



CHAPTER 5

Networking in Cisco Unity Connection 9.x

See the following sections:

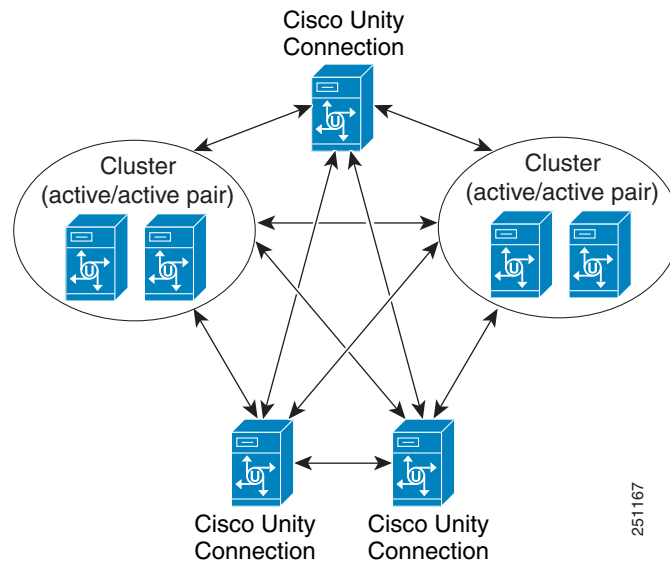
- [Intrasite Networking, page 5-1](#)
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Intrasite Networking

If your organization has more users than a single Cisco Unity Connection server or cluster pair can support, you can join two or more Connection servers or clusters (up to a maximum of ten) to form a well-connected network, referred to as a Connection site. The servers that are joined to the site are referred to as locations. (When a Connection cluster is configured, the cluster counts as one location in the site.) Each location is said to be linked to every other location in the site via an intrasite link. [Figure 5-1](#) illustrates a site of five Connection locations joined by intrasite links.

Intrasite Networking is not supported for use with Cisco Unified Communications Manager Business Edition (CMBE).

Figure 5-1 A Cisco Unity Connection Site Joined by Intrasite Links Among Locations



Within a site, Connection locations automatically exchange directory information, so that a user on one location can dial out to or address messages to a user on any other system by name or extension, provided that the target user is reachable in the search scope of the originating user. The networked systems function as though they share a single directory. Users do not need to know where another user is located; they need only the name or extension number to address a message to any user or system distribution list in the directory.

Because intrasite links use SMTP transport for both directory replication and message transport, Connection locations in a site can be deployed across geographic boundaries. Each server that is joined to the site must be able to access all other servers in the site directly through TCP/IP port 25, or SMTP messages must be routable among the servers through an SMTP smart host.

If your site includes a Connection cluster, you must have a smart host available to resolve the SMTP domain of the cluster to both the publisher and subscriber servers in order for message traffic to reach the cluster subscriber server in the event that the publisher server is down.

In a site, each Connection object is created and homed on a single Connection location. An object can only be modified or deleted on the location where it was created. Each location has its own directory of users and other objects, and replicates a subset of these objects and their properties to other locations.

The following objects are replicated in a Connection site:

- Users
- Administrator-defined contacts (including those associated with a VPIM location)
- System distribution lists (including membership)
- Locations (Connection and VPIM)
- Partitions
- Search spaces
- Recorded voice names

For information about the maximum number of locations and other directory objects supported in a Connection site, see the “Directory Object Limits for Cisco Unity Connection 9.x” section in the *System Requirements for Cisco Unity Connection Release 9.x*, at

http://www.cisco.com/en/US/docs/voice_ip_comm/connection/9x/requirements/9xcucsysreqs.html.

You can also optionally deploy additional cross-server features between locations in a site. Cross-server sign in allows all users to dial the same number when calling from outside the organization to sign in to Connection, regardless of which Connection server they are homed on. Cross-server transfer enables calls from the automated attendant of one Connection location to be transferred to a user on another networked Connection location, according to the call transfer and screening settings of the called user. When you enable cross-server transfer, cross-server live reply is also enabled, allowing users to return calls to message senders who are users on other networked Connection locations, according to the call transfer and screening settings of the called user.

