Networking Cisco Unity Express

This chapter describes the procedures for configuring the networking capability on the local Cisco Unity Express voice-mail system and contains the following sections:

Cisco Unity Express Networking Overview

Cisco Unity Express Release 2.0 supports the Voice Profile for Internet Mail (VPIM) version 2 protocol to permit voice-mail message networking between Cisco Unity Express and Cisco Unity voice-mail systems that are not co-located on the same router or server. The voice-mail systems can reside on Cisco CallManager or Cisco CallManager Express call control platforms. Supported networked voice-mail configurations include:

- Cisco Unity Express to Cisco Unity Express
- Cisco Unity Express to Cisco Unity
- Cisco Unity to Cisco Unity Express

Non-Delivery Record (NDR)

Voice-mail message networking uses Non-Delivery Records (NDRs) for handling undelivered messages. Currently, when a message cannot be delivered to a local subscriber, the sender receives an immediate notification of the reason. However, when sending to a remote subscriber, immediate feedback may not be possible due to repeated attempts to contact the remote location or to deliver the message.

After a specified amount of time, the sender receives a new voice-mail message indicating the reason for non-delivery. If non-delivery is due to the recipient's mailbox being full, nonexistent, or disabled, the non-delivery message includes the sender's original message. When the sender plays the NDR, the sender can readdress and resend the original message or delete the message.

Blind Addressing

When a subscriber sends a message to another subscriber on the same (local) Cisco Unity Express voice-mail system, the sender can address the recipient using spell-by-name or an extension number. The sender hears a confirmation of the recipient's spoken name, if it is recorded, or the recipient's extension number.

When a subscriber sends a message to a remote subscriber, the sender will not hear a confirmation of the recipient's name or extension. This is blind addressing. The address of the remote recipient is the location ID of the remote system plus the recipient's extension number at the remote location.

Components

- Cisco Unity Express—Configure the Cisco Unity Express system at each location for networking between the systems.
- Cisco CallManager—Releases 3.3.3, 3.3.4, and 4.0.1 are supported.
- Cisco Unity—Releases 4.03 and 4.04 are supported. You must configure VPIM networking on Cisco Unity, including the primary location for Cisco Unity and the delivery locations for remote Cisco Unity Express locations. See the documentation in the "Additional References" section on page 17 for more information.

Prerequisites

- Cisco Unity Express must be installed at each remote location.
- Network connectivity between all Cisco Unity Express and Cisco call control system sites must be established.

Cisco CallManager and Cisco Unity Express Version Compatibility

Cisco Unity Express is shipped configured for interoperability with Cisco CallManager 3.3(3) and above. The following scenarios apply when installing Cisco Unity Express with a different version of Cisco CallManager, or upgrading the Cisco CallManager version:

- If Cisco Unity Express is installed with Cisco CallManager 4.0, Cisco Unity Express will reload once after the reload that you initiate at the completion of the initialization wizard procedure.
- If Cisco Unity Express is installed with Cisco CallManager 3.3, and Cisco CallManager is upgraded to version 4.0, then Cisco Unity Express reloads and updates its system files to work with the new version of Cisco CallManager. No further action from you is required.
- If the Cisco CallManager version has changed due to a Cisco CallManager configuration, or a different version of Cisco CallManager is restored, you must perform a manual reload. Cisco Unity Express will then perform one additional reload after the user-initiated reload.

Restrictions

- The VPIM version 2 protocol is supported only between Cisco Unity Express and Cisco Unity 4.0.3. Interworking with other voice-mail systems that use the VPIM version 2 protocol is not supported.
- For Cisco Unity Express Release 2.0, network configuration is available only with the command-line interface (CLI). Network tracing is available using the CLI or the Cisco Unity Express graphical user interface (GUI). From the GUI, choose **Administration > Traces**. See the "Troubleshooting Commands" section on page 155 for more information on trace options.

Configuring Network Locations

To configure network locations in Cisco Unity Express, perform the following tasks at each network location.

