



Understanding Device Support

Cisco CallManager controls Cisco voice devices (such as IP telephones and gateways), allowing you to configure voice to ensure proper call routing.

These sections provide general information about how Cisco CallManager interacts with voice devices in your network:

- Using DHCP and TFTP, page 6-1
- Understanding Device Loads, page 6-5
- Adding Devices to Cisco CallManager, page 6-9

Using DHCP and TFTP

Cisco telephony devices require IP addresses that are assigned manually or by using Dynamic Host Configuration Protocol (DHCP). Devices also require access to a TFTP server that contains device configuration name files (.cnf file format), which enables the device to communicate with Cisco CallManager.

Related Topics

- Understanding DHCP and TFTP, page 6-2
- Accessing the TFTP Server, page 6-3
- Understanding How Devices Identify the TFTP Server, page 6-3

Understanding DHCP and TFTP

DHCP automatically assigns IP addresses to devices whenever you plug them in. For example, you can connect multiple phones anywhere on the IP network and DHCP automatically assigns IP addresses to them.

By default, Cisco IP phones are DHCP-enabled. If you are not using DHCP, you need to disable DHCP on the device and manually assign it an IP address.

Obtaining an IP Address

If the Cisco IP Phone 7960 is using DHCP to obtain an IP address, the phone queries the DHCP server to obtain one.

Accessing TFTP Server

In addition to assigning an IP address, the DHCP server also directs the Cisco IP Phone 7960 to a TFTP Server. If the phone has a statically defined IP address, you must configure the TFTP server locally on the phone and the phone goes to the TFTP server directly.

Requesting the Configuration File

The TFTP server has configuration files (.cnf file format) for telephony devices, which define parameters for connecting to Cisco CallManager. These configuration files also include the phone button template specific to the different phone types. If you have enabled auto-registration in Cisco CallManager, the phones access a default configuration file (sepdefault.cnf) from the TFTP server. If you have manually entered the phones into the Cisco CallManager database, the phone accesses a .cnf file corresponding to its device name.

Contacting Cisco CallManager

The configuration file defines how the Cisco IP Phone 7960 communicates with Cisco CallManager. After obtaining the file from the TFTP server, the phone next attempts to make a TCP connection to the highest priority Cisco CallManager on the list.

If the phone was manually added to the database, Cisco CallManager identifies the phone. If the phone was not manually added to the database and auto-registration is enabled in Cisco CallManager, the phone attempts to auto-register itself in the Cisco CallManager database.

Accessing the TFTP Server

You can enable the IP phones and gateways to access the TFTP server in any one of the following ways, depending on the device type:

- Gateways and phones can use DHCP custom option 150. This is the method Cisco recommends.
- Gateways and phones can use DHCP option 066 (Boot Server Host Name).
- Gateways and phones can query CiscoCM1. The Domain Name Server (DNS) must be able to resolve this name to the IP address of the Cisco CallManager server.
- Phones can receive a static IP address.
- Phones can be configured with the IP address of the TFTP server.

Related Topics

- Understanding DHCP and TFTP, page 6-2
- Accessing the TFTP Server, page 6-3

Understanding How Devices Identify the TFTP Server

The phones and gateways have an order of preference that they use for selecting the address of the TFTP server. If the devices receive conflicting or confusing information from the DHCP server, the device uses the following sequence to determine what information is valid:

1. You can locally configure the phone (but not a gateway) with a TFTP server. This address overrides any TFTP address sent by the DHCP server. The phone always tries to resolve the DNS name CiscoCM1.
2. If this name is resolved, then it overrides all information sent by the DHCP server.

It is not necessary to name the TFTP server CiscoCM1, but you must enter a DNS CName record to associate CiscoCM1 with the address or name of the TFTP server.

3. The phone uses the value of Next-Server in the boot processes.

This DHCP configuration parameter has traditionally been used as the address of the TFTP server. When configuring BOOTP servers, this field is typically referred to as the address of the TFTP server.

This information is returned in the siaddr field of the DHCP header. You should always use this option, if available, because some DHCP servers will place their own IP address in this field when it is not configured.

4. The phone uses the site-specific option 150.

This option resolves the issue that Microsoft Windows NT servers do not allow the Next-Server configuration parameter. The Microsoft Windows NT servers allow access to the Next-Server parameter only when IP address are statically assigned.

5. The phone also accepts the Optional Server Name parameter.

This DHCP configuration parameter is the DNS name of a TFTP server. Currently only a DNS name can be configured in this parameter; a dotted decimal IP address should not be used.

6. The phone also accepts the 66 option, which is the name of the boot server.

7. Option 66 is normally used to replace the sname field when option overloading occurs.

It can be used on Windows NT DHCP servers and functions like the 150 option. This name field can contain a DNS name or a dotted decimal IP address.

8. The 66 option should not be used with the 150 option.

If they are sent together, then the phone prefers the IP address over the name given by the 66 option. However, if both a dotted decimal IP address and a 150 option are sent, then order of preference is dependent on the order that they appear in the option list. The phone chooses the last item in the option list. To reiterate, option 66 and option 150 are mutually exclusive.

