CHAPTER 5

Installing the Software

Revised June 30, 2011

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

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 5-1 and the following sections:

Table 5-1 Comparison of Serial and Parallel Cisco TelePresence Exchange System Installation

Installation Method	Advantage	Disadvantage
Serial	Less opportunity for entry errors. You enter information into the installation wizard for only one server at a time.	Longer installation process. Each server installation requires 40 minutes to install. So the full serial installation requires 240 minutes (6 servers × 40 minutes each).
Parallel	Shorter installation process. Each server pair requires 40 minutes to install. You must install the database servers before you begin to install the administration and call engine servers. Depending on whether you install all four of the administration and call engine servers at the same time, the full parallel installation requires one of the following lengths of time: • 120 minutes (3 parallel installations × 40 minutes) • 80 minutes (2 parallel installations × 40 minutes)	Greater opportunity for entry errors. You enter information into the installation wizard for two to four servers at a time.

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 5-4
- Installing the Cisco TelePresence Exchange System Call Engine Servers, page 5-13
- Installing the Cisco TelePresence Exchange System Administration Servers, page 5-18

Parallel Installation

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

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

1. Install the primary and secondary database servers in parallel.

   Ensure that the database server installations and synchronization are complete before you proceed to install the call engine and administration servers.

2. Install the administration and call engine servers in parallel. You can start the installation for as many servers as you have installation DVDs.

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

- Installing and Synchronizing the Cisco TelePresence Exchange System Database Servers, page 5-4
- Installing the Cisco TelePresence Exchange System Call Engine Servers, page 5-13
- Installing the Cisco TelePresence Exchange System Administration Servers, page 5-18

Options for Connecting to the Cisco TelePresence Exchange System Servers for Installation

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

- Direct connection to the console, for example, through a keyboard-video-mouse (KVM) switch.
- 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 5-3.

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.

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 first complete the procedures in the "Setting Up the IMM" section on page 4-7.
- 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 this task by using one of the following web browsers:
  - Microsoft Internet Explorer version 6.0 or later with the latest Service Pack
  - Mozilla Firefox version 1.5 or later
- Make sure that the browser allows popup windows from the IMM.

Procedure

Step 1 Point your 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.

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.

What to Do Next

Complete the installation procedures for the server:

- Installing and Synchronizing the Cisco TelePresence Exchange System Database Servers, page 5-4
- Installing the Cisco TelePresence Exchange System Call Engine Servers, page 5-13
- Installing the Cisco TelePresence Exchange System Administration Servers, page 5-18

Installing and Synchronizing the Cisco TelePresence Exchange System Database Servers

Complete the following tasks in the order shown:

- Installing the Database Server Software, page 5-4
- Checking the Initial High-Availability Role of the Database Servers, page 5-8
- Synchronizing the Database Servers, page 5-10
- Verifying Synchronization and Network Connectivity of the Database Servers, page 5-12

Installing the Database Server Software

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

Before You Begin

- Complete the tasks and requirements in Chapter 4, “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 5-1.
- Insert the Cisco TelePresence Exchange System installation DVD into the server.
- Turn on or restart the server. If you are performing the installation remotely via the IMM, complete the procedure in the “Using the IMM to Remotely Install the Cisco TelePresence Exchange System Software” section on page 5-3.

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

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, after approximately 30 minutes of installing software on the server, take the following actions:

  – The system displays the Pre-existing Configuration Information screen, on which you select **Continue**. Pre-existing configurations are currently not supported.

  – The system then returns to the Platform Installation Wizard screen, on which you select **Proceed**.

Step 4 At the Node Role Configuration screen, enter **database** 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**. If correct, select **Proceed**.

Note If a different server installation screen appears, 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.

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

Step 7 In the DNS Client Configuration screen, select **Yes** or **No**, depending on whether you want to enable the Domain Name Server (DNS) client on the database server.

If you select **Yes**, complete the following steps in the DNS Client Configuration screen:

a. Enter the IP address for the primary DNS server.

b. (Optional) Enter the IP address for the secondary DNS server.

c. Enter the DNS domain name, for example, “cisco.com” or “example.net.”

d. Select **OK**.

Note If you enable the DNS client, make sure that the DNS servers have entries for each hostname and IP address pair, including the virtual hostname and VIP address that are shared by the database servers. During the installation process, the DNS client connects to the DNS server to resolve the hostname and IP address that you entered in Step 6.

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 IP address, username, and password for the IMM interface.

d. Enter the VIP address to be shared by the primary and secondary database servers.

e. Select **OK**.

f. Enter the following information for the *peer* server.

- IMM IP address, username, and password for the peer server.
- Hostname and IP address of the peer server.

Note If you are configuring the primary database server, enter details for the secondary server. If you are configuring the secondary database server, enter details for the primary server.

g. 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:

a. In the Administrator ID field, enter a username.

b. In the Password and Confirm Password fields, enter a password.

c. Select **OK**.

