

Create Phone Configurations Using Extension Assigner

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Prerequisites for Extension Assigner

- Cisco Unified CME 11.6 or a later version for SIP phones.
- Cisco Unified CME 4.0(3) or a later version for SCCP phones.
- For Extension Assigner Synchronization, Cisco Unified CME 4.2(1) or a later version.
- The **auto-register-phone** command must be enabled (default) for SCCP phones, and **auto-register** must be enabled for SIP phones.
- DHCP must be configured. For configuration information, see Defining Network Parameters.
- You have a valid Cisco.com account.
- You have access to a TFTP server for downloading files.

Restrictions for Extension Assigner

- The number of phones that you install cannot exceed the maximum number of phones supported by the router chassis. To find the maximum number of phones for a particular router and Cisco Unified CME version, see the appropriate Cisco Uniified CME Supported Firmware, Platforms, Memory, and Voice Products for your Cisco IOS release.
- For Extension Assigner Synchronization, automatic synchronization only applies to configuration changes made by Cisco Unified CME Extension Assigner.

Information About Extension Assigner

Extension Assigner Overview

From Cisco Unified CME Release 11.6 onwards, Extension Assigner feature is supported for both SIP and SCCP phones. This feature enables installation technicians to assign extension numbers to Cisco Unified CME phones without administrative access to the server, typically during the installation of new phones or the replacement of broken phones. However, before an installation technician can use this feature, the system administrator must first configure Cisco Unified CME to allow specific extensions to be assigned. The system administrator must also provide the installation technician with the information necessary for assigning extension numbers to phones. The installation technician can then assign extension numbers to phones with access to only the phones themselves and with no further intervention from the administrator.

To configure this feature, tasks must be performed on the Cisco router by an administrator and onsite by installation technicians.

Procedure for System Administrators

Before an installation technician can assign new extension numbers to phones, you must complete the following tasks:

1. Determine which extension numbers will be assigned to the new phones and plan your configuration.
2. Download the appropriate Tcl script and associated audio prompt files and place them in the correct directory.
3. Configure the Cisco Unified CME router to:
    - Configure and load the appropriate Tcl script.
    - Specify the extension that the installation technician calls to assign extension numbers.
    - Optionally specify whether the extension used to assign extension numbers is dialed automatically.
    - Specify the password that the installation technician enters to assign extension numbers.
    - Configure the extension assigner feature.
    - Configure ephone-dns with temporary extension numbers (applicable only for SCCP phones).
    - Configure ephone-dns and voice register dns with the extension numbers that the installation technician can assign to phones.
    - Configure ephones and voice register pools with temporary MAC addresses for each phone that will be assigned an extension number by the installation technician.
    - Optionally configure the router to automatically save your configuration.



Note All phone configurations such as dn and pool that are generated as part of the auto registration process are persistent configurations(If the command **background save interval** is configured under telephony-service). These phone configurations are available on Unified CME even after an event of router reload.

4. Provide the installation technician with the information needed to assign extension numbers to the new phones.

Before you can configure this feature, you must understand how the extension assigner application works and what information the installation technician needs to assign extension numbers to phones.

Other information you must provide to the installation technician involves the tasks that the installation technician must perform. These tasks include:

- Dialing a configurable extension number to access the extension assigner application.
- Entering a configurable password.
- Entering a tag (provision-tag for SIP phones, and ephone-tag or provision-tag for SCCP phones) that identifies the extension number that will be assigned to the phone.

Therefore, you must make the following decisions:

- Which extension number must be dialed to access the extension assigner application.
- Whether the number is dialed automatically when a phone goes off hook.
- What password the installation technician must enter to access the extension assigner application.
- What type of tag (provision-tag for SIP phones, and ephone-tag or provision-tag for SCCP phones) numbers to use to identify the extension number to assign to the phone.
- What specific tag numbers to use to identify the extension number to assign to the phone.

The first three decisions are straightforward, but the last two tag number decisions require some knowledge of how the extension assigner feature works.

This feature is implemented using a Tcl script and audio files. To run this script, the installation technician plugs in the phone, waits for a random extension number to be automatically assigned, and dials a specified extension assigner number to invoke the extension assigner service.

After the phones have registered and received their temporary extension numbers, the installation technician can access extension assigner and enter a tag number. This tag number is used to identify the extension number and must match either an ephone tag (only for SCCP phones) or a similar new tag called the provision-tag (applicable to both SIP and SCCP phones).

For SCCP phones, you must decide on which tag you want to use before you configure your ephone and ephone-dn entries.

The advantage of using the provision-tag is that you can make it easier for the installation technician to assign extension numbers because you can configure the tag to match the primary extension number or some other unique identifier for the phone, such as a jack number. We recommend you to configure provision-tag same as the primary extension number.

The disadvantage is that you configure an additional keyword for each ephone entry, as shown in the following example:

```
ephone 1
 provision-tag 9001
 mac-address 02EA.EAEA.0001
 button 1:1


voice register pool 1
 provision-tag 1001
 mac-address 02EA.EAEA.0001
 number 1 dn 101
```

For SCCP phones, if you decide to use the ephone tag, it requires less configuration. However, the installation technician enters an arbitrary tag number instead of the actual extension number when configuring a phone. This restriction is because the number of ephone tags that you can configure is limited by your license. For

example, if you use the ephone tag and you have a 100-user license, the installation technician cannot enter 9001 for the tag because you can configure only ephone 1 to ephone 100.

Note that each ephone entry that you configure must also include a temporary MAC address. As shown in the above example, this address should begin with 02EA.EAEA and can end with any unique number. We strongly recommend that you can configure this unique number to match the ephone tag for SCCP phones.

For SCCP phones, you do not have to configure any ephone entries for the extension number that are randomly assigned. The auto assign feature automatically creates an ephone entry for each new phone when it registers. The auto assign feature then automatically assigns an ephone-dn entry if there is an available ephone-dn that has one of the tag numbers specified by the **auto assign** command. The resulting ephone pool configurations have the actual MAC address of the phone and a button with the first available ephone-dn designated for the auto assign feature. For more information, see Configure Temporary Extension Numbers for SCCP Phones That Use Extension Assigner, on page 14.

For SIP phones, you do not have to configure voice register pool or voice register dn. You need to configure auto-register command for automatic registration of SIP phones on Cisco Unified CME. For more information, see Configure Temporary Extension Numbers for SCCP Phones That Use Extension Assigner, on page 14.



Note For manually registered phones, ephone (or voice register pool) and ephone-dn (or voice register dn) are manually created.

