

# Upgrade IP Phone Firmware with CCME

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## Introduction

This document provides the procedure for how to upgrade Cisco IP phone firmware with Cisco CallManager Express.

## Prerequisites

### Requirements

Ensure that you meet these requirements before you attempt this configuration:

- Cisco IP phones are currently registered with Cisco CallManager Express.

### Components Used

The information in this document is based on these software and hardware versions, but applicable to all Cisco CallManager Express releases and Cisco IP phone loads:

- Cisco IOS® Router on Cisco IOS® Release 12.4(4)T with Cisco CallManager Express Release 3.4(0)
- Cisco IP Phone 7960

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, make sure that you understand the potential impact of any command.

### Conventions

Refer to the Cisco Technical Tips Conventions for more information on document conventions.

# Background Information

## Signed and Unsigned Images (Image Authentication)

There are two types of images that are used on the Cisco IP Phone 7960 and 7940: signed and unsigned images. Image authentication is performed through signed binary files. Signed images have an .sbn extension, while unsigned images have a .bin extension.

Image versions earlier than 5.x accept unsigned binary files. Image versions 5.x and later accept only signed binary files, which improves security on the Cisco IP Phone 7960 and 7940. However, the use of signed binary files does not allow you to return to an earlier unsigned firmware image. Once a version 5.0 firmware image is installed, regardless of the protocol, the image cannot be replaced with any previous version. The firmware image can be replaced only with another signed image version 5.x or later. All versions earlier than version 5.0 for Cisco IP Phone 7960 and 7940 do not load onto the phone after installation.

## Configure

In this section, you are presented with the information to upgrade Cisco IP phone firmware.

**Note:** Use the Command Lookup Tool (registered customers only) to obtain more information on the commands used in this section.

## Downloads

The required SCCP firmware files can be downloaded from Cisco IP Phone FW 7900 Series (NON SIP) – Software Download [🔗](#) (registered customers only) . Download the appropriate .zip file for the Cisco IP phone model. Depending on the model of Cisco IP phone, the .zip file can contain one or more files.

The firmware version 7.2(3) .zip file for Cisco IP phone models 7960 and 7940, **cmterm-7940-7960-sccp.7-2-3.zip**, includes these files:

- P00307020300.bin
- P00307020300.sbn
- P00307020300.sb2
- P00307020300.loads

Similarly, the firmware .zip file for Cisco IP phone model 7905G, **cmterm-7905G-sccp.6-1-1**, includes these files:

- CP7905060101SCCP050429A.sbin
- CP7905060101SCCP050429A.zup

## Step-by-Step Configurations

In order to configure the applicable firmware, complete these steps:

1. Transfer all the firmware files to the Flash memory of Cisco CallManager Express. In order to verify the transfer of files, issue the **show flash** command:

```
Router_CCME#show flash
```

```
-#- --length-- -----date/time----- path
```

*!--- Part of output elided.*

```
13      128996 Nov 30 2005 07:05:36 +00:00 P00307020300.bin
14      129400 Nov 30 2005 07:06:02 +00:00 P00307020300.sbn
15      681290 Nov 30 2005 07:06:18 +00:00 P00307020300.sb2
16          461 Nov 30 2005 07:06:34 +00:00 P00307020300.loads
```

24612864 bytes available (103567360 bytes used)

2. Make the files available for download by Cisco IP phones with this configuration:

```
Router_CCME#configure terminal
Router_CCME(config)#tftp-server flash: P00307020300.bin
Router_CCME(config)#tftp-server flash: P00307020300.sbn
Router_CCME(config)#tftp-server flash: P00307020300.sb2
Router_CCME(config)#tftp-server flash: P00307020300.loads
```

3. Configure the appropriate firmware for the Cisco IP phones:

```
Router_CCME#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router_CCME(config)#telephony-service
Router_CCME(config-telephony)#load 7960-7940 P00307020300
Updating CNF files
CNF files updating complete
```