The Connection site concept was known as a Digital Network in release 7.x. You can join 7.x locations, 8.x locations, and 9.x locations in the same Connection site, as long as you do not link the site to any other site.

For more information on intrasite networking, see the “[Overview of Networking Concepts in Cisco Unity Connection 9.x](#)” chapter of the *Networking Guide for Cisco Unity Connection Release 9.x*, at http://www.cisco.com/en/US/docs/voice_ip_comm/connection/9x/networking/guide/9xcucnetx.html.

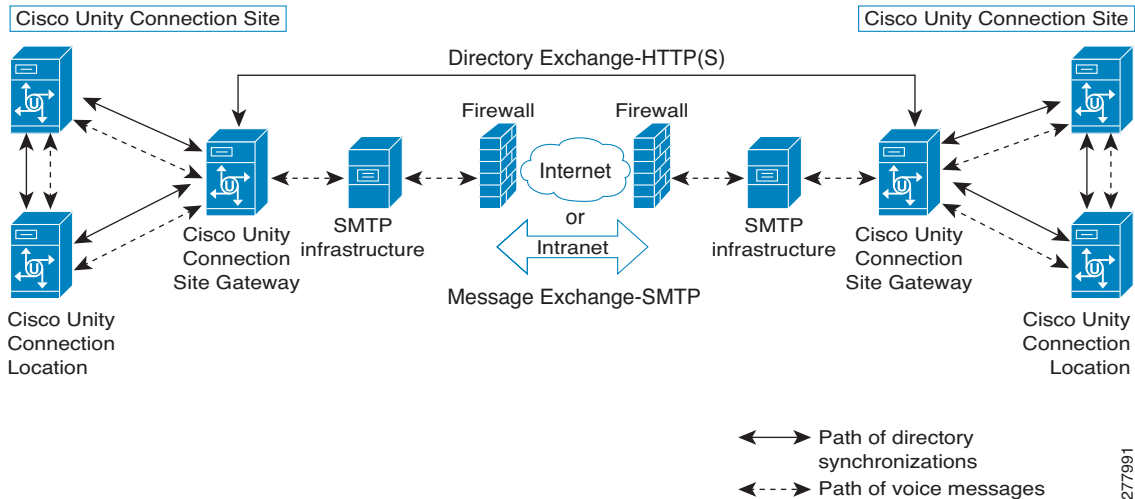
Intersite Networking Between Two Cisco Unity Connection 9.x Sites

You can use an intersite link to connect one Cisco Unity Connection 9.x site to another Connection 9.x site, allowing you to scale your organization from a maximum of ten locations to a maximum of twenty. The linked sites are referred to as a Cisco Voicemail Organization.

To create an intersite link, you select a single location from each site to act as a gateway to the other site. All directory synchronization communications and voice messages pass between the two site gateways, thereby limiting the connectivity requirements and bandwidth usage to the link between those two site gateway locations. The gateways use the HTTP or HTTPS protocol to exchange directory synchronization updates. Intersite voice messages are transmitted and received via SMTP.

[Figure 5-2](#) illustrates the role of the site gateways and the intersite link in connecting two Connection sites.

Figure 5-2 Cisco Voicemail Organization Consisting of Two Cisco Unity Connection Sites Linked via an Intersite Link



Only one intersite link is supported per site. (This restriction applies to all types of intersite links, so you cannot link a Connection site to another Connection site and also to a Cisco Unity site.) In order to link a Connection site to another site, all Connection locations in the site must be running Connection release 8.0 or later. Intersite Networking is not supported for use with Cisco Unified Communications Manager Business Edition (CMBE).

As with intrasite networking, users, system distribution lists, partitions, search spaces, and Connection locations are replicated between sites. (System distribution list replication is optional.) However, contacts, system distribution list membership, and VPIM locations are not replicated between sites. Also, site gateways do not relay VPIM messages to other sites. Therefore, to deploy VPIM in the entire organization, you must independently configure each site for VPIM.