As shown in the following example, you configure at least one ephone-dn for a temporary extension and specify which ephone-dns the autoassign feature will assign to the temporary ephone entries:

```
telephony-service
 auto assign 101 to 105
ephone-dn 101
 number 0001
```

When the installation technician assigns an extension number to a phone, the temporary MAC address is replaced by the actual MAC address and the ephone entry created by the auto register feature is deleted. The number of ephone-dns that you configure for the auto assign feature determines how many phones you can plug in at one time and get an automatically assigned extension. If you define four ephone-dns for auto assign and you plug in five phones, one phone will not get a temporary extension number until you assign an extension to one of the other four phones and reset the fifth phone. You are permitted to set the max-ephone value higher than the number of users and phones supported by your Cisco Unified CME phone licenses for the purpose of enrolling licensed phones using Extension Assigner.

In addition to configuring one ephone-dn for each temporary extension number that is assigned automatically, you also must configure an ephone-dn entry for each extension number that is assigned by the installation technician. For more details on configuring extension numbers that technicians can assign to SCCP phones, see Configure Extension Numbers That Installation Technicians Can Assign to SCCP Phones, on page 17.

For SIP Phones, the temporary MAC address is replaced by the actual MAC address and voice register pool entry created by the auto-register feature is deleted when the installation technician assigns an extension number to a phone. The number of voice register dns that you configure for the auto assign feature determines how many phones you can plug in at one time and get an automatically assigned extension. If you define four voice register dns for auto assign and you plug in five phones, one phone will not get a temporary extension number until you assign an extension to one of the other four phones and reset the fifth phone. You are permitted to set the max-pool value higher than the number of users and phones supported by your Cisco Unified CME phone licenses for the purpose of enrolling licensed phones using Extension Assigner. For more

details on configuring extension numbers that technicians can assign to SIP phones, see Configure Extension Numbers That Installation Technicians Can Assign to SIP Phones, on page 19.

Note For SIP Phones, you need not create temporary dn if auto registration is used.

To complete the configuration, as shown in the following example, you must:

- Specify whether to use the ephone or the provision-tag number to identify the extension number to assign to the phone. Set this when the feature is enabled with the new **extension-assigner tag-type** command provided with this feature.
- Configure an ephone-dn for each temporary extension number that is assigned automatically.
- Configure an ephone-dn or voice register dn for each extension number that you want the installation technician to assign to a phone.
- Configure an ephone or voice register pool with a temporary MAC address for each phone that is assigned an extension number by the installation technician. Optionally, this ephone definition can include the new provision-tag. For SIP phones, it is necessary to have provision-tag information under voice register pool. For more information, see Configure Ephones with Temporary MAC Addresses, on page 20.

```
telephony-service
 extension-assigner tag-type provision-tag
 auto assign 101 to 105
ephone-dn 1 dual-line
 number 6001
ephone-dn 101
 number 0001
 label Temp-Line-not assigned yet
ephone 1
 provision-tag 6001
 mac-address 02EA.EAEA.0001
 button 1:1
*********************************


voice register pool 1
provision-tag 1001
mac-address 02EA.EAEA.0001
number 1 dn 101
```

Because you must configure two ephone-dns or voice register dns for each extension number that you want to assign, you may exceed your max-dn setting. You are permitted to set the max-dn value higher than the number allowed by your license for the purpose of enrolling licensed phones using extension assigner.

Assuming that your max-dn setting is set high enough, your max-ephone or max-pool setting determines how many phones you can plug in at one time. For example, if your max-ephone or max-pool setting is ten more than the number of phones to which you want to assign extension numbers, then you can plug in ten phones at a time. If you plug in eleven phones, one phone will not register or get a temporary extension number until you assign an extension to one of the first ten phones and reset the eleventh phone.

After you have configured your ephone or voice register pool, and ephone-dn or voice register dn entries, you can complete your router configuration by optionally configuring the router to automatically save your configuration. If the router configuration is not saved, any extension assignments made by the installation technician will be lost when the router is restarted. The alternative to this optional procedure is to have the installation technician connect to the router and enter the **write memory** command to save the router configuration.

The final task of the system administrator is to document the information that the installation technician needs to assign extension numbers to the new phones. You can also use this documentation as a guide when you configure Cisco Unified CME to implement this feature. This information includes:

- How many phones the installation technician can plug in at one time
- Which extension number to dial to access the extension assigner application
- Whether the number is dialed automatically when a phone goes off hook
- What password to enter to access the application
- Which tag numbers to enter to assign an extension to each phone



Note Because this feature is implemented using a Tcl script and audio files, you must place the script and associated audio prompt files in the correct directory. Do not edit this script; just configure Cisco Unified CME to load the appropriate script.

Extension Assigner in Mixed Deployment

From Cisco Unified CME release 11.6 onwards, extension assigner feature supports mixed deployment of SCCP and SIP phones. In a mixed deployment scenario, you sometimes have to migrate or replace an SCCP phone with a SIP phone or vice versa. The extension assigner functionality ensures a seamless migration experience in this scenario by letting you assign extension numbers to the new phone (irrespective of SIP or SCCP).

In mixed mode deployment, you can reassign any current extension number to a new phone. When you dial in to the extension assigner system to perform this task, you are redirected to the unassign menu. You need to unassign the current extension number so that it is no more assigned to any phone. After successfully unassigning the extension number, the call is disconnected. When you dial in to the extension assigner again, you can reassign the extension number to your new phone. For more information, see Reassign the Current Extension Number, on page 31.



Note You cannot unassign the extension number of a phone if it is in use. The phone has to be in idle or unregistered state.

Procedures for Installation Technicians

This feature is implemented using a Tcl script and audio prompt files that enable the installation technician to assign an extension number to a new Cisco Unified CME phone by performing the following procedure The system administrator provides the installation technician with all of the information required to perform this procedure.

Procedure

Step 1 Plug in a specified number of new phones.

Step 2 Wait for the phones to be assigned temporary, random extension numbers.

Step 3 Dial a specified number to access the extension assigner application.

Step 4 Enter a specified password.

Step 5 Enter a tag that identifies an extension number and enables the installation technician to perform one of the following tasks:

- Assign a new extension number to a phone.
- Unassign the current extension number.
- Reassign an extension number.