**Note:** In the **load** command, the extension (.bin or .sbn) of the firmware file must not be mentioned.

4. Reset the Cisco IP phones in order to make them pick the new firmware version. If you have planned for downtime, reset all of the phones at once. You can also reset the phones individually, as the users are ready.

```
Router_CCME(config-telephony)#reset ?
  H.H.H          mac address
  all            reset all ethernet phones
  cancel        cancel in progress reset
  sequence-all reset all ethernet phones sequentially, wait for each phone to
                re-register before resetting the next phone. This prevents
                possible conflict between phones when accessing IOS TFTP
                services.

Router_CCME(config-telephony)#reset all
Reset 1 phones: at 15 second interval      - this could take several minutes p
er phone
Starting with 7960 phones

Router_CCME(config-telephony)#
Reset-All: Requesting Reset for phone SEP000A8A93E0F9 at 172.16.2.101 deviceType
 7 Telecaster 7960 Idle [count=1]

*Nov 30 09:21:39.803 UTC: %IPPHONE-6-UNREGISTER_NORMAL: ephone-1:SEP000A8A93E0F9
IP:172.16.2.101 Socket:1 DeviceType:Phone has unregistered normally.
Reset/Restart-all looking for phones registered as type 8 Telecaster 7940
Reset/Restart-all looking for phones registered as type 6 Telecaster 7910
Reset/Restart-all looking for phones registered as type 20000 7905
*Nov 30 09:21:53.803 UTC: %IPPHONE-6-REG_ALARM: 22: Name=SEP000A8A93E0F9 Load=7.
2(3.0) Last=Reset-Reset
*Nov 30 09:21:53.803 UTC: %IPPHONE-6-REGISTER: ephone-1:SEP000A8A93E0F9 IP:172.1
6.2.101 Socket:1 DeviceType:Phone has registered.
Reset/Restart-all looking for phones registered as type 30008 7902
Reset/Restart-all looking for phones registered as type 30007 7912
Reset/Restart-all looking for phones registered as type 30002 7920
Reset/Restart-all looking for phones registered as type 30016 CIPC
Reset/Restart-all looking for phones registered as type 30006 7970
```

```

Reset/Restart-all looking for phones registered as type 119 7971
Reset/Restart-all looking for phones registered as type 115 7941
Reset/Restart-all looking for phones registered as type 308 7961GE
Reset/Restart-all looking for phones registered as type 309 7941GE
Reset/Restart-all looking for phones registered as type 307 7911
Reset/Restart-all looking for phones registered as type 302 7985
Reset/Restart-all looking for phones registered as type 30018 7961
Reset/Restart-all looking for phones registered as type 30019 7936
Reset/Restart-all looking for phones registered as type 12 ATA Phone
Reset/Restart-all looking for phones registered as type 30027 SCCP Gateway (AN)
Reset/Restart-all looking for phones registered as type 30028 SCCP Gateway (BRI)

Reset/Restart-all looking for phones registered as type 9 7935
Reset/Restart-all looking for phones registered as type 1 30SP+
Reset/Restart-all looking for phones registered as type 2 12SP+
Reset/Restart-all looking for phones registered as type 3 12SP
Reset/Restart-all looking for phones registered as type 4 12
Reset/Restart-all looking for phones registered as type 5 30VIP
Reset/Restart-all looking for phones registered as type 80 Unity Voice Port
Reset/Restart-all looking for phones registered as type 21 Unity Voice Port
Reset/Restart-all looking for phones registered as type -1 Unknown -1
Reset-All issued for 1 phones
43 seconds (wait for last phone to re-register)

```

Router_CCME			
Router_CCME#show ephone phone-load			
DeviceName	CurrentPhoneload	PreviousPhoneload	LastReset
SEP000A8A93E0F9	7.2(3.0)	7.2(2.0)	Initialized

## Verify

Use this section to confirm that your configuration works properly.

Use the Command Lookup Tool (registered customers only) to obtain more information on the commands used in this section.

