

Initial Phone Setup

Setting Up Phones in a CME System

This topic describes the three ways to create an initial phone setup in a Cisco CME system.

Phones Setup in Cisco CallManager Express System

Three ways to setup phones:

- **Manual**
 - Numerous commands from the CLI
 - Requires knowledge of Cisco CME commands
 - Phones entered manually
- **Partially automated**
 - Numerous commands from the CLI
 - Requires knowledge of Cisco CME commands
 - Simplifies deployment of many IP phones
- **Automated**
 - Few commands needed from the CLI
 - Requires little knowledge of Cisco CME commands
 - Simplifies deployments

Automated Phone Setup

This topic describes how to perform an automated phone setup in a Cisco CME system using the setup tool.

Automated Setup: Overview

Automated Setup

- Simple to configure
- Question and answer interface
- Good for inexperienced administrators
- Created IOS commands in the background
- Deployment and configuration are automated
- Must be no existing telephony service configuration

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The automated setup is designed for the administrator that does not have a lot of experience with Cisco IOS and may not feel comfortable manually configuring the Cisco CME system. A question-and-answer interface will start and all the administrator does is answer the questions appropriately.

Note Any existing configuration of the telephony-service in Cisco CME must be removed prior to starting the setup.

Automated Setup (Cont.)

- Configure NTP prior to running the setup utility
- Load the firmware files into flash RAM prior to running the setup utility
- Enter the automated setup mode by entering the command “telephony-service setup”
- A question and answer session will start asking for basic parameters
- CTRL + c keystroke can be used at any time to break out of the setup mode
- No changes are committed until the end

```
CMERouter1(config)#telephony-service setup
--- Cisco IOS Telephony Services Setup ---
Do you want to setup DHCP service for your IP Phones? [yes/no]: y
Configuring DHCP Pool for Cisco IOS Telephony Services :
IP network for telephony-service DHCP Pool: 10.90.0.0
Subnet mask for DHCP network :255.255.255.0
TFTP Server IP address (Option 150) :10.90.0.1
Default Router for DHCP Pool :10.90.0.1
Do you want to start telephony-service setup? [yes/no]: y
Configuring Cisco IOS Telephony Services :
Enter the IP source address for Cisco IOS Telephony Services :10.90.0.1
Enter the Skinny Port for Cisco IOS Telephony Services : [2000]:2000
How many IP phones do you want to configure : [0]: 10
Do you want dual-line extensions assigned to phones? [yes/no]: y
What Language do you want on IP phones :
0 English          6 Dutch
1 French           7 Norwegian
2 German           8 Portuguese
3 Russian          9 Danish
4 Spanish         10 Swedish
5 Italian
[0]: 0
```

The Cisco CME setup tool provides a question-and-answer interface that allows you to set up an entire Cisco CME system at one time. The Cisco CME setup tool is started using the **telephony-service setup** command. If you do not use the **setup** keyword, you can set up phones one at a time using router CLI. The **setup** keyword is not stored in the router NVRAM. When using the Cisco CME setup tool, you provide information in response to a series of questions.

Note If you attempt to use the setup option for a system that has a nonempty telephony-service configuration, an error message advises you to remove the existing configuration first by using the **no telephony-service** command.

Prior to running the automated setup utility please configure the Cisco CME router with Network Time Protocol (NTP) and load the appropriate firmware files into flash RAM on the Cisco CME router.

The actual configuration is created only when the entire dialog has been completed. You can interrupt the process using **Control-c** at any point prior to the final question without having any configuration occur.

The first question asked by the automated setup deals with DHCP and whether the Cisco CME router is going to be providing this service. If “y” is entered the parameters of the DHCP scope need to be entered when the setup prompts ask. The name of the scope that will be created as a result of the setup is “ITS.”

The second section of the automated setup configures the telephony service. The setup asks if the telephony service should be started and if “y” is selected the IP address and port that Cisco CME runs on will need to be entered when the setup prompts. The IP address entered should be

the address on the LAN that is local to the IP phones. This is the address that the phones will use to register to. The port should in most cases be left to the default port of 2000.

The next question is how many phones you want to configure. Select no more than the licensed amount. If a number is selected that is less than the licensed amount, more ephones can be added later manually.

The next question asks if dual lines are desired, if “y” is selected the phones will be configured like PBX phones, if “n” is selected the phones will be configured similar to a key switch phone.

The next question deals with the language of the phones and configures the locale that will be used on the IP phone display. This when the configuration is committed will configure the SCCP-dictionary.xml and the *phonemodel*-dictionary.xml files.

Automated Setup (Cont.)

- When configuration is committed the settings show up in the running-config

```
Which Call Progress tone set do you want on IP phones :
0 United States
1 France
2 Germany
3 Russia
4 Spain
5 Italy
6 Netherlands
7 Norway
8 Portugal
9 UK
10 Denmark
11 Switzerland
12 Sweden
13 Austria
14 Canada
[0]: 0
What is the first extension number you want to configure : [0]: 9000
Do you have Direct-Inward-Dial service for all your phones? [yes/no]: y
Enter the full E.164 number for the first phone :2095559000
Do you want to forward calls to a voice message service? [yes/no]: y
Enter extension or pilot number of the voice message service:9999
Call forward No Answer Timeout : [18]: 10
Do you wish to change any of the above information? [yes/no]: n
---- Setup completed config ----
```

The next part of the automated setup configures the call progress tones on the IP phones. The call progress tones are the sounds heard by a caller. These would include things like dial tone, busy signal, ringback and reorder signal. These call progress tones vary from country to country and should be set according to what the users are used to hearing.

To continue the automated setup enter the Directory Number (DN) that will be the start of the DNs that will be assigned, they will be assigned in a sequential fashion.