Related Topics

- Understanding DHCP and TFTP, page 6-2
- Accessing the TFTP Server, page 6-3

Understanding Device Loads

There are two types of loads: phone loads and gateway loads. Loads are files that contain updated application software. During installation or upgrade, the latest loads are automatically provided. However, you can also receive a load between releases that can contain patches or other information important to the devices that use loads, such as phones or gateways.

Loads are stored in the ...Cisco\TFTPPath subdirectory as *.bin files, for example, D501A022.bin. During installation or upgrade, the latest loads are stored in this location. New loads you receive between releases must be copied to this location in order to be accessed by the system.

See Table 6-1 for a description of the loads for each device type.

Table 6-1 Device Load Descriptions

Device	Description
Cisco IP Phone models 12S, 12SP, 12SP+, and 30VIP	Loads for these devices start with P002.... For example, P002K202.
Cisco IP Phone model 30SP+	Loads for these devices start with P001.... For example, P001K202.
Cisco IP Phone 7960	Loads for these devices range from P003-P003AF30.
Cisco Access Analog gateways	Loads for these devices start with the letter A, for example, A001P022.
Cisco Access Digital gateways	Loads for these devices start with the letter D, for example, D003C202.
Cisco Voice Gateway 200	Not applicable.

Table 6-1 Device Load Descriptions (continued)

Device	Description
Cisco Catalyst 6000 8 Port E1 and Services Module	<p>Loads for these devices vary depending on what the device is being used as:</p> <ul style="list-style-type: none"> • Conference Bridge—loads range from WS-X6608 and from C001-C001G030. • Digital Gateway—loads range from WX-X6608 and from D004-D004G030. • Media Termination Point—loads range from WS-X6608 and from M001-M001G030.
Cisco Catalyst 6000 12 Port FXO Analog Interface Module	Loads for these devices range from A002-A002G030.
Catalyst 6000 24 Port FXS Analog Interface Module	Loads for these devices range from A002-A002G030.

Related Topics

- Updating Device Loads, page 6-6
- Verifying the Load on Cisco IP Phones, page 6-8

Updating Device Loads

You can apply a new load to a single phone before applying it system-wide. This is useful for testing purposes. Remember, however, that only the device you updated with the new load uses that load. All other devices use the old load until you perform a system-wide update.

Related Topics

- Updating a Load on a Cisco IP Phone, page 6-7
- Updating the Load on a Cisco Gateway, page 6-8

Updating a Load on a Cisco IP Phone

Follow these instructions to update a load on a Cisco IP phone.

Procedure

Step 1 Open Cisco CallManager.

Step 2 Select **Devices > Phone**.

The Phone Search page displays.

Step 3 Enter search criteria to locate a specific phone.

Step 4 A list of discovered devices appears.

Step 5 Click **Device Name**.

The Phone Configuration window appears.

Step 6 Enter the appropriate load in the Load Information field.

For example, a phone might use load P002K202.

Step 7 Click **Update**.

The information is saved in Cisco CallManager Administration. For the change to take effect, you must now reset the phone.

Related Topics

- Updating a Phone, page 39-8
- Verifying the Load on Cisco IP Phones, page 6-8
- Finding a Phone, page 39-9

Updating the Load on a Cisco Gateway

Follow these steps to update a load on a Cisco gateway.

Procedure

- Step 1** Open Cisco CallManager
- Step 2** Select **Devices > Gateway**.
- Step 3** Enter search criteria to locate a specific gateway.
- Step 4** A list of discovered gateways appears.
- Step 5** Click **Device Name**.
The gateway configuration page displays.
- Step 6** In the Load Information field, enter the appropriate load.
- Step 7** Click **Update**.

The information is saved in Cisco CallManager Administration. For the change to take effect, you must now reset the gateway.

Verifying the Load on Cisco IP Phones

You can verify the load locally on the Cisco IP phones. Follow these procedures to verify the load on the different phone types.

Cisco IP Phone 7960

Using the Cisco IP Phone 7960, follow these steps to verify the load version:

Procedure

- Step 1** Press **settings**.
- Step 2** Scroll to select **Status**.
- Step 3** Press the **Select** soft key.

Step 4 Scroll to Firmware Versions.

Step 5 Press **Select**.

The **Application Load ID** indicates the current firmware version.

Related Topics

- Updating a Load on a Cisco IP Phone, page 6-7

Cisco IP Phone Models 12 and 30

On the phone whose load has been changed, press *. The display shows the letter and the last three digits of the phone load in use. For example, if you configured the phone with load P002K202, the display would read k2.02.

Adding Devices to Cisco CallManager

Before you can use devices, such as gateways and IP phones in your IP telephony network, you must add them to Cisco CallManager.

Refer to these sections for assistance in adding telephony devices to the database:

- Adding a Phone, page 39-3
- Adding Phone Button Templates, page 40-6
- Adding Cisco uOne Ports, page 37-2
- Adding Gateways to Cisco CallManager, page 38-7
- Adding an MGCP Gateway, page 38-21

