

# Installing the Cisco VoIP Infrastructure Solution for SIP

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This chapter provides an overview of how to install the components of the Cisco VoIP Infrastructure Solution for SIP. It includes the following sections:

- [Equipment Requirements, page 3-1](#)
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- [Installing the SIP IP Phone, page 3-7](#)
- [Installing the SIP Proxy Server, page 3-8](#)
- [Installing the Cisco uOne Messaging System, page 3-9](#)
- [Installing the Cisco Secure PIX Firewall, page 3-10](#)
- [Installing the SS7 Interconnect for Voice Gateways Solution, page 3-10](#)

## Equipment Requirements

To implement the Cisco VoIP Infrastructure Solution for SIP, you must start with a functional IP network. Then, depending on which phase of the solution (as described in [Illustrated Implementation, page 2-2](#)) you want to implement, you must have the following (components that are not provided as part of the solution are italicized):

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Phase	Solution Equipment Required
1	<p data-bbox="480 300 1466 359">Cisco Enterprise Gateway (Cisco 2600 series, Cisco 3600 series, or Cisco AS5300 router) with:</p> <ul style="list-style-type: none"> <li data-bbox="493 380 1013 407">• Minimum voice card for the selected router               <ul style="list-style-type: none"> <li data-bbox="537 422 857 449">– 5300:AS53-T1-48VOXD</li> <li data-bbox="537 464 911 491">– 36xx/26xx: NM-HDV-2T1-24</li> </ul> </li> <li data-bbox="493 512 1062 539">• Cisco IOS Software Release 12.1(5)XM or later               <ul style="list-style-type: none"> <li data-bbox="537 554 711 581">– cxxx-is-mz</li> <li data-bbox="537 596 748 623">– cxxx-is56i-mz</li> <li data-bbox="537 638 711 665">– cxxx-js-mz</li> <li data-bbox="537 680 748 707">– cxxx-js56i-mx</li> </ul> </li> </ul> <p data-bbox="529 737 997 764">Where xxx identifies the model of router.</p>


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Phase	Solution Equipment Required
2	<p>Cisco Enterprise Gateway (Cisco 2600 series, Cisco 3600 series, or Cisco AS5300 router) with:</p> <ul style="list-style-type: none"> <li>• Appropriate voice card for the selected router <ul style="list-style-type: none"> <li>– 5300:AS53-T1-24VOX</li> <li>– 36xx/26xx: NM-HDV-2T1-24</li> </ul> </li> <li>• Cisco IOS Software Release 12.1(5)XM <ul style="list-style-type: none"> <li>– cxxx-is-mz</li> <li>– cxxx-is56i-mz</li> <li>– cxxx-js-mz</li> <li>– cxxx-js56i-mx</li> </ul> </li> </ul> <p>Where xxx identifies the model of router.</p> <p><b>Plus:</b></p> <p>Cisco SIP Proxy Server, Version 1.0</p> <ul style="list-style-type: none"> <li>• Solaris platform: <ul style="list-style-type: none"> <li>– Workstation—Sparc or UltraSparc server class machine with a minimum of 256 MB of RAM and 1 GB of disk space</li> <li>– Solaris 2.6 Operating Environment or later</li> </ul> </li> <li>• Linux platform: <ul style="list-style-type: none"> <li>– PC—Intel Pentium III processor operating with a minimum of 128 MB of RAM and 1 GB of disk space</li> <li>– Linux Kernel 2.2.13 or later</li> </ul> </li> </ul>
3	<p>Cisco Enterprise Gateway (Cisco 2600 series, Cisco 3600 series, or Cisco AS5300 router) with:</p> <ul style="list-style-type: none"> <li>• Appropriate voice card for the selected router <ul style="list-style-type: none"> <li>– 5300:AS53-T1-24VOX</li> <li>– 36xx/26xx: NM-HDV-2T1-24</li> </ul> </li> <li>• Cisco IOS Software Release 12.1(5)XM <ul style="list-style-type: none"> <li>– cxxx-is-mz</li> <li>– cxxx-is56i-mz</li> <li>– cxxx-js-mz</li> <li>– cxxx-js56i-mx</li> </ul> </li> </ul> <p>Where xxx identifies the model of router.</p> <p>Cisco SIP Proxy Server, Version 1.0 (see Phase 2 for specifics)</p> <p><b>Plus:</b></p> <p>Cisco SIP IP Phones 7960, Version 2.0</p>

