



Managing Cisco SIP 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).

## Restrictions for XML Cards

The phone supports Cisco CallManager XML up through version 3.0. It does not support the following XML objects in version 3.1 and later: `CiscoIPPhoneIconMenu`, `CiscoIPPhoneExecute`, `CiscoIPPhoneError`, and `CiscoIPPhoneResponse`.

The following restrictions apply to phones that use XML cards:

- External directories cannot be appended to the main list of directories under the Directories button. If external directories are provisioned for the phone, access them by pressing the Directories button and selecting the External Directory option.
- The phone removes white space when Cisco CallManager XML cards are displayed. Multiple spaces are consolidated into a single space.
- The phone does not allow setting of  $x$  and  $y$  coordinates for the `CiscoIPPhoneImage` object. The image always appears at location 0,0. Centering of the image is not supported if  $x$  and  $y$  are set to  $-1$ .
- The phone displays any valid title that it receives. In contrast, with Cisco CallManager phones, the `CiscoIPPhoneGraphicMenu` object does not display a title even if it receives one; the `CiscoIPPhoneImage` object displays the previous menu item or service rather than received titles.
- The phone discards carriage returns and line feeds. In contrast, Cisco CallManager phones allow embedded carriage returns and line feeds.
- The phone always displays the full set of directory soft keys. In contrast, Cisco CallManager phones change the soft keys depending on what type of object the phone receives and the version of Cisco CallManager.
- The phone sends a parameter along with the initial request for a Services or Directory URL. Other types of phones do not.

For more information about using XML on your Cisco SIP 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 SIP 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 SIP IP Phone Firmware Image



## Note

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

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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:

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

You can upgrade to follow-on releases from any earlier release. For example:

-- > 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 dual-booting from either SIP or Media Gateway Control Protocol (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 SIP IP Phone Firmware Image Version](#)” section on page 4-3.)
- 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:
- ```
POS30203
```
- 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 SIP IP 7940/7960 phone software-download site at <http://www.cisco.com/cgi-bin/tablebuild.pl/sip-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 POS30203.
 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 Version 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 Version 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.

Release 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
- POS3-07-0-00.sb2—New SIP 7.x release image.
- POS3-07-0-00.loads—New loader file. The Universal Loader uses the POS3-07-0-00.loads file to determine which images to put on the phone. This file specifies the Loader application version and the SIP application version. The POS3-07-0-00.sbn, POS3-07-0-00.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 SIPDefault.cnf and/or SIP<mac addr>.cnf file to have the correct image version. For example:

```
image_version: P0S3-07-0-00
```

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 SIP 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 SIP .sb2 image (release 7.x). The upgrade will occur automatically, if needed. When upgrading is done, the release 7.x image is initiated.

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

If you have a SIP proxy server and a TFTP server in your phone network, you can upgrade your system firmware image and reboot remotely. You can also push the dialplan.xml file down to the phones.

Procedure

Step 1 Edit the default configuration file as follows:

- a. Using an ASCII text editor such as vi, open the SIPDefault.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 NOTIFY message to the phone. In the message, ensure that the Event header is equal to check-sync. The following is a sample NOTIFY message:

Sample NOTIFY Message

```
NOTIFY sip:lineX_name@ipaddress:5060 SIP/2.0
Via: SIP/2.0/UDP ipaddress:5060;branch=1
Via: SIP/2.0/UDP ipaddress
From: <sip:webadim@ipaddress>
To: <sip:lineX_name@ipaddress>
Event: check-sync <<---->> Event header.
Date: Mon, 10 Jul 2000 16:28:53 -0700
```

```
Call-ID: 1349882@ipaddress
CSeq: 1300 NOTIFY
Contact: <sip:webadmin@ipaddress>
Content-Length: 0
```

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 SIP IP Phones,”](#) for information on debugging and on viewing network statistics.