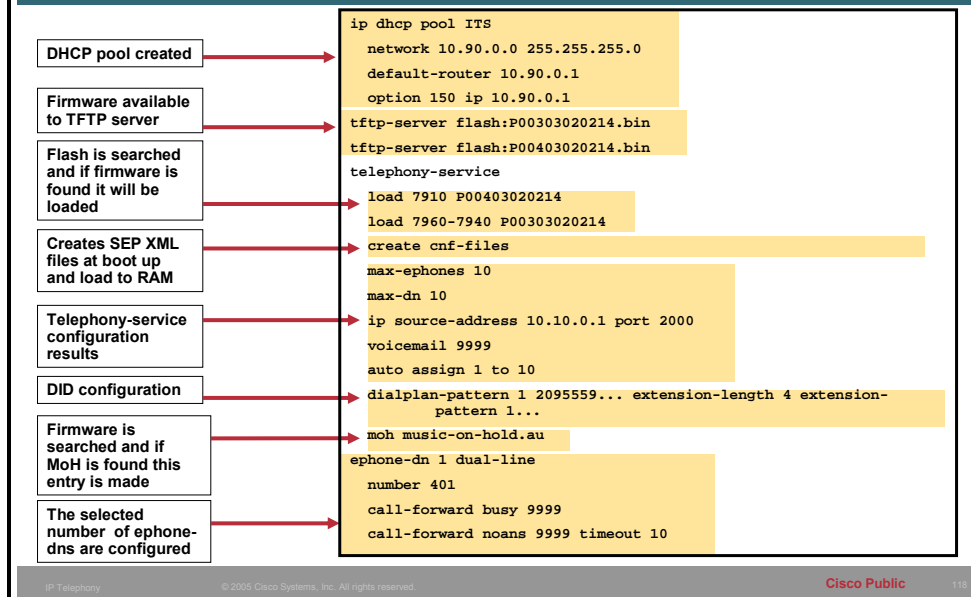
If Direct Inward Dial (DID) needs to be setup enter “yes” when prompted. DIDs are used when the connection to the PSTN is able to pass the dialed number. In order for this to happen the connection will typically be an ISDN connection. If the connections are FXO then a Private Line Auto Ringdown (PLAR) on the analog trunk will need to be set up instead, this will have to be done manually and is not a part of the automated setup. Setting up DIDs can be very simple especially if there is relationship between the PSTN number and the internal DN. (Example 209-555-9009 maps to 1009). If there is no common relationship between the PSTN number and internal DN then manual settings will need to be made outside of the automated setup (Example 209-555-9009 maps to 7691).

The next question asks if the calls should be forwarded to a voice message service. Assuming that there is a voice mail system the pilot point number will need to be entered. This sets the “forward no answer” and the “forward busy” for all of the phones created to the pilot point number. The timeout value for the “forward no answer” will also need to be set, 18 seconds is the default. This value is in seconds not rings as rings may vary in length up to 2 seconds.

The final question asks if any of the information that was entered needs to be changed. If “y” is entered the setup starts over, if “n” is entered the changes are committed to the running-config.

After finishing the automated configuration the configuration has not been saved to the startup configuration. Use the **copy running-config startup-config** command to save the configuration.

Automated Setup (Cont.): Results



This shows the results of the automated setup.

Note ITS is the initial name of what is now called Cisco CME, and still appears in some of the configuration that is created with the automated setup.

Partially Automated Phone Setup

This topic describes how to perform a partially automated phone setup in a Cisco CME system using the router CLI.

Partially Automated Setup: Overview

- **Partially Automated Setup**
- **Is the same as a manual setup except for deploying phones**
- **Deployment of IP phones is automated**
- **Uses the “auto assign” command**
- **All ephone-dns must be the same type (single-line or dual-line)**

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The partially automated setup is exactly like a manual setup, without having to configure ephones. The ephones can be detected automatically and assigned an ephone-dn from a range of configured ephone-dns. This allows for the deployment of many phones without the work of configuring every phone manually. This automatic assignment is done through the use of the **auto assign** command.

Partially Automated Setup (Cont.) Auto Assign Command

```
CMERouter(config-telephony-service)#
```

```
auto assign start-dn to stop-dn [type model] [cfw number  
timeout seconds]
```

- Automatically assigns the ephone-dns configured to new ephones

Auto assign usage guidelines

- Can take up to 5 minutes for phones to register
- Wait for all phones to register before saving the configuration
- **cfw** setting defines the call forward busy number and timeout value for phones that register

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To automatically assign ephone-dn tags to Cisco IP phones as they register for service with the Cisco CME router, use the **auto assign** command in telephony-service configuration mode.

This command lets you assign ranges of ephone-dn tags according to the physical phone type. Multiple **auto assign** commands can be used to provide discontinuous ranges and to support multiple types of IP phones. Overlapping ephone-dn ranges may be assigned so that they map to more than one type of phone. If no type is specified, the values in the range are assigned to phones of any type, but if a specific range is assigned for a phone type, the available ephone-dns in that range are used first. The **cfw** keyword sets the call forward busy number and timeout value on all phones that auto register.

The **auto assign** command cannot be used for the Cisco IP Phone 7914 Expansion Module. Phones with one or more expansion modules must be configured manually.

Automatically assigned ephone-dn tags must belong to normal ephone-dns and cannot belong to paging ephone-dns, intercom ephone-dns, music-on-hold (MOH) ephone-dns, or message-waiting-indication (MWI) ephone-dns. The ephone-dn tags that are automatically assigned must have at least a primary number defined.