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Phase	Solution Equipment Required
4	<p>Cisco Enterprise Gateway (Cisco 2600 series, Cisco 3600 series, or Cisco AS5300 router) with:</p> <ul style="list-style-type: none"> <li>• Appropriate voice card for the selected router <ul style="list-style-type: none"> <li>– 5300:AS53-T1-24VOX</li> <li>– 36xx/26xx: NM-HDV-2T1-24</li> </ul> </li> <li>• Cisco IOS Software Release 12.1(5)XM <ul style="list-style-type: none"> <li>– cxxx-is-mz</li> <li>– cxxx-is56i-mz</li> <li>– cxxx-js-mz</li> <li>– cxxx-js56i-mx</li> </ul> </li> </ul> <p>Where xxx identifies the model of router.</p> <p>Cisco SIP Proxy Server, Version 1.0 (see Phase 2 for specifics)</p> <p>Cisco SIP IP Phones 7960, Version 2.0</p> <p><b>Plus:</b></p> <p><i>Application servers and databases</i></p>

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Phase	Solution Equipment Required
5	<p data-bbox="516 260 1513 323">Cisco Enterprise Gateway (Cisco 2600 series, Cisco 3600 series, or Cisco AS5300 router) with:</p> <ul data-bbox="532 338 1076 684" style="list-style-type: none"> <li data-bbox="532 338 1076 369">• Appropriate voice card for the selected router <ul data-bbox="578 384 948 457" style="list-style-type: none"> <li data-bbox="578 384 948 415">– 5300:AS53-T1-24VOX</li> <li data-bbox="578 430 948 457">– 36xx/26xx: NM-HDV-2T1-24</li> </ul> </li> <li data-bbox="532 472 1076 504">• Cisco IOS Software Release 12.1(5)XM <ul data-bbox="578 518 786 684" style="list-style-type: none"> <li data-bbox="578 518 786 550">– cxxx-is-mz</li> <li data-bbox="578 564 786 596">– cxxx-is56i-mz</li> <li data-bbox="578 611 786 642">– cxxx-js-mz</li> <li data-bbox="578 657 786 684">– cxxx-js56i-mx</li> </ul> </li> </ul> <p data-bbox="565 699 1032 730">Where xxx identifies the model of router.</p> <p data-bbox="516 745 873 777"><i>Ecosystem partner proxy server</i></p> <p data-bbox="516 791 902 823"><i>Application servers and databases</i></p> <p data-bbox="516 837 1219 869">Cisco SIP Proxy Server, Version 1.0 (see Phase 2 for specifics)</p> <p data-bbox="516 884 951 915">Cisco SIP IP Phones 7960, Version 2.0</p> <p data-bbox="516 930 581 961"><b>Plus:</b></p> <p data-bbox="516 976 1430 1008">uOne Messaging System, Service Provider Products, Release 4.2(2)s, SIP Edition</p> <ul data-bbox="532 1022 1495 1575" style="list-style-type: none"> <li data-bbox="532 1022 1495 1184">• uOne messaging server: <ul data-bbox="578 1062 964 1184" style="list-style-type: none"> <li data-bbox="578 1062 964 1094">– Sun computer (A26-AA-R)</li> <li data-bbox="578 1108 737 1140">– Solaris 2.6</li> <li data-bbox="578 1155 964 1184">– Netscape Messaging Server 4.1</li> </ul> </li> <li data-bbox="532 1199 1495 1360">• uOne directory server <ul data-bbox="578 1239 951 1360" style="list-style-type: none"> <li data-bbox="578 1239 951 1270">– Sun computer (A26-AA-R)</li> <li data-bbox="578 1285 737 1316">– Solaris 2.6</li> <li data-bbox="578 1331 951 1360">– Netscape Directory Server 4.0</li> </ul> </li> <li data-bbox="532 1375 1495 1575">• uOne gateserver <ul data-bbox="578 1415 1495 1575" style="list-style-type: none"> <li data-bbox="578 1415 1495 1488">– Sun Sparc server class host with 512 MB RAM and a 4GB disk, dual CPU 300 MHz (N03-UEC2-9N-512AE)</li> <li data-bbox="578 1503 737 1535">– Solaris 2.6</li> <li data-bbox="578 1549 1036 1575">– uOne gateserver software, version 4.2</li> </ul> </li> </ul> <p data-bbox="516 1589 1513 1705">  <b>Note</b> For uOne fax support, see the IOS Compatibility section of the Release Notes for uOne. </p>

