence Exchange System. See the “VLAN Requirements” section on page 1-3 .	
Determine the network configuration that you will use for the UCS servers, and connect the servers. See the “Network Connectivity Requirements for System Redundancy” section on page 1-4 .	

Preinstallation Tasks	Checkoff
Verify that you have all the required information before you begin the installation. See the “Gathering Required Information Before Installation” section on page 1-6.	
Prepare the UCS servers and create the virtual machines. See the “Creating the Virtual Machines” section on page 1-7.	

Rack Mounting Recommendations



Note

Leave a space of one-third of a rack unit (RU) between each unit to provide proper ventilation.

Use the following list to determine the rack position of each solution component, where item 1 is at the top of the rack:

1. Cisco router with interactive voice response (IVR)—two systems
2. Cisco Application Control Engine (ACE)—two systems
3. Cisco TelePresence Video Communication Server
4. Cisco TelePresence Manager
5. Cisco TelePresence Multipoint Switch
6. Keyboard-video-mouse (KVM) switch for console access to all systems
7. Power distribution unit (PDU)—two units for redundancy
8. Cisco Catalyst Switch—two systems
9. UCS servers for Cisco TelePresence Exchange System—two systems (See the [“Requirements for Installing Cisco TelePresence Exchange System on Virtual Machines”](#) section on page 1-3 for system requirements.) Ideally, the two UCS servers should be located in different racks in the same data center.



Note

Cisco expects that the Cisco Unified Communications Manager and Cisco Session Border Controller (if required for your deployment) are already installed and in use in the network, and does not provide rack-mounting recommendations for these components.



Note

The ACE is not applicable in the starter package configuration of the Cisco TelePresence Exchange System, because the starter package configuration does not support the SIP load balancer VIP capability.

Requirements for Installing Cisco TelePresence Exchange System on Virtual Machines

- Two physical Cisco Unified Computing System (UCS) B-series blade servers that meet Cisco TelePresence Exchange System specifications and that are supported for use in a virtualized environment. For tested reference configuration and specification information, see the *Release Notes for the Cisco TelePresence Exchange System Release 1.2* at <http://www.cisco.com/go/ctx-relnotes>.
 - You install the three Cisco TelePresence Exchange System server components—administration server, call engine server, and database server—on each UCS server. Having each of the components on each UCS server eliminates the possibility of having a single point of failure for the system.
 - Do not install any other virtual machines on the UCS servers. The servers must be dedicated to the Cisco TelePresence Exchange System to ensure that the virtual machines have sufficient resources available to them.

**Note**

Because the three server components are grouped together on each UCS server and no other virtual machines can be installed on the server, we do not recommend deploying the virtual machines to hosts in clusters with DRS enabled.

**Note**

Virtual machine snapshots are not supported in production since they have significant impact on system performance.

- VMware ESXi Version 5.0 installed on the UCS servers on which the Cisco TelePresence Exchange System virtual machines will run. For instructions, see the *Cisco UCS B-Series Blade Servers VMware Installation Guide*, at http://www.cisco.com/en/US/products/ps10280/products_installation_and_configuration_guides_list.html.

VLAN Requirements

Apply the following requirements and recommendations as you assign IP addresses to the Cisco TelePresence Exchange System:

- The data network interfaces of all nodes in the Cisco TelePresence Exchange System server cluster must be on the same VLAN.

**Note**

In deployments with the Cisco Application Control Engine (ACE), this VLAN is the inside network VLAN of the ACE.

- The data VLAN of the Cisco TelePresence Exchange System must be separate from the data VLANs that are used by any of the following solution components that are part of your deployment:
 - Cisco Unified Communications Manager
 - Cisco TelePresence Multipoint Switch
 - Cisco Router with Integrated Voice Response (IVR)

- Cisco Session Border Controller
 - Cisco TelePresence Video Communication Server
- You must be able to ping the default gateway from each of the Cisco TelePresence Exchange System servers.
- Multicast must be enabled on the VLAN.

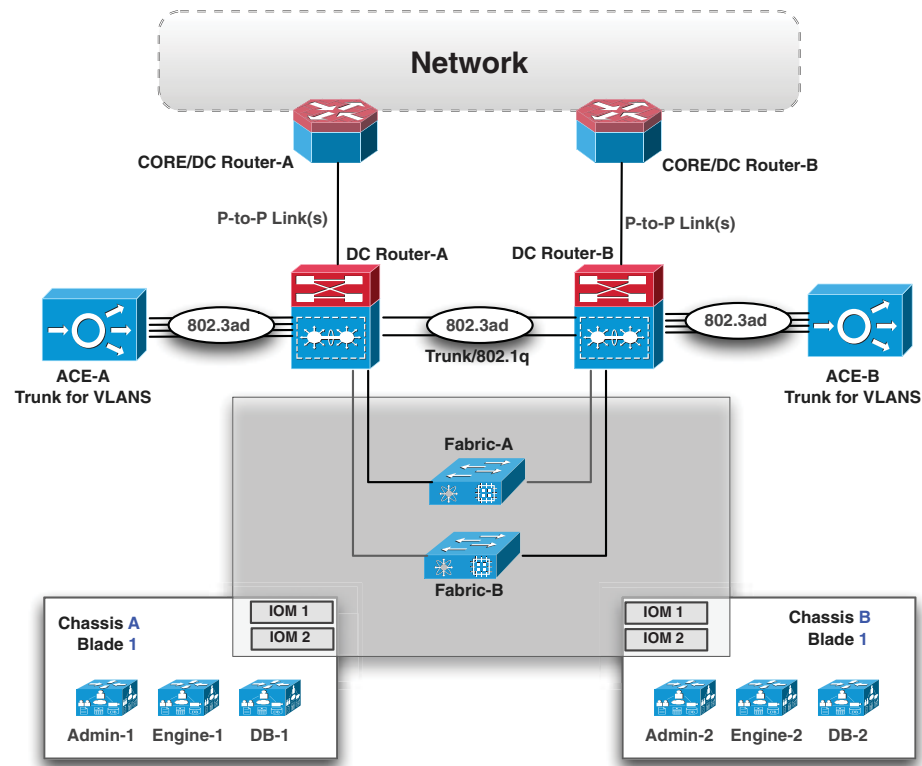
**Note**

Make sure that packets can be routed between all of the VLANs that you implement for the Cisco TelePresence Exchange System solution.

Note that if you are using a VSwitch, only a single VLAN is required for all six nodes in the Cisco TelePresence Exchange System server cluster. Assigning more than one VLAN on a server will create a new virtual NIC, causing the Cisco TelePresence Exchange System software installation process to attempt to install with bonded redundant NIC interfaces. This can cause network connectivity problems.

Network Connectivity Requirements for System Redundancy

When planning the network connectivity for the Cisco TelePresence Exchange System virtual machines, use a topology that ensures that each UCS server is connected to a different switch on the same VLAN, in order to properly support system redundancy in the case of a router or switch failure. [Figure 1-1](#) illustrates a logical topology that includes the Cisco Application Control Engine. (For the starter package configuration of the Cisco TelePresence Exchange System, a similar logical topology can be used without the ACE.)

Figure 1-1 Logical Topology for Cisco TelePresence Exchange System Virtual Machines

To achieve this topology with UCS B-series blade servers, use your preferred method of connecting the servers, for example via the fabric interconnects and UCS Manager with or without a Cisco Nexus 1000. In the topology in [Figure 1-1](#), each chassis is connected to the fabric interconnects in a fully redundant fashion, which is depicted by the UCS chassis overlapping with the fabric interconnects (Fabric-A and Fabric-B). Ideally, the two UCS chassis should be placed in different racks in the data center. For additional information on network routing and VLAN configuration for redundancy, including configuration examples, see [Appendix B, “Network Design and Routing Configuration for Redundancy.”](#)

Also verify that the network between the Cisco TelePresence Exchange System servers meets the following requirements:

- IGMP snooping devices (switches) on the network must do one of the following:
 - Enable a VLAN querier for the call engine servers.
 - Enable the router VLAN interface with PIM to act as mrouter.
 - Disable IGMP snooping on the Cisco TelePresence Exchange System VLAN.
- Layer 2 connectivity between the Cisco TelePresence Exchange System servers should be a local area network (LAN) connectivity with 0.01 or less packet loss, no out-of-order packets, one-way delay and latency less than or equal to 2 ms, and jitter less than or equal to 2 ms on average. This level of delay and latency is required to support multicast replication between the call engine servers and database access among the servers.

Gathering Required Information Before Installation

Complete the worksheets in [Appendix A, “Installation Worksheets,”](#) as you collect the following information. Before you proceed, however, read the [“VLAN Requirements” section on page 1-3.](#)

- Unique hostnames:
 - One hostname for each of the database, call engine, and administration servers.
 - One virtual hostname to be shared by the two database servers. The virtual hostname is used to provide reference to the shared virtual IP (VIP) address and is not configured on the database servers themselves. If you have a DNS server which maintains your IP hostname mapping, you can register this virtual hostname to the shared database virtual IP address through that DNS server.
- Unique IP addresses and their subnet masks:
 - One IP address for each of the database, call engine, and administration servers.
 - One virtual IP (VIP) address to be shared by the two database servers. The shared database VIP is the only address that the network recognizes for the database servers, only one of which is active at any given time.
- IP address of the default gateway:
 - IP address of the default gateway for the data network interfaces. (In deployments with the Cisco Application Control Engine, this address is the IP address of the inside network interface VLAN.)
- Administrator usernames and passwords:
 - For accessing the command line interface (CLI) of each database, administration, and call engine server. You must use the same administrator username and password on all Cisco TelePresence Exchange System servers, because the administration servers also use the administrator credentials over SSH to get the status of all nodes in the server cluster.
- A security password.

The database server uses this password to authenticate data requests from the administration and call engine servers. Therefore, you must define the same security password for the database, administration, and call engine servers.



Note After you configure the security password on a server, you cannot change it without reinstalling the server.

- IP addresses, hostnames, or pool names for external Network Time Protocol (NTP) clocking sources. We recommend that you use at least three external NTP clocking sources.
You must configure the same NTP entries on the database, call engine, and administration servers.
- For the SIP load balancer, which is the Cisco Application Control Engine (ACE):
 - VIP address.
 - Port number—We recommend that you use the default port 5060.



Note The ACE is not applicable in the starter package configuration of the Cisco TelePresence Exchange System, because the starter package configuration does not support the SIP load balancer VIP capability.

- For generating locally significant certificates (LSC) for each database, call engine, and administration server:
 - Organization—typically your company name.
 - Unit—typically your business unit and department.
 - Location—typically the building, floor, and rack in which the server is installed.
 - State and Country—where the server is located.

Use the following guidelines to determine each entry for generating LSCs:

- Refer to your company guidelines for format and entry requirements.
- Supported characters include alphanumeric, space, and the following special characters: `.,-_:;{}()[]#`.
- Each field supports up to 255 characters.

Creating the Virtual Machines

Complete the following tasks to set up the Cisco TelePresence Exchange System virtual machines on the UCS servers.

1. Download the VMware OVA template and, optionally, the Cisco TelePresence Exchange System software. See the “[Downloading the VMware OVA Template and Cisco TelePresence Exchange System Software Installation ISO](#)” section on page 1-7.
2. Deploy the template, which creates a virtual machine and configures it. See the “[Deploying the VMware OVA Template](#)” section on page 1-8.

Downloading the VMware OVA Template and Cisco TelePresence Exchange System Software Installation ISO

Before you begin the installation, you must have a copy of the OVA virtual machine template and a copy of the latest Cisco TelePresence Exchange System software installer (either the ISO file, or a DVD). The OVA file does not include the Cisco TelePresence Exchange System software installer.

Do the following procedure to download a copy of the VMware OVA template for Cisco TelePresence Exchange System virtual machines and, optionally, the latest software installer.

Procedure

- Step 1** Log on to a computer with a high-speed Internet connection, and go to the TelePresence Exchange Products section of the Cisco TelePresence Downloads page at <http://www.cisco.com/go/ctx-download>.



Note To access the software download page, you must be logged on to Cisco.com as a registered user.

- Step 2** On the Select a Release page, verify that the latest version is selected. The download links appear on the right side of the page.
- Step 3** Confirm that the computer you are using has sufficient hard-disk space for the downloaded files. (The download file sizes appear next to the download links.)

- Step 4** Click the link for the **ancillary-files.zip** file containing the VMware OVA template, and follow the instructions to download the file.
 - Step 5** Extract the OVA template file (**ctx-vm-vx.y.ova**) and save the file to a location from which you can access it in the VMware vSphere client.
 - Step 6** If you do not have a copy of the latest Cisco TelePresence Exchange System software installer (either the ISO file, or a DVD), click the applicable link for the latest Release 1.2 ISO image, and follow the instructions to download the file.
-

Deploying the VMware OVA Template



Note

You must use the OVA virtual machine template to create the Cisco TelePresence Exchange System virtual machines. Do not alter the OVA template in any way before deploying it.

Before You Begin

If you have not done so already, set up and prepare the UCS servers according to the [“Requirements for Installing Cisco TelePresence Exchange System on Virtual Machines”](#) section on page 1-3.

Procedure

Do the following procedure to create virtual machines by deploying the OVA template.

- Step 1** In the VMware vSphere client, highlight the host to which you wish the VM to be deployed.
- Step 2** Select **File > Deploy OVF Template**.
- Step 3** Click **Browse** and navigate to the location of the ova file that you downloaded in the previous section, then click **Next**.
- Step 4** Verify the details of the template, and click **Next**.
- Step 5** Provide a name to the virtual machine that you are about to create and choose an inventory location on your host, then click **Next**.
- Step 6** Choose the data store on which you want the virtual machine to reside. Ensure that there is sufficient free space to accommodate the new virtual machine, then click **Next**.
- Step 7** For Disk Format, choose **Thick Provision Lazy Zeroed**, then click **Next**.



Note

We highly recommend that you use thick provisioning. Use thin provisioning only if you have effective storage monitoring in place and can ensure that the Cisco TelePresence Exchange System servers do not exceed the available storage capacity.

- Step 8** Choose a virtual network for the virtual machine, then click **Next**.
 - Step 9** Verify the deployment settings, then click **Finish**.
-

**Caution**

Do not change the computing resource or network interface configuration of the Cisco TelePresence Exchange System virtual machines. Only the configuration created by the OVA template is supported.

What to Do Next

Proceed to the [“Installing the Software”](#) chapter.



APPENDIX 2

Installing the Software

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This chapter describes how to install the software for the Cisco TelePresence Exchange System.

- [Determining the Method and Order of Installation, page 2-1](#)
- [Launching the Installer from the VMware vSphere Client, page 2-3](#)
- [Installing and Synchronizing the Cisco TelePresence Exchange System Database Servers, page 2-4](#)
- [Installing the Cisco TelePresence Exchange System Call Engine Servers, page 2-10](#)
- [Installing the Cisco TelePresence Exchange System Administration Servers, page 2-14](#)
- [Verifying Data Connectivity Among the Servers, page 2-19](#)
- [Verifying Security Certificates for Use With the Cisco VCS Expressway, page 2-20](#)

Determining the Method and Order of Installation

You can install the servers in series or in parallel. To determine which method is best for you, see [Table 2-1](#) and the following sections:

- [Serial Installation, page 2-2](#)
- [Parallel Installation, page 2-2](#)

Table 2-1 Comparison of Serial and Parallel Cisco TelePresence Exchange System Installation

Installation Method	Advantage	Disadvantage
Serial	<p>Less opportunity for entry errors.</p> <p>You enter information into the installation wizard for only one server at a time.</p>	<p>Longer installation process.</p> <p>Each server installation requires 40 minutes to install.¹ So the full serial installation requires 240 minutes (6 servers × 40 minutes each).</p>
Parallel	<p>Shorter installation process.</p> <p>Each server pair requires 40 minutes to install.¹ You must install the database servers serially before you begin to install the administration and call engine servers.</p> <p>If you install all four of the administration and call engine servers at the same time, the full parallel installation requires 160 minutes (2 database server installations x 40 minutes each plus 2 parallel installations x 40 minutes).</p>	<p>Greater opportunity for entry errors.</p> <p>You enter information into the installation wizard for two to four servers at a time.</p>

1. If you are installing the Cisco TelePresence Exchange System software on a server that requires a firmware update, the installer automatically begins the update, which typically takes about 30 minutes, before performing the server installation. This time is not included in these estimations.

Serial Installation

Software installation for each server requires approximately 40 minutes when you employ a serial installation. To ensure the proper exchange of information among the Cisco TelePresence Exchange System servers during a serial installation, install the servers in the following order:

1. Install the primary database server.
2. Install the secondary database server.
3. Install the administration and call engine servers. The order in which you install these remaining nodes does not matter.

See the following sections for detailed installation instructions for each server:

- [Installing and Synchronizing the Cisco TelePresence Exchange System Database Servers, page 2-4](#)
- [Installing the Cisco TelePresence Exchange System Call Engine Servers, page 2-10](#)
- [Installing the Cisco TelePresence Exchange System Administration Servers, page 2-14](#)

Parallel Installation

To reduce the overall installation time of the Cisco TelePresence Exchange System servers, you can install some of the servers in parallel in the following order:

1. Install the primary database server.
2. When the primary database server installation is complete, install the secondary database server.
Ensure that the database server installations and synchronization are complete before you proceed to install the call engine and administration servers.
3. Install the administration and call engine servers in parallel.

See the following sections for detailed installation instructions for each server:

- [Installing and Synchronizing the Cisco TelePresence Exchange System Database Servers, page 2-4](#)
- [Installing the Cisco TelePresence Exchange System Call Engine Servers, page 2-10](#)
- [Installing the Cisco TelePresence Exchange System Administration Servers, page 2-14](#)

Launching the Installer from the VMware vSphere Client

Before You Begin

- Follow the instructions in the “[Preparing for Installation](#)” chapter to prepare the environment, collect the information needed during installation, and create the virtual machines.
- Insert the Cisco TelePresence Exchange System installation DVD into the machine on which you are running the VMware vSphere Client, or download a copy of the installer ISO and save it on the machine.



Caution

For a parallel installation, do not attempt to use a single DVD to install multiple virtual machines simultaneously. Doing so may cause installation failures. We recommend that you copy the installation DVD to an ISO file and use the ISO file for parallel installations.

Procedure

Do the following procedure to change the BIOS setting so the virtual machine boots from the DVD virtual device and launches the Installer.

-
- Step 1** In VMware vSphere Client, power off the virtual machine on which you deployed the OVA template.
 - Step 2** In the left pane of vSphere Client, right-click the name of the virtual machine, and select **Edit Settings**.
 - Step 3** In the Virtual Machine Properties dialog box, select the **Options** tab.
 - Step 4** In the Settings column, under Advanced, select **Boot Options**.
 - Step 5** Under Power On Boot Delay, enter **10,000** to create a 10-second boot delay. This is the maximum boot delay that is allowed.
 - Step 6** Click **OK** to close the Virtual Machine Properties dialog box.
 - Step 7** Click on the console tab for the virtual machine.
 - Step 8** Power on the virtual machine.

The boot process will pause for 10 seconds at the BIOS screen. The bottom of the screen lists the options: Press F2 to enter SETUP, F12 for Network Boot, ESC for Boot Menu.
 - Step 9** Click on the console window for the virtual machine, and press **ESC** to display the Boot Menu. Then, to get mouse control back, press **Ctrl+Alt**.
 - Step 10** Mount the ISO to the virtual machine CD ROM drive as follows:
 - a. Click the CD icon at the top of the screen.
 - b. Select **CD/DVD Drive 1**.
 - c. Select **Connect to ISO Image on Local Disk**.
 - d. Browse to the location of the ISO image on your machine.

- Step 11** Click on the virtual machine console. Then, select the CD-ROM drive from the Boot Menu and press **Enter**.

The virtual machine boots from the CD ROM drive and starts the Cisco TelePresence Exchange System software installation.



Tip Any time you need to release control of the mouse from a VMware client console window, press **Ctrl+Alt**.

What to Do Next

Complete the installation procedures for the server:

- [Installing and Synchronizing the Cisco TelePresence Exchange System Database Servers, page 2-4](#)
- [Installing the Cisco TelePresence Exchange System Call Engine Servers, page 2-10](#)
- [Installing the Cisco TelePresence Exchange System Administration Servers, page 2-14](#)

Installing and Synchronizing the Cisco TelePresence Exchange System Database Servers

Complete the following tasks in the order shown:

- [Preparing to Install the Database Server Software, page 2-4](#)
- [Installing the Database Server Software, page 2-4](#)
- [Checking the Initial High-Availability Roles of the Database Servers, page 2-8](#)
- [Checking the Network Connectivity of the Database Servers, page 2-9](#)

Preparing to Install the Database Server Software

Before you begin installing the database server software, do the following tasks:

- Complete the tasks and requirements in [Chapter 1, “Preparing for Installation.”](#)
- Find your completed [Appendix A, “Installation Worksheets.”](#)
- Choose your installation method. See the [“Determining the Method and Order of Installation” section on page 2-1.](#)
- Launch the installer. See the [“Launching the Installer from the VMware vSphere Client” section on page 2-3.](#)

Installing the Database Server Software

Complete this task to install the Cisco TelePresence Exchange System database server software onto the server.