All the ephone-dns in a single automatic assignment set must be of the same kind (either single-line or dual-line). Automatic assignment cannot create shared lines.


If an insufficient number of ephone-dns are available in the automatic assignment set, some phones will not receive ephone-dns.

Reversal or undoing of automatic assignment must be performed by manual command-line interface (CLI) entry. This command must be followed by a reboot of the phones that are assigned. If you use the **type** keyword with this command, use the **reset** command to reboot the phones. If you do not use the **type** keyword with this command, use the **restart** command to perform a quick reboot.

Note Care should be taken when using the **auto assign** command because this command grants telephony service to any IP phone that attempts to register. If you use the **auto assign** configuration option, make sure that your network is secure from unauthorized access by unknown IP phones.

Example: Phone Setup in Cisco CME System

Phones Setup in Cisco CallManager Express System



New phone plugs in

- When an new IP phone registers with the Cisco CME system, this creates a new ephone with the MAC address of the IP phone
- A pre-existing ephone-dn is assigned to the new ephone; this is selected from the range defined for the type of phone
- The lowest unassigned ephone-dn in matching statement range will be used
- If all ephone-dns in a range have been assigned, some phones may not receive an ephone-dn or may overflow to the general auto assign without a type
- If the new IP phone does not match any auto assign with a type, then the auto assign without a type will be used

```
telephony-service
  auto assign 1 to 10 type 7920
  auto assign 11 to 20 type 7940
  auto assign 21 to 40 type 7960
  auto assign 41 to 50
  ...
  ephone-dn 1 dual-line
  number 1000
  ...
```

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In this example there are four **auto assign** commands with different ephone-dn assigned to each. Any 7920 IP phones will be assigned the lowest unassigned ephone-dn between 1 and 10. 7940s will be assigned the lowest unassigned ephone-dn between 11 and 20. Any 7960s will be assigned the lowest unassigned ephone-dn between 21 and 40. Finally, the phone can get an ephone-dn assigned to it from the generic range 41 to 50 in this example if any 7920s, 7940s, or 7960s cannot be assigned an ephone-dn in their assigned range because they are all assigned. This generic range that is not tied to any type will also be used for any other non specified models of IP phones.

Note When all desired IP phones are have been auto assigned make sure to save the configuration.

Manual Phone Setup

This topic describes how to perform a manual phone setup in a Cisco CME system using the router CLI.

Manual Setup: Overview

- **All commands can be entered from the CLI**
- **Good for experienced administrators**
- **Leverages IOS knowledge**
- **Full functionality through IOS commands**
- **Deployment of IP phones can be batched or scripted through a text file**

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The manual setup of the Cisco CME system involves using the CLI environment. This allows the administrator to leverage existing knowledge of IOS and implement any of the Cisco CME functions. The configuration can be viewed, backed up and restore through a simple text file. This can also be used for multiple site deployments allowing just the differences to be changed on a per site basis, there by saving time and effort.

Manual Setup (Cont.): Commands Overview

Commands needed to configure a basic telephony service

- **tftp-server flash:***filename*
- **telephony-service**
- **max-ephones** *max-ephones*
- **max-dn** *max-directory-numbers*
- **load** *phone-type firmware-file*
- **ip source-address** *ip-address* [port *port*]
- **create cnf-files**
- **keepalive** *seconds*
- **dialplan-pattern tag** *pattern* **extension-length** *length* **extension-pattern** *pattern*

The following commands will need to be configured to deploy a Cisco CME system.

tftp-server flash:*filename*

telephony-service

max-ephones *max-ephones*

max-dn *max-directory-numbers*

load *phone-type firmware-file*

ip source-address *ip-address* [port *port*]

create cnf-files

keepalive *seconds*

dialplan-pattern *tag pattern* **extension-length** *length* **extension-pattern** *pattern*

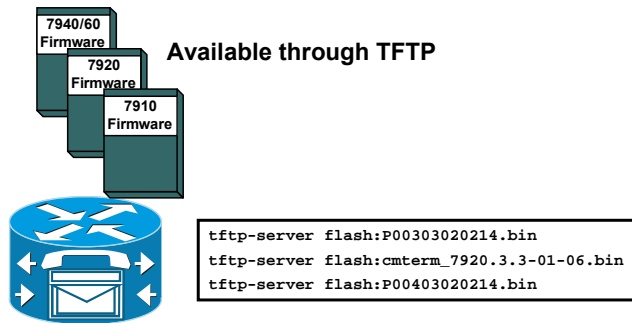
In the addition to these commands, ephones and ephone-dns will need to be manually configured. These topics were discussed in a previous lesson.

Manual Setup (Cont.): tftp-server Command

```
CMERouter(config)#
```

```
tftp-server flash:filename
```

- Allows a file in flash to be downloadable with TFTP



The command **tftp-server flash:filename** allows the file specified that resides in flash to be downloaded via TFTP. In Cisco CME the firmware files need to be configured to be available through TFTP. The example above shares firmware for the 7910, 7940-7960, and the 7920 IP phones.

Manual Setup (Cont.): Telephony Service Commands

```
CMERouter(config)#
```

```
telephony-service
```

- Enters telephony service mode

```
CMERouter(config-telephony-service)#
```

```
max-ephone maximum-ephones
```

- Sets the maximum number of ephones that may be defined in the system (default is 0)

```
CMERouter(config-telephony-service)#
```

```
max-dn maximum-directory-numbers
```

- Sets the maximum number of ephone-dn that may be defined in the system (default is 0)

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The command **telephony-service** enters the telephony service mode where much of the configuration of the Cisco CME system is entered. Two of the first commands that will want to be entered are the **max-dn** and **max-ephone**. Both of these commands are set to 0 which has the affect of not allowing any ephones or ephone-dns to be configured.