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Phase	Solution Equipment Required
6	<p>Cisco Enterprise Gateway (Cisco 2600 series, Cisco 3600 series, or Cisco AS5300 router) with:</p> <ul style="list-style-type: none"> <li>• Appropriate voice card for the selected router <ul style="list-style-type: none"> <li>– 5300:AS53-T1-24VOX</li> <li>– 36xx/26xx: NM-HDV-2T1-24</li> </ul> </li> <li>• Cisco IOS Software Release 12.1(5)XM <ul style="list-style-type: none"> <li>– cxxx-is-mz</li> <li>– cxxx-is56i-mz</li> <li>– cxxx-js-mz</li> <li>– cxxx-js56i-mx</li> </ul> </li> </ul> <p>Where xxx identifies the model of router.</p> <p><i>Ecosystem partner proxy server</i></p> <p><i>Application servers and databases</i></p> <p>Cisco SIP Proxy Server, Version 1.0 (see Phase 2 for specifics)</p> <p>Cisco SIP IP Phones 7960, Version 2.0</p> <p>Cisco uOne Messaging System, Service Provider Products, Release 4.2(2)s, SIP Edition (see Phase 5 for specifics)</p> <p><b>Plus:</b></p> <p>Cisco PIX Firewall, Version 6.0 (PIX 535, PIX 525, PIX 515, PIX 506, or PIX 520 or earlier model)</p>

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Phase	Solution Equipment Required
7	<p>Cisco Enterprise Gateway (Cisco 2600 series, Cisco 3600 series, or Cisco AS5300 router) with:</p> <ul style="list-style-type: none"> <li>• Appropriate voice card for the selected router <ul style="list-style-type: none"> <li>– 5300:AS53-T1-24VOX</li> <li>– 36xx/26xx: NM-HDV-2T1-24</li> </ul> </li> <li>• Cisco IOS Software Release 12.1(5)XM <ul style="list-style-type: none"> <li>– cxxx-is-mz</li> <li>– cxxx-is56i-mz</li> <li>– cxxx-js-mz</li> <li>– cxxx-js56i-mx</li> </ul> </li> </ul> <p>Where xxx identifies the model of router.</p> <p><i>Ecosystem partner proxy server</i></p> <p><i>Application servers and databases</i></p> <p>Cisco SIP Proxy Server, Version 1.0 (see Phase 2 for specifics)</p> <p>Cisco SIP IP Phones 7960, Version 2.0</p> <p>Cisco uOne Messaging System, Service Provider Products, Release 4.2(2)s, SIP Edition (see Phase 5 for specifics)</p> <p>Cisco PIX Firewall, Version 6.0</p> <p><b>Plus:</b></p> <p>SS7 Interconnect for Voice Gateways Solution</p> <ul style="list-style-type: none"> <li>• Cisco Signaling Link Terminal (Cisco SLT) <ul style="list-style-type: none"> <li>– Cisco 2600 Services Router</li> <li>– Cisco IOS Release 12.1(1)T</li> </ul> </li> <li>• Cisco Signaling Controller Host (Cisco SC2200), Release 7.4 <ul style="list-style-type: none"> <li>– Sun Netra t 1400, Netra t 1405, Netra t 1120, Netra t 1125, or E450</li> <li>– Solaris 2.6</li> </ul> </li> <li>• Cisco Network Access Server <ul style="list-style-type: none"> <li>– Cisco AS5300 Universal Access Server Router</li> </ul> </li> <li>• Catalyst Switch (customer premise hardware)</li> </ul>

In addition to the components previously listed, you should have the following installed and operational in your network:

- TFTP server—To download the SIP firmware for the SIP IP phone and update IOS images.
- DHCP server—To provide IP addresses and other parameters to the SIP IP phone.
- DNS server—(optional) To resolve addresses for the components, particularly the SIP IP phone.

