



# Installing the Operating System on the Cisco IP Telephony Applications Server

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## **Operating System Version: 2000.2.3 or later**

Use this document as a guide for installing the Cisco-provided Windows 2000 operating system on the Cisco IP Telephony Applications Server. Cisco IP telephony applications that use this operating system include Cisco CallManager, Cisco Customer Response Applications, Cisco Personal Assistant, Cisco Conference Connection, and Cisco Emergency Responder.

## Purpose of Document

This document includes information and procedures on the following topics:

- Installing the operating system for the first time
- Installing the operating system when you want to overwrite existing settings
- Installing the operating system when you want to retain existing settings
- Upgrading the operating system via the web

Use this document in conjunction with the documents that are listed in [“Locating Related Information and Software”](#) section on page 2.



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# Conventions

Consider the following documentation conventions as you review this installation document:

Blue Text—To quickly navigate to a section or URL, click text that appears in this color.


**Note**

Reader, take note. Notes contain helpful suggestions or references to material not covered in the publication.


**Tip**

Reader, use the information to perform a task. Tips provide helpful information for performing tasks.


**Caution**

Reader, be careful. You may do something that could result in equipment damage or loss of data.

## Locating Related Information and Software

Cisco strongly recommends that you review the following documents before you perform the operating system installation:

- *Cisco IP Telephony BIOS and Operating System Roadmap*

This document provides information on the latest operating system (OS) and BIOS upgrades and patches. Information in this document applies to servers that are running the following Cisco IP telephony applications: Cisco CallManager, Cisco Conference Connection, Cisco Personal Assistant, and Cisco Customer Response Solutions (CRS), etc.

- The appropriate Cisco IP telephony application documentation

Locate the release notes, installation/upgrade/backup and restore, and configuration guides for the applications that you want to install or upgrade.


**Note**

If you need installation information for the Cisco Integrated Communications System (ICS) 7750, refer to the latest version of the *Cisco ICS 7750 Getting Started Guide* and the *Cisco ICS 7750 Release Notes*.

As you review this operating system document and perform operating system installation and upgrade procedures, use [Table 1](#), which provides URLs for software, product keys, and documentation.

**Table 1 Quick Reference for URLs**

Related Information and Software	URL
Related Cisco IP telephony application documentation	<a href="http://www.cisco.com/univercd/cc/td/doc/product/voice/index.htm">http://www.cisco.com/univercd/cc/td/doc/product/voice/index.htm</a>
<i>Cisco IP Telephony BIOS and Operating System Roadmap</i>	<a href="http://www.cisco.com/univercd/cc/td/doc/product/voice/c_callmg/index.htm">http://www.cisco.com/univercd/cc/td/doc/product/voice/c_callmg/index.htm</a>
<i>Cisco CallManager Compatibility Matrix</i>	<a href="http://www.cisco.com/univercd/cc/td/doc/product/voice/c_callmg/index.htm">http://www.cisco.com/univercd/cc/td/doc/product/voice/c_callmg/index.htm</a>

**Table 1 Quick Reference for URLs (continued)**

<b>Related Information and Software</b>	<b>URL</b>
Cisco intrusion detection system (IDS) host sensor and McAfee documentation	<a href="http://www.cisco.com/univercd/cc/td/doc/product/voice/c_callmg/sec_vir/index.htm">http://www.cisco.com/univercd/cc/td/doc/product/voice/c_callmg/sec_vir/index.htm</a>
Virtual Network Computing (VNC) documentation	<a href="http://www.cisco.com/univercd/cc/td/doc/product/voice/iptel_os/index.htm">http://www.cisco.com/univercd/cc/td/doc/product/voice/iptel_os/index.htm</a>
Server hardware specifications	<a href="http://www.cisco.com/warp/public/779/largeent/avid/products/infrastructure.html">http://www.cisco.com/warp/public/779/largeent/avid/products/infrastructure.html</a>
Operating system download via the web (for upgrades only)	<a href="http://www.cisco.com/kobayashi/sw-center/sw-voice.shtml">http://www.cisco.com/kobayashi/sw-center/sw-voice.shtml</a>
Cisco Unity documentation	<a href="http://www.cisco.com/univercd/cc/td/doc/product/voice/c_unity/index.htm">http://www.cisco.com/univercd/cc/td/doc/product/voice/c_unity/index.htm</a>

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## Frequently Asked Questions About the Operating System Installation

Review the following questions and responses before you complete the operating system installation.

### What hardware and CD-ROMs do I receive when I purchase a Cisco MCS or a Cisco IP telephony application?

You do not receive a monitor with any Cisco Media Convergence Server (MCS) or any customer-provided server that meets approved Cisco configuration standards. Most servers do not include a keyboard or mouse. During initial startup and configuration of the server, you must supply a monitor and, if necessary, a keyboard and mouse.

Before you begin the installation, carefully review the hardware documentation that accompanies your server. Make sure that you have the appropriate hardware before installing the operating system. To review the server hardware specifications, click the following URL:

<http://www.cisco.com/warp/public/779/largeent/avid/products/infrastructure.html>

All Cisco MCS and customer-provided servers that meet approved Cisco configuration standards ship with a blank hard drive. When you purchase a Cisco IP telephony application, you use the following CD-ROMs to install the operating system and application:

- Cisco IP Telephony Server Operating System Hardware Detection CD-ROM
- Cisco IP Telephony Server Operating System OS/BIOS Upgrade CD-ROM

This CD-ROM upgrades the operating system on existing (not new) servers in the cluster. For a list of tasks that the operating system upgrade performs, see the [“Upgrading the Operating System” section on page 23](#).

- Cisco IP Telephony Server Operating System Installation and Recovery CD-ROM

You use only one of the server-specific Cisco IP Telephony Server Operating System Installation and Recovery CD-ROMs that come in your software kit. During the operating system installation, you receive a prompt to insert the appropriate CD-ROM into the CD-ROM drive.

- The CD-ROM for the Cisco IP telephony application that you plan to install on the server
- Cisco CallManager Music On Hold CD-ROM
- Cisco Extended Services CD-ROM

## How long does it take to perform the operating system installation?

The entire operating system installation process, excluding preinstallation tasks, takes 30 to 45 minutes per server, depending on your server type.

## Which Cisco IP telephony applications use this Cisco-provided Windows 2000 operating system?

After you install the Windows 2000 operating system, you install supported Cisco IP telephony applications on a server that is dedicated solely to the single application or a server that supports co-resident applications. See [Table 2](#) for more information.

The Cisco IP telephony applications that are listed in [Table 2](#) use the Windows 2000 operating system, which is intended specifically for use with the applications:

**Table 2** *Approved Server Installations for Cisco IP Telephony Applications*

Cisco IP Telephony Application	Approved Server Installation
Cisco CallManager	See the following approved installations: <ul style="list-style-type: none"> <li>• Install on a server that is dedicated to the application.</li> <li>• Install on a server that supports Cisco CallManager and Customer Response Applications.</li> </ul>
Cisco Customer Response Solutions (CRS), including Cisco IP Interactive Voice Response (IP IVR) and Cisco IP Integrated Contact Distribution (IP ICD)	See the following approved installations: <ul style="list-style-type: none"> <li>• Install on a server that is dedicated to the application.</li> <li>• Install on a server that supports Cisco CallManager and Customer Response Applications.</li> </ul>
Cisco Personal Assistant	Install on a server that is dedicated to the application.
Cisco Conference Connection	Install on a server that is dedicated to the application.
Cisco Emergency Responder	Install on a server that is dedicated to the application.