Files Included in this Release

The app-cme-ea-2.0.0.0.tar or later archive file provided for the extension assigner feature includes a readme file, a Tcl script, and several audio prompt files. If you want to replace the audio files with files that use a language other than English, do not change the name of the files. The Tcl script is written to use only the following list of the filenames:

- app-cme-ea-2.0.0.0.tcl (script)
- en_cme_tag_assign_phone.au (audio file)
- en_cme_tag_assigned_to_phone.au (audio file)
- en_cme_tag_assigned_to_phone_idle.au (audio file)
- en_cme_tag_assigned_to_phone_inuse.au (audio file)
- en_cme_tag_assigned_to_phone_unreg.au (audio file)
- en_cme_tag_available.au (audio file)
- en_cme_tag_extension.au (audio file)
- en_cme_tag_invalid.au (audio file)
- en_cme_tag_unassign_phone.au (audio file)
- en_cme_tag_action_cancelled.au (audio file)
- en_cme_tag_assign_failed.au (audio file)
- en_cme_tag_assign_success.au (audio file)
- en_cme_tag_contact_admin.au (audio file)
- en_cme_tag_disconnect.au (audio file)
- en_cme_tag_ephone_tagid.au (audio file)
- en_cme_tag_invalid_password.au (audio file)
- en_cme_tag_invalidoption.au (audio file)
- en_cme_tag_noentry.au (audio file)
- en_cme_tag_password.au (audio file)
- en_cme_tag_unassign_failed.au (audio file)
- en_cme_tag_unassign_success.au (audio file)
- en_eight.au (audio file)
- en_five.au (audio file)
- en_four.au (audio file)
- en_nine.au (audio file)
- en_one.au (audio file)
- en_seven.au (audio file)
- en_six.au (audio file)
- en_three.au (audio file)

- en_two.au (audio file)
- en_zero.au (audio file)
- readme.txt

Extension Assigner Synchronization

Extension Assigner Synchronization enables the secondary backup router to automatically receive any changes made by Extension Assigner to ephone or voice register pool mac-addresses in the primary router. The synchronization is performed using the Cisco Unified CME XML interface. The Cisco Unified CME XML client encapsulates the configuration changes into an **ISexecCLI** request and sends it to the secondary backup router using HTTP. The server on the secondary backup side processes the incoming XML request and calls the Cisco IOS CLI parser to perform the updates.

For configuration information, see Configuring Extension Assigner Synchronization.

Configure Extension Assigner

The following tasks are performed by an administrator or other personnel who is responsible for configuring Extension Assigner:

Determine Extension Numbers to Assign to the New Phones and Plan Your Configuration

After you determine which extension number to assign to each phone, you must make the following decisions:

- Which extension number must be dialed to access the extension assigner application.
- Whether the number is dialed automatically when a phone goes off hook.
- What password the installation technician must enter to access the extension assigner application.
- Whether to use ephone-tag (applicable only for SCCP phones) or the provision-tag number to identify the extension number to assign to the phone.
- How many temporary extension numbers to configure. This will determine how many temporary ephone-dns or voice register dns, and temporary MAC addresses to configure.
- What specific tag numbers to use to identify the extension number to assign to the phone.

Download the Tcl Script and Audio Prompt Files

To download the Tcl script and audio prompt files for the extension assigner feature, perform the following steps.

For more information about how to use Tcl scripts, see the Cisco IOS Tcl IVR and Voice XML Application Guide for your Cisco IOS release.

Note Do not edit the Tcl script

SUMMARY STEPS

1. Go to the Cisco Unified CME software download website at http://software.cisco.com/download/type.html?mdfid=277641082&catid=null.
2. Download the Cisco Unified CME extension assigner tar archive to a TFTP server that is accessible to the Cisco Unified CME router.
3. **enable**
4. **archive tar /xtract** *source-url destination-url*

DETAILED STEPS

Procedure

	Command or Action	Purpose
Step 1	Go to the Cisco Unified CME software download website at http://software.cisco.com/download/type.html?mdfid=277641082&catid=null.	Gives you access to Cisco Unified CME software downloads.
Step 2	Download the Cisco Unified CME extension assigner tar archive to a TFTP server that is accessible to the Cisco Unified CME router.	• This tar archive contains the extension assigner Tcl script and the default audio files that you need for the extension assigner service.
Step 3	**enable** **Example:** `Router> enable`	Enters global configuration mode.
Step 4	**archive tar /xtract** *source-url destination-url* **Example:** `Router# archive tar /xtract tftp://192.168.1.1/app-cme-ea-2.0.0.0.tar flash:`	Uncompresses the files in the archive file and copies them to a location that is accessible by the Cisco Unified CME router. • *source-url*—URL of the source of the extension assigner TAR file. Valid URLs can refer to TFTP or HTTP servers or to flash memory. • *location*—URL of the destination of the extension assigner TAR file, including its Tcl script and audio files. Valid URLs can refer to TFTP or HTTP servers or to flash memory.

Configure the Tcl Script

To configure and load the Tcl script for the extension assigner feature and create the password that installation technicians enter to access the extension assigner application, perform the following steps.

For more information about how to use Tcl scripts, see the Cisco IOS Tcl IVR and Voice XML Application Guide for your Cisco IOS release.

Note To change the password, you must remove the existing extension assigner service and create a new service that defines a new password.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **application**
4. **service** *service-name location*
5. **param ea-password** *password*
6. **paramspace english index** *number*
7. **paramspace english language** *en*
8. **paramspace english location** *location*
9. **paramspace english prefix en**
10. **end**

DETAILED STEPS

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Router> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Router# configure terminal`	Enters global configuration mode.
Step 3	**application** **Example:** `Router(config)# application`	Enters application configuration mode to configure packages and services.
Step 4	**service** *service-name location* **Example:** `Router(config-app)# service EA flash:/EA/`	Enters service parameter configuration mode to configure parameters for the call-queue service. • *service-name*—Name of the extension assigner service. This arbitrary name is used to identify the service during configuration tasks. • *location*—URL of the Tcl script for the extension assigner service. Valid URLs can refer to TFTP or HTTP servers or to flash memory.
Step 5	**param ea-password** *password* **Example:** `Router(config-app-param)# param ea-password 1234`	Sets the password that installation technicians enter to access the extension assigner application. • *password*—Numerical password that installation technicians enter to access the extension assigner application. Length: 2 to 10 digits.

	Command or Action	Purpose
Step 6	**paramspace english index** *number* **Example:** `Router(config-app-param)# paramspace english index 0`	Defines the language of audio files that are used for dynamic prompts by an IVR application. • For the Extension Assigner, language must be English and prefix is en.
Step 7	**paramspace english language** *en* **Example:** `Router(config-app-param)# paramspace english language en`	Defines the language of audio files that are used for dynamic prompts by an IVR application. • For the Extension Assigner, language must be English and prefix is en.
Step 8	**paramspace english location** *location* **Example:** `Router(config-app-param)# paramspace english location flash:/EA/`	Defines the location of audio files that are used for dynamic prompts by an IVR application. • For the Extension Assigner, language must be English. • *location*—URL of the Tcl script for the extension assigner service. Valid URLs can refer to TFTP or HTTP servers or to flash memory.
Step 9	**paramspace english prefix en** **Example:** `Router(config-app-param)# paramspace english prefix en`	Defines the prefix of audio files that are used for dynamic prompts by an IVR application. • For the Extension Assigner, language must be English and prefix is en.
Step 10	**end** **Example:** `Router(config-app-param)# end`	Returns to privileged EXEC mode.

