Cisco Unified Messaging Gateway

Q. What is the Cisco® Unified Messaging Gateway?

A. The Cisco Unified Messaging Gateway is a software-based network module for Cisco integrated services routers. It acts as the central hub for Cisco Unity®, Cisco Unity Connection, and Cisco Unity Express applications in unified messaging solutions to provide intelligent routing for voice messages. Within a voice messaging network, the Cisco Unified Messaging Gateway exchanges subscriber and directory information among the Cisco voice messaging solutions and provides interoperability with third-party voice messaging systems over Voice Profile for Internet Mail (VPIM) networks.

Q. Why introduce the Cisco Unified Messaging Gateway into a voice messaging network?

A. Cisco Unity Express currently provides a networking function for message exchange between users of different Cisco Unity Express nodes. A networked Cisco Unity Express setup requires all Cisco Unity Express nodes to form a fully meshed network, within which each Cisco Unity Express node must be able to reach all other Cisco Unity Express nodes directly. This approach carries limitations on scalability and manageability because the Cisco Unity Express network scales up to a limit of 500 nodes. With a Cisco Unified Messaging Gateway network, the voice messaging network can scale up to 20 Cisco Unified Messaging Gateways (10 primary + 10 secondary) with 500,000 subscribers on up to 10,000 nodes of any combination of Cisco Unity Express, Cisco Unity Connection, and Cisco Unity solutions.

Q. What are the major features and functions of the Cisco Unified Messaging Gateway?

A. Cisco Unified Messaging Gateway 1.0 supports voice messaging system registration (including Cisco Unity Express, Cisco Unity Connection, Cisco Unity, and Avaya Interchange applications) and autoregistration with Cisco Unity Express Version 3.1 and later, directory information exchange, message routing, and delivery, including System Distribution Lists (SDLs) and System Broadcast Messages (SBMs), multiple messaging formats, and dial by name with spoken-name confirmation across a network with many Cisco Unified Messaging Gateways.

Q. What is a typical deployment of the Cisco Unified Messaging Gateway?

A. The Cisco Unified Messaging Gateway solution deployment options include:

- Medium- to large-scale with Cisco Unity Express-only deployment (more than 5 Cisco Unity Express systems and up to 10,000 with a networked offering)
- Medium- to large-scale with mixed Cisco Unity Express, Cisco Unity Connection, and Cisco Unity solutions
- Medium- to large-scale with mixed Cisco Unity Express, Cisco Unity Connection, Cisco Unity, and third-party (Avaya Interchange) voice messaging systems (VPIM)

Q. What type of network topology does the Cisco Unified Messaging Gateway support?

A. Cisco Unified Messaging Gateways interact with nodes on a hub-and-spoke topology and are fully meshed among themselves, with up to 20 Cisco Unified Messaging Gateways in the network (10 primary + 10 secondary).

Q. Does the Cisco Unified Messaging Gateway support any failover mechanism?

A. Yes. The Cisco Unified Messaging Gateway supports 1-1 active-standby failover. Each voice messaging solution registers with both primary and secondary Cisco Unified Messaging Gateways if failover is implemented in the network. Failover is not supported with Avaya Interchange because of Avaya's product limitations.

Q. What voice messaging systems and versions does the Cisco Unified Messaging Gateway support?

A. The Cisco Unified Messaging Gateway 1.0 supports Cisco Unity 4.0(5) and later in a Microsoft Exchange environment, Cisco Unity Connection 7.0, Cisco Unity Express 3.1 and later with autoregistration capability or all previous versions of Cisco Unity Express with manual registration, and Avaya Interchange Version 5.4.

Q. What are the advantages of using Cisco Unity Express 3.1 or later in a Cisco Unified Messaging Gateway network?

A. The Cisco Unified Messaging Gateway supports autoregistration with Cisco Unity Express 3.1 or later. With autoregistration, in addition to the automatic directory exchange between Cisco Unity Express and Cisco Unified Messaging Gateways, new telephone user interface (TUI) prompts and Cisco VoiceView Express interfaces are introduced to enable a "global directory search" when a local Cisco Unity Express does not have a remote subscriber cached. With the dial-by-name option, a spoken name can be confirmed across the voice messaging network.

Q. What are the differences between the interaction of a Cisco Unified Messaging Gateway with Cisco Unity Express and with other voice messaging systems?