### Note

Cisco Unity does not use the operating system that is represented in this document. Refer to the Cisco Unity documentation for information on the Cisco Unity operating system. See [Table 1](#).

## How does the operating system installation work?

When you begin the installation, you boot the server from the Cisco IP Telephony Server Operating System Hardware Detection CD-ROM. After the system boots, the Cisco IP Telephony Applications Server QuickBuilder installation utility loads automatically and guides you through the installation process. Cisco IP Telephony Applications Server QuickBuilder performs several preinstallation tasks that include preparing your server hard drive and loading server configuration information. (See [“What data must I provide to configure the server?”](#) section on page 7 for more information.)

If necessary, Cisco IP Telephony Applications Server QuickBuilder upgrades your system BIOS to a recommended version. Cisco IP Telephony Applications Server QuickBuilder then automatically installs the following software applications:

- Microsoft Windows 2000 Server, which is intended for use with the Cisco IP telephony applications, does not fully function for general use.
- QFECheck, a Microsoft program, verifies the hotfixes that are installed on the Windows 2000 operating system.

For information on how the operating system upgrade works, see the [“Upgrading the Operating System”](#) section on page 23.

## Which product key should I enter when I install the operating system?

Cisco supplies you with a Cisco product key when you purchase a Cisco IP telephony product. The product key, which is based on a file encryption system, allows you to install only the components that you have purchased, and it prevents other supplied software from being installed for general use on the server. The product key comprises alphabetical letters only.

The dedicated installation product key allows you to install Cisco CallManager, Cisco Personal Assistant, Cisco Response Solutions (CRS), or Cisco Conference Connection on a server that is dedicated specifically to the application. To install the single application on a dedicated server, you must purchase the product and obtain the dedicated installation product key through the product installation documentation.

If you plan to install Cisco CallManager and CRS on the same server, refer to the CRS installation documentation to obtain the co-resident installation product key.

## What data must I provide to configure the server?

During the installation process, you receive prompts that tell you to enter important configuration information about the server, such as the server name and IP address. You can complete the initial power up more efficiently if you gather all the necessary configuration information before beginning the installation process. The following information applies:

### **New Installation or Server Replacement**

Choose this option if you are installing the Cisco IP telephony application for the first time, overwriting an existing installation, or replacing a server. To replace the server, you must store the data to a network directory or tape device before the operating system installation.

### **Same Server Recovery**

Choose this option if you plan to rebuild the server using the original system configuration settings. You restore the settings from the latest successful backup. Backup data must exist on a network directory or tape device before the operating system installation.

### **Cisco product key**

See the [“Which product key should I enter when I install the operating system?”](#) section on page 6.

### **User and organization name**

Registering the software product that you are installing requires user and organization name. Do not leave the field blank. You can enter underscores, hyphens, numbers, and letters.

### **Computer name**

Ensure that the computer name comprises a unique network name of 15 characters or less. It may contain alpha and numeric characters, and hyphens (-), and must begin with an alphabetical character. Make sure that the computer name and workgroup labels follow the rules for ARPANET host names. Labels must start with a letter, end with a letter or digit, and have as interior characters only letters, digits, and hyphen.

If you change the computer name after the application installation, you must reinstall the operating system and the application.

### **Workgroup**

This entry records the name of the workgroup of which this computer is a member. A workgroup comprises a collection of computers that have the same workgroup name. Ensure that this entry of 15 characters or less follows the same naming conventions as the computer name. An error message displays if you attempt to name the computer name and workgroup name the same name.

Cisco strongly recommends that the server belong to a Workgroup before you install the application. You can change the selection after the installation, but you must place the server in a workgroup again before you upgrade any applications.

### **Domain suffix**

Always enter the Domain Name System (DNS) domain suffix in the format “mydomain.com” or “mycompany.mydomain.com.” If you are not using DNS, use a fictitious domain suffix, such as acme.com.

**TCP/IP properties**

Assign an IP address, subnet mask, and default gateway. Because the IP addresses that you assign are permanent properties, you should not change them after installation.

Cisco recommends that you choose static IP information, which ensures that the server obtains a fixed IP address. With this selection, Cisco IP Phones can register with the application when you plug the phones into the network.

**Caution**

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If you choose to use Dynamic Host Configuration Protocol (DHCP), Cisco Technical Assistance Center (TAC) requires that you reserve an IP address for each server in the DHCP server scope. This action prevents the release or reassignment of IP addresses. If you do not reserve IP addresses through the DHCP server scope, the DHCP server may assign a different address to the server if the server is disconnected from, and then reconnected to, the network. To return the server to its original IP address, you must reprogram the IP addresses of the other devices on the network.

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**Domain Name System (DNS)**

Cisco requires that you configure DNS, WINS, or lmhosts file to successfully complete installation and upgrade procedures.

**Caution**

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You must have a name resolution method in place, such as Domain Name System (DNS), Windows Internet Name Server (WINS), or local naming that uses a configured lmhosts file. If you use DNS, make sure that the DNS server contains a mapping of the IP address and hostname of the server that you are installing before you begin the installation. If you use local name resolution, ensure that the lmhosts file is updated on the existing servers in the cluster before you begin the installation on the new subscriber server; then, you must add the same information to the lmhosts file on the new server during installation, as instructed in the procedure.

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**Windows 2000 Simple Network Management Protocol (SNMP) agent**

The Windows 2000 SNMP agent provides security through the use of community names and authentication traps. All SNMP implementations universally accept the default name “public.” Cisco sets the community rights to none for security reasons. If you want to use SNMP with this server, you must configure it.

**NT Administrator password**

At the end of the operating system installation, you must enter and confirm an administrator password. Cisco requires a password for security purposes. If you leave the password blank, you cannot install a Cisco IP telephony application on the server.

Make sure that you enter the same password on all servers in the cluster.

Table 3 shows the configuration information that is required for installing the operating system on your server. Complete all fields unless otherwise noted. Gather this information for each Cisco IP Telephony Applications Server that you are installing in the cluster. Make copies of this table and record your entries for each server in a separate table. Have the completed lists with you when you begin the installation.

**Table 3 Configuration Data for Cisco IP Telephony Application Servers**

Configuration Data	Your Entry
Cisco product key(s) <ul style="list-style-type: none"> <li>• Dedicated installation</li> <li>• Co-resident installation</li> </ul>	
User name	
Name of your organization	
Computer name	
Workgroup	
NT domain (optional)	
DNS domain suffix	
Current time zone, date, and time	
SNMP community name	
DHCP parameters	Cisco recommends that you program a fixed IP address in TCP/IP properties for the server instead of using DHCP.
TCP/IP properties (required if DHCP is not used) <ul style="list-style-type: none"> <li>• IP address</li> <li>• Subnet mask</li> <li>• Default gateway</li> </ul>	
DNS servers (optional) <ul style="list-style-type: none"> <li>• Primary</li> <li>• Secondary</li> </ul> WINS servers (optional) <ul style="list-style-type: none"> <li>• Primary</li> <li>• Secondary</li> </ul>	

## May I install other software besides Windows 2000 on the server?

Cisco supports a limited list of applications on the Cisco MCS or Cisco-approved customer-provided server. Consider the following information before you install the operating system:

- You may install Cisco-verified applications (Cisco AVVID Partner Applications), but you must disable these applications before the application installation and then reboot the server. Disable these applications during installation, restoration, and upgrade procedures.  
For more information on supported software, click <http://www.cisco.com/cgi-bin/ecoa/Search>. In the Solution pane, click **IP Telephony**. From the Solution Category drop-down list box, choose **Operations, Administration, and Maintenance (OAM)**. Click **Search**.
- Installing or using Netscape Navigator on the Cisco MCS or the approved customer-provided server causes severe performance problems. Cisco strongly recommends against installing Netscape Navigator on the Cisco MCS or customer-provided server that meets approved Cisco configuration standards.
- See the “[Which Cisco IP telephony applications use this Cisco-provided Windows 2000 operating system?](#)” section on page 5 for supported applications.
- Do not install Cisco Unity on a server that runs this version of the operating system.
- Cisco recommends that you install the Cisco IDS Host Sensor Console on a server that is dedicated to that software. You may install the Cisco IDS Host Agents on the same server as Cisco CallManager.
- You can install McAfee Netshield 4.5 on the Cisco MCS or on approved customer-provided servers.