**Tip**

To move among the options in an installer screen, press the **Tab** key. To select a highlighted option, press the **Spacebar**, **Return**, or **Enter** key.

Procedure

- Step 1** When the installer prompts you to do a media check of the DVD, take one of the following actions:
- If you previously performed a media check of the installation DVD, select **No**.
 - Otherwise, we recommend that you select **Yes**. After the DVD passes the media check, select **OK**.
- If the installation DVD fails the media check, burn a new DVD. Download the software from <http://www.cisco.com/go/ctx-download>.
- After several minutes, the installer displays the current software version that is installed on the server (if any) and the software version on the DVD.
- Step 2** In the Proceed with Install screen, select **Yes**.
- Step 3** In the Platform Installation Wizard screen, select one of the following options, depending on whether you want to enter the server information before or after the installer spends approximately 30 minutes installing the software on the server:
- To first enter the server information and then install the software, select **Proceed**.
 - To first install the software and then enter the server information, select **Skip**.
- If you choose **Skip**, you will need to wait approximately 30 minutes for the software to install, then take the following actions:
1. When the system displays the Pre-existing Configuration Information screen, select **Continue**. Pre-existing configurations are currently not supported.
 2. When the system returns to the Platform Installation Wizard screen, select **Proceed**.
- Step 4** At the Installation Type screen, select one of the following options:
- **CTX**—Select this option if you are installing the full-feature configuration of the Cisco TelePresence Exchange System. The full-feature configuration supports the SIP load balancer VIP capability.
 - **CTX Starter Package**—Select this option if you are installing the starter package configuration of the Cisco TelePresence Exchange System. The starter package configuration does not support the SIP load balancer VIP capability.
- Step 5** At the Node Role Configuration screen, select **Database Node** as the role of the node, then select **OK**.
- Step 6** Verify that the confirmation screen indicates that this node will be configured to run the *database* role. If correct, select **Proceed**.

**Note**

If the confirmation screen indicates that a different node role will be configured, select **Back** to return to [Step 5](#).

- Step 7** In the Static Network Configuration screen, complete the following steps:



Note If you are using the serial installation method, always install the primary (active) database server before you install the secondary (backup) database server.

- a. Enter the host name, IP address, and subnet mask for the database server.
- b. Enter the IP address for the default gateway.



Note If you have Cisco Application Control Engines directly attached to the Cisco TelePresence Exchange System VLAN, use the ACE alias address for the default gateway address.

- c. Verify your entries and select **OK**.

Step 8 In the DNS Client Configuration screen, select **No**. The Domain Name Server (DNS) client is not supported on the database server.

Step 9 In the Database Redundancy Configuration screens, complete the following steps:

- a. When prompted to enable redundancy on the database node, select **Yes**.
- b. When asked whether to configure this node as the *primary* database server, select **Yes** if this is the first database node you are installing. Otherwise, select **No** to install the secondary database node.
- c. Enter the VIP address to be shared by the primary and secondary database servers.
- d. Enter the hostname and IP address for the *peer* server:
 - If you are configuring the primary database server, then enter details for the secondary server.
 - If you are configuring the secondary database server, then enter details for the primary server.
- e. Select **OK**.

Step 10 In the Administrator Login Configuration screen, complete the following steps to create a Linux account for accessing the CLI of the database server:



Note You must use the same administrator username and password for all database, administration, and call engine servers in the cluster.

- a. In the Administrator ID field, enter a username.
- b. In the Password and Confirm Password fields, enter a password.
- c. Select **OK**.

Step 11 In the Certificate Information screen, complete the following steps to generate a locally significant certificate (LSC) for the server:



Note The software installer always prompts you to enter the certificate information. However, the information is currently used only to generate certificates for the call engine nodes in the starter package configuration of the Cisco TelePresence Exchange System.



Note Refer to your company guidelines on the format for each of these entries.

- a. In the Organization field, enter your company name.

- b. In the Unit field, enter descriptive information about the server.
Example: *business-unit, department*
- c. Enter the location of the server.
Example: *building-name, floor, rack*
- d. Enter the state in which the server is located.
You can enter an abbreviation or the full name for the state.
- e. Select the country in which the server is located.
Enter the first letter of the country name, and use the up and down arrows to select the country. Then press the **Tab** key.
- f. Select **OK**.

Step 12 In the Network Time Protocol Client Configuration screen, complete these steps:

- a. Enter at least one NTP server IP address, hostname, or pool name.
Cisco recommends that you configure at least three external NTP entries.



Note You must use the same NTP entries on all database, call engine, and administration servers.

- b. Take one of the following actions, the availability of which depends on whether you chose to enter the server information before or after installing the software in [Step 3](#):
 - Select **Test** to confirm connectivity to the NTP entries, and then select **Proceed**.
 - Select **OK**.

Step 13 In the Security Configuration screen, enter the security password, confirm the password, and select **OK**.



Note You must configure the same security password on all database, administration, and call engine servers. After you configure the security password on a server, you cannot change it without reinstalling the server.



Caution This is your last chance in the installation wizard to select **Back** to verify your entries. Complete the next step only when you are sure that the entries that you made throughout this procedure are correct.

Step 14 In the Platform Configuration Confirmation screen, click **OK**.

If, in [Step 3](#), you chose to proceed to enter the server information before installing the software, the following information applies:

- The installer spends approximately 30 minutes installing the software.
- If the system has problems with the information that you entered in the installation wizard, you will be prompted to correct the information.

The server ejects the installation DVD (if present) and reboots while completing the installation. This process takes approximately 10 minutes. When complete, the system prompts you to log in to the CLI.

The installation of Cisco TelePresence Exchange System has completed successfully.

```
Cisco TelePresence Exchange System x.x.x.x
hostname login:
```

What To Do Next

If you have not yet installed the software for the secondary database server, do so now by repeating this procedure.

Otherwise, proceed to the [“Checking the Initial High-Availability Roles of the Database Servers” section on page 2-8](#).

Checking the Initial High-Availability Roles of the Database Servers

After the secondary database server is installed, the database servers should automatically begin to synchronize with each other. Complete the following task on each database server to confirm the correct initial high-availability (HA) role of primary or secondary, and to verify that the databases have begun synchronization.



Note

The database synchronization process typically takes about 40 minutes to complete. During this time, after you verify that synchronization has begun, you can continue with the installation process.

Procedure

Step 1 Log in to the CLI of the database server.

```
Cisco TelePresence Exchange System x.x.x.x
hostname login: <username>
Password: <password>

Command Line Interface is starting up, please wait...

Welcome to the Platform Command Line Interface

admin:
```

Step 2 Enter the **utils service database status** command.

The following example shows sample output from a database server that was installed with the primary role:

```
admin: utils service database status
The initial configured HA role of this node      : primary
The current HA role of this node                 : primary
The database vip address                        : 10.22.130.61
Node name                                       : ctx-db-1
Node IP address                               : 10.22.130.50
Corosync status                               : Running PID <19250>
Current Designated Controller (DC)             : ctx-db-1 - partition with quorum
MySQL status                                   : Running pid 15633
Connection Sync Status                         : Connected
Role (this-node/peer-node)                     : Primary/Secondary
Disk Status (this-node/peer-node)              : UpToDate/UpToDate
```

The following example shows sample output from a database server that was installed with the secondary role:

```
admin: utils service database status
The initial configured HA role of this node      : secondary
```

```

The current HA role of this node           : secondary
The database vip address                  : 10.22.130.61
Node name                                : ctx-db-2
Node IP address                           : 10.22.130.58
Corosync status                           : Running PID <26656>
Current Designated Controller (DC)        : ctx-db-1 - partition with quorum
MySQL status                              : Not running (only runs on database
server with current role primary.)
Connection Sync Status                     : Connected
Role (this-node/peer-node)                : Secondary/Primary
Disk Status (this-node/peer-node)         : UpToDate/UpToDate

```

**Tip**

While the databases are synchronizing, the Connection Sync Status output displays “SyncTarget <percentage>”. If you see a Connection Sync Status of “Unconfigured,” synchronization did not start successfully. Check the network connectivity between the database servers, and verify that all Cisco TelePresence Exchange System servers are in the same VLAN.

Step 3 In the output from the `utils database status` command on each server, verify that the two database servers are synchronized:

- Verify that the Connection Sync Status line displays “Connected”.
- Verify that the Role (this-node/peer-node) line displays “Primary/Secondary” on the primary database server or “Secondary/Primary” on the secondary server.
- Verify that the Disk Status (this-node/peer-node) line displays “UpToDate/UpToDate”.

Continue with the remaining installation tasks only after you have verified that the two database servers are synchronized.

Checking the Network Connectivity of the Database Servers

Enter the following command on each database server to attempt to reach one of the Cisco TelePresence Exchange System solution components in another VLAN, such as the Cisco Unified Communications Manager or the Cisco Session Border Controller (if applicable):

utils network ping ip-address

The output confirms network connectivity:

```

admin: utils network ping 10.68.10.80
PING 10.68.10.80 (10.68.10.80) 56(84) bytes of data.
64 bytes from 10.68.10.80: icmp_seq=0 ttl=247 time=1.38 ms
64 bytes from 10.68.10.80: icmp_seq=1 ttl=247 time=1.39 ms
64 bytes from 10.68.10.80: icmp_seq=2 ttl=247 time=1.42 ms
64 bytes from 10.68.10.80: icmp_seq=3 ttl=247 time=1.63 ms

--- 10.68.10.80 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3003ms
rtt min/avg/max/mdev = 1.386/1.461/1.636/0.101 ms, pipe 2

```

Installing the Cisco TelePresence Exchange System Call Engine Servers

Complete the following tasks in the order shown:

- [Preparing to Install the Call Engine Software, page 2-10](#)
- [Installing the Call Engine Server Software, page 2-10](#)
- [Checking the Call Engine Server Status and Network Connectivity, page 2-13](#)

Preparing to Install the Call Engine Software

Before you begin installing the call engine server software, do the following tasks:

- Complete the tasks in the “[Installing and Synchronizing the Cisco TelePresence Exchange System Database Servers](#)” section on page 2-4.
- Find your completed [Appendix A, “Installation Worksheets.”](#)
- Launch the installer. See the “[Launching the Installer from the VMware vSphere Client](#)” section on page 2-3.

Installing the Call Engine Server Software

Complete this task to install the Cisco TelePresence Exchange System call engine server software onto the server.



Tip

To move among the options in an installer screen, press the **Tab** key. To select a highlighted option, press the **Spacebar**, **Return**, or **Enter** key.

Procedure

- Step 1** When the installer prompts you to do a media check of the DVD, take one of the following actions:
- If you have already performed a media check of the installation DVD, select **No**.
 - Otherwise, Cisco recommends that you select **Yes**. After the DVD passes the media check, select **OK**.
- If the installation DVD fails the media check, burn a new DVD. Download the software from <http://www.cisco.com/go/ctx-download>.
- After several minutes, the installer displays the current software version that is installed on the server (if any) and the software version on the DVD.
- Step 2** In the Proceed with Install screen, select **Yes**.
- Step 3** In the Platform Installation Wizard screen, select one of the following options, depending on whether you want to enter the server information before or after the installer spends approximately 30 minutes installing the software on the server:
- To first enter the server information and then install the software, select **Proceed**.
 - To first install the software and then enter the server information, select **Skip**.

If you choose Skip, you will need to wait approximately 30 minutes for the software to install, then take the following actions:

1. When the system displays the Pre-existing Configuration Information screen, select **Continue**. Pre-existing configurations are currently not supported.
2. When the system returns to the Platform Installation Wizard screen, select **Proceed**.

- Step 4** At the Installation Type screen, select one of the following options:
- **CTX**—Select this option if you are installing the full-feature configuration of the Cisco TelePresence Exchange System. The full-feature configuration supports the SIP load balancer VIP capability.
 - **CTX Starter Package**—Select this option if you are installing the starter package configuration of the Cisco TelePresence Exchange System. The starter package configuration does not support the SIP load balancer VIP capability.
- Step 5** At the Node Role Configuration screen, select **Call Processing Engine Node** as the role of the node, then select **OK**.
- Step 6** Verify that the confirmation screen indicates that this node will be configured to run the *call processing engine* role. If correct, select **Proceed**.



Caution If the confirmation screen indicates that a different node role will be configured, select **Back** to return to [Step 5](#).

- Step 7** In the Cisco TelePresence Exchange System Other Nodes screen, complete these steps:
- a. In the Database node name (Mandatory) field, enter the database shared virtual hostname that you noted in the [Appendix A, “Installation Worksheets.”](#)
 - b. In the Database node IP Address (Mandatory) field, enter the database shared virtual IP (VIP) address.
 - c. Leave the remaining fields blank.
 - d. Select **OK**.
- Step 8** In the Static Network Configuration screen, complete these steps:
- a. Enter the host name, IP address, and subnet mask for the call engine server.
 - b. Enter the IP address for the default gateway.



Note If you have Cisco Application Control Engines directly attached to the Cisco TelePresence Exchange System VLAN, use the ACE alias address for the default gateway address.

- c. Select **OK**.
- Step 9** In the DNS Client Configuration screen, select **No**. The Domain Name Server (DNS) client is not supported on the call engine server.
- Step 10** *If you selected **CTX Starter Package** as the Installation Type in [Step 4](#): Skip to [Step 12](#). The SIP Load Balancer Configuration does not apply to the starter package configuration of the Cisco TelePresence Exchange System.*
- If you selected **CTX** as the Installation Type in [Step 4](#): In the SIP Load Balancer Configuration screen, select **Yes**.*

**Note**

If you are in the rare situation where you are installing the Cisco TelePresence Exchange System software before you have a functioning Cisco Application Control Engine (ACE) to use as the SIP load balancer, then you may select **No** on the SIP Load Balancer Configuration screen and proceed to [Step 12](#). You must, however, add the SIP load balancer configuration later via the CLI. See the “Configuring SIP Load Balancing on the Call Engine Servers” section in the “Changing the Network Configurations” chapter of the *Administration Guide for the Cisco TelePresence Exchange System Release 1.2* at [http](http://).

Step 11 In the SIP Load Balancer Information screen, complete the following steps:

- a. IP Address—Enter the VIP address of the ACE.
- b. Port—Enter the port number on which the call engine server will connect to the load balancer.
- c. Select **OK**.

Step 12 In the Administrator Login Configuration screen, complete the following steps to create a Linux account for accessing the CLI of the call engine server:

**Note**

You must use the same administrator username and password for all database, administration, and call engine servers in the cluster.

- a. Enter a username in the Administrator ID field.
- b. Enter a password into the Password and Confirm Password fields.
- c. Select **OK**.

Step 13 In the Certificate Information screen, complete the following steps to generate a locally significant certificate (LSC) for the server:

**Note**

The software installer always prompts you to enter the certificate information. However, the information is currently used only to generate certificates for the call engine nodes in the starter package configuration of the Cisco TelePresence Exchange System.

**Note**

Refer to your company guidelines on the format for each of these entries.

- a. In the Organization field, enter your company name.
- b. In the Unit field, enter descriptive information about the server.
Example: *business-unit, department*
- c. Enter the location of the server.
Example: *building-name, floor, rack*
- d. Enter the state in which the server is located.
You can enter an abbreviation or the full name for the state.
- e. Select the country in which the server is located.
Enter the first letter of the country name, and use the up and down arrows to select the country. Then press the **Tab** key.
- f. Select **OK**.

- Step 14** In the Network Time Protocol Client Configuration screen, complete these steps:
- Enter the same NTP server IP addresses, hostnames, or pool names that you configured for the database servers.
 - Take one of the following actions, the availability of which depends on whether you chose to enter the server information before or after installing the software in [Step 3](#):
 - Select **Test** to confirm connectivity to the NTP entries, and then select **Proceed**.
 - Select **OK**.
- Step 15** In the Security Configuration screen, enter the security password, confirm the password, and select **OK**.

**Note**

You must configure the same security password on all database, administration, and call engine servers. After you configure the security password on a server, you cannot change it without reinstalling the server.

**Caution**

This is your last chance in the installation wizard to select **Back** to verify your entries. Complete the next step only when you are sure that the entries that you made throughout this procedure are correct.

- Step 16** In the Platform Configuration Confirmation screen, select **OK**.

If, in [Step 3](#), you chose to proceed to enter the server information before installing the software, the following information applies:

- The installer spends approximately 30 minutes installing the software.
- If the system has problems with the information that you entered in the installation wizard, you will be prompted to correct the information.

The server ejects the installation DVD (if present) and reboots while completing the installation. This process takes approximately 10 minutes. When complete, the system prompts you to log in to the CLI.

The installation of Cisco TelePresence Exchange System has completed successfully.

```
Cisco TelePresence Exchange System x.x.x.x
hostname login:
```

What To Do Next

If you have not yet installed the software for the second call engine server, do so now by repeating this procedure.

Otherwise, proceed to the [“Checking the Call Engine Server Status and Network Connectivity”](#) section on page 2-13.

Checking the Call Engine Server Status and Network Connectivity

Complete this task to confirm that the call engine server is up and can connect to the other Cisco TelePresence Exchange System servers.

Procedure

- Step 1** Log in to the CLI of the call engine server.

```
Cisco TelePresence Exchange System x.x.x.x
hostname login: <username>
Password: <password>

Command Line Interface is starting up, please wait...

Welcome to the Platform Command Line Interface

admin:
```

- Step 2** To verify that the call engine server is running, enter the **utils service sipserver status** command.

In the following example, the call engine server is still starting up. In this case, you would want to wait a few minutes for the server to finish starting up:

```
admin: utils service sipserver status
sipserver.....Starting - PID <10202>
```

In the following example, the call engine server is up and running:

```
admin: utils service sipserver status
sipserver.....Running - PID <10202>
```

- Step 3** To confirm that the call engine server has network connectivity, enter the following command, specifying the IP or VIP address of any of the Cisco TelePresence Exchange System servers that are already installed:

utils network ping ip-address

The output confirms network connectivity:

```
admin: utils network ping 10.22.139.230
PING 10.22.139.230 (10.22.139.230) 56(84) bytes of data.
64 bytes from 10.22.139.230: icmp_seq=0 ttl=64 time=0.512 ms
64 bytes from 10.22.139.230: icmp_seq=1 ttl=64 time=0.093 ms
64 bytes from 10.22.139.230: icmp_seq=2 ttl=64 time=0.090 ms
64 bytes from 10.22.139.230: icmp_seq=3 ttl=64 time=0.090 ms

--- 10.22.139.230 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3001ms
rtt min/avg/max/mdev = 0.090/0.196/0.512/0.182, pipe 2
```

Installing the Cisco TelePresence Exchange System Administration Servers

Complete the following tasks in the order shown:

- [Preparing to Install the Administration Server Software, page 2-15](#)
- [Installing the Administration Server Software, page 2-15](#)
- [Checking the Administration Server Status and Network Connectivity, page 2-18](#)

Preparing to Install the Administration Server Software

Before you begin installing the administration server software, do the following tasks:

- Complete the tasks in the “[Installing and Synchronizing the Cisco TelePresence Exchange System Database Servers](#)” section on page 2-4.
- If you are following the serial installation method, also complete the tasks in the “[Installing the Cisco TelePresence Exchange System Call Engine Servers](#)” section on page 2-10.
- Find your completed [Appendix A, “Installation Worksheets.”](#)
- Launch the installer. See the “[Launching the Installer from the VMware vSphere Client](#)” section on page 2-3.

Installing the Administration Server Software

Complete this task to install the Cisco TelePresence Exchange System administration server software onto the server.



Tip

To move among the options in an installer screen, press the **Tab** key. To select a highlighted option, press the **Spacebar**, **Return**, or **Enter** key.

Procedure

- Step 1** When the installer prompts you to do a media check of the DVD, take one of the following actions:
- If you have already performed a media check of the installation DVD, select **No**.
 - Otherwise, Cisco recommends that you select **Yes**. After the DVD passes the media check, select **OK**.
- If the installation DVD fails the media check, burn a new DVD. Download the software from <http://www.cisco.com/go/ctx-download>.
- After several minutes, the installer displays the current software version that is installed on the server (if any) and the software version on the DVD.
- Step 2** In the Proceed with Install screen, select **Yes**.
- Step 3** In the Platform Installation Wizard screen, select one of the following options, depending on whether you want to enter the server information before or after the installer spends approximately 30 minutes installing the software on the server:
- To first enter the server information and then install the software, select **Proceed**.
 - To first install the software and then enter the server information, select **Skip**.
- If you choose Skip, you will need to wait approximately 30 minutes for the software to install, then take the following actions:
1. When the system displays the Pre-existing Configuration Information screen, select **Continue**. Pre-existing configurations are currently not supported.
 2. When the system returns to the Platform Installation Wizard screen, select **Proceed**.
- Step 4** At the Installation Type screen, select one of the following options:

- **CTX**—Select this option if you are installing the full-feature configuration of the Cisco TelePresence Exchange System. The full-feature configuration supports the SIP load balancer VIP capability.
- **CTX Starter Package**—Select this option if you are installing the starter package configuration of the Cisco TelePresence Exchange System. The starter package configuration does not support the SIP load balancer VIP capability.