Issue these commands to verify your configuration:

- **show telephony-service all** displays the detailed configuration of all Cisco IP phones, voice ports, and dial peers of the Cisco IOS Telephony Service router.

```

Router_CCME#show telephony-service all
CONFIG [Version=3.4(0)]
=====
Version 3.4(0)
Cisco CallManager Express
For on-line documentation please see:
www.cisco.com/univercd/cc/td/doc/product/access/ip_ph/ip_ks/index.htm

ip source-address 172.16.2.211 port 2000
load 7960-7940 P00307020300
max-ephones 1
max-dn 1
max-conferences 8 gain -6
dspfarm units 0
dspfarm transcode sessions 0
hunt-group report delay 1 hours
max-redirect 5
time-format 12
date-format mm-dd-yy

```

```
timezone 0 Greenwich Standard Time
keepalive 30
timeout interdigit 10
timeout busy 10
timeout ringing 180
caller-id name-only: enable
edit DN through Web: disabled.
edit TIME through web: disabled.
Log (table parameters):
    max-size: 150
    retain-timer: 15
create cnf-files version-stamp Jan 01 2002 00:00:00
transfer-system full-consult
auto assign 1 to 1
local directory service: enabled.
```

```
ephone-dn 1
number 7001
preference 0 secondary 9
huntstop
call-waiting beep
```

```
Number of Configured ephones 1 (Registered 1)
ephone 1
mac-address 000A.8A93.E0F9
type 7960
button 1:1
!
```

```
voice-port 50/0/1
station-id number 7001
!
```

```
dial-peer voice 20011 pots
destination-pattern 7001$
huntstop
progress_ind setup enable 3
port 50/0/1
```

```
tftp-server system:/its/SEPDEFAULT.cnf
tftp-server system:/its/SEPDEFAULT.cnf alias SEPDefault.cnf
tftp-server system:/its/XMLDefault.cnf.xml alias XMLDefault.cnf.xml
tftp-server system:/its/ATADefault.cnf.xml
tftp-server system:/its/XMLDefault7960.cnf.xml alias SEP000A8A93E0F9.cnf.xml
tftp-server system:/its/united_states/7960-tones.xml alias United_States/7960-tones.xml
tftp-server system:/its/united_states/7960-font.xml alias English_United_States/7960-font.xml
tftp-server system:/its/united_states/7960-dictionary.xml alias English_United_States/7960-dictionary.xml
tftp-server system:/its/united_states/7960-kate.xml alias English_United_States/7960-kate.xml
tftp-server system:/its/united_states/SCCP-dictionary.xml alias English_United_States/SCCP-dictionary.xml
```

- **show ephone** displays information about registered Cisco IP phones.

```
Router_CCME#show ephone
```

```
ephone-1 Mac:000A.8A93.E0F9 TCP socket:[1] activeLine:0 REGISTERED in SCCP ver 6
mediaActive:0 offhook:0 ringing:0 reset:0 reset_sent:0 paging 0 debug:1
IP:172.16.2.101 50230 Telecaster 7960 keepalive 5 max_line 6
button 1: dn 1 number 7001 CH1 IDLE
```

# Troubleshoot

This section provides information you can use to troubleshoot your configuration.

These debug commands help identify any issues in the firmware upgrade:

- debug tftp events
- debug ephone register

This example shows the debug information generated when a Cisco IP Phone 7960 is successfully upgraded to firmware version 7.2.2:

```
*Nov 30 09:15:19.868 UTC: ephone-1[1]:UnregisterMessage after Reset/Restart sent
*Nov 30 09:15:19.868 UTC: ephone-1[1]:Phone Unregistered on socket [1] SEP000A8A93E0F9
93E0F9
*Nov 30 09:15:19.868 UTC: ephone-1[1]:UnregisterAck sent on socket [1] (0/0/10)
*Nov 30 09:15:19.868 UTC: %IPPHONE-6-UNREGISTER_NORMAL: ephone-1:SEP000A8A93E0F9
IP:172.16.2.101 Socket:1 DeviceType:Phone has unregistered normally.
*Nov 30 09:15:19.868 UTC: skinny_server_process: Socket error. errno=0
*Nov 30 09:15:19.868 UTC: ephone-1[1]:DisAssociate: Closed socket 1 for unregist
ered phone
*Nov 30 09:15:19.868 UTC: CLOSED Skinny socket 1 for de-registered phone
*Nov 30 09:15:30.976 UTC: TFTP: Looking for CTLSEP000A8A93E0F9.tlv
*Nov 30 09:15:30.984 UTC: TFTP: Looking for SEP000A8A93E0F9.cnf.xml
*Nov 30 09:15:31.504 UTC: TFTP: Opened system:/its/XMLDefault7960.cnf.xml, fd 0,
size 788 for process 216
*Nov 30 09:15:31.508 UTC: TFTP: Finished system:/its/XMLDefault7960.cnf.xml, tim
e 00:00:00 for process 216
Reset sequence-all, Ready to reset next phone (last 15 sec)

Reset/Restart-all looking for phones registered as type 8 Telecaster 7940
*Nov 30 09:15:34.384 UTC: New Skinny socket accepted [1] (0 active)
*Nov 30 09:15:34.384 UTC: sin_family 2, sin_port 50230, in_addr 172.16.2.101
*Nov 30 09:15:34.384 UTC: skinny_add_socket 1 172.16.2.101 50230
*Nov 30 09:15:34.869 UTC: %IPPHONE-6-REG_ALARM: 22: Name=SEP000A8A93E0F9 Load=7.
2(3.0) Last=Reset-Reset
*Nov 30 09:15:34.869 UTC:
Skinny StationAlarmMessage on socket [1] 172.16.2.101 SEP000A8A93E0F9
*Nov 30 09:15:34.869 UTC: severityInformational p1=2049 [0x801] p2=1694634156 [0
x650210AC]
*Nov 30 09:15:34.869 UTC: 22: Name=SEP000A8A93E0F9 Load=7.2(3.0) Last=Reset-Rese
t
*Nov 30 09:15:34.869 UTC: ephone-(1)[1] StationRegisterMessage (0/0/10) from 172
.16.2.101
*Nov 30 09:15:34.869 UTC: ephone-(1)[1] Register StationIdentifier DeviceName SE
P000A8A93E0F9
*Nov 30 09:15:34.869 UTC: ephone-(1)[1] StationIdentifier Instance 1 deviceTy
pe 7
*Nov 30 09:15:34.869 UTC: ephone-1[-1]:stationIpAddr 172.16.2.101
*Nov 3
Reset/Restart-all looking for phones registered as type 6 Telecaster 7910 0 09:1
5:34.869 UTC: ephone-1[-1]:maxStreams 0
*Nov 30 09:15:34.869 UTC: ephone-1[-1]:protocol Ver 0x84000006
*Nov 30 09:15:34.869 UTC: ephone-1[-1]:phone-size 2820 dn-size 488
*Nov 30 09:15:34.869 UTC: ephone-(1) Allow any Skinny Server IP address 172.16.2
.211
*Nov 30 09:15:34.869 UTC: ephone-1[-1]:Found entry 0 for 000A8A93E0F9
*Nov 30 09:15:34.869 UTC: ephone-1[-1]:socket change -1 to 1
*Nov 30 09:15:34.869 UTC: ephone-1[-1]:FAILED: CLOSED old socket -1
*Nov 30 09:15:34.869 UTC: ephone-1[1]:***Force device subtype to 0
*Nov 30 09:15:34.869 UTC: ephone-1[1]:phone SEP000A8A93E0F9 re-associate OK on s
ocket [1]
*Nov 30 09:15:34.869 UTC: %IPPHONE-6-REGISTER: ephone-1:SEP000A8A93E0F9 IP:172.1
```

6.2.101 Socket:1 DeviceType:Phone has registered.  
\*Nov 30 09:15:34.869 UTC: Phone  
Reset/Restart-all looking for phones registered as type 20000 7905 0 socket 1  
\*Nov 30 09:15:34.869 UTC: Skinny Local IP address = 172.16.2.211 on port 2000