## May I run a web browser on the server?

Cisco strongly recommends that you do not run a web browser on the Cisco MCS or any customer-provided server that meets approved Cisco configuration standards. Running a web browser on the server causes CPU usage to surge.

## May I use Terminal Services on this server?

Cisco installs Terminal Services so that Cisco Technical Assistance Center (TAC) can perform remote administration and troubleshooting tasks. Cisco does not support installations or configuration tasks through Terminal Services.

If you want to use Virtual Network Computing (VNC) to remotely upgrade the publisher database server, see [Table 1](#) to obtain the latest version of the VNC document.

## May I configure a server in the cluster as a Domain Controller?

Do not configure any server in the cluster as a Domain Controller. If you configure any server in the cluster as a Domain Controller, you cannot upgrade or reinstall Cisco CallManager on the server.

## What preinstallation tasks should I perform?

For preinstallation tasks that you must complete before the installation, see [Table 4](#).

**Table 4** Preinstallation Tasks

	Preinstallation Tasks	Important Notes
<b>Step 1</b>	Carefully review the hardware documentation that accompanies your server. Make sure that you have the appropriate hardware before installing the application.	To review the server hardware specifications, click the following URL: <a href="http://www.cisco.com/warp/public/779/largeent/avid/products/infrastructure.html">http://www.cisco.com/warp/public/779/largeent/avid/products/infrastructure.html</a>
<b>Step 2</b>	Connect a monitor, keyboard, and mouse to the server.	See the “ <a href="#">How do I connect the keyboard and mouse to the server?</a> ” section on page 11.
<b>Step 3</b>	Locate <a href="#">Table 3</a> , which provides specific server configuration information.	See the “ <a href="#">What data must I provide to configure the server?</a> ” section on page 7.

## How do I connect the keyboard and mouse to the server?

You must supply a monitor and, if necessary, a keyboard and mouse to use during initial startup and configuration of the server.

Plug the mouse and keyboard into the standard mouse and keyboard connectors that are marked on the back of the server. Plug the monitor cable into the monitor connector on the back of the server.



### Caution

When installing the operating system on the Cisco MCS, you must use a legacy PS/2 mouse and keyboard. If you use a USB keyboard or mouse, a post-configuration error occurs.

## What if I encounter problems during the installation?

Cisco recommends that if you encounter problems during the installation, take the following actions:

1. During the installation if you receive an error message that displays in a dialog box, see the “[Error Messages](#)” section on page 26 and perform the recommended corrective action.
2. For New Installations—On the server where the problem occurred, obtain and review the log file, stiSetup.log, from C:\Winnt.
3. For Upgrades—On the server where the problem occurred, obtain and review the log file, MCSOSupg.log, from C:\Program Files\Common Files\Cisco\Logs.



### Note

Be aware that not all error messages that display in the log file are catastrophic. Error messages display in the log file for many reasons; for example, attempts to access a service that is not used by Cisco CallManager.

# Installing the Operating System


**Note**

Before the installation, the process erases the server hard drive and all data and configuration information, if present. If you want to retain configuration settings during the operating system, see the [“Installing the Operating System When You Want to Retain Existing Configuration Settings”](#) section on page 17.

During the installation, the server reboots several times. Do not power off the server at any time during this process, unless instructed. Any unexpected power interruption during the installation process could prevent proper completion of the configuration and might prevent the operating system from restarting.


**Note**

Unless otherwise specified in this document, all further references to the MCS-7835 apply to the MCS-7835, which contains a 733-MHz processor, the MCS-7835-1000, which contains a 1-GHz processor, the MCS-7835-1266, which contains a 1.26-GHz processor, and the customer-provided DL380. All further references to the MCS-7825 apply to the MCS-7825, which contains an 800-MHz processor, and the MCS-7825-1133, which contains a 1.13-GHz processor.

See the following sections, depending on the state of your server:

- [Installing the Operating System for the First Time](#), page 12
- [Installing the Operating System to Overwrite Existing Settings/Replace a Server](#), page 14
- [Installing the Operating System When You Want to Retain Existing Configuration Settings](#), page 17
- [Entering the Product Key and Reviewing the License Agreement](#), page 18
- [Entering Server Configuration Data and Completing the Operating System Installation](#), page 19

## Installing the Operating System for the First Time

In this portion of the installation, which takes about 20 minutes, you will perform the following tasks:

- Click to acknowledge that the installation process erases existing data.
- Choose the type of installation (new or recovery) that you plan to perform.

**Procedure**

**Step 1** Locate the Cisco IP Telephony Server Operating System Hardware Detection CD-ROM (CD #1).

**Step 2** You need to boot the server from the CD-ROM. This means that you must power up the server and then insert the CD-ROM early in the startup process.


**Note**

The first time that you start up a new server, you will not see any indication that the startup process is operating normally. The startup on a new server takes longer than on preinstalled servers. You may wait as long as 3 minutes before you a video connection displays.

- Step 3** If you see the post-startup error message about memory upgrades on IBM xSeries servers, you must perform the following procedure:
- The Post Startup Error(s) window displays a message about memory upgrades. Using the arrow keys, choose **Continue** and then press **Enter**.
  - If the Configuration Error window appears, use the arrows keys to choose **Continue**; then, press **Enter**.
  - The Configuration/Setup Utility window displays a variety of configuration options. Using the arrows keys, choose **Save Settings**. Press **Enter**.
  - The Save Settings window displays a message about saving the current settings. Press **Enter** to continue.
  - You automatically return to the Configuration/Setup Utility window. Using the arrows keys, choose **Exit Setup** and then press **Enter**.
  - When the Exit Setup window displays, use the arrow keys to choose **Yes, exit the Setup Utility**. Press **Enter**. The system reboots automatically.
  - With a new server, the IBM BIOS upgrade utility runs; then, the server reboots automatically.

- Step 4** If the ROM Based Setup Configuration Utility window opens on the MCS-7825, perform the following procedure:

**Caution**

Cisco strongly recommends that you choose the following selections from the ROM Based Setup Utility windows. Other selections may impact the stability of Cisco CallManager. If you inaccurately make a choice from one of the ROM Based Setup Utility windows, press F9 during the bootup process to return to the ROM Based Setup Utility and correct the choice.

- The first ROM Based Setup Utility window offers a language selection menu. English remains the only supported language at this time. Press **Enter** to choose English. Choosing a language other than English does not change the language that is seen during the installation process.
- The second ROM Based Setup Utility window lists several operating system choices. Windows 2000 remains the only supported operating system. Using the arrow keys, choose **Windows 2000** from the operating system selection menu. Press **Enter**.
- Because the third ROM Based Setup Utility window is preset at the factory, you cannot alter it. Press **ESC** to close the menu and continue.
- In the fourth ROM Based Setup Utility window, enter the correct date and time and then press **Enter**.
- In the final ROM Based Setup Utility window, a message states that the system configuration is complete. Press **F10** to exit the utility and automatically reboot the system.