Step 5 At the Node Role Configuration screen, select **Administration Node** as the role of the node, then select **OK**.

Step 6 Verify that the confirmation screen indicates that this node will be configured to run the *administration* role. If correct, select **Proceed**.



Caution If the confirmation screen indicates that a different node role will be configured, select **Back** to return to [Step 5](#).

Step 7 In the Cisco TelePresence Exchange System Other Nodes screen, complete these steps:

- In the Database node name (Mandatory) field, enter the virtual hostname that is shared by the database servers.
- In the Database node IP Address (Mandatory) field, enter the virtual IP (VIP) address that is shared by the database servers.
- Leave the remaining fields blank.
- Select **OK**.

Step 8 In the Static Network Configuration screen, complete these steps:

- Enter the host name, IP address, and subnet mask for the administration server.
- Enter the IP address for the default gateway.



Note If you have Cisco Application Control Engines directly attached to the Cisco TelePresence Exchange System VLAN, use the ACE alias address for the default gateway address.

- Click **OK**.

Step 9 In the DNS Client Configuration screen, select **No**. The Domain Name Server (DNS) client is not supported on the administration server.

Step 10 In the Administrator Login Configuration screen, complete the following steps to create a Linux account for accessing the CLI of the call engine server:



Note You must use the same administrator username and password for all database, administration, and call engine servers in the cluster.

- Enter a username in the Administrator ID field.
- Enter a password into the Password and Confirm Password fields.
- Select **OK**.

- Step 11** In the Certificate Information screen, complete the following steps to generate a locally significant certificate (LSC) for the server:



Note The software installer always prompts you to enter the certificate information. However, the information is currently used only to generate certificates for the call engine nodes in the starter package configuration of the Cisco TelePresence Exchange System.



Note Refer to your company guidelines on the format for each of these entries.

- a. In the Organization field, enter your company name.
- b. In the Unit field, enter descriptive information about the server.
Example: *business-unit, department*
- c. Enter the location of the server.
Example: *building-name, floor, rack*
- d. Enter the state in which the server is located.
You can enter an abbreviation or the full name for the state.
- e. Select the country in which the server is located.
Enter the first letter of the country name, and use the up and down arrows to select the country. Then press the **Tab** key.
- f. Select **OK**.

- Step 12** In the Network Time Protocol Client Configuration screen, complete these steps:

- a. Enter the same NTP server IP addresses, hostnames, or pool names that you configured for the database and call engine servers.
- b. Take one of the following actions, the availability of which depends on whether you chose to enter the server information before or after installing the software in [Step 3](#):
 - Select **Test** to confirm connectivity to the NTP entries, and then select **Proceed**.
 - Select **OK**.

- Step 13** In the Security Configuration screen, enter the security password, confirm the password, and select **OK**.



Note You must configure the same security password on all database, administration, and call engine servers. After you configure the security password on a server, you cannot change it without reinstalling the server.



Caution This is your last chance in the installation wizard to select **Back** to verify your entries. Complete the next step only when you are sure that the entries that you made throughout this procedure are correct.

- Step 14** In the Platform Configuration Confirmation screen, select **OK**.

If, in [Step 3](#), you chose to proceed to enter the server information before installing the software, the following information applies:

- The installer spends approximately 30 minutes installing the software.
- If the system has problems with the information that you entered in the installation wizard, you will be prompted to correct the information.

The server ejects the installation DVD (if present) and reboots while completing the installation. This process takes approximately 10 minutes. When complete, the system prompts you to log in to the CLI.

The installation of Cisco TelePresence Exchange System has completed successfully.

```
Cisco TelePresence Exchange System x.x.x.x
hostname login:
```

What To Do Next

If you have not yet installed the software for the second administration server, do so now by repeating this procedure.

Otherwise, proceed to the [“Checking the Administration Server Status and Network Connectivity” section on page 2-18](#).

Checking the Administration Server Status and Network Connectivity

Complete this task to confirm that the administration server is up and can connect to the other Cisco TelePresence Exchange System servers.

Procedure

- Step 1** Log in to the CLI of the administration server.

```
Cisco TelePresence Exchange System x.x.x.x
hostname login: <username>
Password: <password>
```

```
Command Line Interface is starting up, please wait...
```

```
Welcome to the Platform Command Line Interface
```

```
admin:
```

- Step 2** To verify that the administration server is running, enter the **utils service adminserver status** command.

```
admin: utils service adminserver status
adminserver.....Running - PID <31650>
```

If the output does not indicate that the server is running, wait approximately 5 minutes for the server to finish coming up.

- Step 3** To confirm that the administration server has network connectivity, enter the following command, specifying the IP or VIP address of any of the Cisco TelePresence Exchange System servers that are already installed:

utils network ping ip-address

The output confirms network connectivity:

```
admin: utils network ping 10.22.139.230
PING 10.22.139.230 (10.22.139.230) 56(84) bytes of data.
64 bytes from 10.22.139.230: icmp_seq=0 ttl=64 time=0.512 ms
```

```
64 bytes from 10.22.139.230: icmp_seq=1 ttl=64 time=0.093 ms
64 bytes from 10.22.139.230: icmp_seq=2 ttl=64 time=0.090 ms
64 bytes from 10.22.139.230: icmp_seq=3 ttl=64 time=0.090 ms

--- 10.22.139.230 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3001ms
rtt min/avg/max/mdev = 0.090/0.196/0.512/0.182, pipe 2
```

Verifying Data Connectivity Among the Servers

If the Cisco TelePresence Exchange System nodes are unable to properly exchange data, various problems will eventually arise. Complete this task to verify proper data connectivity after you install all six nodes in the Cisco TelePresence Exchange System server cluster or after you reinstall one of the nodes.

Procedure

- Step 1** Point a web browser to the following URL, using the IP address of one of the administration servers:
`http://ip-address/ctxadmin`
- Make sure that you are not using the virtual IP (VIP) address that is configured on the Cisco Application Control Engine (ACE), if applicable.
- Step 2** If the login page for the Cisco TelePresence Exchange System administration console does not appear, complete the following steps:
- Repeat [Step 1](#), but this time use the IP address of the *other* administration server.
If the login page appears, proceed to [Step 3](#).
 - If the login page does not appear, make sure that the browser machine can reach other devices in the same VLAN as the administration servers. Resolve any network connectivity issues.
 - Repeat [Step 1](#).
- Step 3** Log in to the administration console with the username **admin** and the password **cisco**.
- Step 4** Select **System > Cluster Nodes**.
- Step 5** Verify that all six nodes (two database servers, two call engine servers, and two administration servers) appear in the list of cluster nodes.
- It may take up to five minutes for a newly installed node to register itself to the database and appear in the list of cluster nodes.
- Step 6** If any of the servers remain missing from the list of cluster nodes, you need to reinstall those servers to correct the security password on those servers.
- Complete the procedures that are relevant to the servers that are missing from the list of cluster nodes:
- [Installing and Synchronizing the Cisco TelePresence Exchange System Database Servers, page 2-4](#)
 - [Installing the Cisco TelePresence Exchange System Call Engine Servers, page 2-10](#)
 - [Installing the Cisco TelePresence Exchange System Administration Servers, page 2-14](#)
-

Verifying Security Certificates for Use With the Cisco VCS Expressway

For the starter package configuration of the Cisco TelePresence Exchange System, you can set up a secure connection for call encryption with the Cisco VCS Expressway border control element. A secure connection must be configured through Session Initiation Protocol (SIP) with Transport Layer Security (TLS) between the Cisco VCS Expressway and the Cisco TelePresence Exchange System. Security certificates are required to create a secure connection.

After you have completed the software installation of the starter package configuration of the Cisco TelePresence Exchange System and verified data connectivity among the nodes, complete this task to verify that the call engines are installed with the correct self-signed certificates and certificate signed requests.

Procedure

-
- | | |
|---------------|--|
| Step 1 | Log in to the administration console. |
| Step 2 | Select System > Security Certificates .

The Manage Security Certificates window is displayed. |
| Step 3 | Verify that there are two entries for each call engine node (one self-signed certificate of type TLS_CERT and one certificate signed request of type TLS_CSR).

If a call engine node is missing an entry, restart the call engine node. When the Resource Operational Statues area on the System > Status window indicates that the call engine node is active, check the security certificates again to verify that the two entries are present. |
| Step 4 | Verify that the expiration date of each certificate is five years from the date of installation of the call engine node.

To reset the date of a certificate to five years in the future, do the following sub-steps: <ol style="list-style-type: none">a. In the row corresponding to the certificate you are resetting, in the Type column, click the type (TLS_CSR or TLS_CERT). The Security Certificate Details window is displayed.b. Click Regenerate This Security Certificate.c. Click View All Security Certificates to return to the Manage Security Certificates window.d. Repeat sub-steps a through c for each remaining certificate to reset.e. Restart the call engine node. |
-



CHAPTER 3

Upgrading the Software on MCS Servers

Revised May 13, 2013

This chapter describes the process of upgrading the Cisco TelePresence Exchange System from Release 1.1 to Release 1.2 on MCS servers.

If you are planning to migrate the system from MCS servers to virtual machines at the same time as you upgrade to 1.2, do not follow the procedures in this chapter. Instead, see [Chapter 4, “Migrating from MCS Servers to Virtual Machines.”](#)

This chapter contains the following topics:

- [Requirements for Upgrading the Software, page 3-1](#)
- [Task List for Upgrading the MCS Servers, page 3-2](#)
- [Shutting Down and Powering Off the Cisco TelePresence Exchange System Servers, page 3-4](#)
- [Recabling the Servers, page 3-4](#)
- [Connecting to the Cisco TelePresence Exchange System Servers And Launching the Installer, page 3-6](#)
- [Installing and Synchronizing the Cisco TelePresence Exchange System Database Servers on MCS Hardware, page 3-8](#)
- [Installing the Cisco TelePresence Exchange System Call Engine Servers on MCS Hardware, page 3-13](#)
- [Installing the Cisco TelePresence Exchange System Administration Servers on MCS Hardware, page 3-18](#)
- [Verifying Data Connectivity Among the Servers, page 3-22](#)

Requirements for Upgrading the Software

- You must obtain a new perpetual base license for Release 1.2 and, if your licensing needs exceed 48 license ports, additional incremental port licenses. Before you begin, engage your Cisco Account Team and Cisco TelePresence Exchange System Product Management to assist you in replacing any previously purchased licenses and to help you plan for any additional licensing needs. In order to avoid operating for an extended amount of time using the evaluation license, you must engage Cisco prior to beginning the upgrade. For more information on licensing in Release 1.2, see the “Managing Licenses” chapter of the *Administration Guide for the Cisco TelePresence Exchange System Release 1.2* at http://www.cisco.com/en/US/products/ps11276/prod_installation_guides_list.html.

- All six nodes in the server cluster must be running patch level 1.1.0.5.1.1 prior to the upgrade, and you must upgrade all six nodes to the exact same software version of Release 1.2.
- The upgrade process requires a scheduled maintenance window of system downtime, because you need to back up the database, recable the servers, install the new software, and then restore the database. Minimum required maintenance windows are as follows:
 - For a parallel installation (which means that you install the new software on the primary database server and then the secondary database server, then you install the administration and call engine servers in parallel), you will need at least 4 hours of system downtime.
 - For a serial installation (which means that you complete the installation on the primary database server and then the secondary database server, and then you install the remaining servers one at a time), you will need at least 5 hours of system downtime.

Task List for Upgrading the MCS Servers

Use the high-level task list in this section to upgrade the MCS servers to Release 1.2. The tasks reference detailed instructions in this chapter and in other chapters of this guide or in other guides as noted.

Before You Begin

- Read the [“Requirements for Upgrading the Software”](#) section on page 3-1.
- Retrieve all past meeting records, call detail records (CDRs) and associated event records before starting the upgrade. See the [“About Changes to Automatic Data Purging Behavior Between Release 1.1 and Release 1.2”](#) section on page C-1.



Caution

Any Release 1.1 records that remain will be purged during the upgrade process. In addition to CDRs, this includes Meet-Me meetings that occurred 30 or more days in the past, future Meet-Me meetings that have been cancelled, and Rendezvous meetings that have been cancelled.

- Ensure that the bridge resources that were reserved for large meetings in Release 1.1 are online during the upgrade. If the resources are not online while the database is being backed up, the system cannot migrate the large meetings when you try to restore the database, and the restore process will fail. For more information on changes to large meeting behavior during the migration, see the [“About Migration Behavior of Meetings Scheduled to Use Media Bridge Resources Reserved for Large Meetings”](#) section on page C-2.
- Verify that all six MCS servers are running patch level 1.1.0.5.1.1. If the version is lower than this, you must install the patch before proceeding with the upgrade.
- If you have not already done so, contact the Cisco Technical Assistance Center to obtain new 1.2 license files for the MCS servers.



Caution

Do not proceed with the upgrade without obtaining new 1.2 licenses. The task list alerts you when to install the 1.2 licenses.

- Verify that your Cisco TelePresence Exchange System installation DVD has the latest software version. If you are not sure, or if you do not have the DVD, download the latest software from the following URL, and burn the disk image onto a DVD: <http://www.cisco.com/go/ctx-download>.



Note For a parallel installation, you need one copy of the installation DVD for each server that you plan to install in parallel.

- Collect the network and account information required to complete the worksheets in [Appendix A, “Installation Worksheets.”](#)



Caution When installing Release 1.2, the account information that you use must match the information in use at the time that you back up the Release 1.1 database, including the administrator username and password for accessing the CLI and the security password for database authentication.

- Understand the Release 1.2 feature set and the changes to the product behavior and administration console from Release 1.1. See the following resources:
 - *Release Notes for the Cisco TelePresence Exchange System Release 1.2* at <http://www.cisco.com/go/ctx-relnotes>
 - [Appendix C, “Data Migration”](#)
- Schedule the maintenance period and notify all users about your system downtime. Block users from scheduling meetings that will occur during this maintenance period. Begin the following task list as soon as your maintenance period starts.

Task List

1. From the administration console, back up the database. For instructions, see the “Performing a Manual Database Backup” section in the “Managing Database Backups” chapter of the *Administration Guide for the Cisco TelePresence Exchange System Release 1.2* at http://www.cisco.com/en/US/products/ps11276/prod_installation_guides_list.html.
2. Shut down the admin and call engine services and power off all six Cisco TelePresence Exchange System servers. See the “[Shutting Down and Powering Off the Cisco TelePresence Exchange System Servers](#)” section on page 3-4.



Note When following the remaining tasks in the task list, do not turn on any of the six servers until you connect to the server to launch the Release 1.2 software installer.

3. Recable the servers to support Release 1.2. See the “[Recabling the Servers](#)” section on page 3-4.
4. Connect to and install the new software on the primary and secondary database servers. See the “[Installing and Synchronizing the Cisco TelePresence Exchange System Database Servers on MCS Hardware](#)” section on page 3-8.



Note The administration and call engine servers must be powered off during the database server installation, or they may interfere with the installation process.

5. Connect to and install the new software on the call engine servers. See the “[Installing the Cisco TelePresence Exchange System Call Engine Servers on MCS Hardware](#)” section on page 3-13.
6. Connect to and install the new software on the administration servers. See the “[Installing the Cisco TelePresence Exchange System Administration Servers on MCS Hardware](#)” section on page 3-18.
7. From the administration console, restore the database by using the backup from Task 1.

For instructions, see the “Restoring a Database Server Backup” section in the “Managing Database Backups” chapter of the *Administration Guide for the Cisco TelePresence Exchange System Release 1.2* at http://www.cisco.com/en/US/products/ps11276/prod_installation_guides_list.html.



Note To log in to the administration console, use the default username **admin** and password **cisco**. After the database is restored, you can log in with the username and password that you used before beginning this upgrade procedure.

8. Complete the procedure in the “Verifying Data Connectivity Among the Servers” section on page 3-22.
9. Install the new 1.2 license files. See the “Uploading Licenses” section in the “Managing Licenses” chapter of the *Administration Guide for the Cisco TelePresence Exchange System Release 1.2* at http://www.cisco.com/en/US/products/ps11276/prod_installation_guides_list.html.
10. Close the maintenance window and notify your users that they may now use the system.

Shutting Down and Powering Off the Cisco TelePresence Exchange System Servers

After backing up the databases, shut down the services on the administration and call engine servers, and power off all six servers.

Procedure

- Step 1 Log in to the CLI of one of the two administration servers.
- Step 2 Enter the **utils service admin server stop** command.
- Step 3 When the service is stopped, repeat [Step 1](#) and [Step 2](#) on the other administration server.
- Step 4 Log in to the CLI of one of the two call engine servers.
- Step 5 Enter the **utils service sipserver stop** command.
- Step 6 When the service is stopped, repeat [Step 4](#) and [Step 5](#) on the other call engine server.
- Step 7 Power off the MCS hardware for all six Cisco TelePresence Exchange System servers.

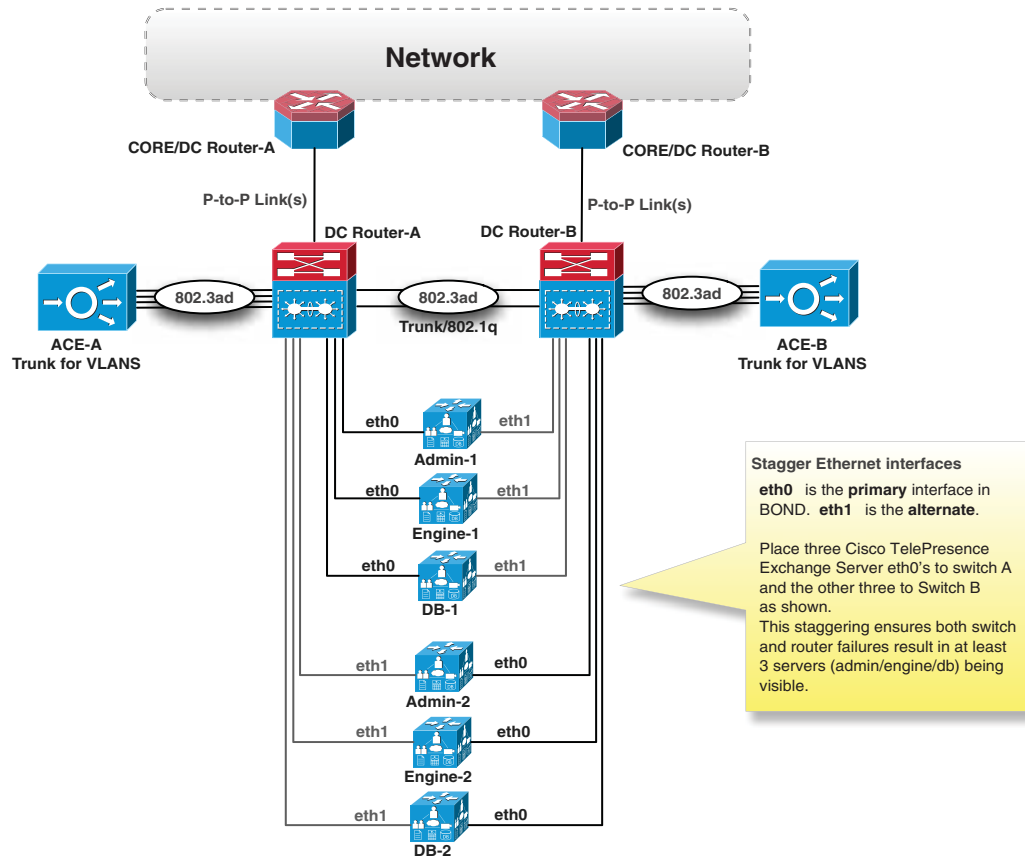
Recabling the Servers

When preparing to install Cisco TelePresence Exchange System Release 1.2 on MCS servers, recable the servers to match the configuration shown in [Figure 3-1](#).