You can use the same username and password for all database, administration, and call engine servers.

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

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.

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 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 and reboots the server 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 Role of the Database Servers" section on page 5-8.

Checking the Initial High-Availability Role of the Database Servers

Complete this task on each database server to confirm the correct initial high-availability (HA) role of primary or secondary.

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
Unable to run CLI as root due to unsuccessful service drbd status!
--------------------------------------------------------------------------------
The initial configured HA role of this node      : primary
The current HA role of this node                 :
The database vip address                         : 10.22.130.54
The database primary node name                   : ctx-db-1
The database primary node IP address             : 10.22.130.49
The database secondary node name                 : ctx-db-2
```

```
The database secondary node IP address           : 10.22.130.57
Unable to run CLI as root due to unsuccessful service heartbeat status!
Mon status                                       : Not running (only runs on primary)
MySQL status                                     : Not running (only runs on primary)
Heartbeat status                                 : Not running
--------------------------------------------------------------------------------

--------------------------------------------------------------------------------

Executed command unsuccessfully
```

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

```
admin: utils service database status
Unable to run CLI as root due to unsuccessful service drbd status!
--------------------------------------------------------------------------------
The initial configured HA role of this node      : secondary
The current HA role of this node                 :
The database vip address                         : 10.22.130.54
The database primary node name                   : ctx-db-1
The database primary node IP address             : 10.22.130.49
The database secondary node name                 : ctx-db-2
The database secondary node IP address           : 10.22.130.57
Unable to run CLI as root due to unsuccessful service heartbeat status!
Mon status                                       : Not running (only runs on primary)
MySQL status                                     : Not running (only runs on primary)
Heartbeat status                                 : Not running
--------------------------------------------------------------------------------

--------------------------------------------------------------------------------

Executed command unsuccessfully
```

Note Because the database servers have not yet been synchronized, you may notice the following information in the output:

- The current HA role of each node is blank.
- The Distributed Replicated Block Device (DRBD) feature is not yet available. This feature synchronizes the secondary database with changes that are made on the primary database.
- The heartbeat is not yet running.
- The system reports that it executed the command unsuccessfully.

What to Do Next

Proceed to the "Synchronizing the Database Servers" section on page 5-10.

Related Topics

- Appendix C, "Command Reference"

Synchronizing the Database Servers

When you initiate database synchronization, you enable the heartbeat connection, begin running MySQL (on the primary database server only), and synchronize the data between the two database servers.

Before You Begin

Complete these tasks for both database servers:

- Installing the Database Server Software, page 5-4
- Checking the Initial High-Availability Role of the Database Servers, page 5-8

Procedure

Step 1 Log in to the CLI of the database server that was initially configured with the *primary* HA role.

Step 2 Enter the **utils service database sync** command to set up synchronization on the initial primary server.

The synchronization takes approximately 10 minutes and includes a reboot of the secondary database server.

Step 3 Enter the **utils service database status** command to check the synchronization status of the initial primary server.

After the synchronization process is complete on the initial primary server, the command output will indicate the following items:

- The server currently has the *primary* HA role.
- The heartbeat is running.
- The connection state (cs) of WFConnection, which is short for "waiting for a connection," indicates that the primary server is waiting for the secondary server to become available on the network.

For example:

```
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                         : 10.22.130.54
The database primary node name                   : ctx-db-1
The database primary node IP address             : 10.22.130.49
The database secondary node name                 : ctx-db-2
The database secondary node IP address           : 10.22.130.57
Mon status                                       : Running pid 1527
MySQL status                                     : Running pid  1472
Heartbeat status                                 : Running pid 32570
--------------------------------------------------------------------------------
drbd driver loaded OK; device status:
version: 8.3.2 (api:88/proto:86-90)
m:res    cs            ro               ds                 p  mounted     fstype
0:mysql  WFConnection  Primary/Unknown  UpToDate/DUnknown  C  /mnt/mysql  ext3
--------------------------------------------------------------------------------
```

Step 4 Log in to the CLI of the database server that was initially configured with the *secondary* HA role.

Step 5 Enter the **utils service database sync** command to set up synchronization on the initial secondary server.

Step 6 Enter the **utils service database status** command on both database servers to check the synchronization status.

Synchronization between the database servers takes approximately 40 minutes. During that time, the disk state (ds) of the secondary server is shown as **inconsistent**. An inconsistent state indicates that the synchronization between the primary and secondary servers is not complete. The synchronization progress appears as a percentage in the command output.

Sample output from a primary database server:

```
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                         : 10.22.130.54
The database primary node name                   : ctx-db-1
The database primary node IP address             : 10.22.130.49
The database secondary node name                 : ctx-db-2
The database secondary node IP address           : 10.22.130.57
Mon status                                       : Running pid 1527
MySQL status                                     : Running pid  1472
Heartbeat status                                 : Running pid 32570
--------------------------------------------------------------------------------
drbd driver loaded OK; device status:
version: 8.3.2 (api:88/proto:86-90)
m:res    cs          ro                ds                     p  mounted     fstype
...      sync'ed:    11.0%             (41060/46080)M
0:mysql  SyncSource  Primary/Secondary  UpToDate/Inconsistent  C  /mnt/mysql  ext3
--------------------------------------------------------------------------------
```

Sample output from a secondary database server:

```
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                         : 10.22.130.54
The database primary node name                   : ctx-db-1
The database primary node IP address             : 10.22.130.49
The database secondary node name                 : ctx-db-2
The database secondary node IP address           : 10.22.130.57
Mon status                                       : Not running (only runs on primary)
MySQL status                                     : Not running (only runs on primary)
Heartbeat status                                 : Running pid 1581
--------------------------------------------------------------------------------
drbd driver loaded OK; device status:
version: 8.3.2 (api:88/proto:86-90)
m:res    cs          ro                ds                     p  mounted  fstype
...      sync'ed:    11.0%             (41032/46080)M
0:mysql  SyncTarget  Secondary/Primary  Inconsistent/UpToDate  C
--------------------------------------------------------------------------------
```

What to Do Next

Proceed to the "Verifying Synchronization and Network Connectivity of the Database Servers" section on page 5-12.

Related Topics

- Appendix C, "Command Reference"

Verifying Synchronization and Network Connectivity of the Database Servers

Before You Begin

Complete the task in the "Synchronizing the Database Servers" section on page 5-10.

Procedure

Step 1 To verify that synchronization is complete, enter the **utils service database status** command on both database servers.

When synchronization is complete, the output includes the following status:

- The role (ro) values indicate that each server recognizes the correct current HA roles for itself (value on the left) and its peer (value on the right).
- The disk state (ds) values indicate that each server sees itself and its peer as being up to date.

Sample output from a primary database server:

```
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                         : 10.22.130.54
The database primary node name                   : ctx-db-1
The database primary node IP address             : 10.22.130.49
The database secondary node name                 : ctx-db-2
The database secondary node IP address           : 10.22.130.57
Mon status                                       : Running pid 1527
MySQL status                                     : Running pid  1472
Heartbeat status                                 : Running pid 32570
--------------------------------------------------------------------------------
drbd driver loaded OK; device status:
version: 8.3.2 (api:88/proto:86-90)
m:res    cs         ro                 ds                 p  mounted     fstype
0:mysql  Connected  Primary/Secondary  UpToDate/UpToDate  C  /mnt/mysql  ext3
--------------------------------------------------------------------------------
```

Sample output from a secondary database server:

```
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                         : 10.22.130.54
The database primary node name                   : ctx-db-1
The database primary node IP address             : 10.22.130.49
The database secondary node name                 : ctx-db-2
The database secondary node IP address           : 10.22.130.57
Mon status                                       : Not running (only runs on primary)
MySQL status                                     : Not running (only runs on primary)
Heartbeat status                                 : Running pid 1581
--------------------------------------------------------------------------------
drbd driver loaded OK; device status:
version: 8.3.2 (api:88/proto:86-90)
m:res    cs         ro                 ds                 p  mounted  fstype
0:mysql  Connected  Secondary/Primary  UpToDate/UpToDate  C
--------------------------------------------------------------------------------
```

Step 2 To verify network connectivity, 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:

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
```

Troubleshooting Tips

If the **utils service database status** command output differs from what is described in the procedure, your system may be in split brain mode. See the "Split Brain Recovery" section on page 30-1.

Related Topics

- Appendix C, "Command Reference"

Installing the Cisco TelePresence Exchange System Call Engine Servers

Complete the following tasks in the order shown:

- Installing the Call Engine Server Software, page 5-13
- Checking the Call Engine Server Status and Network Connectivity, page 5-17

Installing the Call Engine Server Software

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

Before You Begin

- Complete the tasks in the "Installing and Synchronizing the Cisco TelePresence Exchange System Database Servers" section on page 5-4.
- Find your completed Appendix A, "Installation Worksheets."
- Insert the Cisco TelePresence Exchange System installation DVD into the server.
- Turn on or restart the server. If you are performing the installation remotely via the IMM, complete the procedure in the "Using the IMM to Remotely Install the Cisco TelePresence Exchange System Software" section on page 5-3.

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

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, after approximately 30 minutes of installing software on the server, take the following actions:

  – The system displays the Pre-existing Configuration Information screen, on which you select **Continue**. Pre-existing configurations are currently not supported.

  – The system then returns to the Platform Installation Wizard screen, on which you select **Proceed**.