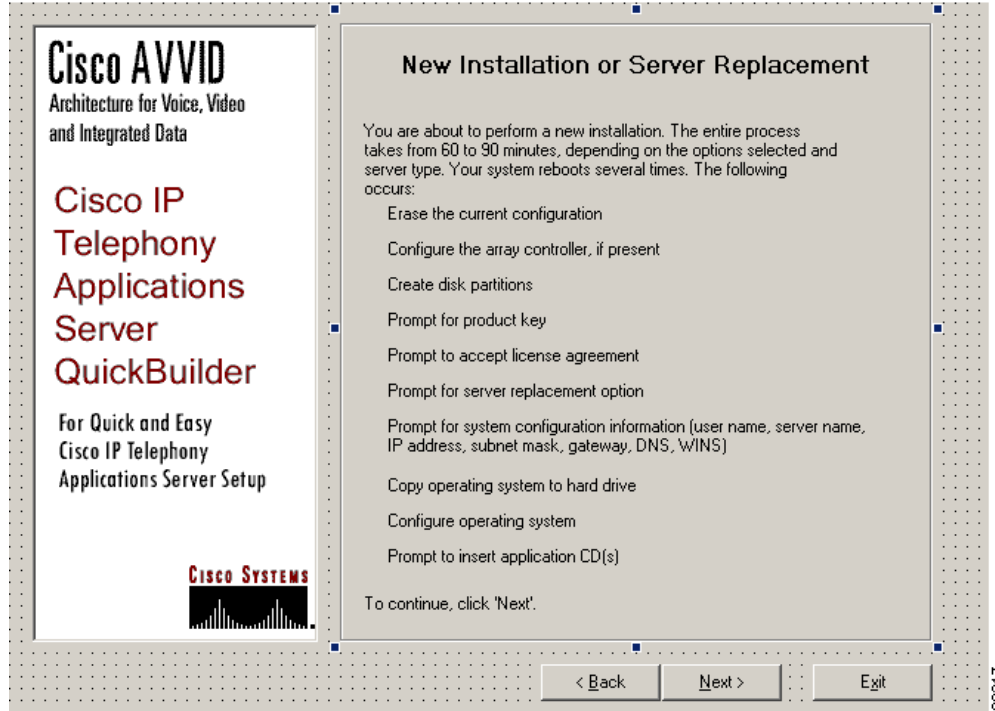
**Caution**

You may not see all the windows or prompts that are represented in [Step 6](#) through [Step 8](#). Read the information in the windows carefully and proceed with the installation.

- Step 5** On some servers, the New Installation or Server Replacement window displays a list of tasks that are performed during the installation. Click **Next**.

[Figure 1](#) shows the tasks that are performed during the installation.

**Figure 1** *New Installation or Server Replacement Window*



- Step 6** On some servers, the Configuration Process window opens with a message that states that hardware detection is in process; click **Next**. The system reboots automatically.
- Step 7** On some servers, a Configuration Process window with a message about conducting an initial hardware configuration opens; click **Next**. The system reboots automatically.
- Step 8** On some servers, a message prompts you to cycle the system power; turn the server off. Wait 10 seconds and then power up the server. The startup may take several minutes.
- Step 9** Continue the installation by performing the steps in [“Entering the Product Key and Reviewing the License Agreement”](#) section on page 18.

## Installing the Operating System to Overwrite Existing Settings/Replace a Server

This section applies if you want to perform one of the following tasks:

- Overwrite existing configuration settings
- Replace a server

For a definition of New Installation or Server Replacement, see the [“New Installation or Server Replacement”](#) section on page 7.

## Procedure

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- Step 1** If necessary, connect a monitor, keyboard, and mouse to the server as described in [“How do I connect the keyboard and mouse to the server?”](#) section on page 11.
  - Step 2** Locate the Cisco IP Telephony Server Operating System Hardware Detection CD-ROM (CD #1).
  - Step 3** Insert the CD-ROM into the CD-ROM drive and then restart the system immediately. Do not press any keys during the reboot.
  - Step 4** Perform the following tasks, depending on the server type.




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**Note** This document does not represent the MCS 7820, MCS 7822, and MCS 7830.

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### MCS 7815-1000

- Step 5** When the Cisco IP Telephony Applications Server QuickBuilder welcome window opens, click **Next**.
- Step 6** When the Type of Installation window opens, choose **New Installation or Server Replacement**; then, click **Next**.
- Step 7** The New Installation or Server Replacement window displays a list of tasks that are performed during the installation. Click **Next**.
- Step 8** If a Configuration Process window opens with a message about conducting an initial hardware configuration, click **Next**. The system reboots automatically.
- Step 9** Skip to [“Entering the Product Key and Reviewing the License Agreement”](#) section on page 18.

### MCS 7825-800

- Step 10** When the Cisco IP Telephony Applications Server QuickBuilder welcome window opens, click **Next**.
- Step 11** When the Type of Installation window opens, choose **New Installation or Server Replacement**; then, click **Next**.
- Step 12** The New Installation or Server Replacement window displays a list of tasks that are performed during the installation. Click **Next**.
- Step 13** A warning displays that configuration and data will be overwritten; click **Next**. The system automatically reboots.
- Step 14** A message prompts you to cycle the system power. Turn the server off, wait 10 seconds, and then power up the server. The startup may take several minutes.
- Step 15** Skip to [“Entering the Product Key and Reviewing the License Agreement”](#) section on page 18.

### MCS 7825-1133

- Step 16** When the Cisco IP Telephony Applications Server QuickBuilder welcome window opens, click **Next**.
- Step 17** When the Type of Installation window opens, choose **New Installation or Server Replacement**; then, click **Next**.
- Step 18** The New Installation or Server Replacement window displays a list of tasks that are performed during the installation. Click **Next**.
- Step 19** If a Configuration Process window opens with a message about conducting an initial hardware configuration, click **Next**. The system reboots automatically.
- Step 20** When a message prompts you to power off and on the server to complete the installation, turn the server off. Wait 10 seconds and then power up the server.

**Step 21** Skip to [“Entering the Product Key and Reviewing the License Agreement” section on page 18.](#)

#### **MCS 7835-733 and MCS 7835-1000**

**Step 22** When the Cisco IP Telephony Applications Server QuickBuilder welcome window opens, click **Next**.

**Step 23** When the Type of Installation window opens, choose **New Installation or Server Replacement**; then, click **Next**.

**Step 24** A warning displays that configuration and data will be overwritten; click **Next**. The system automatically reboots.

**Step 25** The New Installation or Server Replacement window displays a list of tasks that are performed during the installation. Click **Next**.

**Step 26** When the Configuration Process window opens with a message about hardware detection, click **Next**. The system reboots automatically.

**Step 27** When the Configuration Process window opens with a message about conducting an initial hardware configuration, click **Next**. The system reboots automatically.

**Step 28** When a message prompts you to power off and on the server to complete the installation, turn the server off. Wait 10 seconds and then power up the server.

**Step 29** Skip to [“Entering the Product Key and Reviewing the License Agreement” section on page 18.](#)

#### **MCS 7835-1266 and MCS 7845-1400**

**Step 30** When the Cisco IP Telephony Applications Server QuickBuilder welcome window opens, click **Next**.

**Step 31** When the Type of Installation window opens, choose **New Installation or Server Replacement**; then, click **Next**.

**Step 32** A warning displays that configuration and data will be overwritten; click **Next**. The system automatically reboots.