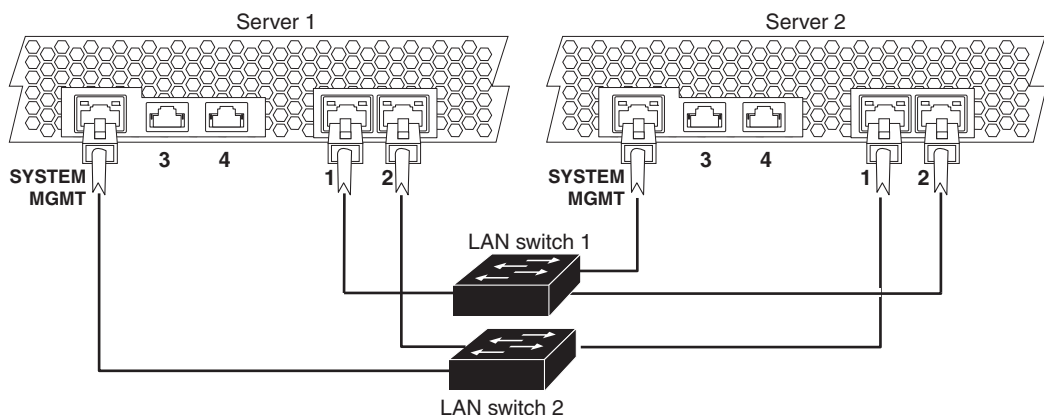
Note You can use straight-through or crossover cables for these connections.

Figure 3-1 Cisco TelePresence Exchange System Server Cabling for Release 1.2



In particular, the database server cabling requirements have changed in Release 1.2 to match the interface cabling used by the administration and call engine servers. For all three types of server, the Cisco TelePresence Exchange System software bonds Ethernet 0 with Ethernet 1 on the server. When the servers are cabled as shown above (also depicted in [Figure 3-2](#)), the bonded interface is connected to both LAN switches. If the Ethernet 0 interface fails on a server, traffic switches over to the Ethernet 1 interface.

Figure 3-2 Required Cabling For MCS I3 Servers in Release 1.2



Port label	Interface	Bonded Interface
1	Ethernet 0—data	Bond 0
2	Ethernet 1—data	Bond 0
3	Ethernet 2—currently not used	—
4	Ethernet 3—currently not used	—
SYSTEM MGMT (optional)	Integrated management module (IMM) You are not required to use the IMM interface, which enables remote control of the server.	—

In addition, having the two sets of servers connect to different switches allows one set of administration, call engine, and database servers to take over in the event of a switch hardware or software failure that isolates the other set.

You are not required to use the IMM interfaces, but if you do, we recommend that you connect the IMM interfaces to separate LAN switches as shown in [Figure 3-2](#).

For more information about networking the servers and setting up the VLAN and routing to support redundancy, see [Appendix B, “Network Design and Routing Configuration for Redundancy.”](#)

**Note**

Before installing the Cisco TelePresence Exchange System software, verify that both Ethernet interfaces on each server are properly cabled and connected to the switch. If the system cannot bring up the Ethernet interfaces during installation, the installation will fail.

Connecting to the Cisco TelePresence Exchange System Servers And Launching the Installer

You have two connection options for running the Cisco TelePresence Exchange System installer on each server during the upgrade:

- Direct connection to the console, for example, through a keyboard-video-mouse (KVM) switch. See the [“Launching the Installer from the MCS Server Console”](#) section on page 3-7.
- Remote connection by using the integrated management module (IMM) interface. See the [“Using the IMM to Remotely Install the Cisco TelePresence Exchange System Software”](#) section on page 3-7.

**Note**

Although you may use the IMM to remotely run the installer, the Cisco TelePresence Exchange System installation DVD must be inserted into the server. Cisco currently does not support full remote installation by mounting the DVD or image file using the IMM.

**Caution**

Regardless of the connection option you choose, the IMM user name and password must be set to the default values (user name USERID and password PASSWORD with a zero, not the letter O) or the software installation will fail. After the installation is complete, you can reset the credentials to their previous values if you have changed them from the defaults.

Launching the Installer from the MCS Server Console

To launch the installer, do the following:

- Insert the Cisco TelePresence Exchange System installation DVD into the server.
- Turn on or restart the server.

After the restart, the server recognizes the DVD and automatically runs the installer.

**Note**

If you are installing the Cisco TelePresence Exchange System software on a server that requires a firmware update, the installer automatically begins the update when you first launch it. During the update, the system will restart approximately four times. The update typically takes about 30 minutes.

Using the IMM to Remotely Install the Cisco TelePresence Exchange System Software

Before You Begin

- For each server that you want to access remotely, you must have set up the IMM network connection, user account, and SSH configuration. For instructions, see the *Installation and Administration Guide for the Cisco TelePresence Exchange System Release 1.1*, at http://www.cisco.com/en/US/docs/telepresence/tx/exchange_system/1_1/install_admin/book/b_install_admin.html.
- Insert the Cisco TelePresence Exchange System installation DVD into the server. Cisco currently does not support full remote installation by mounting the DVD or image file using the IMM.
- Complete the following procedure by using one of the following web browsers:
 - Microsoft Internet Explorer version 8.x or 9.x with the latest Service Pack
 - Mozilla Firefox version 3.7 or later
- Make sure that the web browser allows popup windows from the IMM.

Procedure

- Step 1** Point your web browser to the IP address of the IMM interface.
- Step 2** Log in to the IMM web interface.
- Step 3** Select **Continue**.
- Step 4** Select **System > Tasks > Remote Control**.
- Step 5** Click **Start Remote Control in Single User Mode**.

This opens a console window, which you will use later to enter information as the installer runs.

**Tip**

If the console window does not open, press and hold down the Control key and click **Start Remote Control in Single User Mode** again. Continue to hold the Control key until the window opens.

Step 6 In the IMM web interface, select **System > Tasks > Power/Restart**.

Step 7 Click **Restart the Server Immediately**.

Step 8 Click **OK** to confirm the restart.

When the DVD is recognized after the restart, the installer begins to run. Use the console window to complete the installation procedures.

**Note**

If you are installing the Cisco TelePresence Exchange System software on a server that requires a firmware update, the installer automatically begins the update when you first launch it. During the update, the system will restart approximately four times. The update typically takes about 30 minutes. When using the IMM, you will temporarily lose connectivity during the firmware update.

Installing and Synchronizing the Cisco TelePresence Exchange System Database Servers on MCS Hardware

Complete the following tasks in the order shown:

- [Preparing to Install the Database Server Software, page 3-8](#)
- [Installing the Database Server Software, page 3-8](#)
- [Checking the Initial High-Availability Roles of the Database Servers, page 3-12](#)
- [Checking the Network Connectivity of the Database Servers, page 3-13](#)

Preparing to Install the Database Server Software

Before you begin installing the database server software, do the following tasks:

- Find your completed [Appendix A, “Installation Worksheets.”](#)
- Verify that both Ethernet interfaces on each server are properly cabled and connected to the switch. If the system cannot bring up the Ethernet interfaces during installation, the installation will fail.
- Turn on and connect to the primary database server, and launch the software installer. See the [“Connecting to the Cisco TelePresence Exchange System Servers And Launching the Installer”](#) section on page 3-6.

Installing the Database Server Software

Complete this task to install the Cisco TelePresence Exchange System database server software onto the server.

**Tip**

To move among the options in an installer screen, press the **Tab** key. To select a highlighted option, press the **Spacebar**, **Return**, or **Enter** key.

Procedure

- Step 1** When the installer prompts you to do a media check of the DVD, take one of the following actions:
- If you previously performed a media check of the installation DVD, select **No**.
 - Otherwise, We recommend that you select **Yes**. After the DVD passes the media check, select **OK**.
- If the installation DVD fails the media check, burn a new DVD. Download the software from <http://www.cisco.com/go/ctx-download>.
- After several minutes, the installer displays the current software version that is installed on the server (if any) and the software version on the DVD.
- Step 2** In the Proceed with Install screen, select **Yes**.
- Step 3** In the Platform Installation Wizard screen, select one of the following options, depending on whether you want to enter the server information before or after the installer spends approximately 30 minutes installing the software on the server:
- To first enter the server information and then install the software, select **Proceed**.
 - To first install the software and then enter the server information, select **Skip**.
- If you choose Skip, you will need to wait approximately 30 minutes for the software to install, then take the following actions:
1. When the system displays the Pre-existing Configuration Information screen, select **Continue**. Pre-existing configurations are currently not supported.
 2. When the system returns to the Platform Installation Wizard screen, select **Proceed**.
- Step 4** At the Node Role Configuration screen, select **Database Node** as the role of the node, then select **OK**.
- Step 5** Verify that the confirmation screen indicates that this node will be configured to run the *database* role. If correct, select **Proceed**.

**Note**

If the confirmation screen indicates that a different node role will be configured, select **Back** to return to [Step 4](#).

- Step 6** In the Static Network Configuration screen, complete the following steps:

**Note**

If you are using the serial installation method, always install the primary (active) database server before you install the secondary (backup) database server.

- a. Enter the host name, IP address, and subnet mask for the database server.
- b. Enter the IP address for the default gateway.

**Note**

If you have Cisco Application Control Engines directly attached to the Cisco TelePresence Exchange System VLAN, use the ACE alias address for the default gateway address.

c. Verify your entries and select **OK**.

Step 7 In the DNS Client Configuration screen, select **No**. The Domain Name Server (DNS) client is not supported on the database server.

Step 8 In the Database Redundancy Configuration screens, complete the following steps:

- a. When prompted to enable redundancy on the database node, select **Yes**.
- b. When asked whether to configure this node as the primary database server, select **Yes** or **No**, depending on which database server you are installing (**Yes** for primary, **No** for secondary).
- c. Enter the VIP address to be shared by the primary and secondary database servers.
- d. Enter the hostname and IP address for the *peer* server:
 - If you are configuring the primary database server, then enter details for the secondary server.
 - If you are configuring the secondary database server, then enter details for the primary server.
- e. Select **OK**.

Step 9 In the Administrator Login Configuration screen, complete the following steps to create a Linux account for accessing the CLI of the database server:



Note You must use the same administrator username and password for all database, administration, and call engine servers in the cluster.

- a. In the Administrator ID field, enter a username.
- b. In the Password and Confirm Password fields, enter a password.
- c. Select **OK**.

Step 10 In the Certificate Information screen, complete the following steps to generate a locally significant certificate (LSC) for the server:



Note The software installer always prompts you to enter the certificate information. However, the information is currently used only to generate certificates for the call engine nodes in the starter package configuration of the Cisco TelePresence Exchange System.



Note Refer to your company guidelines on the format for each of these entries.

- a. In the Organization field, enter your company name.
- b. In the Unit field, enter descriptive information about the server.
Example: *business-unit, department*
- c. Enter the location of the server.
Example: *building-name, floor, rack*
- d. Enter the state in which the server is located.
You can enter an abbreviation or the full name for the state.
- e. Select the country in which the server is located.
Enter the first letter of the country name, and use the up and down arrows to select the country. Then press the **Tab** key.

- f. Select **OK**.

Step 11 In the Network Time Protocol Client Configuration screen, complete these steps:

- a. Enter at least one NTP server IP address, hostname, or pool name.

We recommend that you configure at least three external NTP entries.



Note You must use the same NTP entries on all database, call engine, and administration servers.

- b. Take one of the following actions, the availability of which depends on whether you chose to enter the server information before or after installing the software in [Step 3](#):
- Select **Test** to confirm connectivity to the NTP entries, and then select **Proceed**.
 - Select **OK**.

Step 12 In the Security Configuration screen, enter the security password, confirm the password, and select **OK**.



Note You must configure the same security password on all database, administration, and call engine servers. After you configure the security password on a server, you cannot change it without reinstalling the server.



Caution This is your last chance in the installation wizard to select **Back** to verify your entries. Complete the next step only when you are sure that the entries that you made throughout this procedure are correct.

Step 13 In the Platform Configuration Confirmation screen, click **OK**.

If, in [Step 3](#), you chose to proceed to enter the server information before installing the software, the following information applies:

- The installer spends approximately 30 minutes installing the software.
- If the system has problems with the information that you entered in the installation wizard, you will be prompted to correct the information.

The server ejects the installation DVD (if present) and reboots while completing the installation. This process takes approximately 10 minutes. When complete, the system prompts you to log in to the CLI.

The installation of Cisco TelePresence Exchange System has completed successfully.

```
Cisco TelePresence Exchange System x.x.x.x
hostname login:
```

What To Do Next

If you have not yet installed the software for the secondary database server, do so now by turning on and connecting to the server and repeating this procedure.

Otherwise, proceed to the [“Checking the Initial High-Availability Roles of the Database Servers”](#) section on page 3-12.

After the secondary database server is installed, the database servers should automatically begin to synchronize with each other. Complete the following task on each database server to confirm the correct initial high-availability (HA) role of primary or secondary, and to verify that the databases have begun synchronization.



The database synchronization process typically takes about 40 minutes to complete. During this time, after you verify that synchronization has begun, you can continue with the installation process.

**Tip**

While the databases are synchronizing, the Connection Sync Status output displays “SyncTarget <percentage>”. If you see a Connection Sync Status of “Unconfigured,” synchronization did not start successfully. Check the network connectivity between the database servers, and verify that all Cisco TelePresence Exchange System servers are in the same VLAN.

Checking the Network Connectivity of the Database Servers

Enter the following command on each database server to attempt to reach one of the Cisco TelePresence Exchange System solution components in another VLAN, such as the Cisco Unified Communications Manager or the Cisco Session Border Controller (if applicable):

utils network ping ip-address

The output confirms network connectivity:

```
admin: utils network ping 10.68.10.80
PING 10.68.10.80 (10.68.10.80) 56(84) bytes of data.
64 bytes from 10.68.10.80: icmp_seq=0 ttl=247 time=1.38 ms
64 bytes from 10.68.10.80: icmp_seq=1 ttl=247 time=1.39 ms
64 bytes from 10.68.10.80: icmp_seq=2 ttl=247 time=1.42 ms
64 bytes from 10.68.10.80: icmp_seq=3 ttl=247 time=1.63 ms

--- 10.68.10.80 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3003ms
rtt min/avg/max/mdev = 1.386/1.461/1.636/0.101 ms, pipe 2
```

Installing the Cisco TelePresence Exchange System Call Engine Servers on MCS Hardware

Complete the following tasks in the order shown:

- [Preparing to Install the Call Engine Software, page 3-13](#)
- [Installing the Call Engine Server Software, page 3-14](#)
- [Checking the Call Engine Server Status and Network Connectivity, page 3-17](#)

Preparing to Install the Call Engine Software

Before you begin installing the call engine server software, do the following tasks:

- Complete the tasks in the [“Installing and Synchronizing the Cisco TelePresence Exchange System Database Servers on MCS Hardware”](#) section on page 3-8.
- Find your completed [Appendix A, “Installation Worksheets.”](#)
- Verify that both Ethernet interfaces on each server are properly cabled and connected to the switch. If the system cannot bring up the Ethernet interfaces during installation, the installation will fail.

- Turn on and connect to the first call engine server that you will install, and launch the installer. See the “[Connecting to the Cisco TelePresence Exchange System Servers And Launching the Installer](#)” section on page 3-6.

Installing the Call Engine Server Software

Complete this task to install the Cisco TelePresence Exchange System call engine server software onto the server.



Tip

To move among the options in an installer screen, press the **Tab** key. To select a highlighted option, press the **Spacebar**, **Return**, or **Enter** key.

Procedure

- Step 1** When the installer prompts you to do a media check of the DVD, take one of the following actions:
- If you have already performed a media check of the installation DVD, select **No**.
 - Otherwise, Cisco recommends that you select **Yes**. After the DVD passes the media check, select **OK**.
- If the installation DVD fails the media check, burn a new DVD. Download the software from <http://www.cisco.com/go/ctx-download>.
- After several minutes, the installer displays the current software version that is installed on the server (if any) and the software version on the DVD.
- Step 2** In the Proceed with Install screen, select **Yes**.
- Step 3** In the Platform Installation Wizard screen, select one of the following options, depending on whether you want to enter the server information before or after the installer spends approximately 30 minutes installing the software on the server:
- To first enter the server information and then install the software, select **Proceed**.
 - To first install the software and then enter the server information, select **Skip**.
- If you choose Skip, you will need to wait approximately 30 minutes for the software to install, then take the following actions:
1. When the system displays the Pre-existing Configuration Information screen, select **Continue**. Pre-existing configurations are currently not supported.
 2. When the system returns to the Platform Installation Wizard screen, select **Proceed**.
- Step 4** At the Node Role Configuration screen, select **Call Processing Engine Node** as the role of the node, then select **OK**.
- Step 5** Verify that the confirmation screen indicates that this node will be configured to run the *call processing engine* role. If correct, select **Proceed**.



Caution

If the confirmation screen indicates that a different node role will be configured, select **Back** to return to [Step 4](#).

- Step 6** In the Cisco TelePresence Exchange System Other Nodes screen, complete these steps:
- In the Database node name (Mandatory) field, enter the database shared virtual hostname that you noted in the [Appendix A, “Installation Worksheets.”](#)
 - In the Database node IP Address (Mandatory) field, enter the database shared virtual IP (VIP) address.
 - Leave the remaining fields blank.
 - Select **OK**.

- Step 7** In the Static Network Configuration screen, complete these steps:
- Enter the host name, IP address, and subnet mask for the call engine server.
 - Enter the IP address for the default gateway.



Note If you have Cisco Application Control Engines directly attached to the Cisco TelePresence Exchange System VLAN, use the ACE alias address for the default gateway address.

- Select **OK**.

- Step 8** In the DNS Client Configuration screen, select **No**. The Domain Name Server (DNS) client is not supported on the call engine server.

- Step 9** In the SIP Load Balancer Configuration screen, select **Yes**.



Note If you are in the rare situation where you are installing the Cisco TelePresence Exchange System software before you have a functioning Cisco Application Control Engine (ACE) to use as the SIP load balancer, then you may select **No** on the SIP Load Balancer Configuration screen and proceed to [Step 11](#). You must, however, add the SIP load balancer configuration later via the CLI.

- Step 10** In the SIP Load Balancer Information screen, complete the following steps:
- IP Address—Enter the VIP address of the ACE.
 - Port—Enter the port number on which the call engine server will connect to the load balancer.
 - Select **OK**.

- Step 11** In the Administrator Login Configuration screen, complete the following steps to create a Linux account for accessing the CLI of the call engine server:



Note You must use the same administrator username and password for all database, administration, and call engine servers in the cluster.

- Enter a username in the Administrator ID field.
 - Enter a password into the Password and Confirm Password fields.
 - Select **OK**.
- Step 12** In the Certificate Information screen, complete the following steps to generate a locally significant certificate (LSC) for the server:

**Note**

The software installer always prompts you to enter the certificate information. However, the information is currently used only to generate certificates for the call engine nodes in the starter package configuration of the Cisco TelePresence Exchange System.

**Note**

Refer to your company guidelines on the format for each of these entries.

- a. In the Organization field, enter your company name.
- b. In the Unit field, enter descriptive information about the server.
Example: *business-unit, department*
- c. Enter the location of the server.
Example: *building-name, floor, rack*
- d. Enter the state in which the server is located.
You can enter an abbreviation or the full name for the state.
- e. Select the country in which the server is located.
Enter the first letter of the country name, and use the up and down arrows to select the country. Then press the **Tab** key.
- f. Select **OK**.

Step 13 In the Network Time Protocol Client Configuration screen, complete these steps:

- a. Enter the same NTP server IP addresses, hostnames, or pool names that you configured for the database servers.
- b. Take one of the following actions, the availability of which depends on whether you chose to enter the server information before or after installing the software in [Step 3](#):
 - Select **Test** to confirm connectivity to the NTP entries, and then select **Proceed**.
 - Select **OK**.

Step 14 In the Security Configuration screen, enter the security password, confirm the password, and select **OK**.

**Note**

You must configure the same security password on all database, administration, and call engine servers. After you configure the security password on a server, you cannot change it without reinstalling the server.

**Caution**

This is your last chance in the installation wizard to select **Back** to verify your entries. Complete the next step only when you are sure that the entries that you made throughout this procedure are correct.

Step 15 In the Platform Configuration Confirmation screen, select **OK**.

If, in [Step 3](#), you chose to proceed to enter the server information before installing the software, the following information applies:

- The installer spends approximately 30 minutes installing the software.

- If the system has problems with the information that you entered in the installation wizard, you will be prompted to correct the information.

The server ejects the installation DVD (if present) and reboots while completing the installation. This process takes approximately 10 minutes. When complete, the system prompts you to log in to the CLI.

The installation of Cisco TelePresence Exchange System has completed successfully.

```
Cisco TelePresence Exchange System x.x.x.x
hostname login:
```

What To Do Next

If you have not yet installed the software for the second call engine server, do so now by turning on and connecting to the server and repeating this procedure.

Otherwise, proceed to the [“Checking the Call Engine Server Status and Network Connectivity”](#) section on page 3-17.

Checking the Call Engine Server Status and Network Connectivity

Complete this task to confirm that the call engine server is up and can connect to the other Cisco TelePresence Exchange System servers.

Procedure

- Step 1** Log in to the CLI of the call engine server.

```
Cisco TelePresence Exchange System x.x.x.x
hostname login: <username>
Password: <password>
```

Command Line Interface is starting up, please wait...