Step 4 At the Node Role Configuration screen, enter **engine** 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*. If correct, select **Proceed**.

Caution If a different server installation screen appears, 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 call engine server.

b. Enter the IP address for the default gateway.

c. Select **OK**.

Step 8 In the DNS Client Configuration screen, select **Yes** or **No**, depending on whether you want to enable the Domain Name Server (DNS) client on the database server.

Note If you enable the DNS client, make sure that the DNS servers have entries for each hostname and IP address pair, including the virtual hostname and VIP address that are shared by the database servers. During the installation process, the DNS client connects to the DNS server to resolve the hostname and IP address that you entered in Step 7.

Only if you select **Yes**, complete the following steps in the DNS Client Configuration screen:

a. Enter the IP address for the primary DNS server.

b. (Optional) Enter the IP address for the secondary DNS server.

c. Enter the DNS domain name, for example, “cisco.com” or “example.net.”

d. Select **OK**.

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. See the “Configuring SIP Load Balancing on the Call Engine Servers” section on page 28-5.

Step 10 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 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:

a. Enter a username in the Administrator ID field.

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

c. Select **OK**.

Cisco recommends that you use the same username and password for all database, administration, and call engine servers.

Step 12 In the Certificate Information screen, complete the following steps to generate a locally significant certificate (LSC) for the server:

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 and reboots the server 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 5-17.

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
```

Related Topics

- Appendix C, "Command Reference"

Installing the Cisco TelePresence Exchange System Administration Servers

Complete the following tasks in the order shown:

- Installing the Administration Server Software, page 5-18
- Checking the Administration Server Status and Network Connectivity, page 5-22

Installing the Administration Server Software

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

Before You Begin

- Complete the tasks in the "Installing and Synchronizing the Cisco TelePresence Exchange System Database Servers" section on page 5-4.
- 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 5-13.
- Find your completed Appendix A, "Installation Worksheets."
- Insert the Cisco TelePresence Exchange System installation DVD into the server.
- Turn on or restart the server. If you are performing the installation remotely via the IMM, complete the procedure in the "Using the IMM to Remotely Install the Cisco TelePresence Exchange System Software" section on page 5-3.

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

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, then after approximately 30 minutes of installing software on the server, take the following actions:

  – The system displays the Pre-existing Configuration Information screen, on which you select **Continue**. Pre-existing configurations are currently not supported.

  – The system then returns to the Platform Installation Wizard screen, on which you select **Proceed**.

Step 4 At the Node Role Configuration screen, enter **admin** 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 console*. If correct, select **Proceed**.

Caution If a different server installation screen appears, 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.

c. Click **OK**.

Step 8 In the DNS Client Configuration screen, select **Yes** or **No**, depending on whether you want to enable the Domain Name Server (DNS) client on the database server.

Only if you select **Yes**, complete the following steps in the DNS Client Configuration screen:

a. Enter the IP address for the primary DNS server.

b. (Optional) Enter the IP address for the secondary DNS server.

c. Enter the DNS domain name, for example, “cisco.com” or “example.net.”

d. Select **OK**.

Note If you enable the DNS client, make sure that the DNS servers have entries for each hostname and IP address pair, including the virtual hostname and VIP address that are shared by the database servers. During the installation process, the DNS client connects to the DNS server to resolve the hostname and IP address that you entered in Step 7.

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:

a. Enter a username in the Administrator ID field.

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

c. Select **OK**.

You can use the same username and password for all database, administration, and call engine servers.

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

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 and reboots the server 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 5-22.

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
```

Related Topics

- Appendix C, "Command Reference"

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).

Step 2 If the login page for the Cisco TelePresence Exchange System administration console does not appear, complete the following steps:

a. Repeat Step 1, but this time use the IP address of the *other* administration server.

If the login page appears, proceed to Step 3.

b. Make sure that the browser machine can reach other devices in the same VLAN as the administration servers. Resolve any network connectivity issues.

c. The administration server may be configured with an incorrect VIP address for the database servers. Complete the procedure in the "Changing the Database VIP Address That Is Configured on a Call Engine or Administration Server" section on page 28-4.

d. Repeat Step 1.

e. If you still cannot reach the admin console, the security password that you entered while installing the administration server does not match the security password that you entered while installing the the initial primary database server.

To change the security password on a server, you need to reinstall that server. See the "Installing the Cisco TelePresence Exchange System Administration Servers" section on page 5-18.

If reinstalling to change the security password on the administration server does not enable you to reach the admin console, you need to reinstall and change the security password on both database servers. See the "Installing and Synchronizing the Cisco TelePresence Exchange System Database Servers" section on page 5-4.

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 5-4
- Installing the Cisco TelePresence Exchange System Call Engine Servers, page 5-13
- Installing the Cisco TelePresence Exchange System Administration Servers, page 5-18