**Step 33** A message prompts you to cycle the system power. Turn the server off, wait 10 seconds, and then power up the server. The startup may take several minutes.

**Step 34** When the Configuration Process window opens with a message about conducting an initial hardware configuration, click **Next**. The system reboots automatically.

**Step 35** When a message prompts you to power off and on the server to complete the installation, turn the server off. Wait 10 seconds and then power up the server.

**Step 36** Skip to [“Entering the Product Key and Reviewing the License Agreement” section on page 18.](#)

#### **IBM xSeries 330 Server**

**Step 37** When the Cisco IP Telephony Applications Server QuickBuilder welcome window opens, click **Next**.

**Step 38** When the Type of Installation window opens, choose **New Installation or Server Replacement**; then, click **Next**.

**Step 39** The New Installation or Server Replacement window displays a list of tasks that are performed during the installation. Click **Next**.

**Step 40** A warning displays that configuration and data will be overwritten; click **Next**. The system automatically reboots.

**Step 41** Skip to [“Entering the Product Key and Reviewing the License Agreement” section on page 18.](#)

**IBM xSeries 340, 342, or 345 Servers**

- Step 42** When the Cisco IP Telephony Applications Server QuickBuilder welcome window opens, click **Next**.
  - Step 43** When the Type of Installation window opens, choose **New Installation or Server Replacement**; then, click **Next**.
  - Step 44** The New Installation or Server Replacement window displays a list of tasks that are performed during the installation. Click **Next**.
  - Step 45** When the Configuration Process window opens with a message about hardware detection, click **Next**. The system reboots automatically.
  - Step 46** Skip to [“Entering the Product Key and Reviewing the License Agreement”](#) section on page 18.
- 

## Installing the Operating System When You Want to Retain Existing Configuration Settings

This section applies if you want to install the operating system and use the existing configuration settings that apply to the cluster.

For a definition of Same Server Recovery, see the [“Same Server Recovery”](#) section on page 7.

**Caution**

Before you perform this procedure, verify that you have a good backup on a network directory or tape device.

---

**Procedure**

- Step 1** Locate the Cisco IP Telephony Server Operating System Hardware Detection CD-ROM (CD #1).
  - Step 2** Insert the Cisco-provided operating system version 2000.2.3 CD-ROM into the CD-ROM drive and then restart the system immediately. Do not press any keys during the reboot.
  - Step 3** When the Cisco IP Telephony Applications Server QuickBuilder welcome window opens, click **Next**.
  - Step 4** When the Type of Installation window opens, choose **Same Server Recovery**; then, click **Next**.
  - Step 5** A warning message states that the installation erases all data. Click **Next**.
  - Step 6** In the Ready to Install window, click **Next**.
  - Step 7** Skip to the [“Entering Server Configuration Data and Completing the Operating System Installation”](#) section on page 19.
-

## Entering the Product Key and Reviewing the License Agreement

In this portion of the installation, you will perform the following tasks:

- Enter the Cisco product key for the Cisco IP telephony application that you want to install.
- Read and agree to the terms in the End User License Agreement.
- Ensure that the I am recovering a system from backup check box is unchecked.

### Procedure

**Step 1** Obtain the product key for the Cisco IP telephony application that you want to install.

To obtain the product key, click the URL for product keys in [Table 1](#) or review the application installation documentation.

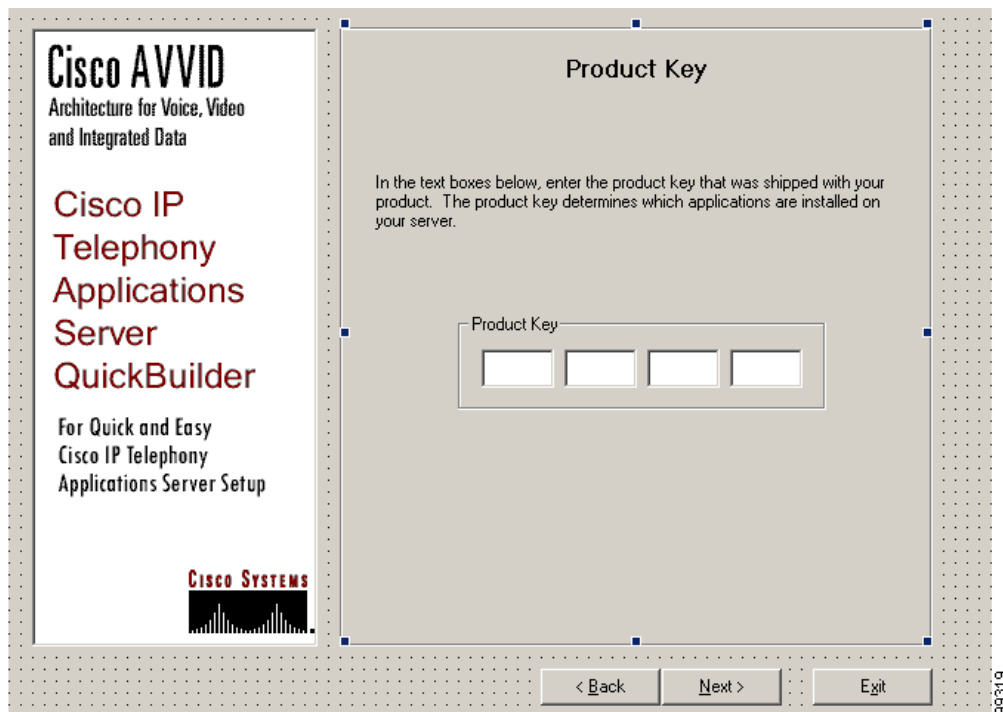


#### Note

If you plan to install Cisco CallManager and CRS on the same server, make sure that you obtain the product key for co-resident applications. To obtain the product key and information about the co-resident configuration, refer to the CRS installation documentation.

Figure 2 shows the product key window.

**Figure 2** Product Key Window



**Step 2** Enter the product key; then, click **Next**.

**Step 3** The End User License Agreement window opens. Read through the contents of the agreement. If you consent to the terms of the agreement, click **I Agree**. If you do not consent, you must terminate the installation by clicking **Exit**.

- Step 4** Depending on the state of your server, the Server Replacement Option window may or may not display. If this window does not display, go to [Step 6](#).
- If the window displays, perform one of the following procedures:
- If you are installing the application for the first time, make sure that the **I am recovering a system from backup** check box is unchecked.
  - If you are performing a server replacement on the publisher database server and you are restoring the data, check the **I am recovering a system from backup** check box.
- Step 5** Then, click **Next**.
- Step 6** In the Ready to Complete Installation window, click **Next**.
- Step 7** Continue the operating system installation by completing the steps in “[Entering Server Configuration Data and Completing the Operating System Installation](#)” section on page 19.
- 

## Entering Server Configuration Data and Completing the Operating System Installation

In this portion of the installation, which takes about 30 minutes, you will perform the following tasks:

- Enter your user name, name of organization, computer name, and DNS suffix.
- Join a workgroup, which serves as a requirement for the application installation.
- Choose the appropriate time zone, date, and time.
- Enter the server IP address, subnet mask, and default gateway.
- Enter the primary and secondary IP addresses for DNS and WINS (or configure LMHosts). These entries serve as requirements for the Cisco CallManager installation.
- Change the default community public name to ensure security within the Windows 2000 Simple Network Management Protocol (SNMP) agent.
- Enable or disable Terminal Services.
- Insert the server-specific Cisco IP Telephony Server Operating System Installation and Recovery CD-ROM to complete the operating system installation.