Welcome to the Platform Command Line Interface

admin:

- Step 2** To verify that the call engine server is running, enter the **utils service sipserver status** command.

In the following example, the call engine server is still starting up. In this case, you would want to wait a few minutes for the server to finish starting up:

```
admin: utils service sipserver status
sipserver.....Starting - PID <10202>
```

In the following example, the call engine server is up and running:

```
admin: utils service sipserver status
sipserver.....Running - PID <10202>
```

- Step 3** To confirm that the call engine server has network connectivity, enter the following command, specifying the IP or VIP address of any of the Cisco TelePresence Exchange System servers that are already installed:

utils network ping ip-address

The output confirms network connectivity:

```

admin: utils network ping 10.22.139.230
PING 10.22.139.230 (10.22.139.230) 56(84) bytes of data.
64 bytes from 10.22.139.230: icmp_seq=0 ttl=64 time=0.512 ms
64 bytes from 10.22.139.230: icmp_seq=1 ttl=64 time=0.093 ms
64 bytes from 10.22.139.230: icmp_seq=2 ttl=64 time=0.090 ms
64 bytes from 10.22.139.230: icmp_seq=3 ttl=64 time=0.090 ms

--- 10.22.139.230 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3001ms
rtt min/avg/max/mdev = 0.090/0.196/0.512/0.182, pipe 2

```

Installing the Cisco TelePresence Exchange System Administration Servers on MCS Hardware

Complete the following tasks in the order shown:

- [Preparing to Install the Administration Server Software, page 3-18](#)
- [Installing the Administration Server Software, page 3-18](#)
- [Checking the Administration Server Status and Network Connectivity, page 3-21](#)

Preparing to Install the Administration Server Software

Before you begin installing the administration server software, do the following tasks:

- Complete the tasks in the [“Installing and Synchronizing the Cisco TelePresence Exchange System Database Servers on MCS Hardware”](#) section on page 3-8.
- If you are following the serial installation method, also complete the tasks in the [“Installing the Cisco TelePresence Exchange System Call Engine Servers on MCS Hardware”](#) section on page 3-13.
- Find your completed [Appendix A, “Installation Worksheets.”](#)
- Verify that both Ethernet interfaces on each server are properly cabled and connected to the switch. If the system cannot bring up the Ethernet interfaces during installation, the installation will fail.
- Turn on and connect to the first administration server that you will install, and launch the installer. See the [“Connecting to the Cisco TelePresence Exchange System Servers And Launching the Installer”](#) section on page 3-6.

Installing the Administration Server Software



Complete this task to install the Cisco TelePresence Exchange System administration server software onto the server.



Tip

To move among the options in an installer screen, press the **Tab** key. To select a highlighted option, press the **Spacebar**, **Return**, or **Enter** key.

Procedure

-
- Step 1** When the installer prompts you to do a media check of the DVD, take one of the following actions:
- If you previously performed a media check of the installation DVD, select **No**.
 - Otherwise, We recommend that you select **Yes**. After the DVD passes the media check, select **OK**.
- If the installation DVD fails the media check, burn a new DVD. Download the software from <http://www.cisco.com/go/ctx-download>.
- After several minutes, the installer displays the current software version that is installed on the server (if any) and the software version on the DVD.
- Step 2** In the Proceed with Install screen, select **Yes**.
- Step 3** In the Platform Installation Wizard screen, select one of the following options, depending on whether you want to enter the server information before or after the installer spends approximately 30 minutes installing the software on the server:
- To first enter the server information and then install the software, select **Proceed**.
 - To first install the software and then enter the server information, select **Skip**.
- If you choose Skip, you will need to wait approximately 30 minutes for the software to install, then take the following actions:
1. When the system displays the Pre-existing Configuration Information screen, select **Continue**. Pre-existing configurations are currently not supported.
 2. When the system returns to the Platform Installation Wizard screen, select **Proceed**.
- Step 4** At the Node Role Configuration screen, select **Administration Node** as the role of the node, then select **OK**.
- Step 5** Verify that the confirmation screen indicates that this node will be configured to run the administration role. If correct, select **Proceed**.
-
-  **Caution** If the confirmation screen indicates that a different node role will be configured, select **Back** to return to [Step 4](#).
-
- Step 6** In the Cisco TelePresence Exchange System Other Nodes screen, complete these steps:
- a. In the Database node name (Mandatory) field, enter the virtual hostname that is shared by the database servers.
 - b. In the Database node IP Address (Mandatory) field, enter the virtual IP (VIP) address that is shared by the database servers.
 - c. Leave the remaining fields blank.
 - d. Select **OK**.
- Step 7** In the Static Network Configuration screen, complete these steps:
- a. Enter the host name, IP address, and subnet mask for the administration server.
 - b. Enter the IP address for the default gateway.
-
-  **Note** If you have Cisco Application Control Engines directly attached to the Cisco TelePresence Exchange System VLAN, use the ACE alias address for the default gateway address.
-

c. Click **OK**.

Step 8 In the DNS Client Configuration screen, select **No**. The Domain Name Server (DNS) client is not supported on the administration server.

Step 9 In the Administrator Login Configuration screen, complete the following steps to create a Linux account for accessing the CLI of the call engine server:



Note You must use the same administrator username and password for all database, administration, and call engine servers in the cluster.

a. Enter a username in the Administrator ID field.

b. Enter a password into the Password and Confirm Password fields.

c. Select **OK**.

Step 10 In the Certificate Information screen, complete the following steps to generate a locally significant certificate (LSC) for the server:



Note The software installer always prompts you to enter the certificate information. However, the information is currently used only to generate certificates for the call engine nodes in the starter package configuration of the Cisco TelePresence Exchange System.



Note Refer to your company guidelines on the format for each of these entries.

a. In the Organization field, enter your company name.

b. In the Unit field, enter descriptive information about the server.

Example: *business-unit, department*

c. Enter the location of the server.

Example: *building-name, floor, rack*

d. Enter the state in which the server is located.

You can enter an abbreviation or the full name for the state.

e. Select the country in which the server is located.

Enter the first letter of the country name, and use the up and down arrows to select the country. Then press the **Tab** key.

f. Select **OK**.

Step 11 In the Network Time Protocol Client Configuration screen, complete these steps:

a. Enter the same NTP server IP addresses, hostnames, or pool names that you configured for the database and call engine servers.

b. Take one of the following actions, the availability of which depends on whether you chose to enter the server information before or after installing the software in [Step 3](#):

– Select **Test** to confirm connectivity to the NTP entries, and then select **Proceed**.

– Select **OK**.

Step 12 In the Security Configuration screen, enter the security password, confirm the password, and select **OK**.

**Note**

You must configure the same security password on all database, administration, and call engine servers. After you configure the security password on a server, you cannot change it without reinstalling the server.

**Caution**

This is your last chance in the installation wizard to select **Back** to verify your entries. Complete the next step only when you are sure that the entries that you made throughout this procedure are correct.

Step 13 In the Platform Configuration Confirmation screen, select **OK**.

If, in [Step 3](#), you chose to proceed to enter the server information before installing the software, the following information applies:

- The installer spends approximately 30 minutes installing the software.
- If the system has problems with the information that you entered in the installation wizard, you will be prompted to correct the information.

The server ejects the installation DVD (if present) and reboots while completing the installation. This process takes approximately 10 minutes. When complete, the system prompts you to log in to the CLI.

The installation of Cisco TelePresence Exchange System has completed successfully.

```
Cisco TelePresence Exchange System x.x.x.x
hostname login:
```

What To Do Next

If you have not yet installed the software for the second administration server, do so now by turning on and connecting to the server and repeating this procedure.

Otherwise, proceed to the [“Checking the Administration Server Status and Network Connectivity” section on page 3-21](#).

Checking the Administration Server Status and Network Connectivity

Complete this task to confirm that the administration server is up and can connect to the other Cisco TelePresence Exchange System servers.

Procedure

Step 1 Log in to the CLI of the administration server.

```
Cisco TelePresence Exchange System x.x.x.x
hostname login: <username>
Password: <password>
```

```
Command Line Interface is starting up, please wait...
```

```
Welcome to the Platform Command Line Interface
```

```
admin:
```

- Step 2** To verify that the administration server is running, enter the **utils service adminserver status** command.

```
admin: utils service adminserver status
adminserver.....Running - PID <31650>
```

If the output does not indicate that the server is running, wait approximately 5 minutes for the server to finish coming up.

- Step 3** To confirm that the administration server has network connectivity, enter the following command, specifying the IP or VIP address of any of the Cisco TelePresence Exchange Systemservers that are already installed:

utils network ping ip-address

The output confirms network connectivity:

```
admin: utils network ping 10.22.139.230
PING 10.22.139.230 (10.22.139.230) 56(84) bytes of data.
64 bytes from 10.22.139.230: icmp_seq=0 ttl=64 time=0.512 ms
64 bytes from 10.22.139.230: icmp_seq=1 ttl=64 time=0.093 ms
64 bytes from 10.22.139.230: icmp_seq=2 ttl=64 time=0.090 ms
64 bytes from 10.22.139.230: icmp_seq=3 ttl=64 time=0.090 ms

--- 10.22.139.230 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3001ms
rtt min/avg/max/mdev = 0.090/0.196/0.512/0.182, pipe 2
```

Verifying Data Connectivity Among the Servers

If the Cisco TelePresence Exchange System nodes are unable to properly exchange data, various problems will eventually arise. Complete this task to verify proper data connectivity after you install all six nodes in the Cisco TelePresence Exchange System server cluster or after you reinstall one of the nodes.

Procedure

- Step 1** Point a web browser to the following URL, using the IP address of one of the administration servers:
- `http://ip-address/ctxadmin`**
- Make sure that you are not using the virtual IP (VIP) address that is configured on the Cisco Application Control Engine (ACE), if applicable.
- Step 2** If the login page for the Cisco TelePresence Exchange System administration console does not appear, complete the following steps:
- Repeat [Step 1](#), but this time use the IP address of the *other* administration server.
If the login page appears, proceed to [Step 3](#).
 - If the login page does not appear, make sure that the browser machine can reach other devices in the same VLAN as the administration servers. Resolve any network connectivity issues.
 - Repeat [Step 1](#).
- Step 3** Log in to the administration console with the username **admin** and the password **cisco**.
- Step 4** Select **System > Cluster Nodes**.

Step 5 Verify that all six nodes (two database servers, two call engine servers, and two administration servers) appear in the list of cluster nodes.

It may take up to five minutes for a newly installed node to register itself to the database and appear in the list of cluster nodes.

Step 6 If any of the servers remain missing from the list of cluster nodes, you need to reinstall those servers to correct the security password on those servers.

Complete the procedures that are relevant to the servers that are missing from the list of cluster nodes:

- [Installing and Synchronizing the Cisco TelePresence Exchange System Database Servers on MCS Hardware, page 3-8](#)
 - [Installing the Cisco TelePresence Exchange System Call Engine Servers on MCS Hardware, page 3-13](#)
 - [Installing the Cisco TelePresence Exchange System Administration Servers on MCS Hardware, page 3-18](#)
-



CHAPTER 4

Migrating from MCS Servers to Virtual Machines

Revised May 13, 2013

This chapter describes the process of migrating the Cisco TelePresence Exchange System from a physical machine installation on MCS servers to a virtual machine installation on UCS servers. You can use this process to do an upgrade migration from Release 1.1 on MCS servers to Release 1.2 on virtual machines, or to migrate after you have already upgraded the MCS servers to Release 1.2.

This chapter contains the following topics:

- [Requirements for Migrating to Virtual Machines, page 4-1](#)
- [Task List For Migrating From MCS Servers to Virtual Machines, page 4-2](#)
- [Shutting Down and Powering Off the Cisco TelePresence Exchange System Servers, page 4-4](#)
- [Collecting the Data Needed to Obtain New Licenses, page 4-5](#)
- [Updating the Configuration for Solution Components, page 4-5](#)

Requirements for Migrating to Virtual Machines

- During the migration process, you must obtain new license files. Before you begin, engage your Cisco Account Team and Cisco TelePresence Exchange System Product Management to assist you in updating or replacing any previously purchased licenses and to help you plan for any additional licensing needs. In order to avoid operating for an extended amount of time using the evaluation license, you must engage Cisco prior to beginning the migration, and then collect information during the migration so that the Cisco Technical Assistance Center can issue your new license files. The task list in this chapter alerts you when and how to collect the license information.
 - If you are upgrading from Release 1.1 during the migration, you must obtain a new perpetual base license for Release 1.2. If your licensing needs exceed 48 license ports, you must obtain additional incremental port licenses. For more information on licensing changes in Release 1.2, see the “Managing Licenses” chapter of the *Administration Guide for the Cisco TelePresence Exchange System Release 1.2* at http://www.cisco.com/en/US/products/ps11276/products_installation_and_configuration_guides_list.html.
 - If you are migrating from Release 1.2, you will need updated Release 1.2 licenses that are keyed to the virtual machines.

- All six nodes must run the exact same software version. If you are upgrading from Release 1.1 during the migration, you must install patch level 1.1.0.5.1.1 prior to the migration.
See the *Release Notes for the Cisco TelePresence Exchange System* for your specific release for any restrictions on software version compatibility. The release notes are available at <http://www.cisco.com/go/ctx-relnotes>.
- Each solution component used with the Cisco TelePresence Exchange System has a specific compatible version supported for use with Release 1.2. For more information on these supported versions, see the *System Requirements and Compatibility Matrix for the Cisco TelePresence Exchange System* at http://www.cisco.com/en/US/docs/telepresence/tx/exchange_system/compatibility/matrix/ctxmatrix.html.
- The migration process requires a scheduled maintenance window of system downtime, because you need to back up the database, set up the virtual machine environment, install the new software, and then restore the database. Minimum required maintenance windows are as follows:
 - For a parallel installation (which means that you install the new software on the primary database server and then the secondary database server, then you install the administration and call engine servers in parallel), you will need at least 4 hours of system downtime.
 - For a serial installation (which means that you complete the installation on the primary database server and then the secondary database server, and then you install the remaining servers one at a time), you will need at least 5 hours of system downtime.

Task List For Migrating From MCS Servers to Virtual Machines

Use the high-level task list in this section to migrate from Release 1.1 or 1.2 on MCS servers to Release 1.2 on virtual machines. The tasks reference detailed instructions in this chapter and in other chapters of this guide or in other guides as noted.

Before You Begin

- Read the “[Requirements for Migrating to Virtual Machines](#)” section on page 4-1.
- If you are upgrading from Release 1.1 during the migration, retrieve all past meeting records, call detail records (CDRs) and associated event records before starting the migration. See the “[About Changes to Automatic Data Purging Behavior Between Release 1.1 and Release 1.2](#)” section on page C-1.



Caution

Any Release 1.1 records that remain will be purged during the upgrade process. In addition to CDRs, this includes Meet-Me meetings that occurred 30 or more days in the past, future Meet-Me meetings that have been cancelled, and Rendezvous meetings that have been cancelled.

- If you are upgrading from Release 1.1 during the migration, ensure that the bridge resources that were reserved for large meetings in Release 1.1 are online. If the resources are not online while the database is being backed up, the system cannot migrate the large meetings when you try to restore the database, and the restore process will fail. For more information on changes to large meeting behavior during the migration, see the “[About Migration Behavior of Meetings Scheduled to Use Media Bridge Resources Reserved for Large Meetings](#)” section on page C-2.

- If you are upgrading from Release 1.1 during the migration, verify that all six MCS servers are running patch level 1.1.0.5.1.1. If the version is lower than this, you must install the patch before proceeding with the migration.
- If you have not already done so, engage your Cisco Account Team and Cisco TelePresence Exchange System Product Management, and notify them that you are beginning a migration and will need to obtain new Release 1.2 license files for the virtual machines.

**Caution**

Do not proceed with the migration without engaging Cisco. The task list alerts you when to obtain and install the virtual machine licenses.

- Decide whether the new Cisco TelePresence Exchange System virtual machines will use the same IP addresses as the MCS servers you are replacing, or will use a different set of IP addresses. Then, collect the network and account information required to complete the worksheets in [Appendix A, “Installation Worksheets.”](#)

**Caution**

When installing the virtual machines, the account information that you use must match the information in use at the time that you back up the database on the MCS servers, including the administrator username and password for accessing the CLI and the security password for database authentication.

- Understand the Release 1.2 feature set and the changes to the product behavior and administration console from Release 1.1. See the following resources:
 - *Release Notes for the Cisco TelePresence Exchange System Release 1.2* at <http://www.cisco.com/go/ctx-relnotes>
 - [Appendix C, “Data Migration”](#)
- Set up the UCS servers and create the virtual machines in preparation for the installation task. Follow the instructions in the [“Preparing for Installation”](#) chapter, up to the end of the chapter. Then return to this task list.
- Schedule the maintenance period and notify all users about your system downtime. Block users from scheduling meetings that will occur during this maintenance period. Begin the following task list as soon as your maintenance period starts.

Task List

1. From the administration console, back up the database. For instructions, see the “Performing a Manual Database Backup” section in the “Managing Database Backups” chapter of the *Administration Guide for the Cisco TelePresence Exchange System Release 1.2* at http://www.cisco.com/en/US/products/ps11276/products_installation_and_configuration_guides_list.html.
2. Shut down the admin and call engine services and power off all six Cisco TelePresence Exchange System MCS servers. See the [“Shutting Down and Powering Off the Cisco TelePresence Exchange System Servers”](#) section on page 4-4.

**Caution**

Make sure that the six original servers are shut down when following the remaining tasks in the task list.

3. Install the Cisco TelePresence Exchange System Release 1.2 software on the prepared virtual machines. For instructions, see the [“Installing the Software”](#) chapter.

**Note**

When performing the software installation, at the Installation Type screen, choose **CTX**. The CTX Starter Package option is not supported for migrations from MCS servers to virtual machines.

4. When the software installation is complete and you have verified data connectivity among the servers, collect the virtual machine license MAC address data from the call engine servers, and send the data values to Cisco TAC to obtain new licenses. See the [“Collecting the Data Needed to Obtain New Licenses”](#) section on page 4-5.
5. In the administration console, restore the database by using the backup from Task 1.
For instructions, see the “Restoring a Database Server Backup” section in the “Managing Database Backups” chapter of the *Administration Guide for the Cisco TelePresence Exchange System Release 1.2*.

**Note**

To log in to the administration console, use the default username **admin** and password **cisco**. After the database is restored, you can log in with the username and password that you used before beginning this migration procedure.

If you are restoring a backup from Release 1.1 to Release 1.2, the restore process could take anywhere from a few minutes to an hour or more depending on the size of your database.

6. Install the new license files. See the “Uploading Licenses” section in the “Managing Licenses” chapter of the *Administration Guide for the Cisco TelePresence Exchange System Release 1.2*.
7. If you installed the virtual machines using different IP addresses than the MCS servers, update the configuration related to the solution components with the new IP address information. See the [“Updating the Configuration for Solution Components”](#) section on page 4-5.
8. Close the maintenance window and notify your users that they may now use the system.

Shutting Down and Powering Off the Cisco TelePresence Exchange System Servers

After backing up the databases, shut down the services on the administration and call engine servers, and power off all six servers.

Procedure

- Step 1 Log in to the CLI of one of the two administration servers.
- Step 2 Enter the **utils service admin server stop** command.
- Step 3 When the service is stopped, repeat [Step 1](#) and [Step 2](#) on the other administration server.
- Step 4 Log in to the CLI of one of the two call engine servers.
- Step 5 Enter the **utils service sipserver stop** command.
- Step 6 When the service is stopped, repeat [Step 4](#) and [Step 5](#) on the other call engine server.
- Step 7 Power off the MCS hardware for all six Cisco TelePresence Exchange System servers.

Collecting the Data Needed to Obtain New Licenses

In order to receive your new Release 1.2 licenses, you must first collect the license MAC data from the call engine server virtual machines, and send the values to the Cisco Technical Assistance Center (TAC) to issue your new licenses.

Procedure

-
- Step 1** Log in to the CLI of one of the two call engine servers.
- Step 2** To collect the License MAC address, enter the **show status** command.

```
admin:show status
```

```
Host Name      : ctx-vm-engine1
Date           : Thu Nov 8, 2012 22:03:19
Time Zone      : Coordinated Universal Time (Etc/UTC)
Locale         : en_US.UTF-8
Product Ver    : 1.2.0.2.0.0-73100
OS Ver         : 5.0.0.0-2
License MAC    : E41F13302900

Uptime:
  22:03:20 up 6 days,  3:06,  1 user,  load average: 0.72, 0.68, 0.71

CPU Idle:    98.82%   System:    00.50%   User:    00.37%
IOWAIT:    00.25%   IRQ:    00.00%   Soft:    00.06%   Intr/sec: 1079.00

Memory Total:      8158776K
  Free:            326336K
  Used:            7832440K
  Cached:          6067680K
  Shared:              0K
  Buffers:         212468K

                                Total                Free                Used
Disk/active           7936256K             5317252K          2537076K (33%)
Disk/inactive         7936288K             7377400K          149232K (2%)
Disk/logging          282844448K          255061272K        13183708K (5%)
```

- Step 3** Repeat the procedure on the other call engine server, and contact Cisco TAC to obtain the license files. (The task list alerts you when to install the new license files.)
-

Updating the Configuration for Solution Components

After migrating the Cisco TelePresence Exchange System to a new set of servers, you must do the following tasks to update the configuration of various solution components to account for the new IP addresses:

**Note**

Several of the tasks in this task list reference the *Administration Guide for the Cisco TelePresence Exchange System Release 1.2*, which is available at http://www.cisco.com/en/US/products/ps11276/products_installation_and_configuration_guides_list.html.