\*Nov 30 09:15:34.869 UTC: Skinny Phone IP address = 172.16.2.101 50230  
\*Nov 30 09:15:34.869 UTC: ephone-1[1]:Signal protocol ver 5 to phone with ver 6  
\*Nov 30 09:15:34.869 UTC: ephone-1[1]:Date Format M/D/Y  
\*Nov 30 09:15:34.869 UTC: ephone-1[1]:RegisterAck sent to ephone 1: keepalive pe  
riod 30 use sccp-version 5  
\*Nov 30 09:15:34.873 UTC: ephone-1[1]:CapabilitiesReq sent  
\*Nov 30 09:15:35.125 UTC: ephone-1[1]:CapabilitiesRes received  
\*Nov 30 09:15:35.125 UTC: ephone-1[1]:Caps list 7  
WideBand\_256K 120 ms  
G711Ulaw64k 40 ms  
G711Alaw64k 40 ms  
G729AnnexB 60 ms  
G729AnnexAwAnnexB 60 ms  
G729 60 ms  
G729AnnexA 60 ms

\*Nov 30 09:15:35.125 UTC: ephone-1[1]:ButtonTemplateReqMessage  
\*Nov 30 09:15:35.  
Reset/Restart-all looking for phones registered as type 30008 7902 125 UTC: eph  
one-1[1]:CheckAutoReg  
\*Nov 30 09:15:35.125 UTC: ephone-1[1]:AutoReg is disabled  
\*Nov 30 09:15:35.125 UTC: ephone-1[1][SEP000A8A93E0F9]:Setting 6 lines 0 speed-d  
ials on phone (max\_line 6)  
\*Nov 30 09:15:35.125 UTC: ephone-1[1]:First Speed Dial Button location is 0 (0)  
\*Nov 30 09:15:35.125 UTC: ephone-1[1]:Configured 0 speed dial buttons  
\*Nov 30 09:15:35.125 UTC: ephone-1[1]:ButtonTemplate lines=6 speed=0 buttons=6 o  
ffset=0  
\*Nov 30 09:15:35.381 UTC: ephone-1[1]:StationSoftKeyTemplateReqMessage  
\*Nov 30 09:15:35.381 UTC: ephone-1[1]:StationSoftKeyTemplateResMessage  
\*Nov 30 09:15:35.633 UTC: ephone-1[1]:StationSoftKeySetReqMessage  
\*Nov 30 09:15:35.633 UTC: ephone-1[1]:Removed SkPark key  
\*Nov 30 09:15:35.633 UTC: ephone-1[1]:StationSoftKeySetResMessage  
\*Nov 30 09:15:3  
Reset/Restart-all looking for phones registered as type 30007 7912 5.885 UTC: e  
phone-1[1]:StationLineStatReqMessage from ephone line 6  
\*Nov 30 09:15:35.885 UTC: ephone-1[1][SEP000A8A93E0F9]:StationLineStatReqMessage  
from ephone line 6 Invalid DN 0  
\*Nov 30 09:15:35.885 UTC: ephone-1[1][SEP000A8A93E0F9]:StationLineStatResMessage  
sent to ephone (1 of 6)  
\*Nov 30 09:15:36.137 UTC: ephone-1[1]:StationLineStatReqMessage from ephone line  
5  
\*Nov 30 09:15:36.137 UTC: ephone-1[1][SEP000A8A93E0F9]:StationLineStatReqMessage  
from ephone line 5 Invalid DN 0  
\*Nov 30 09:15:36.137 UTC: ephone-1[1][SEP000A8A93E0F9]:StationLineStatResMessage  
sent to ephone (2 of 6)  
\*Nov 30 09:15:36.389 UTC: ephone-1[1]:StationLineStatReqMessage from ephone line  
4  
\*Nov 30 09:15:36.389 UTC: ephone-1[1][SEP000A8A93E0F9]:StationLineStatReqMessage  
from ephone line 4 Invalid DN 0  
\*Nov 30 09:15:36.38  
Reset/Restart-all looking for phones registered as type 30002 7920 9 UTC: ephon  
e-1[1][SEP000A8A93E0F9]:StationLineStatResMessage sent to ephone (3 of 6)  
\*Nov 30 09:15:36.641 UTC: ephone-1[1]:StationLineStatReqMessage from ephone line  
3  
\*Nov 30 09:15:36.641 UTC: ephone-1[1][SEP000A8A93E0F9]:StationLineStatReqMessage  
from ephone line 3 Invalid DN 0  
\*Nov 30 09:15:36.641 UTC: ephone-1[1][SEP000A8A93E0F9]:StationLineStatResMessage  
sent to ephone (4 of 6)  
\*Nov 30 09:15:36.893 UTC: ephone-1[1]:StationLineStatReqMessage from ephone line  
2  
\*Nov 30 09:15:36.893 UTC: ephone-1[1][SEP000A8A93E0F9]:StationLineStatReqMessage