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## Installing the SIP Gateway

Install your Cisco 2600 Series, 3600 Series, or AS5300 router per the instructions that accompanied the router. Ensure that the appropriate network cards are installed and that the routers are running the correct release of Cisco IOS Software.

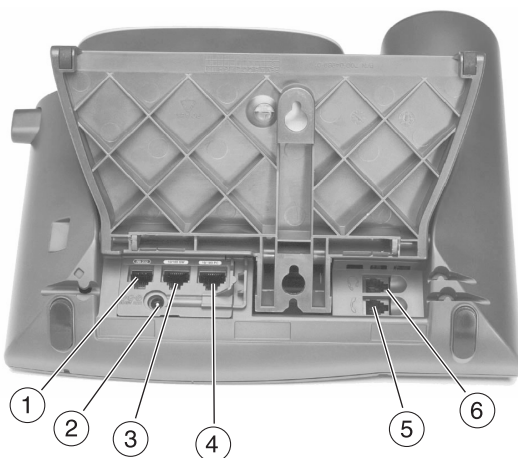
For the	Reference
Cisco 2600 Series Router	<i>Cisco 2600 Series Hardware Installation Guide</i> <i>WAN Interface Cards Hardware Installation Guide</i>
Cisco 3600 Series Router	<i>Cisco 3600 Series Hardware Installation Guide</i> <i>WAN Interface Cards Hardware Installation Guide</i>
Cisco AS5300 Router	<i>Cisco AS5300 Chassis Installation Guide</i> <i>Cisco AS5300 Module Installation Guide</i>

## Installing the SIP IP Phone

Use the following procedure to connect the cables to your Cisco SIP IP phone.

- Step 1** Place your Cisco SIP IP phone on a flat surface with the LCD side down. On the rear of your Cisco SIP IP phone there are several jacks. Review the [Figure 3-1](#) to determine the use of each jack.

*Figure 3-1 Rear of the SIP IP Phone*



1. RJ-11/RS-232 (This jack is not used.)
2. AC Adapter port
3. LAN-to-phone jack (This jack is labeled 10/100 SW.)
4. PC-to-phone jack (This jack is labeled 10/100 PC.)
5. Handset jack
6. Headset jack



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- Step 2** Plug one end of the AC adapter cord into the back of your Cisco SIP IP phone and the other end into an electrical outlet. There is an AC adapter power brick in the path.
  - Step 3** Plug one end of your RJ-45 LAN cable into the LAN-to-phone jack and the other end into your LAN RJ-45 port.
  - Step 4** Plug one end of your RJ-45 PC cable into the PC-to-phone jack and the other end into the RJ-45 port on your PC.
  - Step 5** Plug one end of the handset cord into the handset jack on the back of the Cisco SIP IP phone and the other end into your handset.
  - Step 6** If you use a headset (not supplied) plug one end of the headset cord into the headset jack on the back of the Cisco IP phone and your headset is ready for use.
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**Note**

For complete information about installing the Cisco SIP IP phone, see the *Cisco SIP IP Phone 7960 Administrator Guide, Version 2.0*.

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## Installing the SIP Proxy Server

There are two versions of the Cisco SIP Proxy Server: a version that runs on Linux and a version that runs on Solaris. Before installing the Cisco SIP Proxy Server, ensure that the Sun Sparc server or PC server platform on which the proxy server will be run is installed and connected to your network per the instructions that accompanied the system.

The following sections describe how to install the Cisco SIP Proxy Server on each platform:

- [Installing the Cisco SIP Server Linux Software, page 3-8](#)
- [Installing the Cisco SIP Proxy Server Solaris Software, page 3-9](#)

## Installing the Cisco SIP Server Linux Software

There is a Cisco SIP Proxy Server software binary image and a Red Hat Package Manager (RPM) image. To install the Cisco SIP Server Linux software, complete the following tasks:

- 
- Step 1** Mount the Cisco SIP Proxy Server CD-ROM.
  - Step 2** Install the Cisco SIP Proxy Server by complete the following:
    - a. Log in as **root**.
    - b. Change directories to the directory in which the Cisco SIP Proxy Server software images are located.