A. Cisco Unity unified messaging and other systems need manual provisioning on the Cisco Unified Messaging Gateway. When failover is applied, these systems need a Domain Name System (DNS) server to resolve the IP address of Cisco Unified Messaging Gateways. Cisco Unity Express 3.1 and later autoregistration can be enabled along with directory information exchange (refer to previous answer for the advantages of Cisco Unity Express 3.1 in a Cisco Unified Messaging Gateway network). Older versions of Cisco Unity Express need manual provisioning on the Cisco Unified Messaging Gateway.

Q. What Cisco IOS® Software is required to support the Cisco Unified Messaging Gateway Module on a Cisco integrated services router?

A. Cisco IOS Software Release 12.4(15) T or later is required.

Q. How does the Cisco Unified Messaging Gateway register Cisco Unity Express, Cisco Unity Connection, Cisco Unity, and Avaya Interchange applications?

A. The Cisco Unified Messaging Gateway registers Cisco Unity Express either automatically or manually, depending on the Cisco Unity Express version. For Cisco Unity Express Version 3.1 and later, autoregistration is suggested with username and password authentication. For versions of Cisco Unity Express prior to 3.1, you can manually register Cisco Unity Express on the Cisco Unified Messaging Gateway. The same manual registration rule is applicable to the Cisco Unity, Cisco Unity Connection, and Avaya Interchange applications.

Q. How do I calculate the capacity and sizing of a Cisco Unified Messaging Gateway network?

A. Cisco Unified Messaging Gateway hardware has two versions with different capacities; the part numbers are NME-UMG and NME-UMG-EC. The first (NME-UMG) can support up to 250 voice messaging systems or nodes; the second (NME-UMG-EC) can support up to 1,000

voice messaging systems or nodes, with a maximum 50,000 subscribers. A fully meshed Cisco Unified Messaging Gateway network can contain up to 20 Cisco Unified Messaging Gateways (10 as primary and 10 as secondary) with a total of 500,000 subscribers.

Q. What are the required components for the Cisco Unified Messaging Gateway? Are licenses included?

A. A Cisco integrated services router with a network module slot is required as a hosting router. Cisco Unified Messaging Gateway hardware with either version (NME-UMG or NME-UMG-EC) with preloaded Cisco Unified Messaging Gateway software and licenses are required to use the Cisco Unified Messaging Gateway software. Licenses are ordered separately from hardware as part of the Cisco Unified Messaging Gateway ordering process. You can order additional licenses later if your network expands.

Q. How many additional licenses can I order after the initial license purchase?

A. The initial license purchase consists of a choice; part numbers follow: UMG-LIC-25, UMG-LIC-100, UMG-LIC-500, and UMG-LIC-1000. You can purchase license upgrades with the initial purchase with either of the following part numbers: UMG-LIC-25-UPG or UMG-LIC-100-UPG. You can buy license upgrades at a later time with part number UMG-LIC-25-UPG= or UMG-LIC-100-UPG=.

Q. What is the administration interface for the Cisco Unified Messaging Gateway?

A. The Cisco Unified Messaging Gateway can be administered using a command-line interface (CLI) that is very similar to the Cisco IOS Software or Cisco Unity Express CLI interfaces.

Q. How does the Cisco Unified Messaging Gateway network work?

A. The standard setup procedure follows:

1. Cisco Unified Messaging Gateways register voice messaging systems as nodes into their database.
2. Directory information is exchanged: For all manually registered voice messaging systems, there is no directory exchange between the voice messaging system and Cisco Unified Messaging Gateways; they are all manually provisioned either as prefix-based locations or particular users on each system. Directory exchange happens between autoregistered Cisco Unity Express systems and the Cisco Unified Messaging Gateway, and between Cisco Unified Messaging Gateways; this process is automatic and needs no configuration or human intervention. The directories are also kept synchronized automatically across the entire network so that moves, adds, and changes are correctly reflected across the network.
3. The originating Cisco Unified Messaging Gateway routes messages based on the directory table on its database to find the terminating Cisco Unified Messaging Gateway.
4. The message is delivered from a subscriber to a remote SDL, SBM, or subscriber using VPIM across the Cisco Unified Messaging Gateway network.

Q. Can Cisco Unified Messaging Gateway software run on the same module with Cisco Unity Express software?

A. No. Cisco Unified Messaging Gateway software runs on a separate network module from Cisco Unity Express and cannot coexist on the same network module.

Q. Can Cisco Unified Messaging Gateway software run on the same Cisco integrated services router with Cisco Unity Express software?

A. Yes. The Cisco Unified Messaging Gateway and Cisco Unity Express can run on the same Cisco integrated services router in different network module slots.