```

from ephone line 2 Invalid DN 0
*Nov 30 09:15:36.893 UTC: ephone-1[1][SEP000A8A93E0F9]:StationLineStatResMessage
sent to ephone (5 of 6)
*Nov 30 09:15:37.145 UTC: ephone-1[1]:StationLineStatReqMessage from ephone line
1
*Nov 30 09:15:37.145 UTC: ephon
Reset/Restart-all looking for phones registered as type 30016 CIPC e-1[1]:Stati
onLineStatReqMessage ephone line 1 DN 1 = 7001 desc = 7001 label =
*Nov 30 09:15:37.145 UTC: ephone-1[1][SEP000A8A93E0F9]:StationLineStatResMessage
sent to ephone (6 of 6)
*Nov 30 09:15:37.145 UTC: ephone-1[1]:SkinnyCompleteRegistration
*Nov 30 09:15:37.221 UTC: TFTP: Looking for SEP000A8A93E0F9.cnf.xml
*Nov 30 09:15:37.221 UTC: TFTP: Opened system:/its/XMLDefault7960.cnf.xml, fd 0,
size 788 for process 216
*Nov 30 09:15:37.221 UTC: TFTP: Looking for RINGLIST.XML
*Nov 30 09:15:37.241 UTC: TFTP: Finished system:/its/XMLDefault7960.cnf.xml, tim
e 00:00:00 for process 216
*Nov 30 09:15:37.245 UTC: TFTP: Looking for DISTINCTIVERINGLIST.XML
*Nov 30 09:15:37.409 UTC: ephone-1[1]:Skinny Available Lines 6 set for socket [1
]
*Nov 30 09:15:37.409 UTC: ephone-1[1]:Already d
Reset/Restart-all looking for phones registered as type 30006 7970 one SkinnyCo
mpleteRegistration
Reset/Restart-all looking for phones registered as type 119 7971
Reset/Restart-all looking for phones registered as type 115 7941
Reset/Restart-all looking for phones registered as type 308 7961GE
Reset/Restart-all looking for phones registered as type 309 7941GE
Reset/Restart-all looking for phones registered as type 307 7911
Reset/Restart-all looking for phones registered as type 302 7985
Reset/Restart-all looking for phones registered as type 30018 7961
Reset/Restart-all looking for phones registered as type 30019 7936
Reset/Restart-all looking for phones registered as type 12 ATA Phone
Reset/Restart-all looking for phones registered as type 30027 SCCP Gateway (AN)
Reset/Restart-all looking for phones registered as type 30028 SCCP Gateway (BRI)

Reset/Restart-all looking for phones registered as type 9 7935
Reset/Restart-all looking for phones registered as type 1 30SP+
Reset/Restart-all looking for phones registered as type 2 12SP+
Reset/Restart-all looking for phones registered as type 3 12SP
Reset/Restart-all looking for phones registered as type 4 12
Reset/Restart-all looking for phones registered as type 5 30VIP
Reset/Restart-all looking for phones registered as type 80 Unity Voice Port
Reset/Restart-all looking for phones registered as type 21 Unity Voice Port
Reset/Restart-all looking for phones registered as type -1 Unknown -1
Reset-All issued for 1 phones
45 seconds (wait for last phone to re-register)

```

**Note:** During an upgrade, if the LCD of a Cisco IP phone displays `File Not Found`, this could indicate an attempt to load an unsigned image onto a Cisco IP phone that already has a signed image.

## Related Information

- [Cisco 7940 and 7960 IP Phones Firmware Upgrade Matrix](#)
- [Voice Technology Support](#)
- [Voice and IP Communications Product Support](#)
- [Troubleshooting Cisco IP Telephony](#)
- [Technical Support & Documentation – Cisco Systems](#)