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- c. To decompress and install the Cisco SIP Proxy Server binary image into the `/usr/local/sip` directory, issue the following command:

```
gunzip -d -c sip-server-1.0-linux.tar.gz | tar xvfP -
```

To install the Cisco RPM image into the `/usr/local/sip` directory, issue the following command:

```
rpm -i sip-server-1.0-linux.i386.rpm
```

- Step 3 Unmount the Cisco SIP Proxy Server CD-ROM.
- 

**Note**

For complete information about installing the Cisco SIP Proxy Server on Linux, see the *CD Installation Guide for the Cisco SIP Proxy Server on Linux*.

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## Installing the Cisco SIP Proxy Server Solaris Software

To install the Cisco SIP Server Solaris software, complete the following tasks:

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- Step 1 Mount the Cisco SIP Proxy Server CD-ROM.
- Step 2 Install the Cisco SIP Proxy Server by complete the following:
- a. Log in as **root**.
  - b. Change directories to the directory in which the Cisco SIP Proxy Server software image is located.
  - c. Decompress and install the Cisco SIP Proxy Server software image into the `/opt/sip` directory by issuing the following command:
- ```
gunzip -d -c sip-server-1.0-solaris.tar.gz | tar xvfP -
```
- Step 3 Unmount the Cisco SIP Proxy Server CD-ROM.
- 

**Note**

For complete information about installing the Cisco SIP Proxy Server on Linux, see the *CD Installation Guide for the Cisco SIP Proxy Server on Solaris*.

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## Installing the Cisco uOne Messaging System

The uOne Messaging System is composed of three components: a gateserver and two backend servers (the directory server and the message server). These components run on a Sun Sparc server. Before installing the Cisco uOne system software, ensure that the Sun Sparc server and operating system is configured per the instructions that accompanied the platform.

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To install the Cisco uOne system software, complete the following tasks:

|        | Task                                                            | References                                                                                                                                   |
|--------|-----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| Step 1 | Install the uOne 4.2(2)s files on the directory server.         | <i>uOne BackEnd Servers Reference Manual, Release 4.2(2)s</i>                                                                                |
| Step 2 | Install the uOne 4.2(2)s files on the messaging server.         |                                                                                                                                              |
| Step 3 | Configure the gateserver host operating system are recommended. | <i>uOne Gateserver Installation and Configuration Manual, Release 4.2(2)s</i>                                                                |
| Step 4 | Install the uOne 4.2(2)s software packages on the gateserver.   | <i>Installing and Configuring uOne 4.2(2)s, SIP Edition</i><br><i>uOne Gateserver Installation and Configuration Manual, Release 4.2(2)s</i> |

## Installing the Cisco Secure PIX Firewall

Any Cisco Secure PIX Firewall model running Version 6.0 can be used in the Cisco VoIP Infrastructure Solution for SIP. Install and connect the Cisco Secure PIX Firewall per the instructions that accompanied the device.



**Note**

For complete information about installing the Cisco Secure PIX Firewall, see the latest version of the *Installation Guide for the Cisco Secure PIX Firewall*.

## Installing the SS7 Interconnect for Voice Gateways Solution

Install your Cisco 2600 Series router and your SC2200 media gateway controller per the instructions that accompanied the devices. Ensure that the appropriate network cards are installed and that the devices are running the correct release of software.

| For the                  | Reference                                                                                                                                       |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| Cisco 2600 Series Router | <i>Cisco 2600 Series Hardware Installation Guide</i><br><i>WAN Interface Cards Hardware Installation Guide</i>                                  |
| Cisco SC2200             | <i>Cisco Media Gateway Controller Hardware Installation Guide</i><br><i>Cisco MGC Software Release 9 Installation &amp; Configuration Guide</i> |
| Cisco AS5300 Router      | <i>Cisco AS5300 Chassis Installation Guide</i><br><i>Cisco AS5300 Module Installation Guide</i>                                                 |
| Catalyst Switch          | Documentation that shipped with the Catalyst switch. The switch is customer premises equipment.                                                 |

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