The number of ephones and ephone-dns is version and platform specific. The number displayed in the IOS help is not always accurate and may reflect an artificially high number. Consult the information provided with the CallManager router or cisco.com website.

Example

```
CMERouter1(config-telephony)#max-dn ?
```

```
<1-288> Maximum directory numbers supported
```

```
CMERouter1(config-telephony)#max-ephone ?
```

```
<1-100> Maximum phones to support
```

Manual Setup (Cont.): Firmware Association

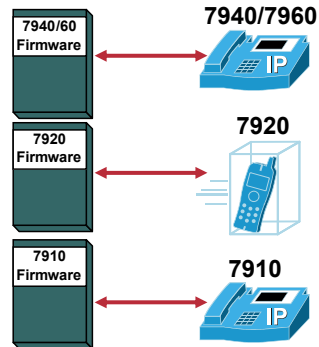
```
CMERouter(config-telephony-service)#
```

```
load model firmware-file
```

- Associates a firmware file with the model of IP phone

```
telephony-service
load 7960-7940 P00303020214
load 7920 cmterm_7920.3.3-01-06.bin
load 7910 P00403020214
```

Filenames are case-sensitive



To associate a type of Cisco IP phone with a phone firmware file, use the **load model firmware-file** command in telephony-service configuration mode. The following show the supported models for which firmware can be loaded:

Note No suffix should be used when using the load command for the 7910, 7940 and 7960 model IP phones.

CMERouter1(config-telephony)#load ?

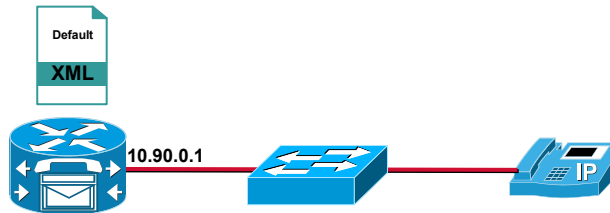
- | | |
|-----------|--|
| 7902 | Select the firmware load file for 7902 |
| 7905 | Select the firmware load file for 7905 |
| 7910 | Select the IP phone firmware load file for Telecaster 7910 phones |
| 7912 | Select the firmware load file for 7912 |
| 7914 | Select the IP phone firmware load file for sidecar 7914 |
| 7920 | Select the firmware load file for 7920 |
| 7935 | Select the IP phone firmware load file for 7935 Conference Station |
| 7936 | Select the firmware load file for 7936 |
| 7960-7940 | Select the IP phone firmware load file for Telecaster 7960 & 7940 phones |
| ATA | Select the firmware load file for ATA |

Manual Setup (Cont.): Source IP and Port

```
CMERouter(config-telephony-service)#
```

```
ip source-address ip-address [port port]
```

- Identifies the address and port through which IP phones communicate with Cisco CME



```
telephony-service
ip source-address 10.90.0.1 port 2000
```

The command **ip source *ip-address* [*port port*]** is used to configure the local IP address and TCP port where the Cisco CME system is expecting Skinny Client Control Protocol (SCCP) messages from the IP phones concerning registrations and call control. The port by default is set to 2000, while this may be changed it is unusual to do so.

Example

This is an example of the XMLDefault.cnf.xml file. Note the IP address, port and firmware files.

```
<Default>
```

```
<callManagerGroup>
```

```
<members>
```

```
<member priority="0">
```

```
<callManager>
```

```
<ports>
```

```
<ethernetPhonePort>2000</ethernetPhonePort>
```

```
</ports>
```

```
<processNodeName>10.90.0.1</processNodeName>
```

```
</callManager>
```

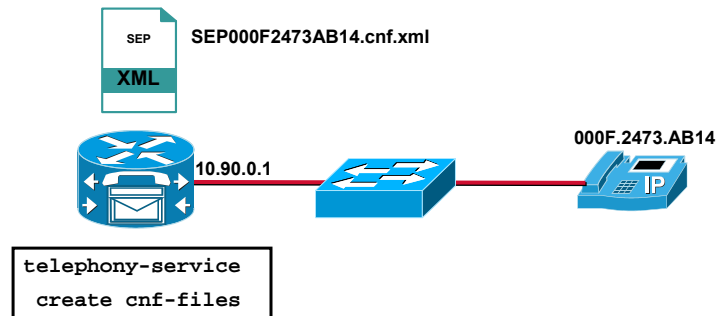
```
</member>
</members>
</callManagerGroup>
<loadInformation6 model="IP Phone 7910">P00403020214</loadInformation6>
<loadInformation124 model="Addon 7914"></loadInformation124>
<loadInformation9 model="IP Phone 7935"></loadInformation9>
<loadInformation8 model="IP Phone 7940">P00303020214</loadInformation8>
<loadInformation7 model="IP Phone 7960">P00303020214</loadInformation7>
<loadInformation20000 model="IP Phone 7905"></loadInformation20000>
<loadInformation30008 model="IP Phone 7902"></loadInformation30008>
<loadInformation30002 model="IP Phone 7920">cmterm_7920.3.3-01-
06.bin</loadInformation30002>
<loadInformation30019 model="IP Phone 7936"></loadInformation30019>
<loadInformation30007 model="IP Phone 7912"></loadInformation30007>
</Default>
```


Manual Setup (Cont.): Create XML Files

```
CMERouter(config-telephony-service)#
```

```
create cnf-files
```

- Builds the specific XML files necessary for the IP phones



To build the XML configuration files that are required for IP phones used with Cisco CME 3.1, or later versions, use the **create cnf-files** command in telephony-service configuration mode.