Q. How many Cisco Unified Messaging Gateway Modules can run on a single Cisco integrated services router?

A. At any time, only one Cisco Unified Messaging Gateway can run on a Cisco integrated services router.

Q. How can the Cisco Unified Messaging Gateway detect other Cisco Unified Messaging Gateways within a network?

A. An administrator needs to provision peer Cisco Unified Messaging Gateways on a network. Autodiscovery is not supported for other Cisco Unified Messaging Gateways on the network. All Cisco Unified Messaging Gateways on the network should be configured in a fully meshed topology. When this configuration is in place, all message exchanges between peer Cisco Unified Messaging Gateways are automatic.

Q. Does the Cisco Unified Messaging Gateway support security?

A. Cisco Unified Messaging Gateway 1.0 does not support inherent security protocols. Message exchange between nodes is not encrypted by the Cisco Unified Messaging Gateway and should be encrypted, if necessary, using VPN or IP Security (IPsec) tunnels on the Cisco integrated services router. The Cisco Unified Messaging Gateway supports a Network Address Translation (NAT) table configuration to map internal and external IP addresses if needed. The Cisco Unified Messaging Gateway also supports application-level security with shared secret between Cisco Unified Messaging Gateway and Cisco Unity Express 3.1 nodes to prevent an unauthorized node from accessing the Cisco Unified Messaging Gateway network. The Cisco Unified Messaging Gateway supports the concept of white and black lists -- lists of devices that are either allowed or blocked from registering or transferring messages through the Cisco Unified Messaging Gateway.

Q. What happens on a Cisco Unified Messaging Gateway network if message delivery fails?

A. Similar to Cisco Unity Express and other voice messaging systems, a delayed-delivery receipt (DDR) and nondelivery receipt (NDR) are generated toward the sender of the message, with configurable timers. The Cisco Unified Messaging Gateway attempts to deliver the message with a DDR time window until an NDR timeout is reached. The NDR is sent back to the sender with the original message if a failure occurs after the configured timeouts.

Q. What are the default DDR and NDR timeout values?

A. DDR is 1 hour by default, and NDR is 6 hours by default. These timeout values are configurable.

Q. Does the Cisco Unified Messaging Gateway support backup and restore?

A. Yes. The Cisco Unified Messaging Gateway supports a Cisco Unity Express-style backup and restore infrastructure. The Cisco Unified Messaging Gateway supports backup and restore of configuration, data, or a combination of the two. Data-only backup and restore is discouraged. Backup and restore are performed in offline mode, and restore requires a system reboot.

Q. What information is saved during the Cisco Unified Messaging Gateway backup and restore?

A. The Cisco Unified Messaging Gateway config-only backup has system configuration information (peer Cisco Unified Messaging Gateway, manually configured nodes, registration credential, NAT configuration, default route, and other information from the show startup config command). The config + data backup contains dynamic operational data acquired by the Cisco Unified Messaging Gateway (autoregistered nodes, directory information from local nodes, SDL, and SBM) in addition to the system configuration information.

Q. Does the Cisco Unified Messaging Gateway 1-1 active-standby failover mechanism work the same on the Cisco Unity Express, Cisco Unity Connection, Cisco Unity, and Avaya Interchange applications?

A. No. With Cisco Unity Express, there is no need to have a DNS server involved. IP addresses of primary and secondary Cisco Unified Messaging Gateways are enough for a Cisco Unity Express solution provisioned with a primary and secondary Cisco Unified Messaging Gateway. To set up a remote VPIM server with Cisco Unity Connection, the “Remote VPIM Domain Name” and the IP Address field are mandatory. This action limits support for failover by the Cisco Unified Messaging Gateway. The Cisco Unity application does not support multiple VPIM nodes to the same remote user, so a DNS server is required to have both primary and secondary Cisco Unified Messaging Gateways in record for a single Cisco Unified Messaging Gateway domain name. Avaya Interchange allows one Cisco Unified Messaging Gateway to send VPIM, so no failover is supported with Avaya Interchange.

Q. What are the failover scenarios?

A. Failover can happen during registration, directory query, message exchange, or message delivery.

Q. Can a voice messaging system de-register with one Cisco Unified Messaging Gateway and switch to another Cisco Unified Messaging Gateway?

A. Yes. Cisco Unity Express 3.1 and later can de-register from a Cisco Unified Messaging Gateway using the CLI.

Q. What telephony or extension addressing scheme does the Cisco Unified Messaging Gateway support for mailbox users?

A. The Cisco Unified Messaging Gateway supports E.164 format, Node + Primary extension, and flexible string length, which is unique across a Cisco Unified Messaging Gateway network with a maximum of 15 digits.