Prerequisites

The following information is required to configure networking on Cisco Unity Express:

- Network location ID number—Unique ID number for each location used by the voice-mail sender to send a remote message. The maximum length of the number is 7 digits. Release 2.0 supports a maximum of 500 locations.
- (Optional) Location name—Descriptive name of the network location.
- (Optional) Abbreviated location name—Abbreviated description of the network location.
- E-mail domain name—E-mail domain name or IP address for the remote voice-mail system. The domain name is attached to the local voice-mail originator's extension when sending a VPIM message. The local system's e-mail domain name must be configured to receive remote voice-mail messages.
- Voice-mail system telephone number prefix—Phone number prefix that is added to a local voice-mail originator's extension to create a VPIM address. A prefix is required only if an e-mail domain services multiple locations, and extensions between the locations are not unique. The maximum length of the prefix is 15 digits.
- Length of the local voice-mail system extensions.
- VPIM encoding scheme—Encoding scheme options for translating voice-mail messages at the local Cisco Unity Express system are dynamic, G.711ulaw, or G.726.
- (Optional) Voice-mail spoken name capability—Enabling this functionality permits receipt of a voice-mail originator's spoken name, which is played at the beginning of the received voice-mail message.

SUMMARY STEPS

1. **config t**
2. **network location id** *number*
3. **name** *location-name*
4. **abbreviation** *name*
5. **email domain** *domain-name*
6. **voicemail phone-prefix** *digit string*
7. **voicemail extension-length** *number* [**min** *number* | **max** *number*]
8. **voicemail vpim-encoding** {**dynamic | G711ulaw | G726**}
9. **(Optional) voicemail spoken-name**
10. **end**
11. **network local location id** *number*
12. **end**
13. **show network locations**
14. **show network detail location id** *number*
15. **show network detail local**
16. **show network queues**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**config t** **Example:** `se-10-0-0-0# config t`	Enters configuration mode.
Step 2	**network location id** *number* **Example:** `se-10-0-0-0(config)# network location id 9`	Enters location configuration mode to allow you to add or modify a location. • *number*—A unique numeric ID assigned to the location. This number is used to identify the location and is entered when a user performs addressing functions in the telephone user interface. The maximum length of the number is 7 digits. Cisco Unity Express Release 2.0 supports up to 500 locations on a single system. • To delete a location, use the **no** form of this command.
Step 3	**name** *location-name* **Example:** `se-10-0-0-0(config-location)# name "San Jose"`	(Optional) Descriptive name used to identify the location. Enclose the name in double quotes if spaces are used. • To delete a location name, use the **no** form of this command.
Step 4	**abbreviation** *name* **Example:** `se-10-0-0-0(config-location)# abbreviation sjcal`	(Optional) Creates an alphanumeric abbreviation for the location that is spoken to a user when the user performs addressing functions in the telephone user interface. You cannot enter more than 5 characters. • To delete an abbreviation, use the **no** form of this command.

	Command or Action	Purpose
Step 5	**email domain** *domain-name* **Example:** `se-10-0-0-0(config-location)# email domain cisco.com`	Configures the e-mail domain name or IP address for the location. The domain name is added when sending a VPIM message to the remote location (for example, "4843000@cisco.com"). If you do not configure a domain name or IP address, the Cisco Unity Express system at this location cannot receive network messages. **Caution** To remove the e-mail domain name or IP address and disable networking, use the **no** form of this command.If you remove the e-mail domain for this location, and the location was also configured as the network local location (see Step 11), then if you save your configuration and reload Cisco Unity Express, the network local location will remain disabled. After Cisco Unity Express restarts, reenter the **network local location id** command to reenable networking at this location.
Step 6	**voicemail phone-prefix** *digit-string* **Example:** `se-10-0-0-0(config-location)# voicemail phone-prefix 484`	Configures the phone number prefix that is added to an extension to create a VPIM address for a user at the location. A prefix is required only if an e-mail domain services multiple locations and extensions between the locations are not unique. Valid values: 1 to 15 digits. Default value: empty. • To delete a phone prefix, use the **no** form of this command.