When this command is entered the file XMLDefault.cnf.xml is generated with that appropriate settings including the firmware defined by the **load** command, the IP address for new IP phones to register to and the TCP port those messages will arrive on.

Example

This is an example of SEP000F2473AB14.cnf.xml. Note the IP address, port, locale information and firmware required.

```
<device>  
  
<devicePool>  
  
<callManagerGroup>  
  
<members>  
  
<member priority="0">  
  
<callManager>  
  
<ports>  
  
<ethernetPhonePort>2000</ethernetPhonePort>  
  
</ports>
```

```
<processNodeName>10.90.0.1</processNodeName>
</callManager>
</member>
</members>
</callManagerGroup>
</devicePool>
<versionStamp>{Jan 01 2002 00:00:00}</versionStamp>
<loadInformation>P00303020214</loadInformation>
- <userLocale>
  <name>English_United_States</name>
  <langCode>en</langCode>
</userLocale>
  <networkLocale>United_States</networkLocale>
  <idleTimeout>0</idleTimeout>
  <authenticationURL />
  <directoryURL>http://10.90.0.1/localdirectory</directoryURL>
  <idleURL />
  <informationURL />
  <messagesURL />
  <proxyServerURL />
  <servicesURL />
</device>
```

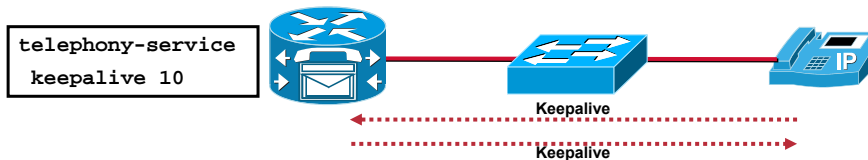
Manual Setup (Cont.) Keepalive

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```
CMERouter(config-telephony-service)#
```

```
keepalive seconds
```

- Sets the length of the time interval between keepalive message from the IP phones to Cisco CME



```
telephony-service  
keepalive 10
```

- Default is 30 seconds, range is 10 – 65535 seconds
- If 3 keepalives are missed in a row, the device will have to register again

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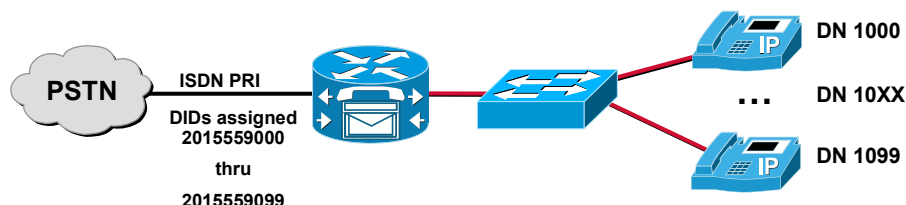
To set the length of the time interval between successive keepalive messages from the Cisco CME router to IP phones, use the **keepalive** command in telephony-service configuration mode. The default setting for the keepalives is 30 seconds and if the router fails to receive three successive keepalive messages, it considers the phone to be out of service until the phone reregisters.

Manual Setup (Cont.): DID Configuration Commands

```
CMERouter(config-telephony-service)#
```

```
dialplan-pattern tag pattern extension-length length  
extension-pattern pattern [no-reg]
```

- Sets a dial plan pattern which can expand extension numbers to E.164 numbers that can be used for DIDs



```
telephony-service  
dialplan-pattern 1 20155590.. extension-length 4 extension pattern 10..
```

To create a global prefix that can be used to expand abbreviated extension numbers in a Cisco CME system into fully qualified E.164 numbers, use the **dialplan-pattern** command in telephony-service configuration mode.

Directory numbers for the Cisco IP phones are entered in extension-number format. The **dialplan-pattern** command creates a global prefix that can be used to expand the abbreviated extension numbers into fully qualified E.164 numbers. The dial-plan pattern is also required in order to register Cisco IP phone lines with a gatekeeper. The **dialplan-pattern** command can resolve an incoming call with a full E.164 number to a Cisco IP phone extension number.

The **extension-length** keyword enables the system to convert a full E.164 telephone number back into an extension number for the purposes of caller ID display and received-call and missed-call lists. For example, a company uses extension number range 100 to 199 across several sites, with only the extensions from 1000 to 1099 present on the local router. An incoming call from 1044 arrives from the company's internal VoIP H.323 network, and this call includes the calling number as 4085550144 in its full E.164 format.

By default the numbers matching the **dialplan-pattern** command will be registered to a H.323 Gatekeeper if a gatekeeper is configured. The use of the **no-reg** keyword will change this default behavior and prevent the numbers matching the pattern from registering with the Gatekeeper.

When the called number matches the dial-plan pattern, the call is considered a local call and has a distinctive ring that identifies the call as internal. Any call that does not match the dial-plan pattern is considered an external call and has a ring different from the internal ring. The valid dial-plan pattern with the lowest dial-plan-tag number is used as a prefix to all local Cisco IP phones.

The number of *extension-pattern* characters must match the extension length that is specified in this command.

Note This command can be a replacement for configuring secondary numbers on ephone-dns.

Example

Manual Setup (Cont.): Example

Manual Setup of the Cisco CME