Specify the Extension for Accessing Extension Assigner Application

To specify the extension number that installation technicians must dial to access the extension assigner application during onsite installation, perform the following steps.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **dial-peer voice** *tag* **voip**
4. **service** *service-name* **out-bound**
5. **destination-pattern** *string*
6. **session protocol sipv2**
7. **session target ipv4:** *destination-address*
8. **dtmf-relay rtp-nte**
9. **codec** *g711ulaw*

10. **no vad**
11. **end**

DETAILED STEPS

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Router> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Router# configure terminal`	Enters global configuration mode.
Step 3	**dial-peer voice** *tag* **voip** **Example:** `Router(config)# dial-peer voice 5999 voip`	Enters dial-peer configuration mode. • *tag*—Number used during configuration tasks to identify this dial peer.
Step 4	**service** *service-name* **out-bound** **Example:** `Router(config-dial-peer)# service extensionassigner out-bound`	Loads and configures the extension assigner application on a dial peer. • *service-name*—Name must match the name that you used to load the extension assigner Tcl script in the *Configuring the Tcl Script* section. • **outbound**—Required for Extension Assigner.
Step 5	**destination-pattern** *string* **Example:** `Router(config-dial-peer)# destination pattern 1010`	Specifies either the prefix or the full E.164 telephone number (depending on the dial plan) for a dial peer. • *string*—Number that the installation technician calls when assigning an extension number to a phone.
Step 6	**session protocol sipv2** **Example:** `Router(config-dial-peer)# session protocol sipv2`	Designates a SIP loopback trunk for Extension Assigner application.
Step 7	**session target ipv4:** *destination-address* **Example:** `Router(config-dial-peer)# session target ipv4:172.16.200.200`	Designates a network-specific address to receive calls from a VoIP dial peer. • *destination*-IP address for the Cisco Unified CME interface on this router.
Step 8	**dtmf-relay rtp-nte** **Example:** `Router(config-dial-peer)# dtmf-relay rtp-nte`	Specifies the method for relaying dual tone multifrequency (DTMF) tones between two devices as per RFC2833.

	Command or Action	Purpose
Step 9	**codec** *g711ulaw* **Example:** `Router(config-dial-peer)# codec g711ulaw`	Specifies the voice coder rate of speech for a dial peer. • *g711ulaw*-Option that represents the correct voice decoder rate. g711ulaw is the only codec supported with Extension Assigner application.
Step 10	**no vad** **Example:** `Router(config-dial-peer)# no vad`	Disables voice activity detection (VAD) for the calls using a particular dial peer. • Required for Extension Assigner.
Step 11	**end** **Example:** `Router(config-dial-peer)# end`	Returns to privileged EXEC mode.

Configure Provision-Tags for the Extension Assigner Feature

To modify Extension Assigner to use provision-tags, perform the following steps. By default, the extension assigner is enabled and uses ephone tags.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **telephony-service**
4. **extension-assigner tag-type** { **ephone-tag** | **provision-tag** }
5. **end**

DETAILED STEPS

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Router> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Router# configure terminal`	Enters global configuration mode.
Step 3	**telephony-service** **Example:** `Router(config)# telephony-service`	Enters telephony-service configuration mode.

	Command or Action	Purpose
Step 4	**extension-assigner tag-type** { **ephone-tag** | **provision-tag** } **Example:** `Router(config-telephony)# extension-assigner tag-type provision-tag`	Specifies tag type to use to identify extension numbers for Extension Assigner. • **ephone-tag** -Specifies that extension assigner use the ephone tag to identify the extension number that is assigned to a phone. The installation technician enters this number to assign an extension number to a phone. • **provision-tag**-Specifies that extension assigner use the provision-tag to identify the extension number that is assigned to a phone. The installation technician enters this number to assign an extension number to a phone.
Step 5	**end** **Example:** `Router(config-telephony)# end`	Returns to privileged EXEC mode.

Configure Temporary Extension Numbers for SCCP Phones That Use Extension Assigner

To create ephone-dn that is used as temporary extension numbers for phones to which an extension number will be assigned by Extension Assigner, perform the following steps for each temporary number to be created.

Tip The readme file that is included with the script contains some sample entries for this procedure that you can edit to fit your needs.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **ephone-dn** *dn-tag* [**dual-line**]
4. **number** *number* [**secondary** *number*] [**no-reg** [**both** | **primary**]]
5. **trunk** *digit-string* [**timeout** *seconds*]
6. **name** *name*
7. **exit**
8. **telephony-service**
9. **auto assign** *dn-tag* **to** *dn-tag*
10. **end**

DETAILED STEPS

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Router> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Router# configure terminal`	Enters global configuration mode.
Step 3	**ephone-dn** *dn-tag* [**dual-line**] **Example:** `Router(config)# ephone-dn 90`	Enters ephone-dn configuration mode, creates an ephone-dn, and optionally assigns it dual-line status. **Note** We recommend that you use single-line mode for your temporary extension numbers.
Step 4	**number** *number* [**secondary** *number*] [**no-reg** [**both** | **primary**]] **Example:** `Router(config-ephone-dn)# number 9000`	Configures a valid extension number for this ephone-dn instance.
Step 5	**trunk** *digit-string* [**timeout** *seconds*] **Example:** `Router(config-ephone-dn)# trunk 5999`	(Optional) Configures extension number to be automatically dialed for accessing the extension assigner application. • *digit-string* - Must match the number that you configured in the Specifying the Extension for Accessing Extension Assigner Application section.
Step 6	**name** *name* **Example:** `RRouter(config-ephone-dn)# name hardware`	(Optional) Associates a name with this ephone-dn instance. This name is used for caller-ID displays and in the local directory listings. • Must follow the name order that is specified with the **directory** command.
Step 7	**exit** **Example:** `Router(config-ephone-dn)# exit`	Exits ephone-dn configuration mode.
Step 8	**telephony-service** **Example:** `Router(config)# telephony-service`	Enters telephony-service configuration mode.

	Command or Action	Purpose
Step 9	**auto assign** *dn-tag* **to** *dn-tag* **Example:** `Router(config-telephony)# auto assign 90 to 99`	Automatically assigns ephone-dn tags to Cisco Unified IP phones as they register for service with a Cisco Unified CME router. • Must match the tags that you configured in earlier step.
Step 10	**end** **Example:** `Router(config-telephony)# end`	Returns to privileged EXEC mode.

Configure Temporary Extension Numbers for SIP Phones That Use Extension Assigner

To create voice register dns to use as temporary extension numbers for phones in which an extension number is assigned by Extension Assigner, perform the following steps for each temporary number to be created.

Tip The readme file that is included with the script contains some sample entries for this procedure that you can edit to fit your needs.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **voice register global**
4. **auto-register**
5. **password** *string*
6. **auto-assign** *first dn* **to** *last dn*
7. **end**

DETAILED STEPS

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Router> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Router# configure terminal`	Enters global configuration mode.