Q. How can the administrator decide which addressing scheme will be used in the Cisco Unified Messaging Gateway network?

A. It is recommended that administrators configure only one addressing scheme on each node across the network. If the Cisco Unified Messaging Gateway is deployed with any combination of a Cisco Unified Messaging solution or Avaya Interchange, E.164 or unique digits are required for the addressing scheme.

Q. Does the Cisco Unified Messaging Gateway support centralized management for a Cisco Unified Messaging Gateway network?

A. No. The administrator needs to manually provision and configure all the Cisco Unified Messaging Gateways in the network. A customer can use third-party tool or scripts for bulk configuration.

Q. Does the Cisco Unified Messaging Gateway support load balancing?

A. There is no need to support load balancing because of the nature of VPIM. Delivery of voice messages does not need to be done in real time.

Q. How does the Cisco Unified Messaging Gateway update its directory database?

A. The Cisco Unified Messaging Gateway directory information is updated through either manual configuration or directory exchange using Simple Mail Transfer Protocol (SMTP) between Cisco Unity Express and the Cisco Unified Messaging Gateway or between Cisco Unified Messaging Gateways. Cisco Unity Express accumulates updates (2 minutes is the default, but this variable is configurable) before sending out to its primary Cisco Unified Messaging Gateway. The Cisco Unified Messaging Gateway pushes out the information to all other Cisco Unified Messaging Gateways (both primary and secondary) in the network along with synchronization protocols to keep the database consistent across the network. These updates are optimized to save bandwidth in most cases, unless there are multiple changes across network locations at the same time, when a full directory exchange may be required to synchronize the entire network database.

Q. What will current Cisco Unity Express users experience when the Cisco Unified Messaging Gateway is introduced into the network?

A. Migration from a Cisco Unity Express VPIM network to a Cisco Unified Messaging Gateway network should be transparent to all subscribers because remote directory information is moved from Cisco Unity Express to the Cisco Unified Messaging Gateway. When Cisco Unity Express users dial by name or dial by number from the TUI, new prompts with a global lookup option will be available to them as an added advantage over current schemes. This new enhancement is also available through the Cisco VoiceView Express interface.

Q. When I add the Cisco Unified Messaging Gateway to a Cisco Unified Communications solution, how should I configure Cisco Unified Communications Manager?

A. The Cisco Unified Messaging Gateway does not need configuration on Cisco Unified Communications Manager.

Q. How does the Cisco Unified Messaging Gateway control out-of-synchronization information between peers?

A. Cisco Unified Messaging Gateways on a network automatically synchronize information in an optimized fashion. Most synchronization messages between Cisco Unified Messaging Gateways are small update messages. If catastrophic failures occur on the network, automatic full database synchronizations across the network are possible, but this situation rarely occurs.

Q. How does the Cisco Unified Messaging Gateway handle nested SDLs?

A. The Cisco Unified Messaging Gateway internally manages lists and forwards only one message to the subscriber.

Q. How does the Cisco Unified Messaging Gateway handle SDLs, SBMs, and individual subscriber addresses when a message comes into the Cisco Unified Messaging Gateway?

A. The Cisco Unified Messaging Gateway resolves the destination in the precedence of SDL, SBM, and a subscriber. If the message destination does not match any of the existing SDLs, the gateway searches for a match in the list of configured broadcast endpoints. If still no match is found, the Cisco Unified Messaging Gateway tries to resolve the message

destination as a subscriber. If all the resolving stages are passed and no matches are found, the message is dropped, and a NDR is sent to the sender.

Q. How can an administrator configure and synchronize SDL lists among Cisco Unified Messaging Gateways?

A. SDL configuration should be completed on one Cisco Unified Messaging Gateway as a virtual master; then the master Cisco Unified Messaging Gateway automatically publishes the configurations to other peers. To declare the Cisco Unified Messaging Gateway as the master, the administrator needs to use a CLI command to lock down the CLI configurations on other peers. When the SDL configuration on a Cisco Unified Messaging Gateway is locked, no SDL configuration is allowed on other Cisco Unified Messaging Gateways until the lock is released, either when a unlock request comes from the master Cisco Unified Messaging Gateway or after a 5-minute lock lease timeout when there is no unlock request from the master Cisco Unified Messaging Gateway. The lock lease timeout gives dead-lock protection if a catastrophic network or device outage occurs during the synchronization process.

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Printed in USA C67-422515-04 10/08