Using the data that you collected in [Table 3](#), complete the following steps to configure each server:

### Procedure

- Step 1** The Cisco IP Telephony Applications Server Configuration Wizard begins. Click **Next** to continue. The Cisco Registration window opens, as seen in [Figure 3](#).

### About Same Server Recovery

If you chose the Same Server Recovery option at the beginning of the installation, Cisco CallManager automatically populates the data entry fields with configuration data that was recovered from the backup. Do not change IP addresses or the computer name during the recovery.

If you did not join a Workgroup during the previous operating system installation, be aware that Cisco requires this configuration for the installation of the application.

If you did not configure DNS, WINS, or lmhosts file during the previous operating system installation, be aware that Cisco requires this configuration for the Cisco CallManager 3.3 installation.

### About New Installation or Server Replacement

If you chose the New Installation or Server Replacement option at the beginning of the installation, you must enter the appropriate information in the following windows.

**Figure 3 Cisco Registration Window**

### Configuring the Computer Name and DNS Domain Suffix (Required)

Ensure that the computer name comprises a unique network name of 15 characters or less. It may contain alpha and numeric characters, and hyphens (-), and must begin with an alphabetical character. Make sure that the computer name and workgroup labels follow the rules for ARPANET host names. Labels must start with a letter, end with a letter or digit, and have as interior characters only letters, digits, and hyphen.

Ensure that the DNS domain suffix is entered in the format “mydomain.com” or “company.mydomain.com.” If you are not using DNS, use a fictitious domain suffix, such as acme.com.

- Step 2** After the Cisco Registration window opens, enter your user name, the name of your organization, a computer name, and DNS suffix; then, click **Next**.

### Configuring a Workgroup (Required for Cisco CallManager Installations and Upgrades)

- Step 3** The Join Domain window displays whether the server is in a Workgroup or Domain. If the server exists in a Domain, Cisco requires that you place the server in a Workgroup. To join a Workgroup, perform the following procedure:
- Enter a name of the Workgroup, for example, WRKGRP. Make sure that you enter a Workgroup name that is different than the Computer Name.
  - Click **Next**.
- Step 4** Choose the appropriate time zone for the server. Set the current date and time; then, click **Next**.

The IP Address Configuration window opens, as seen in [Figure 4](#). This window serves two purposes. You assign the IP address, subnet mask, and default gateway in the pane at the top of the window. In the pane at the bottom of the window, you enter the information to configure DNS and WINS. If you prefer to do so, you can choose to configure lmhosts file instead of DNS and WINS.

**Figure 4** IP Address Configuration Window

### Configuring a Static IP Address (Strongly Recommended)



#### Caution

Cisco recommends choosing static IP information, which ensures that the Cisco CallManager server obtains a fixed IP address. With this choice, Cisco IP Phones can register with Cisco CallManager when you plug the phones into the network.

If you choose to use Dynamic Host Configuration Protocol (DHCP), Cisco Technical Assistance Center (TAC) requires that you reserve an IP address for each server in the DHCP server scope. This action prevents the release or reassignment of IP addresses. If you do not reserve IP addresses through the DHCP server scope, the DHCP server may assign a different address to the server if the server is disconnected from, and then reconnected to, the network. To return the server to its original IP address, you would have to reprogram the IP addresses of the other devices on the network.

**Step 5** Cisco recommends that you choose **Use the following IP address** when prompted about the method that is used to configure the IP information.

**Step 6** Enter the server IP address, subnet mask, and default gateway in the appropriate fields.

### Configuring DNS, WINS, or lmhosts file (Required for Cisco CallManager Installations and Upgrades)



#### Caution

You must have a name resolution method in place. If you are not using DNS or WINS, you must configure local name resolution by updating the lmhosts file with IP address and hostname information for every server in your cluster, as instructed in [Step 8](#).

**Step 7** If you are using DNS or WINS, click the **Use the following DNS and WINS server addresses** radio button; then, enter the IP addresses of the primary and secondary DNS servers and primary and secondary WINS servers. Click **Next** and continue to [Step 9](#).

If you are not using DNS, leave the DNS and WINS fields empty. Make sure that the **Use the following DNS and WINS server addresses** radio button is not chosen, so you can configure local name resolution; then, click **Next**.

**Step 8** If you did not enter DNS or WINS server information in the previous window, and if you are installing multiple servers in a cluster, you must configure local name resolution by updating the lmhosts file, so it contains a mapping of the IP address and hostname of each server in the cluster. Perform the following steps to configure the lmhosts file:

a. In the LMHost window, check the **Check if you want to edit LMHosts file** check box.

b. Enter the IP Address and Server Name.

For example:

```
172.16.0.10 dallascml
```

c. Click **Add Server**.

d. Click **Next** to continue.



#### Note

The Windows 2000 SNMP agent provides security through the use of community names and authentication traps. All SNMP implementations universally accept the default name “public.” Cisco sets the community rights to none for security reasons. If you want to use SNMP with this server, you must configure it.

- Step 9** When the SNMP agent window opens, be aware that Cisco sets the default community value to “public.” If you want to change the value, enter a new name and then click **Next**.
- Step 10** The installation process enables Terminal services automatically, so Cisco TAC can perform remote management and troubleshooting tasks. If you want, you can disable these services; then, click **Next**.
- Step 11** The CD-ROM drive automatically opens. Remove CD #1 from the CD-ROM drive and insert the server-specific Cisco IP Telephony Server Operating System Installation and Recovery CD-ROM into the CD-ROM drive. The configuration process continues automatically after detection of the appropriate CD-ROM. The server begins an installation and reboot process that takes about 10 minutes to complete.
- Step 12** The CD-ROM drive automatically opens. When you are prompted, remove the operating system CD-ROM and press any key to reboot. Windows 2000 setup begins and takes about 10 minutes to complete. Do not power down the server or press any keys during setup.

**Entering an NT Administrator Password (Required for Application Installation)**

- Step 13** When the dialog box displays, enter an administrative password in the Password field; enter the same password in the Confirm Password field, and click **OK**.

If you leave the password fields blank, you cannot install any Cisco IP telephony applications on the server.

Make sure that you enter the same password on all servers in the cluster.

- Step 14** The server reboots automatically.
- Step 15** Log in to the server by using the administrative user name and password.
- Step 16** Install the operating system on every server in the cluster that uses it.
- Step 17** Perform Cisco IP telephony application installation and configuration procedures after you locate the appropriate documentation.

## Upgrading the Operating System

The operating system upgrade CD-ROM and executable that is available on the web provide the latest service packs, hotfixes, and operating system components and services that are available for your server; to obtain the latest operating system hotfixes, service packs, and components, download the executable instead of using the CD-ROM.

Review the following documentation before you upgrade the operating system:

- *Cisco IP Telephony BIOS and Operating System Version Roadmap* provides information on the latest Cisco-supported BIOS, operating system files, hotfixes, and service packs that are available for web download. This document also provides instructions for verifying versions of operating system hotfixes, service packs, etc.

To obtain this document, click


[http://www.cisco.com/univercd/cc/td/doc/product/voice/c\\_callmg/osbios.htm](http://www.cisco.com/univercd/cc/td/doc/product/voice/c_callmg/osbios.htm)

- The operating system readme that is available on the web provides the latest procedures, caveats, and descriptive information that is necessary for upgrading the operating system.

## Performing Pre-Upgrade Tasks

Perform the tasks that are listed in [Table 5](#) before you upgrade the operating system.