Step 7	**voicemail extension-length** {*number* | **min** *number* **max** *number*}
	
	Example:
	`se-10-0-0-0(config-location)# voicemail extension-length 8`
	
	`se-10-0-0-0(config-location)# voicemail extension-length min 5 max 9`
		Configures the voice mail extension length for the location.
		• *number*—Configures the number of digits contained in extensions at the location.
		• **max** *number*—Sets the minimum number of digits for extensions. Default value: 2.
		• **min** *number*—Sets the maximum number of digits for extensions. Default value: 15.
		• To remove the configuration for the number of digits for extensions, use the **no** form of this command.

	Command or Action	Purpose
Step 8	**voicemail vpim-encoding** {**dynamic** | **G711ulaw** | **G726**} **Example:** `se-10-0-0-0(config-location)# voicemail vpim-encoding G711ulaw`	Configures the encoding method used to transfer voice-mail messages to this location. • **dynamic**—Cisco Unity Express negotiates with the location to determine the encoding method • **G711ulaw**—Cisco Unity Express always sends messages as G711 ulaw .wav files. Set this only if the receiving system supports G711 ulaw encoding (such as Cisco Unity). • **G726**—Cisco Unity Express always sends messages as G726 (32K ADPCM). Use for low-bandwidth connections or when the system to which Cisco Unity Express is connecting does not support G711ulaw. • Default value: **dynamic**. • To return to the default value for encoding, use the **no** form of this command.
Step 9	**voicemail spoken-name** **Example:** `se-10-0-0-0(config-location)# voicemail spoken-name`	(Optional) Enables sending the spoken name of the voice-mail originator as part of the message. If the spoken name is sent, it is played as the first part of the received message. Default: enabled. • To disable sending the spoken name, use the **no** form of this command.
Step 10	**end** **Example:** `se-10-0-0-0(config-location)# end`	Exits location configuration mode.
Step 11	**network local location id** *number* **Example:** `se-10-0-0-0(config)# network local location id 1`	Enables networking for the local Cisco Unity Express system identified by the location ID number. • To delete the local location, use the **no** form of this command. ⚠ **Caution** If you delete the network local location and then save your configuration, when you reload Cisco Unity Express, the network local location will remain disabled. After Cisco Unity Express restarts, reenter the **network local location id** command to reenable networking at this location.
Step 12	**exit** **Example:** `se-10-0-0-0(config)# exit`	Exits configuration mode.

	Command or Action	Purpose
Step 13	**show network locations** **Example:** `se-10-0-0-0# show network locations`	(Optional) Displays the location ID, name, abbreviation, and domain name for each configured Cisco Unity Express location.
Step 14	**show network detail location id** *number* **Example:** `se-10-0-0-0# show network detail location id 9`	(Optional) Displays network information for the specified location ID, including the number of messages sent and received.
Step 15	**show network detail local** **Example:** `se-10-0-0-0# show network detail local`	(Optional) Displays network information for the local Cisco Unity Express location, including the number of messages sent and received.
Step 16	**show network queues** **Example:** `se-10-0-0-0# show network queues`	(Optional) Displays information about messages in the outgoing queue that are to be sent from this Cisco Unity Express system. The queue information contains three displays: one for urgent job queue information, one for normal job queue information, and one for running job information.

Examples

The following examples illustrate the output from the **show network** commands on company ABC's call control system in San Jose with remote voice-mail provided by six remote Cisco Unity Express sites.

```
se-10-0-0-0# show network locations

ID        NAME                          ABBREV  DOMAIN
101       'San Jose'                      SJC    sjc.cue.abc.com
102       'Dallas/Fort Worth'             DFW    dfw.cue.abc.com
201       'Los Angeles'                   LAX    lax.cue.abc.com
202       'Canada'                        CAN    can.cue.abc.com
301       'Chicago'                       CHI    chi.cue.abc.com
302       'New York'                      NYC    nyc.cue.abc.com
401       'Bangalore'                     BAN    bang.cue.abc.com


se-10-0-0-0# show network detail location id 102

Name:                                Dallas/Fort Worth
Abbreviation:                        DFW
Email domain:                        dfw.cue.abc.com
Minimum extension length:              2
Maximum extension length:             15
Phone prefix:
VPIM encoding:                        G726
Send spoken name:                     enabled
Sent msg count:                       10
Received msg count:                   110


se-10-0-0-0# show network detail local
```

```
Location Id:                          101
Name:                                 San Jose
Abbreviation:                         SJC
Email domain:                         sjc.cue.abc.com
Minimum extension length:             2
Maximum extension length:             15
Phone prefix:
VPIM encoding:                        dynamic
Send spoken name:                     enabled
```