	Command or Action	Purpose
Step 3	**voice register global** **Example:** `Router(config)# voice register global`	Enters voice register global configuration mode.
Step 4	**auto-register** **Example:** `Router(config-register-global)# auto-register`	Enters auto-register configuration mode.
Step 5	**password** *string* **Example:** `Router(config-voice-auto-register)# password xxxx`	Specifies default password for auto registered phones.
Step 6	**auto-assign** *first dn* **to** *last dn* **Example:** `Router(config-voice-auto-register)# auto-assign 90 to 99`	Automatically assigns voice register dn with these extensions to Cisco Unified IP phones as they register for service with a Cisco Unified CME router.
Step 7	**end** **Example:** `Router(config-voice-auto-register)# end`	Returns to privileged EXEC mode.

Configure Extension Numbers That Installation Technicians Can Assign to SCCP Phones

To create ephone-dns for an extension numbers that the installation technicians can assign to phones, perform the following steps for each directory number to be created.

Tip The readme file provided with this feature contains sample entries that you can edit to fit your needs.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **ephone-dn** *dn-tag* [**dual-line**]
4. **number** *number* [**secondary** *number*] [**no-reg** [**both** | **primary**]]
5. **trunk** *digit-string* [**timeout** *seconds*]
6. **name** name
7. **exit**
8. **telephony-service**
9. **auto assign** *dn-tag* **to** *dn-tag*
10. **end**

DETAILED STEPS

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Router> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Router# configure terminal`	Enters global configuration mode.
Step 3	**ephone-dn** *dn-tag* [**dual-line**] **Example:** `Router(config)# ephone-dn 20`	Enters ephone-dn configuration mode, creates an ephone-dn, and optionally assigns it dual-line status. **Note** To change an ephone-dn from dual-line to single-line mode or the reverse, first delete the ephone-dn and then recreate it.
Step 4	**number** *number* [**secondary** *number*] [**no-reg** [**both** | **primary**]] **Example:** `Router(config-ephone-dn)# number 9000`	Configures a valid extension number for this ephone-dn instance.
Step 5	**trunk** *digit-string* [**timeout** *seconds*] **Example:** `Router(config-ephone-dn)# trunk 5999`	(Optional) Configures extension number to be automatically dialed for accessing the extension assigner application. • digit-string - Must match the number that you configured in the Specifying the Extension for Accessing Extension Assigner Application section.
Step 6	**name** name **Example:** `Router(config-ephone-dn)# name hardware`	(Optional) Associates a name with this ephone-dn instance. This name is used for caller-ID displays and in the local directory listings. • Must follow the name order that is specified with the **directory** command.
Step 7	**exit** **Example:** `Router(config-ephone-dn)# exit`	Exits ephone-dn configuration mode
Step 8	**telephony-service** **Example:** `Router(config)# telephony-service`	Enters telephony-service configuration mode.

	Command or Action	Purpose
Step 9	**auto assign** *dn-tag* **to** *dn-tag* **Example:** `Router(config-telephony)# auto assign 90 to 99`	Automatically assigns ephone-dn tags to Cisco Unified IP phones as they register for service with a Cisco Unified CME router. • Must match the tags that you configured in earlier step.
Step 10	**end** **Example:** `Router(config-telephony)# end`	Returns to privileged EXEC mode.

Configure Extension Numbers That Installation Technicians Can Assign to SIP Phones

To create voice register dns for an extension numbers that the installation technicians can assign to phones, perform the following steps for each directory number to be created.

Tip The readme file provided with this feature contains sample entries that you can edit to fit your needs.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **voice register dn** *tag*
4. **number** *number*
5. **name** *name*
6. **end**

DETAILED STEPS

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Router> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Router# configure terminal`	Enters global configuration mode.

	Command or Action	Purpose
Step 3	**voice register dn** *tag* **Example:** `Router(config)# voice register dn 20`	Enters voice register dn configuration mode, and creates a voice register dn.
Step 4	**number** *number* **Example:** `Router(config-register-dn)# number 20`	Configures a valid extension number for this voice register dn instance.
Step 5	**name** *name* **Example:** `Router(config-register-dn)# name hardware`	(Optional) Associates a name with this voice register dn instance. This name is used for caller-ID displays and in the local directory listings. • Must follow the name order that is specified with the **directory** command.
Step 6	**end** **Example:** `Router(config-register-dn)# end`	Returns to privileged EXEC mode.

Configure Ephones with Temporary MAC Addresses

Restriction To create an ephone configuration with temporary MAC address for a Cisco Unified CME phone to which you want the installation technician to assign extension numbers, perform the following steps for each phone.

- Max-ephone setting determines how many phones you can plug in at one time. For example, if your max-ephone setting is ten more than the number of phones to which you want to assign extension numbers, the you can plug in ten phones at a time. If you plug in eleven phones, one phone will not register or get a temporary extension number until you assign an extension to one of the first ten phones and reset the eleventh phone.
- For Cisco VG224 analog voice gateways with extension assigner, a minimum of 24 temporary ephones is required.

Tip The readme file provided with this feature contains some sample entries for this procedure that you can edit to fit your needs.

Before you begin

The **max-ephone** command must be configured for a value equal to at least one greater than the number of phones to which you want to assign extension numbers to allow the autoregister feature to automatically create at least one ephone for your temporary extension numbers.

Note You are permitted to set the max-ephone value higher than the number of users supported by your Cisco Unified CME licenses for the purpose of enrolling licensed phones using Extension Assigner.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **enable** *phone-tag*
4. **provision-tag** *number*
5. **mac-address 02EA.EAEA.** *number*
6. **type** *phone-type* [**addon 1** *module-type* [*2 module-type*]]
7. **button** *button-number{separator}dn-tag*
8. **end**

DETAILED STEPS

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Router> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Router# configure terminal`	Enters global configuration mode.
Step 3	**enable** *phone-tag* **Example:** `Router(config)# ephone 20`	Enters ephone configuration mode. • phone-tag-Maximum number is version and platform-specific. Type *?* to display range. • Number that the installation technician enters when assigning an extension to a phone if Extension Assigner uses ephone-tags (default).
Step 4	**provision-tag** *number* **Example:** `Router(config-ephone)# provision-tag 20`	(Optional) Creates a unique sequence number to be used by Extension Assigner to identify extension numbers to be assigned. • required only if you configured the **provision-tag** keyword with the **extension-assigner tag-type** command.
Step 5	**mac-address 02EA.EAEA.** *number*	Specifies a temporary MAC address number for this ephone.