**Table 5** Pre-Upgrade Tasks

	Pre-Upgrade Tasks	Important Notes
Step 1	<p><b>About Disabling Cisco-verified Applications</b></p> <p>If you have Cisco-verified applications (Cisco AVVID partner applications) or platform agents installed on the server, you must disable the services.</p> <p>The following applications/platform agents may interfere with the Cisco CallManager installation:</p> <ul style="list-style-type: none"> <li>• Antivirus services</li> <li>• Intrusion detection services</li> <li>• OEM server agents</li> <li>• Server management agents</li> <li>• VOIP monitoring/performance monitoring</li> <li>• Remote access/remote management agents</li> </ul> <p><b>About Disabling McAfee Antivirus Services</b></p> <p>Before you perform upgrade installation procedures, you must disable all Cisco-approved McAfee antivirus services. You can enable all antivirus services after you complete the application upgrade procedures, or after the operating system upgrade, if you do not plan to immediately upgrade the application.</p> <p><b>About Disabling Cisco IDS Host Sensor Agents</b></p> <p>If you have Cisco IDS Host Sensor Agents installed on the server, you must disable the following services before the upgrade:</p> <ul style="list-style-type: none"> <li>• intercept Agent</li> <li>• intercept Watchdog</li> <li>• intercept Notification Manager</li> <li>• intercept Server</li> </ul> <p>You can enable and start the services after the application upgrade, or after the operating system upgrade, if you do not plan to immediately upgrade the application.</p>	<p>See “<a href="#">Disabling Cisco-Approved McAfee Antivirus Services</a>” section on page 25.</p> <p><b>For Cisco-verified Applications</b></p> <p>To review a list of Cisco-verified applications that you should disable before the installation, click the following URL: <a href="http://www.cisco.com/pcgi-bin/ecoa/Search">http://www.cisco.com/pcgi-bin/ecoa/Search</a>. In the Solution pane, click <b>IP Telephony</b>. From the Solution Category drop-down list box, choose <b>Operations, Administration, and Maintenance (OAM)</b>. Click <b>Search</b>.</p> <hr/> <p> <b>Caution</b> For the change to take effect, reboot the server after you disable these applications. Before you start any upgrade, always verify that none of the services are running.</p>

**Table 5 Pre-Upgrade Tasks (continued)**

<b>Step 2</b>	<p>As ongoing performance management, download hotfixes and service patches on the server.</p> <p>If necessary, install the latest Microsoft SQL Service 7.0 or 2000 service pack, depending on your application release.</p> <p>If necessary, install the latest BIOS updates.</p>	<p>For more information, review <i>Cisco IP Telephony BIOS and Operating System Version Roadmap</i>. This document specifies compatible operating system versions and provides information for verifying the versions that exist on the server.</p> <p>To obtain the document, click the following URL:</p> <p><a href="http://www.cisco.com/univercd/cc/td/doc/product/voice/c_callmg/osbios.htm">http://www.cisco.com/univercd/cc/td/doc/product/voice/c_callmg/osbios.htm</a></p> <p>Perform the procedure in the “Obtaining the Operating System Upgrade, Service Patches, Hotfixes, and the Corresponding Documentation” section on page 26.</p>
<b>Step 3</b>	<p>Make sure that you have a good backup of your data on a network directory or tape device.</p> <p>If you back up your data to a local directory, the upgrade erases the data.</p>	<p>To start a backup now, right-click the backup icon in the Windows 2000 system tray. Choose <b>Start Backup Now</b>. The backup begins immediately.</p> <p>To locate the log file, stiBackup.log, for the backup, use Windows Explorer to browse to the following folder: C:\Program Files\Common Files\Cisco\Logs.</p> <p>For more information on the backup utility, refer to the backup documentation that accompanies your software.</p>

## Disabling Cisco-Approved McAfee Antivirus Services

To disable the McAfee antivirus services, perform the following procedure:

- 
- Step 1** Choose **Start > Settings > Control Panel > Administrative Tools > Services**.
  - Step 2** From the Services window, right-click one of the antivirus services; i.e., Network Associates Alert Manager, Network Associates McShield, or Network Associates Task Manager, and choose **Properties**.
  - Step 3** Verify that the General tab displays in the Properties window.
  - Step 4** From the Startup type drop-down list box, choose **Disabled**.
  - Step 5** Click **Stop**.
  - Step 6** Click **OK**.
  - Step 7** Perform the procedure to disable all Cisco-approved McAfee antivirus services; i.e., Network Associates Alert Manager, Network Associates McShield, and Network Associates Task Manager.
-

## Obtaining the Operating System Upgrade, Service Patches, Hotfixes, and the Corresponding Documentation

To obtain the operating system upgrade executable, hotfixes, and service patches and the corresponding readme documentation, perform the following procedure:

### Procedure

- 
- Step 1** Click <http://www.cisco.com/kobayashi/sw-center/sw-voice.shtml>.
  - Step 2** Choose **The Application** (i.e., Cisco CallManager)> **Download...Cryptographic Software... > Download Cisco 3DES Cryptographic Software under export licensing controls.**
  - Step 3** Download the readme document for the file.  
The readme file provides procedures, caveats, and descriptive information for installing the files.
  - Step 4** Using the readme file as a reference, install the files.
  - Step 5** Perform this procedure on every server in the cluster.
- 

Upgrade the Cisco IP telephony application after you locate the appropriate documentation.

## Error Messages

Table 6 describes error messages that display in dialog boxes and the appropriate corrective actions. If you need to obtain the log files, see the “[What if I encounter problems during the installation?](#)” section on page 11.

**Table 6** Error Messages

Error Message	Corrective Action
THIS CD DOES NOT SUPPORT THIS MACHINE EJECT THE CD AND PRESS ANY KEY TO REBOOT.	The error message provides the corrective action.
Hardware Not Supported. OS version 2000.2.3a only supports the IBM X345. Eject the CD and press any key to reboot.	The error message provides the corrective action.
No recovery information is found. You must select New Installation.	You chose the Same Server Recovery option during the operating system installation, or the system cannot detect your recovery information. Choose the <b>New Installation and Server Replacement</b> option.
Quickbuilder could not find <file>. Please restart the Process and make sure you have the CD for the server inserted. If you get this again, your machine may not be supported by this CD.	The error message provides the corrective action.

**Table 6** Error Messages (continued)

Error Message	Corrective Action
The product key you entered will build an NT 4.0 operating system which is no longer a supported platform. Please enter another product key.	To obtain the correct product key, refer to the installation documentation for the application that you want to install on this server.
Cisco eServices is not supported as a stand alone server on this platform. Please enter a product key for a CallManager server, a CallManager server with Cisco eServices or abort the installation.	The error message provides the corrective action. To obtain the correct product key, refer to the installation documentation for the application that you want to install on this server.
The product key you entered does not enable you to run the installation on this CD. Please enter another key or exit from the program.	The error messages provides the corrective action. To obtain the correct product key, refer to the installation documentation for the application that you want to install on this server.
QuickBuilder cannot support hardware. The hardware detected is not supported by this CD. QuickBuilder cannot be run.	Locate the correct server, and install the operating system on the server.
Quickbuilder could not read your hard drive correctly. Please restart the Process. If you get this again, your machine may not be supported by this CD. Do you want to continue anyway?	The error message provides the corrective action.
model.txt file not found. The hardware model type could not be detected. QuickBuilder cannot be run.	Locate the correct server, and install the operating system on the server.
The IP address that you have entered for the IP address in lmhosts file is not valid. Please enter a valid IP address.	The error message provides the corrective action.
User Name, Organization, Computer Name, Workgroup and DNS Suffix are required entries.	Enter the requested information.
Computer Name must be 2 or more characters.	Enter the appropriate information.
The new Computer Name is a number. The name may not be a number.	See the <a href="#">“Computer name” section on page 7</a> for guidelines.
The Workgroup and Computer Name cannot be the same.	Enter a different Workgroup name.
NT Domain or Workgroup are required entries.	Enter the appropriate information.
Workgroup must be 2 or more characters.	Enter the appropriate information.
The NT Domain Name and Computer Name cannot be the same.	Enter unique names.
Domain Name must be 2 or more characters.	Enter the appropriate information.
This is not a valid user name.	See the <a href="#">“User and organization name” section on page 7</a> .
The password was not correctly confirmed. Please ensure that the password and confirmation match exactly.	The error message provides the corrective action.