The following example illustrates output from the **show network queues** command. The output includes the following fields:

- ID—Job ID.
- Retry—Number of times that Cisco Unity Express has tried to send this job to the remote location.
- Time—Time when the job will be resent.

```
se-10-0-0-0# show network queues

Running Job Queue
=================

ID    TYPE TIME       RETRY SENDER          RECIPIENT
107   VPIM 06:13:26   20    jennifer        1001@sjc.cue.abc.com
106   VPIM 06:28:25   20    jennifer        1001@sjc.cue.abc.com

Urgent Job Queue
=================

ID    TYPE TIME       RETRY SENDER          RECIPIENT
123   VPIM 16:33:39   1     andy            9003@lax.cue.abc.com

Normal Job Queue
=================

ID    TYPE TIME       RETRY SENDER          RECIPIENT
122   VPIM 16:33:23   1     andy            9001@lax.cue.abc.com
124   VPIM 16:34:28   1     andy            9003@lax.cue.abc.com
125   VPIM 16:34:57   1     andy            9002@lax.cue.abc.com
126   VPIM 16:35:43   1     andy            9004@lax.cue.abc.com
```

Troubleshooting Commands

To troubleshoot network configuration in Cisco Unity Express, use the following commands in EXEC mode.

SUMMARY STEPS

1. **trace networking smtp** [**all** | **receive** | **send** | **work**]
2. **trace networking vpim** [**all** | **receive** | **send**]
3. **trace networking sysdb** [**all**]
4. **trace networking dns** [**all**]
5. **trace networking database** [**all** | **connection** | **execute** | **garbage** | **largeobject** | **mgmt** | **query** | **results** | **transaction**]
6. t**race networking jobqueue** [**all** | **job** *number*]

DETAILED STEPS

	Command or Action	Purpose
Step 1	**trace networking smtp** [**all** | **receive** | **send** | **work**] **Example:** `se-10-0-0-0# trace networking smtp all`	Enables tracing for SMTP network functions. • **all**—Traces every SMTP activity. • **receive**—Traces SMTP receiving. • **send**—Traces SMTP sending. • **work**—
Step 2	**trace networking vpim** [**all** | **receive** | **send**] **Example:** `se-10-0-0-0# trace networking vpimi all`	Enables tracing for VPIM network functions. • **all**—Traces every VPIM activity. • **receive**—Traces VPIM receiving. • **send**—Traces VPIM sending.
Step 3	**trace networking sysdb** [**all**] **Example:** `se-10-0-0-0# trace networking sysdb`	Enables tracing for sysdb events. • **all**—Traces every sysdb event.
Step 4	**trace networking dns** [**all**] **Example:** `se-10-0-0-0# trace networking dns`	Enables tracing for DNS activities. Displays DNS lookups that are performed and results that are given when a user adds an e-mail domain to a location, and when a domain is verified and resolved using SMTP. • **all**—Traces every DNS event.

	Command or Action	Purpose
Step 5	**trace networking database** [**all** | **connection** | **execute** | **garbage** | **largeobject** | **mgmt** | **query** | **results** | **transaction**]] **Example:** `se-10-0-0-0# trace networking database results`	Enables tracing for database functions. The following keywords specify the type of traces: • **all**—Every database event. • **connection**—Database connections. • **execute**—Inserts and updates performed on database. • **garbage**—Garbage data collection process. • **largeobject**—Large object reads and writes to the database. • **mgmt**—Database management processes. • **query**—Queries performed on the database. • **results**—Results of queries, inserts, and updates. • **transactions**—Start and end of database transactions.
Step 6	**trace networking jobqueue** [**all** | **job** *number*] **Example:** `se-10-0-0-0# trace networking jobqueue job 101`	Enables tracing for the job queue. • **all**—Traces all jobs in the queue. • **job** *number*—Traces a specified job in the queue.