```
tftp-server flash:P00303020214.bin
tftp-server flash:P00403020214.bin
telephony-service
  load 7910 P00403020214
  load 7960-7940 P00303020214
  create cnf-files
  max-ephones 10
  max-dn 10
  ip source-address 10.10.0.1 port 2000
  dialplan-pattern 1 2095559... extension-length 4 extension-pattern 1...
ephone-dn 1 dual-line
  number 401
  call-forward busy 1999
  call-forward noans 1999 timeout 10
ephone 1
  mac-address 000F.2745.2AD8
  button 1:1
```

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This shows a sample basic Cisco CME system that has been configured.

Setup Tips

This topic identifies IP phone setup troubleshooting tips.

Setup Troubleshooting: Verify IP Addressing

Verify the IP addressing on the IP phone

- Use the **Settings** button and select “**Network Configuration**”
- **Verify IP and subnet mask are correct**
- **Verify the TFTP server is the Cisco CME router**
- **Verify the default gateway is correct**

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To verify that the DHCP server is handing out the correct information to the IP phones use the “Settings” button and from the menu that appears select the “Network Configuration” settings. Scroll through the settings and verify the IP address, subnet mask, default gateway and the location of the defined TFTP server. The TFTP server needs to be the Cisco CME router.

Setup Tips (Cont.): Verify the Correct Files in Flash

Show flash

```
CMERouter#show flash
-#- --length-- -----date/time----- path
1      399514 Mar 1 2002 12:56:28 P00305000301.sbn
2     22649180 Mar 1 2002 12:38:00 c3725-ipvoice-mz.123-7.T.bin
3      321939 Mar 1 2002 12:55:58 CP7902010200SCCP031023A.sbin
4      317171 Mar 1 2002 12:56:06 CP7905010200SCCP031023A.sbin
5      317968 Mar 1 2002 12:56:10 CP7912010200SCCP031023A.sbin
6      369950 Mar 1 2002 12:56:22 P00303020214.bin
7      333822 Mar 1 2002 12:56:30 P00403020214.bin
8       47904 Mar 1 2002 12:56:54 S00103020002.bin
9     301298 Mar 1 2002 12:56:56 ata18x-v2-16-ms-030327b.zup
10    496521 Mar 1 2002 12:57:22 music-on-hold.au
11    1908762 Mar 1 2002 12:56:54 P00503010100.bin
12         21 Mar 1 2002 12:56:18 OS7920.txt
13    839984 Mar 1 2002 12:57:18 cmterm_7920.3.3-01-06.bin
14    307067 Mar 1 2002 12:56:02 CP79050101SCCP030530B31.zup
...

```

The command **show flash** displays the contents of flash RAM. This needs to contain the firmware file necessary for the models of IP phones that are deployed. There may be many other files here depending on other configurations.












Optional Parameters

This topic identifies optional IP phone parameters.

Optional Parameters: Locale Parameters

Allow changes to:

- Language of phone display
- Locale for call progress tones and cadences

 Danish	 Italian	 Spanish
 Dutch	 Norwegian	 Swedish
 French	 Portuguese	 English
 German	 Russian Federation	

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The Cisco CME system can be customized to some degree with a localized language on the IP phone, call progress indicators and cadence. This allows the user to hear and interact with the system with the language and audible queues that they are familiar with.

The format that the phone displays the date and time in can be modified to the format that is usual for the location of the installation.












Router Configuration: Two Commands

This topic identifies a router configuration.

Optional Parameters: Locale Parameters

Allow changes to:

- Language of phone display
- Locale for call progress tones and cadences

 Danish	 Italian	 Spanish
 Dutch	 Norwegian	 Swedish
 French	 Portuguese	 English
 German	 Russian Federation	

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The CallManager Express system can be customized to some degree with a localized language on the IP phone, call progress indicators and cadence. This allows the user to hear and interact with the system with the language and audible queues that they are familiar with.

The format that the phone displays the date and time can be modified to the format that is usual for the location of the installation.

Optional Parameters – Locale Parameters

This topic identifies a router configuration.

Optional Parameters: Locale Parameters


```
CMERouter(config-telephony-service)#  
user-locale language-code
```

- Specifies the language for display on an IP phone


```
CMERouter(config-telephony-service)#  
network-locale language-code
```

- Specifies the set of call progress tones and cadence on the IP phone

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On the Cisco IP Phone 7940 and Cisco IP Phone 7960, the language displayed on the phone and the locale for call progress tones and cadences can be set to one of several ISO-3166 codes that indicate specific languages and geographic regions.

Note The 7920 IP phone supports English, French, German, and Spanish and this setting is made on the handset. The **user-locale** and **network-locale** have no effect on the 7920 IP phone.

CMERouter1(config-telephony)#**user-locale ?**

DE Germany

DK Denmark

ES Spain

FR France

IT Italy

NL Netherlands

NO Norway

PT Portugal

RU Russian Federation

SE Sweden

US United States

CMERouter1(config-telephony)#**network-locale ?**

AT Austria

CA Canada

CH Switzerland

DE Germany

DK Denmark

ES Spain

FR France

GB United Kingdom

IT Italy

NL Netherlands

NO Norway

PT Portugal

RU Russian Federation

SE Sweden

US United States

Optional Parameters: Date and Time

```
CMERouter(config-telephony-service)#
```

```
date-format {mm-dd-yy | dd-mm-yy | yy-dd-mm | yy-mm-dd}
```

- Sets the date format for IP phone displays