1. Configure a new Cisco Application Control Engine (ACE) or create a new context for the Cisco TelePresence Exchange System virtual machines if you are using an existing ACE. See the “Configuring the Cisco Application Control Engine” chapter of the *Administration Guide for the Cisco TelePresence Exchange System Release 1.2*.
2. Verify that the SIP load balancer virtual IP (VIP) address points to the new ACE VIP. See the “Verifying the SIP Load Balancer Virtual IP Address” section on page 4-7.
3. Log in to each Cisco TelePresence Server MSE 8710 that is configured as a resource in the Cisco TelePresence Exchange System, and change the Outbound address field in the SIP outbound call configuration to point to the new ACE VIP. For instructions, see the “Configuring SIP for Dial-Out Calls” section of the “Configuring Cisco TelePresence MSE 8000 Series” chapter of the *Administration Guide for the Cisco TelePresence Exchange System Release 1.2*.
4. Log in to each Cisco TelePresence MCU MSE 8510 that is configured as a resource in the Cisco TelePresence Exchange System, and change the SIP proxy address field in the SIP dial-out call settings configuration to the point to the new ACE VIP. For instructions, see the “Configuring SIP Dial-Out Call Settings” section of the “Configuring Cisco TelePresence MSE 8000 Series” chapter of the *Administration Guide for the Cisco TelePresence Exchange System Release 1.2*.
5. Log in to each Cisco TelePresence Multipoint Switch that is configured as a resource in the Cisco TelePresence Exchange System, and change the Unified CM settings to the new ACE VIP and to the IP addresses of both new call engine servers. See the “Configuring Unified CM Settings on the Cisco TelePresence Multipoint Switch” section of the “Configuring the Cisco TelePresence Multipoint Switch” chapter of the *Administration Guide for the Cisco TelePresence Exchange System Release 1.2*.

**Note**

Enter the new ACE VIP in the first field (Unified CM1). Enter either the hostname or IP address of the two Cisco TelePresence Exchange System call engine servers in the Unified CM2 and Unified CM3 fields. Leave the Unified CM4 and Unified CM5 fields blank.

6. In the Cisco TelePresence Exchange System administration console, update the SIP Load Balancer Address with the new ACE VIP. For instructions, see the “Configuring the SIP Load Balancer Address” section in the “Configuring System Settings” chapter of the *Administration Guide for the Cisco TelePresence Exchange System Release 1.2*.
7. Log in to the Cisco Session Border Controller and create three new adjacencies which point to new ACE VIP and both new Cisco TelePresence Exchange System call engine servers. For instructions, see the “Creating Adjacencies” section of the “Configuring Cisco Session Border Controllers” chapter of the *Administration Guide for the Cisco TelePresence Exchange System Release 1.2*.
8. Add the new adjacencies to the SBC call-policy. See the “Configuring Call Policies” section of the same chapter.

Verifying the SIP Load Balancer Virtual IP Address

Complete this procedure on a call engine server to display the configured SIP load balancer virtual IP (VIP) address and port.

Procedure

Step 1 Log in to the CLI of the call engine server.

Step 2 Enter the **show siplb** command.

In the following example, SIP load balancing is enabled on the server:

```
admin: show siplb
```

```
SIP Loadbalancer Host: 192.0.2.25
```

```
SIP Loadbalancer Port: 5060
```

In the following example, SIP load balancing is disabled on the server:

```
admin: show siplb
```

```
SIP Loadbalancer is not enabled/configured on this server.
```

Step 3 If you need to make changes to the SIP load balancer VIP address, see the “Configuring SIP Load Balancing on the Call Engine Servers” section in the “Changing the Network Configurations” chapter of the *Administration Guide for the Cisco TelePresence Exchange System Release 1.2* at http://www.cisco.com/en/US/products/ps11276/products_installation_and_configuration_guides_list.html.



APPENDIX A

Installation Worksheets

Complete these worksheets before you install the software on the Cisco TelePresence Exchange System database, administration, and call engine servers. For details and requirements, see the [“Gathering Required Information Before Installation”](#) section on page 1-6.

Table A-1 **Worksheet for Cisco TelePresence Exchange System Servers**

Node	Hostname	IP Address	Subnet Mask	Username	Password
Database—shared virtual ¹				—	—
Database—primary				—	—
Database—secondary				—	—
Engine 1				—	—
Engine 2				—	—
Admin 1				—	—
Admin 2				—	—
Default gateway for the data VLAN			—	—	—
Administrator username and password for accessing the CLI of any node in the cluster ²					
Security password to authenticate data requests between the database server and the other servers ³					

1. The virtual hostname and virtual IP (VIP) address are shared by both the primary and secondary database servers. The virtual hostname is used to provide reference to the shared virtual IP (VIP) address and is not configured on the database servers themselves. If you have a DNS server which maintains your IP hostname mapping, you can register this virtual hostname to the shared database virtual IP address through that DNS server.
2. You must use the same administrator username and password on all Cisco TelePresence Exchange System servers.
3. The security password must be identical for all nodes in the server cluster. After you set the security password on a server, you cannot change it without reinstalling the server.

Table A-2 **Worksheet for Other Solution Components**

Component	Information	Value
SIP load balancer ¹ (Cisco Application Control Engine)	Virtual IP (VIP) address	
	Port ²	

Table A-2 *Worksheet for Other Solution Components (continued)*

Component	Information	Value
NTP ³	Server IP address, server hostname, or pool name	
	Server IP address, server hostname, or pool name	
	Server IP address, server hostname, or pool name	
	Server IP address, server hostname, or pool name	
	Server IP address, server hostname, or pool name	

1. The SIP load balancer is not applicable in the starter package configuration of the Cisco TelePresence Exchange System, because the starter package configuration does not support the SIP load balancer VIP capability.
2. Cisco recommends that you use the default port 5060.
3. NTP = network time protocol. Only one NTP entry is required, but Cisco recommends that you have at least three clocking sources.

Table A-3 *Worksheet for Generating LSCs¹ for the Cisco TelePresence Exchange System Servers*

Node	Organization	Unit	Location	State	Country
Database—primary					
Database—secondary					
Engine 1					
Engine 2					
Admin 1					
Admin 2					

1. LSC = locally significant certificate

**Note**

The software installer always prompts you to enter the certificate information. However, the information is currently used only to generate certificates for the call engine nodes in the starter package configuration of the Cisco TelePresence Exchange System.



APPENDIX B

Network Design and Routing Configuration for Redundancy

This appendix provides technical details on the network design and routing configuration for the Cisco TelePresence Exchange System. See the following sections:

- [Overview, page B-1](#)
- [Physical Cabling of the Servers, page B-3](#)
- [Networking the Cisco TelePresence Exchange System by Using the Cisco Application Control Engine, page B-4](#)
- [Networking the Starter Package Configuration of the Cisco TelePresence Exchange System by Directly Connecting the VLAN to the Switch Router, page B-7](#)
- [Example Configuration, page B-9](#)

Overview

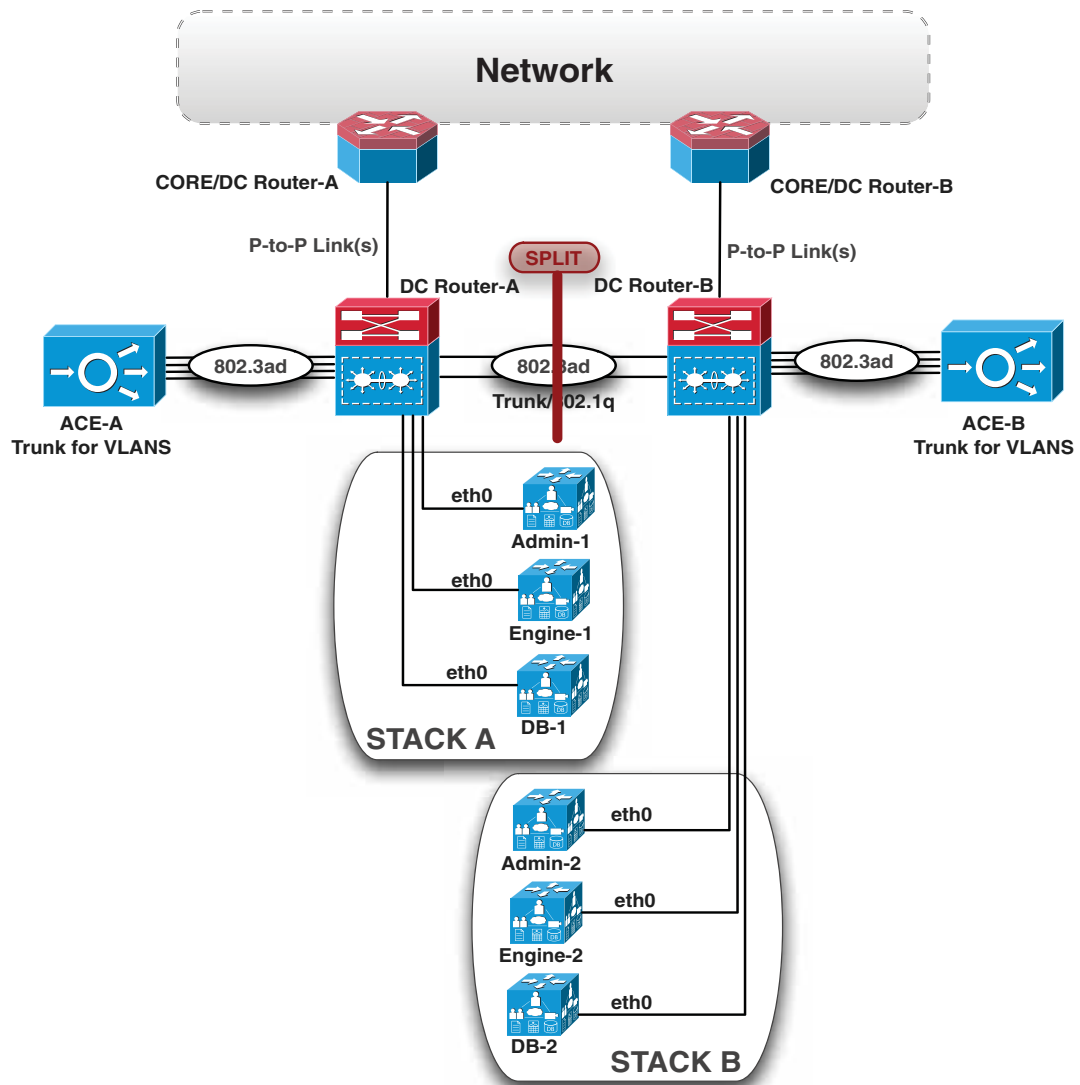
The Cisco TelePresence Exchange System servers all reside on the same VLAN to support multicast between the servers. The servers use multicast to elect the primary database server. The database server dynamically assumes the database virtual IP (VIP) address when it becomes primary, which enables the servers to access the database using the VIP.

There are two ways to provide VLAN support for the Cisco TelePresence Exchange System: By directly connecting to the switch router or using the Cisco Application Control Engine (ACE) 4710 appliance. For starter package configurations of the Cisco TelePresence Exchange System, the ACE is not applicable, and therefore the VLAN for the Cisco TelePresence Exchange System servers is directly connected to the switch router. For full-feature configurations of the Cisco TelePresence Exchange System that support the SIP load balancer VIP capability, the ACE is configured as a Layer 3 gateway between the Cisco TelePresence Exchange System servers and the rest of the network. In order for SIP communication to be load balanced, all routed traffic flows bidirectionally through the ACE.

Starting in Cisco TelePresence Exchange System Release 1.2, the database servers can enter split-brain mode (in which neither database server knows the high availability role of its peer) when the database election is reduced from 6 to 3 servers. In this condition, the database servers enter split-brain mode only if the default gateway is reachable by ICMP and if each database server can reach at least one administration server and one call engine server. Ensuring that the default gateway is reachable means that either Hot Standby Router Protocol (HSRP) or the ACE fault tolerance is part of the failure and that the two sides are isolated. Monitoring if both an administration server and a call engine server are available ensures that a single device failure or a complete multicast failure does not result in the servers entering split-brain mode.

Split-stack mode occurs when the two sets of Cisco TelePresence Exchange System servers can no longer communicate with each other. [Figure B-1](#) illustrates an example where the stack is split because the port channel between the switches went down.

Figure B-1 Cisco TelePresence Exchange System Split Stack Example



In this scenario, the Cisco Application Control Engine and HSRP between the ACE and the Cisco TelePresence Exchange System VLAN go active/active because the two sides can no longer see each other. The Cisco TelePresence Exchange System does the same thing by making each of the servers active. This means the database servers are active/active in this phase. When Layer 2 connectivity breaks between the Cisco TelePresence Exchange System servers, the servers can be configured to go active.

The goal of the network design should be to route traffic to only one stack of Cisco TelePresence Exchange System servers in the event of a split stack. To support this design, routing must be symmetric and cannot be load balanced at the server edge. Routing can be load balanced further in the network. The routers that uplink the rest of the network to the Cisco TelePresence Exchange System server VLAN/subnet must not advertise equal cost metrics for the Cisco TelePresence Exchange System Server VLAN. One router should be designated as primary and the other as standby.

The remainder of this appendix describes how to cable the servers and set up routing and the VLAN to properly support split-stack redundancy.

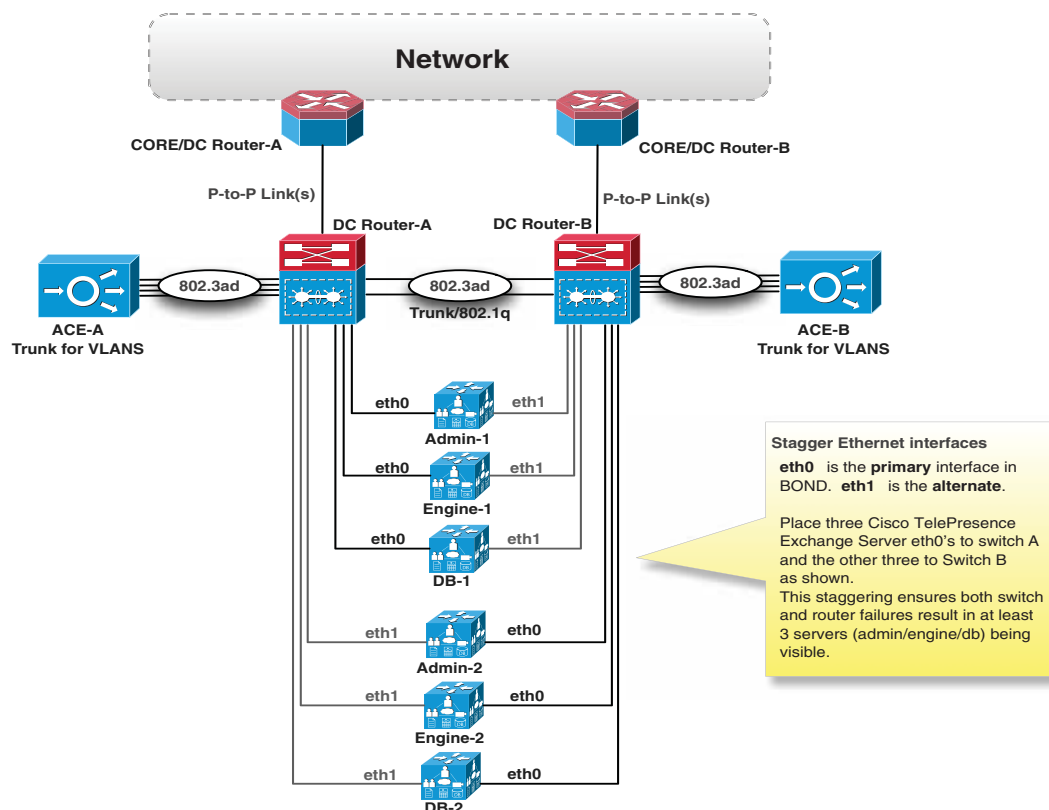
Physical Cabling of the Servers

The Cisco TelePresence Exchange System consists of two sets of three paired servers: administration, call engine, and database. You must do the physical Ethernet cabling in a specific way in order to achieve split-stack redundancy, where each set of servers can act independently in the case of a failure.

Starting in Release 1.2 on the MCS I3 servers, the primary interface in bond0 will always be ETH0 and the backup will be ETH1. If ETH0 fails, traffic will shift over to ETH1. When ETH0 becomes available again, traffic will shift back to ETH0. Knowing which ETH(n) interface will be primary, when active, gives the implementer the option to cable the servers in such a way that ensures that one set of administration, call engine, and database servers is reachable in the event of a split stack.

In order to support a switch/router hardware or software failure, three of the servers should be configured primary on the first switch with their backup link to the second switch. The other three should be configured primary on the second switch with their backup port to the first switch. For example, the odd numbered servers (admin-1, engine-1, and database-1) should have their ETH0 interfaces connected to the first switch and ETH1 to the second switch. Likewise, the even numbered servers (admin-2, engine-2, and database-2) should have their ETH0 interfaces connected to the second switch and ETH1 to the first switch. [Figure B-2](#) depicts this configuration.

Figure B-2 Physical Ethernet Cabling of Cisco TelePresence Exchange System MCS Servers



If the servers are not cabled according to [Figure B-2](#), during a split-stack scenario a pair of servers of the same role could end up being isolated on the side that has failed. For example, if ETH0 of DB-1 and DB-2 were connected to switch-1 and if switch-1 had a soft failure, the call engine servers and administration servers would no longer have visibility to DB-1 or DB-2 even though the database servers have a redundant ETH1 connected to switch-2. This happens because the Cisco TelePresence Exchange System server does not detect a soft switch failure and therefore will continue to use the ETH0 interface connected to switch-1.

For virtual machine deployments, the Cisco Unified Computing System (UCS) servers can be configured in a similar fashion as above. The configuration for UCS is out of scope for this appendix since several options exist to uplink UCS, such as utilizing fabric extenders and interconnects. The implementer should ensure that Layer 1 and 2 connectivity is maintained as outlined above when implementing UCS.

Networking the Cisco TelePresence Exchange System by Using the Cisco Application Control Engine

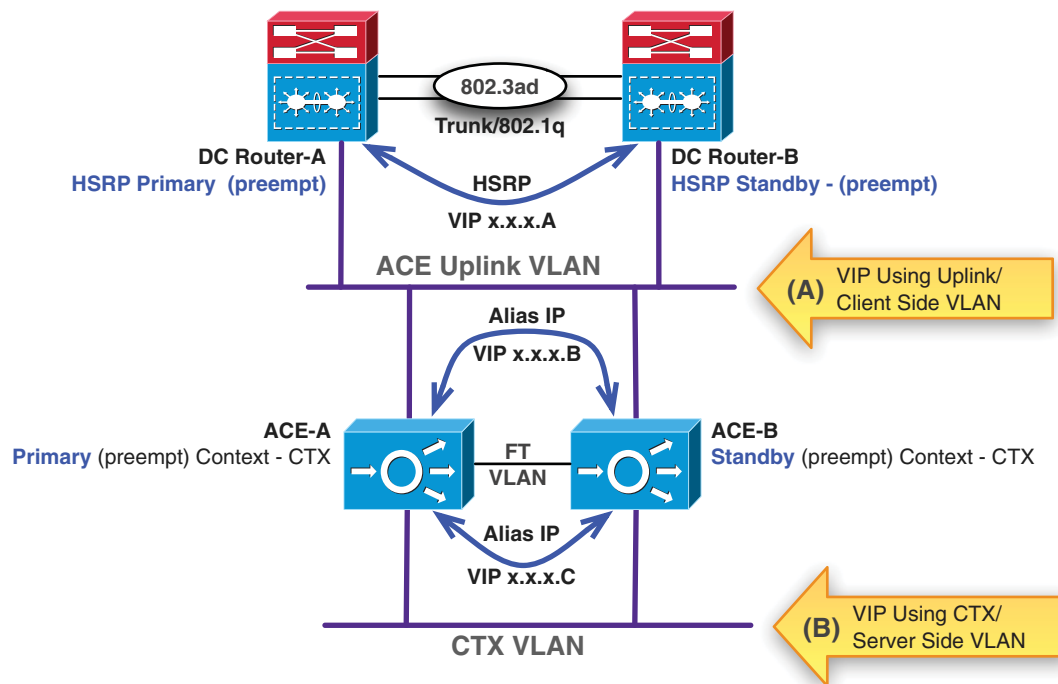
The Cisco TelePresence Exchange System utilizes two Cisco Application Control Engine (ACE) 4710 appliances for SIP server load balancing and optionally for IVR VXML HTTP load balancing. (For information about using the starter package without the ACE, see the [“Networking the Starter Package Configuration of the Cisco TelePresence Exchange System by Directly Connecting the VLAN to the Switch Router”](#) section on page B-7.)

