



Managing Cisco MGCP IP Phones

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How to Customize Cisco IP 7960G/7940G Phone Rings

The Cisco IP 7960G/7940G phone ships with two ring types: Chirp1 and Chirp2. However, you can create and add custom rings.

Procedure

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- Step 1** Create a pulse-code-modulation (PCM) file for each desired ring type and store it in the root directory of your TFTP server.
- PCM files must contain no header information and must comply with the following format guidelines:
- 8000-Hz sampling rate
 - 8 bits per sample
 - mu-law compression
- Step 2** Using an ASCII text editor such as vi, open the RINGLIST.DAT file. For each ring type that you are adding, specify the name as you want it to appear on the Ring Type menu, press **Tab**, and then specify the filename of the ring type. Your RINGLIST.DAT file should appear similar to the following:
- ```
Ring Type 1 ringer1.pcm
Ring Type 2 ringer2.pcm
```
- Step 3** Save and close the file.
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## How to Access XML Cards

You can access XML cards in any of the following ways:

- Select **Services** (configured by means of the `services_url` parameter).
- Select **External Directory** (configured by means of the `directory_url` parameter).
- Download a bitmap to be used as the phone logo (configured by means of the `logo_url` parameter).

For more information about using XML on your Cisco MGCP IP phone, refer to the following:

- IP Telephony  
<http://www.hotdispatch.com/cisco-ip-telephony>
- Cisco CallManager Services Developer Kit  
[http://www.cisco.com/pcgi-bin/dev\\_support/access\\_level/product\\_support](http://www.cisco.com/pcgi-bin/dev_support/access_level/product_support)
- *Developing Cisco IP Phone Services* by Darrick Deel, Mark Nelson, and Anne Smith, ISBN 1-58705-060-9

## How to View Your Cisco MGCP IP Phone Firmware Image Version

You can determine your firmware image version.

### Procedure

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- Step 1** Select **Settings > Status**.
- Step 2** Select **Firmware Versions**. The Firmware Versions menu appears.
- Step 3** View information as needed. The following displays:
- Application Load ID—Current software image on the phone.
  - Boot Load ID—Bootstrap loader image version that is manufactured on the phone. This image name does not change.
  - DSP Load ID—Current DSP version on the phone.
- Step 4** Select **Exit**.
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# How to Upgrade Your Cisco MGCP IP Phone Firmware Image

**Note**

Refer to the *Cisco 7940 and 7960 IP Phones Firmware Upgrade Matrix* for additional upgrade information for all releases.

At some point after you install hardware and the initial firmware image, you could require an upgrade. You can upgrade by means of either of two methods:

- You can upgrade one phone at a time using a phone-defined configuration file.
- You can upgrade a system of phones using the default configuration file.

You can upgrade to Release 6.0 or 6.1 from any earlier release. The path to do so is as follows:

-- > Release 2.3 --> Release 5.3 --> Release 7.4

Each intermediate releases adds key functionality that is necessary for a subsequent upgrade. Each upgrade provides the following:

- Prevents digital signal processor (DSP) mismatches in the upgrade to a higher release.
- Addresses user-interface responsiveness and voice-clipping issues.
- Adds image authentication to IP phone protocols, so that tampering with the binary image before the image is downloaded to the phone is not allowed. Any tampering with the image causes the phone to fail the authentication process and reject the image.

It is possible during the upgrade procedure to configure your system to enable the phone to dual-boot from MGCP. If it is so configured, during initialization the phone automatically determines the network in which it is being installed.

## Procedure

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- Step 1** Determine your current firmware image release. (For instructions, see the “[How to View Your Cisco MGCP IP Phone Firmware Image Version](#)” section on page 4-2.)
- Step 2** To enable dual-booting, use an ASCII text editor such as vi, open the OS79XX.TXT dual-boot file that resides in the root directory of your TFTP server, and add the following:
- ```
P0M3-03-0-00
```
- Step 3** If your current release is earlier than Release 2.3, upgrade to Release 2.3 as follows:
- a. From the Cisco.com website, do the following:
 1. Go to the Cisco.com MGCP IP 7940/7960 phone software-download site at <http://www.cisco.com/cgi-bin/tablebuild.pl/mgcp-ip-phone7960>.
 2. Download the following to the root directory of your TFTP server: Release 2.3 ZIP archive, default configuration file, and release notes.
 - b. Read the release notes and any readme.txt files. Unzip the archive and extract the binary image files to the root directory of the TFTP server.
 - c. Using an ASCII text editor such as vi, do the following:
 1. Open the default configuration file.
 2. Update the image version specified in the image_version variable. The version name in the image_version variable should match the version name (without the .sbn or .bin extension) of the latest firmware image; in this case the version is P0M30203.