```
CMERouter(config-telephony-service)#
```

```
time-format {12 | 24}
```

- Specifies the set of call progress tones and cadence on the IP phone

On the Cisco IP Phone 7940 and Cisco IP Phone 7960, the date and time format can be set on a system wide basis for all IP phones.

CMERouter1(config-telephony)#**date-format ?**

dd-mm-yy Set date to dd-mm-yy format

mm-dd-yy Set date to mm-dd-yy format

yy-dd-mm Set date to yy-dd-mm format

yy-mm-dd Set date to yy-mm-dd format

CMERouter1(config-telephony)#**time-format ?**

12 Set time to 12Hrs(AM/PM) format

24 Set time to 24Hrs format

Rebooting Cisco CallManager Express Phones

This topic discusses rebooting IP phones.

Rebooting Cisco CallManager Express Phones

Reset Command	Restart Command
<ul style="list-style-type: none">• Hard reboot• Phone firmware changes• User locales changes• Network locales changes• URL parameters changes• DHCP and TFTP invoked• Takes longer than restart	<ul style="list-style-type: none">• Soft reboot• Phone buttons changes• Phone lines changes• Speed-dial number changes• No DHCP or TFTP invoked• System message changes

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After you update information for one or more phones associated with a Cisco CME router, the phone or phones must be rebooted. There are two commands to reboot the phones: **reset** and **restart**. The **reset** command performs a “hard” reboot similar to a power-off-power-on sequence. It reboots the phone and contacts the DHCP server and TFTP server to update from their information as well. The **restart** command performs a “soft” reboot by simply rebooting the phone without contacting the DHCP and TFTP servers. The **reset** command takes significantly longer to process than the **restart** command when you are updating multiple phones, but it must be used after updating phone firmware, user locale, network locale, or URL parameters. For simple button, line, or speed-dial changes, you can use the **restart** command.

Use the **reset (ephone)** command to perform a complete reboot of an IP phone when you are in ephone configuration mode. This command has the same effect as a **reset (telephony-service)** command that is used to reset a single phone.

Router Configuration: Two Commands (Cont.)

```
CMERouter(config-telephony-service)#
```

```
reset {all [time-interval] | cancel | mac-address /  
sequence-all}
```

- Sets the date format for IP phone displays

```
CMERouter(config-ephone)#
```

```
reset
```

- Resets a specific ephone

To perform a complete reboot of one or all phones associated with a Cisco CME router, use the **reset** command in telephony-service configuration mode.

When using the **reset** command from telephony service mode, the default time interval of 15 seconds is recommended for an 8- to 10-phone office so that all the phones do not attempt to access TFTP server resources simultaneously. This value should be increased for larger networks.

When you use the **reset sequence-all** command, the router waits for one phone to complete its reset and reregister before starting to reset the next phone. The delay provided by this command prevents multiple phones from attempting to access the TFTP server simultaneously and therefore failing to reset properly. Each reset operation can take several minutes when you use this command. There is a reset timeout of 4 minutes, after which the router stops waiting for the currently registering phone to complete registration and starts to reset the next phone.

If the router configuration is changed so that the XML configuration files for the phones are modified (changes are made to user locale, network locale, or phone firmware), then whenever you use the **reset all** or **restart all** command, the router automatically executes the **reset sequence-all** command instead. The **reset sequence-all** command resets phones one at a time in order to prevent multiple phones trying to contact the TFTP server simultaneously. This one-at-a-time sequencing can take a long time if there are many phones. To avoid this automatic behavior, use the **reset all time-interval** command or the **restart all time-interval** command with an explicit argument that is not equal to the default 15-second time interval; for example, set a time interval of 14 seconds. If a **reset sequence-all** command has been started in error, use the **reset cancel** command to interrupt and cancel the sequence of resets.

To perform a complete reboot of a single phone associated with a Cisco CallManager Express router, use the **reset** command in ephone configuration mode.

Router Configuration: Two Commands (Cont.)

```
CMERouter(config-telephony-service)#
```

```
restart {all [time-interval] | mac-address}
```

- Sets the date format for IP phone displays

```
CMERouter(config-ephone)#
```

```
restart
```

- Restarts the ephone

This command causes the system to perform a fast phone reset in which only the button template, lines, and speed-dial numbers are updated on the phone. For updates related to phone firmware, user locale, network locale, or URL parameters, use the **reset** command.

Use the **restart** command to reboot IP phones after quick changes to buttons, lines, and speed-dial numbers. This command is much faster than the **reset** command because the phone does not access the DHCP or TFTP server.

To restart a single phone, use the **restart** command with the *mac-address* argument or use the **restart** command in ephone configuration mode.

Setup Troubleshooting

This topic identifies IP phone setup troubleshooting tips.

Setup Troubleshooting

Troubleshooting setup overview

- **Verify that a correct IP address and scope options are received on the IP phone**
- **Verify the correct files are in flash**
- **Debug the tftp server**
- **Verify phone firmware install**
- **Verify locale is correct**
- **Verify phone setup**
- **Review configuration**

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When using the automated setup if problems are encountered there are a many places to check, some of the more useful places and tools to use include:

- **Verify IP addressing** - checking the configuration on the IP phone through the “Settings” button
- **Verify the files in flash** – Check and verify that the correct firmware files are present in flash
- **Debug the TFTP server** – Make sure the firmware and xml files are being served correctly
- **Verify the phone firmware install** – Use the debug ephone register command to verify which firmware is being installed.
- **Verify locale is correct** - Use the telephony-service tftp-bindings command to view the files being served up by the tftp server
- **Verify phone setup** – Use the show ephone command to view the status of ephone and whether they are registered correctly
- **Review the configuration** - Use the show running-config command to verify the ephone-dn configuration

Verifying Cisco CallManager Express Phone Configuration

This topic identifies the steps to verify the Cisco CME configuration.

Verifying Cisco CallManager Express Phone Configuration

Verify ephone-dn Configurations

```
show running-config
telephony-service
load 7910 P00403020214
load 7960-7940 P00303020214
max-ephones 10
max-dn 10
ip source-address 10.90.0.1 port 2000
auto assign 1 to 10
create cnf-files dialplan-pattern 1 2015559... extension-length 4 extension-pattern 1...
voicemail 9999
max-conferences 8
!
ephone-dn 1 dual-line
number 9000
!
ephone 1
mac-address 000F.2470.F8F8
button 1:1
```

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To verify the configuration the command **show running-config** may be used. The primary area of interest for Cisco CME functionality will be the telephony-service section, the tftp configuration, the ephones, and the ephone-dns.

Setup Tips (Cont.): Debug tftp events command

Debug tftp events command