	Command or Action	Purpose
	Example: `Router(config-ephone)# mac-address 02EA. EAEA. 0020`	• For Extension Assigner, MAC address must begin with **02EA.EAEA.** • *number* - we strongly recommend that you make this number the same as the ephone number.
Step 6	**type** *phone-type* [**addon 1** *module-type* [*2 module-type*]] **Example:** `Router(config-ephone)# type 7960 addon 1 7914`	Specifies the type of phone.
Step 7	**button** *button-number{separator}dn-tag* **Example:** `Router(config-ephone)# button 1:1`	Associates a button number and line characteristics with an extension (ephone-dn). • Maximum number of buttons is determined by phone type. **Note** The Cisco Unified IP Phone 7910 has only one line button, but can be given two ephone-dn tags.
Step 8	**end** **Example:** `Router(config-ephone)# end`	Returns to privileged EXEC mode

Configure Voice Register Pools with Temporary MAC Addresses

Restriction

- Max-pool setting determines how many phones you can plug in at one time. For example, if your max-pool setting is ten more than the number of phones to which you want to assign extension numbers, the you can plug in ten phones at a time. If you plug in eleven phones, one phone will not register or get a temporary extension number until you assign an extension to one of the first ten phones and reset the eleventh phone.

Tip The readme file provided with this feature contains some sample entries for this procedure that you can edit to fit your needs.

Before you begin

The **max-pool** command must be configured for a value equal to at least one greater than the number of phones to which you want to assign extension numbers to allow the autoregister feature to automatically create at least one ephone for your temporary extension numbers.

Note

- You are permitted to set the max-pool value higher than the number of users supported by your Cisco Unified CME licenses for the purpose of enrolling licensed phones using Extension Assigner.
- For a phone that needs to invoke Extension Assigner application for assign or unassign operations, g711ulaw codec and dtmf-relay as rtp-nte needs to be configured in voice register pool.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **voice register pool** *pool-tag*
4. **provision-tag** *number*
5. **mac-address 02EA.EAEA.** *number*
6. **type** *phone-type* [**addon 1** *module-type* [*2 module-type*]]
7. **number** *number* **dn** *dn-tag*
8. **dtmf-relay rtp-nte**
9. **codec** *g711ulaw*
10. **end**

DETAILED STEPS

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Router> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Router# configure terminal`	Enters global configuration mode.
Step 3	**voice register pool** *pool-tag* **Example:** `Router(config)# voice register pool 20`	Enters voice register pool configuration mode. • phone-tag-Maximum number is version and platform-specific. Type *?* to display range. • Number that the installation technician enters when assigning an extension to a phone.
Step 4	**provision-tag** *number* **Example:**	Creates a unique sequence number to be used by Extension Assigner to identify extension numbers to be assigned.

	Command or Action	Purpose
	`Router(config-register-pool)# provision-tag 20`	• required only if you configured the **provision-tag** keyword with the **extension-assigner tag-type** command.
Step 5	**mac-address 02EA.EAEA.** *number* **Example:** `Router(config-register-pool)# mac-address 02EA. EAEA. 0020`	Specifies a temporary MAC address number for this phone. • For Extension Assigner, MAC address must begin with **02EA.EAEA.** • *number* - we strongly recommend that you make this number same as the voice register pool number.
Step 6	**type** *phone-type* [**addon 1** *module-type* [*2 module-type*]] **Example:** `Router(config-register-pool)# type 8860 addon 1 CKEM 2`	Specifies the type of phone.
Step 7	**number** *number* **dn** *dn-tag* **Example:** `Router(config-register-pool)# number 1 dn 1`	Associates number and line characteristics with an extension (voice register dn).
Step 8	**dtmf-relay rtp-nte** **Example:** `Router(config-register-pool)# dtmf-relay rtp-nte`	(Optional) Specifies the method for relaying dual tone multifrequency (DTMF) tones between two devices as per RFC2833. This configuration is required only to perform assign or unassign operation using Extension Assigner application.
Step 9	**codec** *g711ulaw* **Example:** `Router(config-register-pool)# codec g711ulaw`	(Optional) Specifies the voice coder rate of speech for a dial peer. This configuration is required only to perform assign or unassign operation using Extension Assigner application. • *g711ulaw*-Option that represents the correct voice decoder rate. g711ulaw is the only codec supported with Extension Assigner application.
Step 10	**end** **Example:** `Router(config-register-pool)# end`	Returns to privileged EXEC mode.

Configure the Router to Automatically Save Your Configuration

To automatically save your router configuration when the router is restarted, perform the following steps.

SUMMARY STEPS

1. **enable**
2. **configure terminal**

3. **kron policy-list** *list-name*
4. **cli write**
5. **exit**
6. **kron occurrence** *occurrence-name* [**user** *username*] [[**in** *numdays:*]*numhours:*]*nummin* { **oneshot** | **recurring** }
7. **policy-list** *list-name*
8. **end**

DETAILED STEPS

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Router> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Router# configure terminal`	Enters global configuration mode.
Step 3	**kron policy-list** *list-name* **Example:** `Router(config)# kron policy-list save-config`	Specifies a name for a new or existing Command Scheduler policy list and enters kron-policy configuration mode. • If the value of the *list-name* argument is new, a new policy list structure is created. • If the value of the *list-name* argument exists, the existing policy list structure is accessed. No editor function is available, and the policy list is run in the order in which it was configured. **Note** You can also use the CLI command **background save interval** configured under telephony-service to automatically save configurations on Unified CME. This is as an alternative for the **kron** command.
Step 4	**cli write** **Example:** `Router(config-kron-policy)# cli write`	Specifies the fully-qualified EXEC command and associated syntax to be added as an entry in the Command Scheduler policy list.
Step 5	**exit** **Example:** `Router(config-kron-policy)# exit`	Returns to global configuration mode.

	Command or Action	Purpose
Step 6	**kron occurrence** *occurrence-name* [**user** *username*] [[**in** *numdays:*]*numhours:*]*nummin* { **oneshot** | **recurring** } **Example:** `Router(config)# kron occurrence backup in 30 recurring`	Specifies schedule parameters for a Command Scheduler occurrence and enters kron-occurrence configuration mode. • We recommend that you configure your router to save your configuration every 30 minutes. • *occurrence-name*-Specifies the name of the occurrence. Length of occurrence-name is from 1 to 31 characters. If the occurrence-name is new, an occurrence structure is created. If the occurrence-name is not new, the existing occurrence is edited. • **user**-(Optional) Used to identify a particular user. • *username*-Name of user. • **in**-Identifies that the occurrence is to run after a specified time interval. The timer starts when the occurrence is configured. • *numdays*:- (Optional) Number of days. If used, add a colon after the number. • *numhours*:- (Optional) Number of hours. If used, add a colon after the number. • *nummin*:- (Optional) Number of minutes. • **oneshot**-Identifies that the occurrence is to run only one time. After the occurrence has run, the configuration is removed. • **recurring**-Identifies that the occurrence is to run on a recurring basis.
Step 7	**policy-list** *list-name* **Example:** `Router(config-kron-occurrence)# policy-list save-config`	Specifies a Command Scheduler policy list.
Step 8	**end** **Example:** `Router(config-kron-occurrence)# end`	Returns to privileged EXEC mode.