3. Save the modified file to the TFTP server.
- d. Reinitialize each phone and verify that it does the following:
 1. Contacts the TFTP server and requests its configuration files.
 2. Compares the image defined in the file to the image that it has stored in flash memory.
 3. If the images differ, downloads the image defined in the configuration file (which is stored in the root directory on the TFTP server).
 4. Programs that image into flash memory.
 5. Reboots.

Step 4 If your current release is between Release 2.3 and Release 5.2, upgrade to Release 5.3 as follows:



Note If your current release is Release 5.2, you need not upgrade to Release 5.3. Upgrade directly to Release 6.0 or 6.1 as described in [Step 5](#) below.

- a. From the Cisco.com website listed in [Step 3a](#) above, download the following to the root directory of your TFTP server: Release 5.3 ZIP archive, default configuration file, and release notes.
- b. Read the release notes and any readme.txt files. Unzip the archive and extract the binary image files to the root directory of the TFTP server.
- c. Using an ASCII text editor such as vi, do the following:
 1. Open the configuration file.
 2. Update the image version specified in the image_version variable. The version name in the image_version variable should match the version name (without the .sbn or .bin extension) of the latest firmware image.
 3. Save the modified file to the TFTP server.
- d. Reinitialize each phone as described in [Step 3d](#) above.

Step 5 If your current release is Release 5.2 or higher, upgrade to Release 6.0 or 6.1 as follows:

- a. From the Cisco.com website listed in [Step 3a](#) above, download the following to the root directory of your TFTP server: Release 6.0 (or 6.1) ZIP archive, default configuration file, and release notes.
- b. Read the release notes and any readme.txt files. Unzip the archive and extract the binary image files to the root directory of the TFTP server.
- c. Using an ASCII text editor such as vi, do the following:
 1. Open the configuration file.
 2. Update the image version specified in the image_version variable. The version name in the image_version variable should match the version name (without the .sbn or .bin extension) of the latest firmware image.
 3. Save the modified file to the TFTP server.
- d. Reinitialize each phone as described in [Step 3d](#) above.

Step 6 If you are upgrading from any previous release to Release 7.0, 7.1, or a later release, see the [“Upgrading to Versions 7.0 and Later Releases”](#) section on [page 4-5](#).

**Note**

If you do not define the `image_version` parameter in the default configuration file, only phones that have an updated phone-specific configuration file with the new image version and that have been restarted use the latest firmware image. All other phones use the older version until their configuration files have been updated with the new image version.

Upgrading to Versions 7.0 and Later Releases

**Note**

Refer to the [Cisco 7940 and 7960 IP Phones Firmware Upgrade Matrix](#) for additional upgrade information for all releases.

Releases 7.x is delivered in a ZIP archive. The ZIP archive contains 6 files:

- P003-07-0-00.bin—New universal loader application file
- P003-07-0-00.sbn—New universal loader application file
- P0M3-07-0-00.sb2—New MGCP 7.x release image.
- P0M3-07-0-00.loads—New loader file. The Universal Loader uses the P0M3-07-0-00.loads file to determine which images to put on the phone. This file specifies the Loader application version and the MGCP application version. The P0M3-07-0-00.sbn, P0M3-07-0-00.loads, P003-07-0-00.sb2 are all signed files and cannot be altered.
- OS79XX.TXT—Contains the upgrade image of the universal loader used by pre-release 7.0 images.

Procedure

- Step 1** Unzip the archive contents into your root TFTP directory.
- Step 2** Edit your MGCPDefault.cnf and/or MGCP<mac addr>.cnf file to have the correct image version. For example:
- ```
image_version: P0M3-07-0-00
```
- Step 3** Reboot the phone.
- The phone automatically upgrades to the Universal Loader application (P003-07-0-00) upon reboot. Once the Universal Loader application starts, it will examine the MGCP configuration file to determine which image to use (determined in Step 2 above).
- After determining the image version, the Universal Loader application examines the .loads file to determine if the .loads file needs to be upgraded to the MGCP.sb2 image (release 7.0 or 7.1). The upgrade will occur automatically, if needed. When upgrading is done, the release 7.0 or 7.1 image is initiated.