You configure the ACE in routed mode, which positions the ACE as a router hop between the Cisco TelePresence Exchange System servers and the rest of the network. The Cisco TelePresence Exchange System servers use the ACE virtual “alias” address as the default gateway. This ensures that SIP traffic is bidirectionally forwarded through the ACE.

SIP Engine Virtual IP Address

The Cisco TelePresence Exchange System solution uses several virtual IP (VIP) addresses. This section describes the VIP address that is used for SIP load balancing between the two call engine servers.

The VIP can be any address used on the ACE. At first glance it would seem that the VIP should be from the Uplink (a.k.a. client side) VLAN (see A in [Figure B-3](#)) but it does not need to be. Using an address from the ACE Uplink VLAN is supported and permitted. However, doing so requires extra configurations on the DC-Routers to ensure that the connected VLAN is not advertised via OSPF, IS-IS, EIGRP, or BGP with equal metrics. This extra configuration affects all routing to all VIPs from this VLAN, which may be suboptimal if it is being shared with load-balanced VLANs other than the Cisco TelePresence Exchange System VLAN. For this reason, we recommend that you use the Cisco TelePresence Exchange System VLAN space (see B in [Figure B-3](#)) for the VIP of the SIP engines. Considering there are six Cisco TelePresence Exchange System servers, two ACEs with one alias address, one SIP engine VIP, and one database VIP, a /28 or less subnet should be used.

Figure B-3 SIP Engine VIP Address Choices Using Cisco TelePresence Exchange System VLAN or Uplink VLAN

Network Design with the Cisco Application Control Engine

The Cisco Application Control Engine does not support interior or exterior routing protocols and therefore relies on gateway redundancy protocols. Both the ACE and the uplink switch router (DC Router-A and Router-B in [Figure B-3](#)) implement gateway redundancy. The ACE refers to this as the alias address. The alias address is active on the active ACE. We recommend the use of HSRP because it provides redundancy on the DC router side. Gateway Load Balancing Protocol (GLBP) can be used, but, if used, should be configured in active/backup mode to ensure that the second forwarder is only used if the primary is down. Allowing both GLBP forwarders to be active can lead to asymmetric routing, which could result in a failure of the controlled split-brain mode.

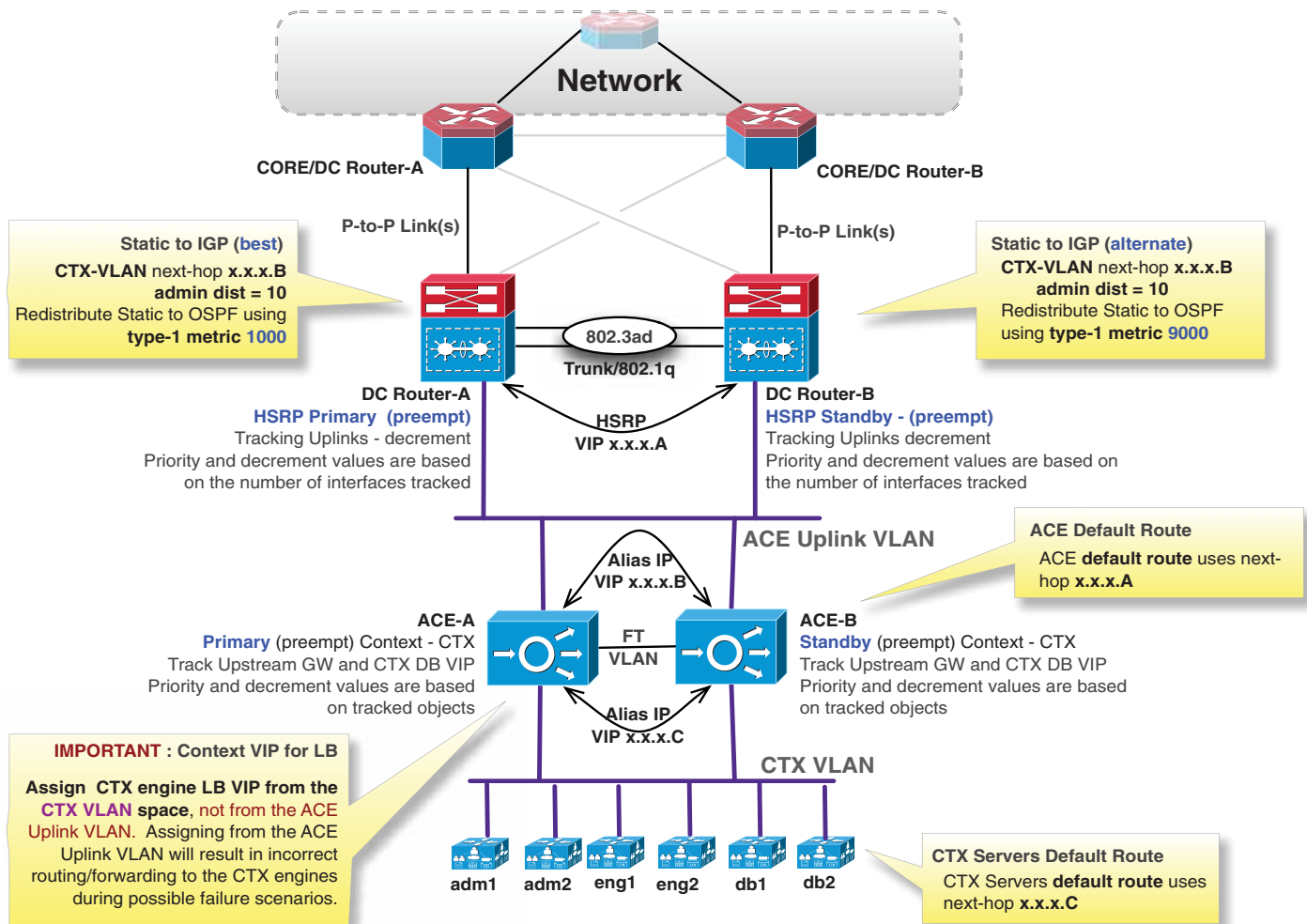
The following sections depict the network design with the ACE, using the Cisco TelePresence Exchange System VLAN for the SIP VIP.

- [Network Diagram with the Cisco Application Control Engine, page B-5](#)
- [DC Router Configuration with the Cisco Application Control Engine, page B-6](#)
- [Cisco Application Control Engine Configuration, page B-7](#)

Network Diagram with the Cisco Application Control Engine

[Figure B-4](#) illustrates the Cisco TelePresence Exchange System servers connecting to the ACE and the ACE connecting to the DC routers. The Cisco TelePresence Exchange System servers on UCS can be connected to the ACE via the fabric extenders/interconnect at Layer 2. The routers that connect to the ACE in the below diagram are referred to as the DC Routers. These DC Routers have a shared VLAN (referred to as ACE Uplink VLAN) between the DC routers and the ACE.

Figure B-4 Cisco TelePresence Exchange System Logical Routing with the Cisco Application Control Engine



DC Router Configuration with the Cisco Application Control Engine

HSRP is configured on the VLAN interfaces of the DC routers. DC Router A is configured as primary and DC Router B is configured as standby. Tracking is configured to track the DC Router uplink interfaces. The priority and decrement values must be configured per the implementation requirements. Both routers are configured to preempt in order to take over for the VIP if the priority on the active router becomes worse.

Both DC routers are configured with a static route, administrative distance set to greater than 0 but less than 20, for the Cisco TelePresence Exchange System VLAN subnet using the NEXT-HOP address of the ACE alias address. This ensures that the static route always goes to the active ACE.

The Cisco TelePresence Exchange System VLAN prefix static route is redistributed into the routing protocol of choice. OSPF is used in this document. The metric on redistribution should ensure that DC Router-A is preferred over the advertised route from DC Router-B. Upstream routers to DC Router-A

and Router-B will use DC Router-A as long as Router-A is advertising the prefix. If DC Router-A fails or loses connectivity to the ACE alias next-hop address, the route will be removed and Router-B will become primary.

Cisco Application Control Engine Configuration

The ACE has a similar concept to HSRP but is configured differently. Normally the ACE is configured in multiple context mode to allow scaling the ACE virtually to support additional environments. Multiple contexts are not required. The configuration documented here uses multiple contexts; Admin context and CTX context.

The priority is configured when configuring the fault tolerant group in the admin context. The tracking and decrementing values are configured within the context that has been configured for fault tolerance. Having the tracking configuration within the context enables the tracking of Cisco TelePresence Exchange System servers as well as the HSRP gateway using standard probe configurations. It is suggested that at a minimum the database servers and HSRP gateway are tracked.



Note

The SIP VIP with ICMP-reply should NOT be used as the NEXT-HOP address on the static route for the Cisco TelePresence Exchange System VLAN subnet. Instead the tracking as described above and depicted below should be utilized. Using an application VIP has inherent problems that cause loss of connectivity to the Cisco TelePresence Exchange System servers. For example, during maintenance it may be normal and expected that the SIP VIP will be unavailable. Dropping the Cisco TelePresence Exchange System VLAN route because of this would cause loss of connectivity. Additionally there may be more VIPs and using one or more of them with floating static routes becomes administratively a problem.

The ACE is configured with a single default route with the NEXT-HOP configured as the HSRP address on the DC Routers. This ensures that the ACE uses the desired active DC Router.

Each Cisco TelePresence Exchange System server is configured to use the ACE alias address on the Cisco TelePresence Exchange System VLAN.

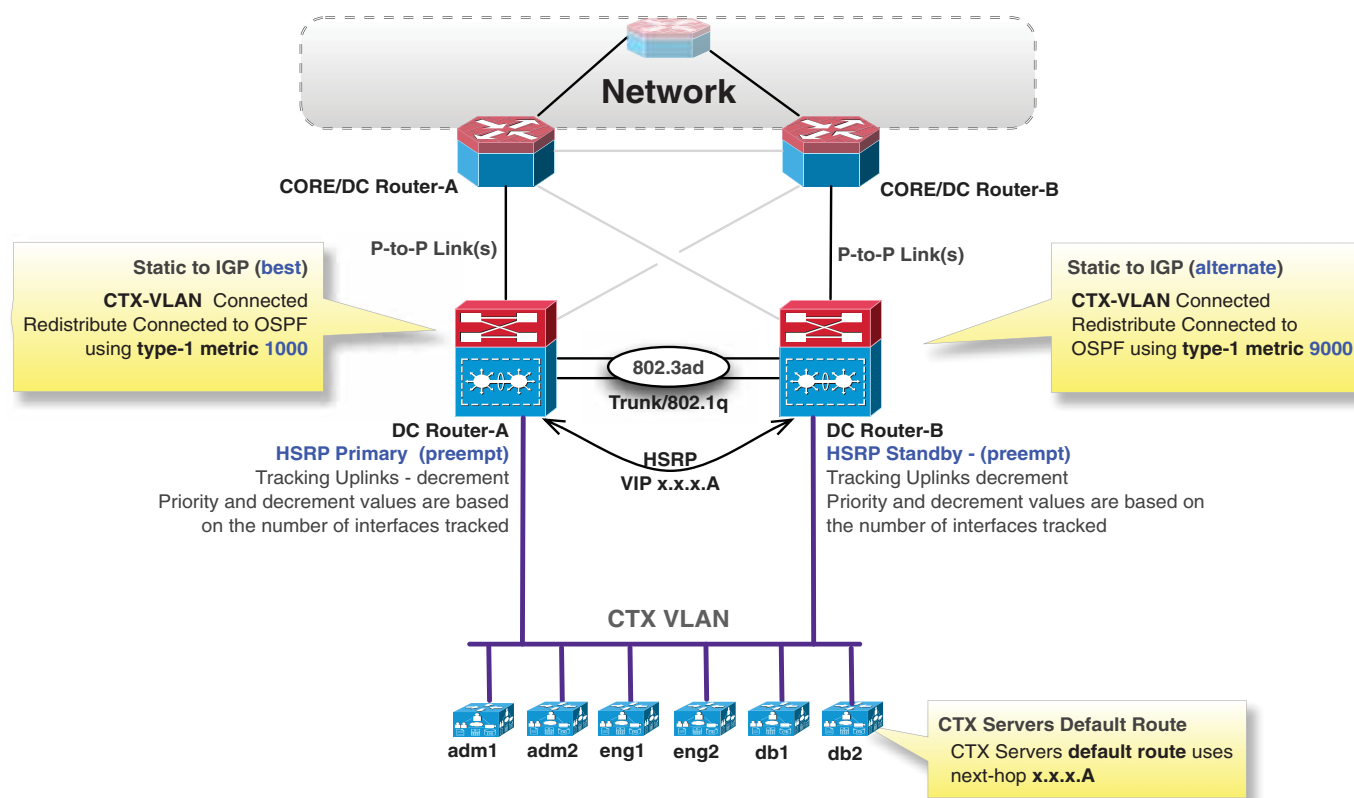
Networking the Starter Package Configuration of the Cisco TelePresence Exchange System by Directly Connecting the VLAN to the Switch Router

For starter package configurations, the Cisco TelePresence Exchange System VLAN is directly connected to the switch router. The Cisco Application Control Engine is not applicable in the starter package configuration of the Cisco TelePresence Exchange System, because the starter package configuration does not support the SIP load balancer VIP capability.

Network Diagram with the VLAN Directly Connected to the Switch Router

Figure B-5 illustrates the Cisco TelePresence Exchange System servers directly connected at Layer 3 to the DC routers. The Cisco TelePresence Exchange System servers as virtual machines on UCS can be connected to the DC routers via the fabric extenders and interconnect at Layer 2.

Figure B-5 Cisco TelePresence Exchange System Logical Routing with VLAN Directly Connected to the Switch Router



DC Router Configuration with the VLAN Directly Connected

HSRP is configured on the Cisco TelePresence Exchange System VLAN interfaces of the DC routers. DC Router A is configured as primary and DC Router B is configured as standby. Tracking is configured to track the DC Router uplink interfaces. The priority and decrement values must be configured per the implementation requirements. Both routers are configured to preempt in order to take over for the VIP if the priority on the active router becomes worse.

Adjusting the metrics for the Cisco TelePresence Exchange System VLAN subnet when advertised depends on the protocol being used. When using OSPF, the subnet should not be included in OSPF as a link. Instead, the directly connected interface should be redistributed into OSPF in a similar fashion as documented for the static route example.

Each Cisco TelePresence Exchange System server is configured to use the DC router HSRP VIP as the default gateway address.

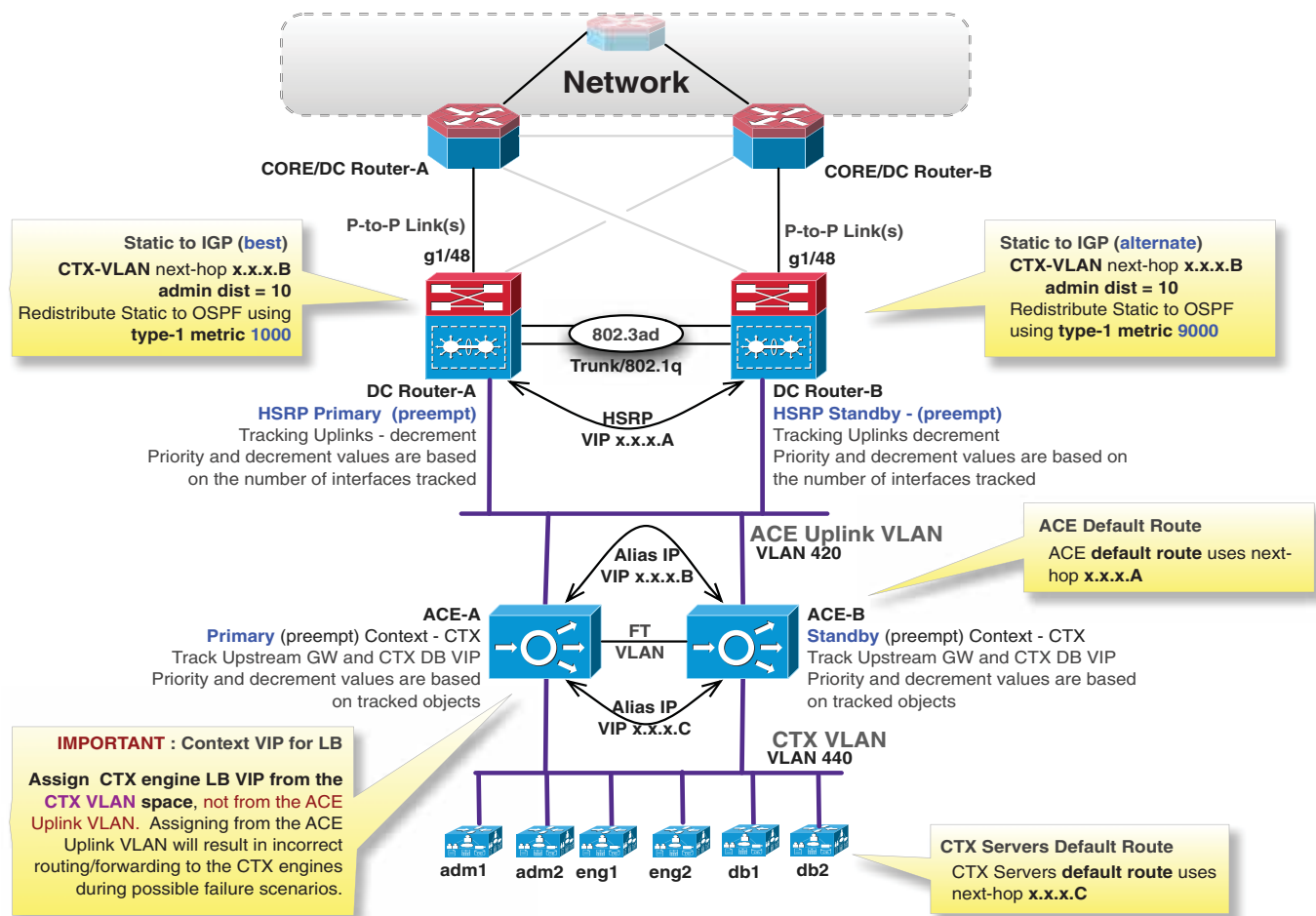
Example Configuration

This section outlines an example configuration of the Cisco TelePresence Exchange System using the Cisco Application Control Engine 4710 with OSPF as the routing protocol. This configuration uses Cisco IOS syntax and was validated using Cisco 4948s as the DC routers that uplink the ACE 4710s. The general configuration is applicable to Cisco IOS, Cisco IOS XE, Cisco IOS XR, and Cisco NX-OS configurations using VPN routing and forwarding instances (VRFs) and without VRFs.

This configuration focuses on HSRP, routing of the Cisco TelePresence Exchange System VLAN via OSPF, and ACE fault tolerant configurations only.

Figure B-6 shows the topology used in the examples.

Figure B-6 Configuration Example Reference Topology with the Cisco Application Control Engine



See the following sections for configuration details for the elements of the topology:

- [Core Routers, page B-10](#)
- [DC Routers, page B-10](#)
- [Cisco Application Control Engines, page B-13](#)

Core Routers

The CORE/DC routers do not require any extra configuration. As depicted in [Figure B-6](#), the links between the DC routers and the CORE routers are optionally redundant. Typically CORE Router-A would uplink the DC Router-A and CORE Router-B would uplink DC Router-B at a minimum. Providing a crosslink between DC routers enables the CORE router to load balance to DC Router-A. Since traffic is going to Router-A, the primary path for the Cisco TelePresence Exchange System VLAN, load balancing would be acceptable.