Provide the Installation Technician with the Required Information

Before the installation technician can assign extension numbers to the new phones, you must provide the following information:

- How many phones the installation technician can plug in at one time. This is determined by the number of temporary MAC addresses that you configured.

- Which extension number to dial to access the extension assigner application.
- Whether the number is dialed automatically when a phone goes off hook (applicable only to SCCP phones).
- What password to enter to access the application.
- Which tag numbers to enter to assign an extension to each phone.

Configure Extension Assigner Synchronization

Configure the XML Interface for the Secondary Backup Router

To configure the secondary backup router to activate the XML interface required to receive configuration change information from the primary router, perform the following steps.



Note If there are HTTP connection issues between the primary router and the secondary backup router during automatic synchronization, the extension assigner synchronization changes are lost.



Restriction

- Automatic synchronization for new or replacement routers is not supported.
- Extension assigner preconfiguration must be manually performed on the secondary backup router.

Before you begin

- The XML interface, provided through the Cisco IOS XML Infrastructure (IXI), must be configured. See Configuring the XML API.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **telephony-service** | **voice register global**
4. **xml user** *user-name* **password** *password privilege-level*
5. **end**

DETAILED STEPS

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Router> enable`	Enables privileged EXEC mode. • Enter your password if prompted.

	Command or Action	Purpose
Step 2	**configure terminal** **Example:** `Router# configure terminal`	Enters global configuration mode.

Step 3	**telephony-service** | **voice register global**
	Example:
	`Router(config)# telephony-service`
	`Router(config)# voice register global`
		Enters telephony service configuration mode or voice register global mode.

Step 4	**xml user** *user-name* **password** *password privilege-level*
	Example:
	`Router(config-telephony)# xml user user23 password 3Rs92uzQ 15`
	`Router(config-register-global)# xml user user23 password 3Rs92uzQ 15`
		Defines an authorized user.
		• *user-name*—Username of the authorized user.
		• *password*—Password to use for access.
		• *privilege-level*—Level of access to Cisco IOS commands to be granted to this user. Only the commands with the same or a lower level can be executed via XML. Range is 0 to 15.

Step 5	**end**
	Example:
	`Router(config-telephony)# end`
	`Router(config-register-global)# end`
		Returns to privileged EXEC mode.

Configure Extension Assigner Synchronization on the Primary Router

To configure the primary router to enable automatic synchronization to the secondary backup router, perform the following steps.

Before you begin

- XML interface for secondary backup router is configured. See Configuring the XML Interface for the Secondary Backup Router.
- The secondary backup router's IP address must already be configured using the **ip source-address** command in telephony-service configuration mode.

Note Phone configurations such as MAC address, pool-tag, and phone type are saved as part of synchronization for Extension Assigner feature.

SUMMARY STEPS

1. **enable**

2. **configure terminal**
3. **telephony-service** | **voice register global**
4. **standby username** *username* **password** *password*
5. **end**

DETAILED STEPS

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Router> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Router# configure terminal`	Enters global configuration mode.

Step 3	**telephony-service** | **voice register global**
	Example:
	`Router(config)# telephony-service`
	`Router(config)# voice register global`
		Enters telephony service configuration mode or voice register global mode.

Step 4	**standby username** *username* **password** *password*
	Example:
	`Router(config-telephony)# standby username user23 password 3Rs92uzQ`
	`Router(config-register-global)# standby username user23 password 3Rs92uzQ`
		Defines an authorized user.
		• Same username and password that was previously defined for the XML interface on the secondary backup router.

Step 5	**end**
	Example:
	`Router(config-telephony)# end`
	`Router(config-register-global)# end`
		Returns to privileged EXEC mode.

Assign Extension Numbers Onsite by Using Extension Assigner

The following tasks are performed by the installation technician at the customer's site:

Assign New Extension Numbers

Initially, when you install a phone, it is assigned a temporary, random extension number. To access Extension Assigner and assign the appropriate extension number to this phone, perform the following steps.

Procedure

Step 1 Get the information you need to use extension assigner from your system administrator. For a list of this information, see Provide the Installation Technician with the Required Information.

Step 2 Dial the appropriate extension number to access the extension assigner system.

Step 3 Enter the password for the extension assigner and press **#**.

Step 4 Enter the ID number that represents this phone's extension and press **#**.

Step 5 If the extension is not assigned to another phone, press **1** to confirm that you want to assign the extension to your phone, then hang up. After the phone resets, the assignment is complete.

Step 6 If the extension is assigned to another phone that is idle:

a) Press **2** to confirm that you want to unassign the extension from the other phone.
b) Hang up.
c) Repeat this procedure beginning at Step 2, on page 30.

Step 7 If the extension is assigned to another phone that is in use, either:

- Return to Step 5, on page 30 to enter another extension number.
- Perform the procedures in the Unassigning an Extension Number section and then repeat this procedure beginning at Step 2, on page 30.

Unassign an Extension Number

After the new extension number is assigned, you may find that you assigned the wrong number or that your original dial plan has changed. To unassign the wrong number so that it can be used by another phone, perform the following steps.

Note You can unassign the extension number of the phone that is used to dial in to the Extension Assigner or the extension number of another phone that has a provision-tag configured.

Procedure

Step 1 Get the information you need to use extension assigner from your system administrator. For a list of this information, see Provide the Installation Technician with the Required Information.

Step 2 Dial the appropriate extension number to access the extension assigner system.

Step 3 Enter the password for the extension assigner and press **#**.

Step 4 Enter the provision-tag of the phone that needs to be unassigned, and press **#**.

Step 5 When you enter the provision-tag for the phone extension that needs to be unassigned, you are prompted to press **2** followed by **#** to confirm that you want to unassign the extension from the phone.

Step 6 Hang up.

Reassign the Current Extension Number

- If you must replace a broken phone or you want to reassign an extension number, perform the following steps.



Note You can reassign a number to a phone only if that number:

- Is not assigned to another phone
- Is assigned to another phone and that phone is idle
- Is assigned to another phone and you first unassign the extension

Procedure

Step 1 Get the information you need to use extension assigner from your system administrator. For a list of this information, see Provide the Installation Technician with the Required Information.

Step 2 Dial the appropriate extension number to access the extension assigner system.

Step 3 Enter the password for the extension assigner and press **#**.

Step 4 Enter the ID number that represents this phone's extension and press **#**.

Step 5 If the extension is not assigned to another phone, press **1** to confirm that you want to assign the extension to your phone, then hang up. After the phone resets, the reassignment is complete.