## Upgrading with New Features

This section contains information on how to add new features to the Cisco IP 7960G/7940G phone.

## MGCP NAT Support

In its simplest configuration, the Network Address Translator (NAT) operates on a router connecting two networks together; one of these networks (designated as inside) is addressed with either private or obsolete addresses that need to be converted into legal addresses before packets are forwarded onto the other network (designated as outside). The translation operates in conjunction with routing, so that NAT can simply be enabled on a customer-side Internet access router when translation is desired.

Use of a NAT device provides RFC 1631-style network address translation on the router platform. The goal of NAT is to provide functionality as if the private network had globally unique addresses and the NAT device was not present. RFC 1631 represents a subset of Cisco IOS NAT functionality.

Cisco IOS NAT supports “bi-directional translation” through the simultaneous use of “inside source” and “outside source” translations.

When NAT is enabled on the Cisco MGCP IP phone, MGCP messages are able to traverse NAT/firewall networks. The Session Description Protocol (SDP) message is modified to reflect the NAT parameters so that if NAT is enabled, the SDP message uses `nat_address` and a Realtime Transport Protocol (RTP) port between the `start_media_port` and the `end_media_port` range. The UDP port for MGCP messages can be configured using parameter `voip_control_port`.

### MGCP NAT Configuration Parameters

Use the following configuration parameters to add the NAT feature to your Cisco IP 7960G/7940G phone:

```
nat_enable 0 disabled(default); 1 enabled
If nat is enabled the SDP message uses nat_address and an RTP port between the start_media
port and the end_media_port range
nat_address IP address of the NAT or firewall server
voip_control_port UDP port used for MGCP messages when nat_enable = 1
```

# How to Upgrade Your Cisco MGCP IP Phone Firmware Image and Reboot Remotely

If you have an MGCP call agent and a TFTP server in your phone network, you can upgrade your system firmware image and reboot remotely.

### Procedure

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- Step 1** Edit the default configuration file as follows:
- a. Using an ASCII text editor such as `vi`, open the `MGCPDefault.cnf` file located in the root directory of your TFTP server.
  - b. Change the `image_version` parameter to Release 7.4.
  - c. Save and close the file.
- Step 2** Edit the synchronization file as follows:
- a. Using a text editor, open the `syncinfo.xml` file located in the root directory of your TFTP server.
  - b. Specify values for the image version and sync parameter as follows:
 

```
<IMAGE VERSION="image_version" SYNC="sync_number"/>
```

Where the variables are as follows:

- `image_version`—Image version of the phone. You can use the asterisk (\*) as a wildcard character.
- `sync_number`—Synchronization level of the phone. A valid value is a character string of up to 32 characters. Default is 1.

c. Save and close the file.

**Step 3** Send a notification request (RQNT) message to the phone to initiate a reboot. In the message, ensure that the signal line is equal to X-check-sync. The following is a sample RQNT message:

#### Sample RQNT Message

```
RQNT 9713 d001 @ 003094c25d40 MGCP 0.1
X: 100
S: X-check-sync
```

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During a remote reboot, the phone does the following:

1. If it is idle, the phone waits 20 seconds and contacts the TFTP server for the `syncinfo.xml` file. Otherwise, it waits until it is idle for 20 seconds and then contacts the TFTP server.
2. The phone reads the `syncinfo.xml` file and does the following as appropriate:
  - a. Determines whether the current image is specified. If it is not specified, the phone proceeds to Step b. If it is specified, the phone proceeds to Step c.
  - b. Determines whether the image version parameter contains a wildcard entry (\*). If it does, the phone proceeds to Step c. If it does not, the phone proceeds to Step d.
  - c. Determines if the synchronization value is different from that stored on the phone. If it is, the phone proceeds to Step 3. If it is not, the phone proceeds to Step d.
  - d. Does nothing. The procedure is finished.
3. The phone performs a normal reboot.

During reboot, the phone sees the new image and upgrades to it with a synchronization value as specified in the `syncinfo.xml` file. The procedure is finished.

## Where to Go Next

- See [Chapter 5, “Monitoring Cisco MGCP IP Phones,”](#) for information on debugging and on viewing network statistics.

■ Where to Go Next