**Table 6** Error Messages (continued)

<b>Error Message</b>	<b>Corrective Action</b>
The Primary DNS that you have entered for the IP address is not valid. Please enter a valid Primary DNS.	The error message provides the corrective action.
The Secondary DNS that you have entered for the IP address is not valid. Please enter a valid Secondary DNS.	The error message provides the corrective action.
The Secondary DNS server entry can not exist without Primary DNS server entry.	Enter the appropriate information for the Primary DNS server.
The Primary WINS that you have entered for the IP address is not valid. Please enter a valid Primary WINS.	The error message provides the corrective action.
The Secondary WINS that you have entered for the IP address is not valid. Please enter a valid Secondary WINS.	The error message provides the corrective action.
The Secondary WINS server entry can not exist without Primary WINS server entry.	Enter the appropriate information for the Primary WINS server.
The adapter requires at least one valid IP address. Please enter one.	The error message provides the corrective action.
The current drive configuration is not supported. This application will now exit.	Check the hardware specifications for the server. See <a href="#">Table 1</a> .
Config file isn't found. Please supply config information again.	The error message provides the corrective action.
Failed to determine correct time zone settings. Please check your selections. Time zone code is invalid.	Choose the correct time zone.
This entry must begin with a character value between 'A' and 'Z'	Enter a valid entry.
Spaces are not valid for this entry.	Enter a valid entry.
<The information that you entered> is not a valid entry. Please specify value between 1 and 223.	Enter a valid entry.
IP addresses starting with 127 are not valid because they are reserved for loopback addresses. Please specify some other valid value between 1 and 223.	The error message provides the corrective action.
<The information that you entered> is not a valid entry. Please specify value between 0 and 255.	The error message provides the corrective action.

# Obtaining Documentation

The following sections explain how to obtain documentation from Cisco Systems.

## World Wide Web

You can access the most current Cisco documentation on the World Wide Web at the following URL:

<http://www.cisco.com>

Translated documentation is available at the following URL:

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

## Documentation CD-ROM

Cisco documentation and additional literature are available in a Cisco Documentation CD-ROM package, which is shipped with your product. The Documentation CD-ROM is updated monthly and may be more current than printed documentation. The CD-ROM package is available as a single unit or through an annual subscription.

## Ordering Documentation

Cisco documentation is available in the following ways:

- Registered Cisco Direct Customers can order Cisco product documentation from the Networking Products MarketPlace:  
[http://www.cisco.com/cgi-bin/order/order\\_root.pl](http://www.cisco.com/cgi-bin/order/order_root.pl)
- Registered Cisco.com users can order the Documentation CD-ROM through the online Subscription Store:  
<http://www.cisco.com/go/subscription>
- Nonregistered Cisco.com users can order documentation through a local account representative by calling Cisco corporate headquarters (California, USA) at 408 526-7208 or, elsewhere in North America, by calling 800 553-NETS (6387).

## Documentation Feedback

If you are reading Cisco product documentation on Cisco.com, you can submit technical comments electronically. Click **Feedback** at the top of the Cisco Documentation home page. After you complete the form, print it out and fax it to Cisco at 408 527-0730.

You can e-mail your comments to [bug-doc@cisco.com](mailto:bug-doc@cisco.com).

To submit your comments by mail, use the response card behind the front cover of your document, or write to the following address:

Cisco Systems, Inc.  
 Attn: Document Resource Connection  
 170 West Tasman Drive  
 San Jose, CA 95134-9883

We appreciate your comments.

## Obtaining Technical Assistance

Cisco provides Cisco.com as a starting point for all technical assistance. Customers and partners can obtain documentation, troubleshooting tips, and sample configurations from online tools by using the Cisco Technical Assistance Center (TAC) Web Site. Cisco.com registered users have complete access to the technical support resources on the Cisco TAC Web Site.

### Cisco.com

Cisco.com is the foundation of a suite of interactive, networked services that provides immediate, open access to Cisco information, networking solutions, services, programs, and resources at any time, from anywhere in the world.

Cisco.com is a highly integrated Internet application and a powerful, easy-to-use tool that provides a broad range of features and services to help you to

- Streamline business processes and improve productivity
- Resolve technical issues with online support
- Download and test software packages
- Order Cisco learning materials and merchandise
- Register for online skill assessment, training, and certification programs

You can self-register on Cisco.com to obtain customized information and service. To access Cisco.com, go to the following URL:

<http://www.cisco.com>

### Technical Assistance Center

The Cisco TAC is available to all customers who need technical assistance with a Cisco product, technology, or solution. Two types of support are available through the Cisco TAC: the Cisco TAC Web Site and the Cisco TAC Escalation Center.

Inquiries to Cisco TAC are categorized according to the urgency of the issue:

- Priority level 4 (P4)—You need information or assistance concerning Cisco product capabilities, product installation, or basic product configuration.
- Priority level 3 (P3)—Your network performance is degraded. Network functionality is noticeably impaired, but most business operations continue.

- Priority level 2 (P2)—Your production network is severely degraded, affecting significant aspects of business operations. No workaround is available.
- Priority level 1 (P1)—Your production network is down, and a critical impact to business operations will occur if service is not restored quickly. No workaround is available.

Which Cisco TAC resource you choose is based on the priority of the problem and the conditions of service contracts, when applicable.

## Cisco TAC Web Site

The Cisco TAC Web Site allows you to resolve P3 and P4 issues yourself, saving both cost and time. The site provides around-the-clock access to online tools, knowledge bases, and software. To access the Cisco TAC Web Site, go to the following URL:

<http://www.cisco.com/tac>

All customers, partners, and resellers who have a valid Cisco services contract have complete access to the technical support resources on the Cisco TAC Web Site. The Cisco TAC Web Site requires a Cisco.com login ID and password. If you have a valid service contract but do not have a login ID or password, go to the following URL to register:

<http://www.cisco.com/register/>

If you cannot resolve your technical issues by using the Cisco TAC Web Site, and you are a Cisco.com registered user, you can open a case online by using the TAC Case Open tool at the following URL:

<http://www.cisco.com/tac/caseopen>

If you have Internet access, it is recommended that you open P3 and P4 cases through the Cisco TAC Web Site.

## Cisco TAC Escalation Center

The Cisco TAC Escalation Center addresses issues that are classified as priority level 1 or priority level 2; these classifications are assigned when severe network degradation significantly impacts business operations. When you contact the TAC Escalation Center with a P1 or P2 problem, a Cisco TAC engineer will automatically open a case.

To obtain a directory of toll-free Cisco TAC telephone numbers for your country, go to the following URL:

<http://www.cisco.com/warp/public/687/Directory/DirTAC.shtml>

Before calling, please check with your network operations center to determine the level of Cisco support services to which your company is entitled; for example, SMARTnet, SMARTnet Onsite, or Network Supported Accounts (NSA). In addition, please have available your service agreement number and your product serial number.

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