Executing “show ip ospf database <Cisco TelePresence Exchange System vlan prefix>” on CORE router A and CORE router B would show an EXTERNAL LSA from DC Router-A with a metric of 1000 and forwarder address of 0.0.0.0 and from DC Router-B with a metric of 9000 and a forwarder address of 0.0.0.0.

```
core-dc-router-A# show ip ospf database 192.0.2.48
Routing Bit Set on this LSA
  LS age: 849
  Options: (No TOS-capability, DC)
  LS Type: AS External Link
  Link State ID: 192.0.2.48 (External Network Number )
  Advertising Router: 192.0.2.214
  LS Seq Number: 80000003
  Checksum: 0x9374
  Length: 36
  Network Mask: /28
    Metric Type: 1 (Comparable directly to link state metric)
    TOS: 0
    Metric: 1000
    Forward Address: 0.0.0.0
    External Route Tag: 1000

  LS age: 33
  Options: (No TOS-capability, DC)
  LS Type: AS External Link
  Link State ID: 192.0.2.48 (External Network Number )
  Advertising Router: 192.0.2.217
  LS Seq Number: 80000069
  Checksum: 0x4EF0
  Length: 36
  Network Mask: /28
    Metric Type: 1 (Comparable directly to link state metric)
    TOS: 0
    Metric: 9000
    Forward Address: 0.0.0.0
    External Route Tag: 1000
```

DC Routers

The DC routers provide the Layer 3 routing for the ACE/Cisco TelePresence Exchange System VLAN (referred to as CTX VLAN in the example). These routers are configured per the design and [Figure B-6](#).

DC Router Configuration

```
!=====
!= Configure Prefix Lists
!=====
! Below defines the prefix list used to match the CTX VLAN IP addresses
```

```

ip prefix-list CTX-to-OSPF description ----- CTX Prefixes redistributed into OSPF
-----
ip prefix-list CTX-to-OSPF permit 192.0.2.48/28

!=====
!= Configure Route-maps for redistribution
!=====
! Static-into-OSPF is the route map used to filter and apply attributes
!   for specific routes that are to be redistributed into OSPF

!   Sequence 500 is configured on both routers and is used to deny anything else
route-map Static-into-OSPF deny 500
  description ----- Deny anything not already allowed -----

!   Sequence 10 is used for the CTX VLAN preferred entry
!   Below is configured on the primary router
route-map Static-into-OSPF permit 10
  description ----- REDIST CTX prefixes as MOST Preferred -----

! Below matches the specific prefixes
match ip address prefix-list CTX-to-OSPF

! Below sets the OSPF metric and external type to 1
! Set metric to 1000 on the primary router
set metric 1000
set metric-type type-1

! This TAG is not required but it is nice to have if we redistribute
!   OSPF into anything else.
!   Tag 1000 is an example of a tag that can be used to identify
!   on other routers which prefixes are CTX VLAN prefixes. This would be
!   applied to both primary and secondary routers.
set tag 1000

! Sequence 20 is used for the CTX VLAN LEAST preferred entry
! Below is configured on the secondary router
route-map Static-into-OSPF permit 20
  description ----- REDIST CTX prefixes as LEAST Preferred -----

! Below matches the specific prefixes
match ip address prefix-list CTX-to-OSPF

! Below sets the OSPF metric and external type to 1
! Set metric to 9000 on the secondary router
set metric 9000
set metric-type type-1

! This TAG is not required but it is nice to have if we redistribute
!   OSPF into anything else.
!   Tag 1000 is an example of a tag that can be used to identify
!   on other routers which prefixes are CTX VLAN prefixes. This would be
!   applied to both primary and secondary routers.
set tag 1000

!=====
!= Configure OSPF
!=====
router ospf 100

! Redistribute OSPF using the route-map filter/attribute set
redistribute static subnets route-map Static-into-OSPF

! Disable ACE Uplink VLAN from forming OSPF adjacencies since the ACE doesn't
!   support OSPF and we do not want this router to use this interface

```

```

!   as transit. This is also required to ensure that the OSPF forwarding
!   address isn't set to the next-hop of the static route on the ACE VLAN.
!   If we didn't do this OSPF would still LB using the forwarder address.
passive-interface Vlan420

! Include the ACE uplink VLAN in OSPF routing
network 192.0.2.0 0.0.0.31 area 0

! Include other OSPF config related items

!=====
!= Configure Static routes for CTX VLAN
!=====
! Next-hop is set to the ACE VLAN alias address. ADMIN distance is set to
! 10 and a name is given on the prefix
ip route 192.0.2.48 255.255.255.240 192.0.2.11 10 name CTX-VLAN

!=====
!= Configure ACE Vlan with HSRP
!=====
! -----
! Below is the configuration on the Primary router
interface Vlan420
description ===== ACE Context: CTX; UPLINK VLAN (Primary) =====
ip address 192.0.2.2 255.255.255.224

! Configure HSRP version 2
standby version 2

! Configure the VIP address
standby 420 ip 192.0.2.1

! Configure the timers to detect failure in 3 seconds
standby 420 timers 1 3

! Configure the primary as preferred - secondary is 100/default
standby 420 priority 105

! Configure the preempt delay to reduce flapping
standby 420 preempt delay minimum 15

! Configure an authentication string for HSPR
standby 420 authentication md5 key-string MyHSRPKey

! Track the primary (default route in our case) interface - Decrement is 10
! 10 is the default
standby 420 track GigabitEthernet1/48 10

! -----
! Below is the configuration on the secondary router
interface Vlan420
description ===== ACE Context: CTX; UPLINK VLAN (Secondary) =====
ip address 192.0.2.3 255.255.255.224

! Configure HSRP version 2
standby version 2

! Configure the VIP address
standby 420 ip 192.0.2.1

! Configure the timers to detect failure in 3 seconds
standby 420 timers 1 3

```

```

! Configure the primary as preferred - secondary is 100/default
standby 420 priority 100

! Configure the preempt delay to reduce flapping
standby 420 preempt delay minimum 15

! Configure an authentication string for HSPR
standby 420 authentication md5 key-string MyHSRPKey

! Track the primary (default route in our case) interface - Decrement is 10
! 10 is the default
standby 420 track GigabitEthernet1/48 10

```

Verifying the DC Router configuration

From the CORE routers we can see the active LSA is the one that has the lower metric. Take special note to the forwarder address being set to 0.0.0.0. This allows the routing to forward based on the path to the ASBR instead of the path to the forwarder. This is needed when using OSPF. The following is sample output from the **show ip ospf database** command:

```

core-dc-router-A# show ip ospf database 192.0.2.48
Routing Bit Set on this LSA
  LS age: 849
  Options: (No TOS-capability, DC)
  LS Type: AS External Link
  Link State ID: 192.0.2.48 (External Network Number )
  Advertising Router: 192.0.2.214
  LS Seq Number: 80000003
  Checksum: 0x9374
  Length: 36
  Network Mask: /28
    Metric Type: 1 (Comparable directly to link state metric)
    TOS: 0
    Metric: 1000
    Forward Address: 0.0.0.0
    External Route Tag: 1000

  LS age: 33
  Options: (No TOS-capability, DC)
  LS Type: AS External Link
  Link State ID: 192.0.2.48 (External Network Number )
  Advertising Router: 192.0.2.217
  LS Seq Number: 80000069
  Checksum: 0x4EF0
  Length: 36
  Network Mask: /28
    Metric Type: 1 (Comparable directly to link state metric)
    TOS: 0
    Metric: 9000
    Forward Address: 0.0.0.0
    External Route Tag: 1000

```

Cisco Application Control Engines

The Cisco Application Control Engines are configured per the design and example diagram. There are two contexts: Admin and CTX. The Admin context is for management and has the main fault tolerant configurations and the CTX context is used for the Cisco TelePresence Exchange System.

Admin Context

```

!=====
!= CONTEXT: Admin - This needs to be configured on both ACE's
!=      Configure the general/basic FT configuration
!=====
! Configure the redundant/replica interface - this is a dedicated
!      back-to-back VLAN for the ACE
ft interface vlan 441
    ip address 10.0.0.2 255.255.255.252
    peer ip address 10.0.0.1 255.255.255.252
    no shutdown

! Configure the peer probe settings over the FT interface
ft peer 1
    heartbeat interval 200
    heartbeat count 10
    ft-interface vlan 441

! Configure the FT Group specifically for context platform-i3
ft group 1
    peer 1
    ! Make sure we preempt when the priority decrements due to a tracking failure
    preempt

    ! 105 is configured on primary and 100 is configured on standby
    priority 105

    associate-context CTX
    inservice

```

CTX Context

```

!=====
!= CONTEXT: CTX
!=      Configure the tracking of CTX DB server VIP and Default GW
!=====
! Configure the interfaces and the alias addresses
interface vlan 420
    description Uplink VLAN
    ip address 192.0.2.9 255.255.255.240
    alias 192.0.2.11 255.255.255.240
    peer ip address 192.0.2.10 255.255.255.240

interface vlan 440
    description CTX VLAN
    ip address 192.0.2.57 255.255.255.240
    alias 192.0.2.49 255.255.255.240
    peer ip address 192.0.2.58 255.255.255.240

! Configure a probe for CTX DB tracking - this is subject to change and is
!      is used as an example probe only to monitor the DB.
probe tcp probe-CTX-DB
    port 3306
    interval 2
    passdetect interval 2
    passdetect count 4
    open 2

! Configure the probe for the Default GW tracking
probe icmp probe-ICMP
    interval 2

```



```

faildetect 2
passdetect interval 15
passdetect count 4

! Configure tracking of the CTX DB VIP address using the probe defined above
ft track host CTX-DB

! Configure the DB VIP address - this host address is the DB VIP address
track-host 192.0.2.56
peer track-host 192.0.2.56

probe probe-CTX-DB
peer probe probe-CTX-DB

! Configure the decrement priorities to be used when the probe fails
priority 10
peer priority 10

! Configure tracking of the Default GW HSRP address using the probe defined above
ft track host DEFAULT-GW

! Configure the HSRP VIP address
track-host 192.0.2.1
peer track-host 192.0.2.1

probe probe-ICMP
peer probe probe-ICMP

! Configure the decrement priorities to be used when the probe fails
priority 10
peer priority 10

```

Verifying the Cisco Application Control Engine Configuration

From the CTX context issue the following to see the current fault tolerant configuration, states, and priorities for the CTX context.

ace/CTX# **show ft group detail**

```

FT Group                : 1
No. of Contexts         : 1
Context Name            : CTX
Context Id              : 2
Configured Status       : in-service
Maintenance mode        : MAINT_MODE_OFF
My State                : FSM_FT_STATE_ACTIVE
My Config Priority       : 105
My Net Priority          : 105
My Preempt              : Enabled
Peer State               : FSM_FT_STATE_STANDBY_HOT
Peer Config Priority     : 100
Peer Net Priority        : 100
Peer Preempt            : Enabled
Peer Id                 : 1
Last State Change time  : Mon Aug  6 23:26:24 2012

Running cfg sync enabled : Enabled
Running cfg sync status  : Running configuration sync has completed
Startup cfg sync enabled : Enabled
Startup cfg sync status  : Startup configuration sync has completed
Connection sync enabled  : Enabled
Bulk sync done for ARP: 1

```

```
Bulk sync done for LB: 1
Bulk sync done for ICM: 1
```

The following sample output displays the tracking status.

```
ace/CTX# show ft track detail
```

```
FT Group           : 1
Status             : in-service
Maintenance mode   : MAINT_MODE_OFF
My State           : FSM_FT_STATE_ACTIVE
My Config Priority  : 105
My Net Priority     : 105
My Preempt         : Enabled
Context Name       : platform-i3
Context Id         : 2
Track Name         : DEFAULT-GW
Track type         : TRACK_HOST
Host IP Address    : 192.0.2.1
State              : TRACK_UP
Priority           : 10
Transitions        : 1
Probe count        : 1
Probes down        : 0
Probe name         : probe-ICMP
State              : TRACK_UP
Priority           : 0
Transitions        : 1
Track Name         : CTX-DB
Track type         : TRACK_HOST
Host IP Address    : 192.0.2.56
State              : TRACK_UP
Priority           : 10
Transitions        : 1
Probe count        : 1
Probes down        : 0
Probe name         : probe-CTX-DB
State              : TRACK_UP
Priority           : 0
Transitions        : 1
```



APPENDIX C

Data Migration

This appendix provides information about migrating data during an upgrade of the Cisco TelePresence Exchange System from Release 1.1 to Release 1.2, and how the administration console graphical user interface has changed between the two releases.

The following sections are included:

- [About Changes to Automatic Data Purging Behavior Between Release 1.1 and Release 1.2, page C-1](#)
- [About Migration Behavior of Meetings Scheduled to Use Media Bridge Resources Reserved for Large Meetings, page C-2](#)
- [About Changes to the Administration Console Between Release 1.1 and Release 1.2, page C-2](#)

About Changes to Automatic Data Purging Behavior Between Release 1.1 and Release 1.2

In Release 1.1, the Cisco TelePresence Exchange System enforced automatic purging of call detail records (CDRs) and conference events older than 30 days. In Release 1.2, the system automatically purges certain meeting data as well, and the data retention period is configurable for any length between 1 and 60 days. The default retention period is 30 days. (Also note that, in both releases, if the total number of CDRs retained by the system reaches 100,000, the system retains only the most recent 100,000 records and automatically purges the rest regardless of age.)

When you upgrade from Release 1.1 to 1.2, the new automatic data purging policy takes effect, and the system automatically purges Meet-Me meetings that occurred 30 or more days in the past (based on the default data retention period), future Meet-Me meetings that have been cancelled, and Rendezvous meetings that have been cancelled. In addition, during the upgrade, the system purges all CDR records. For this reason, it is important that you develop and implement a regular retrieval strategy for both CDR records and meeting data, perform the retrieval prior to the upgrade, and continue to perform regular retrievals of both types of data after upgrading.

For guidelines on setting up a regular data retrieval strategy, see the “Best Practices for Retrieving Meeting Details” section in the “Scheduling API” chapter and the “Best Practices for Retrieving CDRs” section in the “Call Detail Record API” chapter of the *API User Guide for the Cisco TelePresence Exchange System Release 1.2* at http://www.cisco.com/en/US/products/ps11276/products_programming_reference_guides_list.html.

For information about the configurable data retention period, see the “Configuring Purge Meeting Data After This Many Days” section in the “Configuring System Settings” chapter of the *Administration Guide for the Cisco TelePresence Exchange System Release 1.2* at http://www.cisco.com/en/US/products/ps11276/products_installation_and_configuration_guides_list.html.

About Migration Behavior of Meetings Scheduled to Use Media Bridge Resources Reserved for Large Meetings



Note

Before backing up the database, ensure that the bridge resources that were reserved for large meetings in Release 1.1 are online. If the resources are not online while the database is being backed up, the system cannot migrate the large meetings when you try to restore the database, and the restore process will fail.

The concept of reserving specific media bridge resources for large meetings is not supported in Release 1.2. For information about the new meeting reservation algorithm in Release 1.2, see the “Configuring Capacity Padding Settings for Guaranteed Meeting Reservations” section in the “Configuring System Settings” chapter of the *Administration Guide for the Cisco TelePresence Exchange System Release 1.2* at http://www.cisco.com/en/US/products/ps11276/products_installation_and_configuration_guides_list.html.

After migration, the behavior of large meetings that were scheduled in Release 1.1 (exclusively on bridge resources that were reserved for large meetings) remains the same in Release 1.2. Ensure that the bridge resources that were reserved for large meetings in Release 1.1 are added to the appropriate resource pools and that the number of segments reserved by meetings in each resource pool (Reserved Capacity) is less than the maximum number of segments that can participate concurrently in each resource pool (Max Capacity) during any given time period. For information about how to view the Reservation Pool Usage page, see the “Meeting Diagnostics” chapter of the *Administration Guide for the Cisco TelePresence Exchange System Release 1.2*.

To optimize bridge resource capacity reservation and allocation, we recommend that each resource in a given resource pool is configured with a similar value for the maximum number of segments that can participate concurrently in a meeting (Max Capacity). For information on configuring the Max Capacity for a bridge resource, see the “Configuring Media Resources” chapter of the *Administration Guide for the Cisco TelePresence Exchange System Release 1.2*.

About Changes to the Administration Console Between Release 1.1 and Release 1.2

The following sections describe the administration console user interface changes related to migrating data during an upgrade of the Cisco TelePresence Exchange System from Release 1.1 to Release 1.2.

- [System Settings, page C-3](#)
- [Media Bridge Resources, page C-3](#)
- [Customers, page C-5](#)
- [Call Routing, page C-5](#)

- [Collaboration Services, page C-5](#)
- [Diagnostics, page C-6](#)

System Settings

[Table C-1](#) describes changes to a field that is displayed when you are configuring global configuration settings.

Table C-1 Global Configuration Field Changes

Release 1.1 Field	Release 1.1 Field Removed	Release 1.1 Scenario	Replaced With...	Release 1.2 Scenario
MeetMe Default Screens	No	This field allows you to enter a value which the Cisco TelePresence Exchange System may use to calculate the number of segments that the system reserves or allocates for unprovisioned or remote endpoints dialing in to a Meet-Me meeting. The default value was 3 screens.	—	The default value is 1 screen. When migrating from Release 1.1 to Release 1.2, the MeetMe Default Screens values that were set in Release 1.1 are preserved in Release 1.2.

Additional global configuration fields have been added in Release 1.2. For a description of all global configuration fields, see the “Configuring System Settings” chapter of the *Administration Guide for the Cisco TelePresence Exchange System Release 1.2* at http://www.cisco.com/en/US/products/ps11276/products_installation_and_configuration_guides_list.html.

Media Bridge Resources

The following sections describe the changes to the administration console user interface that are associated with configuring media bridge resources:

- [CTMS Resources Fields, page C-4](#)
- [TPS Resources Fields, page C-4](#)
- [MSE 8510 Resources Fields, page C-4](#)

CTMS Resources Fields

[Table C-2](#) describes changes to a field that is displayed when you are configuring Cisco TelePresence Multipoint Switch (CTMS) resources.

Table C-2 *CTMS Resources Field Changes*

Release 1.1 Field	Release 1.1 Field Removed	Release 1.1 Scenario	Replaced With...	Release 1.2 Scenario
Reserve For Large Meeting	Yes	This check box allowed you to reserve the Cisco TelePresence Multipoint Switch resource for large meetings only. A large meeting included 32 or more segments.	—	The concept of reserving specific resources for large meetings is not supported.

TPS Resources Fields

[Table C-3](#) describes changes to a field that is displayed when you are configuring Cisco TelePresence Server MSE 8710 (TPS) resources.

Table C-3 *TPS Resources Field Changes*

Release 1.1 Field	Release 1.1 Field Removed	Release 1.1 Scenario	Replaced With...	Release 1.2 Scenario
Reserve For Large Meeting	Yes	This check box allowed you to reserve the TPS resource for large meetings only. A large meeting included 32 or more segments.	—	The concept of reserving specific resources for large meetings is not supported.

MSE 8510 Resources Fields

[Table C-4](#) describes changes to a field that is displayed when you are configuring Cisco TelePresence MCU MSE 8510 (MSE 8510) resources.

Table C-4 *MSE 8510 Resources Field Changes*

Release 1.1 Field	Release 1.1 Field Removed	Release 1.1 Scenario	Replaced With...	Release 1.2 Scenario
Reserve For Large Meeting	Yes	This check box allowed you to reserve the MCU MSE 8510 resource for large meetings only. A large meeting included 32 or more segments.	—	The concept of reserving specific resources for large meetings is not supported.

Customers

Table C-5 describes changes to a field that is displayed when you are configuring organizations.

Table C-5 Organizations Field Changes

Release 1.1 Field	Release 1.1 Field Removed	Release 1.1 Scenario	Replaced With...	Release 1.2 Scenario
Minimize Capacity	No	This check box allows you to reserve the smallest amount of capacity necessary for an endpoint to attend a meeting. Check box was unchecked by default.	—	Check box is checked by default. For all organizations that migrate from Release 1.1 to Release 1.2, the check box setting in Release 1.1 is preserved in Release 1.2.

Call Routing

Table C-6 describes changes to a field that is displayed when you are configuring routes.

Table C-6 Routes Field Changes

Release 1.1 Field	Release 1.1 Field Removed	Release 1.1 Scenario	Replaced With...	Release 1.2 Scenario
Endpoint Type	Yes	The Endpoint Type field allowed you to indicate the protocol support for the endpoints being served by a particular route.	—	—

Collaboration Services

Table C-7 describes changes to a field that is displayed when you are configuring Rendezvous meetings.

Table C-7 Rendezvous Meetings Field Changes

Release 1.1 Field	Release 1.1 Field Removed	Release 1.1 Scenario	Replaced With...	Release 1.2 Scenario
Number of Endpoints	Yes	The Number of Endpoints field allowed you to specify the number of endpoints to reserve for a Rendezvous meeting.	Number of Screens	The Number of Screens field allows you to specify the number of screens to reserve for a Rendezvous meeting. For all meetings that migrate from Release 1.1 to Release 1.2, the number of endpoints is converted to the number of screens and the meeting behavior remains the same.

Diagnostics

[Table C-8](#) describes changes to a reservation pool usage field.

Table C-8 *Reservation Pool Usage Field Changes*

Release 1.1 Field	Release 1.1 Field Removed	Release 1.1 Scenario	Replaced With...	Release 1.2 Scenario
Large Meeting	Yes	This check box allowed you to view the scheduled resource pool usage for large meetings. A large meeting included 32 or more segments.	—	The concept of reserving specific resource pools for large meetings is not supported.