```
CMERouter#debug tftp events
Mar 2 19:32:59.333: TFTP: Looking for OS79XX.TXT
Mar 2 19:32:59.337: TFTP: Looking for SEP000F2470F8F8.cnf.xml
Mar 2 19:32:59.681: TFTP: Opened system:/its/XMLDefault7960.cnf.xml, fd 0, size 784 for
process 131
Mar 2 19:32:59.685: TFTP: Finished system:/its/XMLDefault7960.cnf.xml, time 00:00:00 for
process 131
Mar 2 19:33:02.713: TFTP: Looking for SEP000F2470F8F8.cnf.xml
Mar 2 19:33:02.713: TFTP: Opened system:/its/XMLDefault7960.cnf.xml, fd 0, size 784 for
process 131
Mar 2 19:33:02.745: TFTP: Finished system:/its/XMLDefault7960.cnf.xml, time 00:00:00 for
process 131
```

- Can verify if the SEP file for the phone is found
- Can verify the downloading of the correct firmware

The debugging command **debug tftp events** allows the administrator to view output regarding files that are served up by the tftp server. Cisco CME specific files include firmware if version are out of date or different than the supported versions, XML files for configured IP phones, XML files for new IP phones, and locale files.

If the firmware ends with a .bin extension then the file is unsigned. The .sbin firmware files are signed and if used the IP phone will permanently require signed load and can no longer use unsigned firmware loads.

Verifying Cisco CallManager Express Phone Configuration (Cont.)

Verify Phone Firmware Installation

```
debug ephone register
Mar 2 15:16:57.582: New Skinny socket accepted [1] (2 active)
Mar 2 15:16:57.582: sin_family 2, sin_port 49692, in_addr 10.90.0.11
Mar 2 15:16:57.582: skinny_add_socket 1 10.90.0.11 49692
Mar 2 15:16:57.766: %IPPHONE-6-REG_ALARM: 20: Name=SEP000F2470F8F8 Load=3.2(2.14) Last=Phone-Keypad
Mar 2 15:16:57.766: Skinny StationAlarmMessage on socket [1] 10.90.0.11 SEP000F2470F8F8
Mar 2 15:16:57.766: severityInformational p1=2368 [0x940] p2=184551946 [0xB000A0A]
Mar 2 15:16:57.766: 20: Name=SEP000F2470F8F8 Load=3.2(2.14) Last=Phone-Keypad
Mar 2 15:16:57.766: ephone-1[1] StationRegisterMessage (1/2/2) from 10.90.0.11
Mar 2 15:16:57.766: ephone-1[1] Register StationIdentifier DeviceName SEP000F2470F8F8
Mar 2 15:16:57.766: ephone-1[1] StationIdentifier Instance 1 deviceType 7
Mar 2 15:16:57.766: ephone-1[-1]:stationIpAddr 10.90.0.11
Mar 2 15:16:57.766: ephone-1[1]:phone SEP000F2470F8F8 re-associate OK on socket [1]
Mar 2 15:16:57.766: %IPPHONE-6-REGISTER: ephone-1:SEP000F2470F8F8 IP:10.90.0.11 has registered.
Mar 2 15:16:57.766: Phone 0 socket 1
Mar 2 15:16:57.766: Skinny Local IP address = 10.95.0.1 on port 2000
...
Mar 2 15:16:57.766: Skinny Phone IP address = 10.90.0.11 49692
Mar 2 15:16:57.766: ephone-1[1]:Date Format M/D/Y
Mar 2 15:16:57.766: ephone-1[1][SEP000F2470F8F8]:RegisterAck sent to ephone 1: keepalive period 30
```

Verify the correct phone firmware installation by setting registration debugging with the **debug ephone register** command. Then, reset the phones and look at the StationAlarmMessage displayed during phone re-registration. The Load= parameter should appear in the display, followed by an abbreviated version name corresponding to the correct phone firmware file name.

Verifying Cisco CallManager Express Phone Configuration (Cont.)

Verify Locale-Specific Files

```
CMERouter1#show telephony-service tftp-bindings
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/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
tftp-server system:/its/XMLDefault7960.cnf.xml alias SEP000F2470F8F8.cnf.xml
tftp-server system:/its/XMLDefault7960.cnf.xml alias SEP000F23FC9CF0.cnf.xml
```

Use the show telephony-service tftp-bindings command to ensure that the locale-specific files are correct.

Verifying Cisco CallManager Express Phone Configuration (Cont.)

Verify Cisco IP Phone Setup

```
CMERouter1#show ephone
ephone-1 Mac:000F.2470.F8F8 TCP socket:[1] activeLine:0 REGISTERED
mediaActive:0 offhook:0 ringing:0 reset:0 reset_sent:0 paging 0 debug:1
IP:10.10.0.11 49692 Telecaster 7960 keepalive 29 max_line 6
button 1: dn 1 number 1000 CH1 IDLE CH2 IDLE

ephone-2 Mac:000F.23FC.9CF0 TCP socket:[2] activeLine:0 REGISTERED
mediaActive:0 offhook:0 ringing:0 reset:0 reset_sent:0 paging 0 debug:1
IP:10.10.0.13 52633 Telecaster 7960 keepalive 135 max_line 6
button 1: dn 2 number 1001 CH1 IDLE CH2 IDLE
```

Enter the show ephone command to verify Cisco IP phone setup after phones have registered with the Cisco CME router.