Step 6 If the extension is assigned to another phone that is idle:

- Press **2** to confirm that you want to unassign the extension from the other phone.
- Hang up.
- Perform the procedure in the Assign New Extension Numbers section.

Step 7 If the extension is assigned to another phone that is in use, either:

- Return to Step 5, on page 31 to enter another extension number.
- Perform the procedures in the Unassign an Extension Number section and the Assign New Extension Numbers section.

Verify Extension Assigner Configuration for SCCP Phones

Procedure

Step 1 Use the **debug ephone extension-assigner** command to display status messages produced by the extension assigner application.

Step 2 Use the **debug voip application script** command to display status messages produced by the server as it runs the assigner application Tcl script.

Step 3 Use the **debug ephone state** command as described in the Cisco IOS Debug Command Reference.

Verify Extension Assigner Configuration for SIP Phones

Procedure

Step 1 Use the **debug voice register events** and **debug voice register error** commands to display status messages produced by the extension assigner application.

Step 2 Use the **debug voip application script** command to display status messages produced by the server as it runs the assigner application Tcl script.

Step 3 Use the **debug ccsip messages** and **debug ccsip error** commands to display status messages for unregistration of phones.

Configuration Examples for Extension Assigner

Example for Extension Assigner on SCCP Phone

This example shows a router configuration with the following characteristics:

- The extension that the installation technician dials to access the extension assigner application is 0999.
- The password that the installation technician enters to access the extension assigner application is 1234.
- The **auto assign** command is configured to assign extensions 0001 to 0005.
- The installation technician can use extension assigner to assign extension numbers 6001 to 6005.
- The extension assigner uses the provision-tag to identify which ephone configuration and extension numbers to assign to the phone.
- The **auto-reg-ephone** command is shown but required, since it is enabled by default.
- The **kron** command is used to automatically save the router configuration.
- The max-ephone and max-dn settings of 51 are high enough to allow the installation technician to assign extensions to 50 phones, plugging them in one at a time. If the installation technician is assigning extensions to 40 phones, 11 can be plugged in one at a time. The exception is if you use

CiscoVG224AnalogVoiceGateways. Extension assigner creates 24 ephones for each CiscoVG224AnalogVoiceGateway, one for each port.

```
Router# show running-config
version 12.4
no service password-encryption
!
hostname Test-Router
!
boot-start-marker
boot system flash:c2800nm-ipvoice-mz.2006-05-31.GOPED_DEV
boot-end-marker
!
enable password ww
!
no aaa new-model
!
resource policy
!
ip cef
no ip dhcp use vrf connected
!
ip dhcp pool pool21
network 172.21.0.0 255.255.0.0
default-router 172.21.200.200
option 150 ip 172.30.1.60
!
no ip domain lookup
!
application
service EA flash:ea/app-cme-ea-2.0.0.0.tcl
paramspace english index 0
paramspace english language en
param ea-password 1234
paramspace english location flash:ea/
paramspace english prefix en
!
interface GigabitEthernet0/0
no ip address
duplex auto
speed 100
```

```
no keepalive
!
interface GigabitEthernet0/0.21
encapsulation dot1Q 21
ip address 172.21.200.200 255.255.0.0
ip http server
!
control-plane
!
dial-peer voice 999 voip
service EA out-bound
destination-pattern 0999
session target ipv4:172.21.200.200
dtmf-relay h245-alphanumeric
codec g711ulaw
no vad
!
telephony-service
extension-assigner tag-type provision-tag
max-ephones 51
max-dn 51
ip source-address 172.21.200.200 port 2000
auto-reg-ephone
auto assign 101 to 105
system message Test-CME
create cnf-files version-stamp 7960 Jun 14 2006 05:37:34
!
ephone-dn  1  dual-line
number 6001
!
ephone-dn  2  dual-line
number 6002
!
ephone-dn  3  dual-line
number 6003
!
ephone-dn  4  dual-line
number 6004
!
ephone-dn  5  dual-line
```

```
number 6005
!
ephone-dn  101
number 0101
label Temp-Line-not assigned yet
!
ephone-dn  102
number 0102
label Temp-Line-not assigned yet
!
ephone-dn  103
number 0103
label Temp-Line-not assigned yet
!
ephone-dn  104
number 0104
label Temp-Line-not assigned yet
!
ephone-dn  105
number 0105
label Temp-Line-not assigned yet
!
ephone  1
provision-tag 101
mac-address 02EA.EAEA.0001
button  1:1
!
ephone  2
provision-tag 102
mac-address 02EA.EAEA.0002
button  1:2
!
ephone  3
provision-tag 103
mac-address 02EA.EAEA.0003
button  1:3
!
ephone  4
provision-tag 104
mac-address 02EA.EAEA.0004
```

```
button  1:4
!
ephone  5
provision-tag 105
mac-address 02EA.EAEA.0005
button  1:5
!
kron occurrence backup in 30 recurring
policy-list writeconfig
!
kron policy-list writeconfig
cli write
!
line con 0
line aux 0
line vty 0 4
logging synchronous
!
no scheduler max-task-time
scheduler allocate 20000 1000
!
end
```

Example for Extension Assigner on SIP Phone

The following example shows that provision tag 1001 is configured for voice register pool 1 and provision tag 1002 is configured for voice register pool 2:

```
voice register global
 auto-register
  password cisco1234
  auto assign 101-102

voice register dn 1001
 number 1001

voice register dn 1002
 number 1002

voice register pool 1
 provision-tag 1001
 mac-address 02EA.EAEA.0001
 number 1 dn 1001

voice register pool 2
 provision-tag 1002
 mac-address 02EA.EAEA.0002
 number 2 dn 1002
```

Example for Extension Assigner Synchronization

Primary Router: Example

The extension assigner is authorized to send configuration change information from the primary router to the secondary backup router.

```
telephony-service
standby username user555 password purplehat
```

Secondary Backup Router: Example

System components are enabled and the XML interface is readied to receive configuration change information.

```
ip http server
ixi transport http
no shutdown
ixi application cme
no shutdown
telephony-service
xml user user555 password purplehat 15
```

Feature Information for Extension Assigner

The following table provides release information about the feature or features described in this module. This table lists only the software release that introduced support for a given feature in a given software release train. Unless noted otherwise, subsequent releases of that software release train also support that feature.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to www.cisco.com/go/cfn. An account on Cisco.com is not required.

Table 1: Feature Information for Extension Assigner

Feature Name	Cisco Unfiied CME Version	Feature Information
Extension Assigner for SIP Phones	11.6	Enables the installation technicians to assign extension numbers to SIP Phones configured on Cisco Unified CME.
Extension Assigner Synchronization	4.2(1)	Enables the secondary backup router to automatically receive any changes made to ephone mac-addresess in the primary router.
Extension Assigner	4.0(3)	Enables installation technicians to assign extension numbers to Cisco Unified CME SCCP phones without accessing the server.