All of the optional cross-server features that are available within a Connection site (cross-server sign in, cross-server transfers, and cross-server live reply) are also available between sites.

When you use a Connection cluster as a site gateway, only the publisher server in the cluster participates in directory synchronization over the intersite link. However, the subscriber server can continue to provide message exchange over the intersite link if the publisher server is down. Note that in this configuration you must have a smart host available to resolve the SMTP domain of the cluster to both the publisher and subscriber servers in order for message traffic to reach the cluster subscriber server in the event that the publisher server is down.

For more information on intersite networking, see the “[Overview of Networking Concepts in Cisco Unity Connection 9.x](#)” chapter of the *Networking Guide for Cisco Unity Connection Release 9.x*, at http://www.cisco.com/en/US/docs/voice_ip_comm/connection/9x/networking/guide/9xcucnetx.html.

Intersite Networking Between Cisco Unity Connection 9.x and Cisco Unity

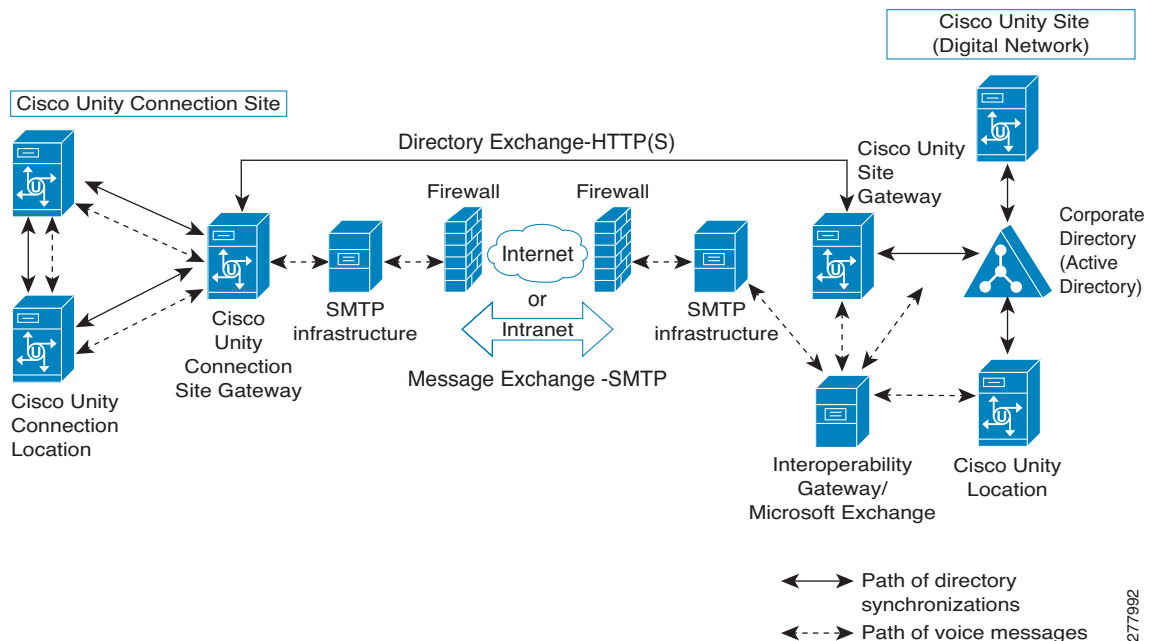
Cisco Unity Connection 9.x introduces a new option for internetworking Cisco Unity Connection and Cisco Unity servers—you can use intersite networking to connect a Connection server, cluster, or site to a Cisco Unity server, failover pair, or Digital Network. The network of Connection and Cisco Unity servers is referred to as a Cisco Voicemail Organization.

When you link a Cisco Unity site to a Connection site, the gateway for each site is responsible for collecting information about all changes to the local site directory, and for polling the remote site gateway periodically to obtain information about updates to the remote site directory. The gateways use the HTTP or HTTPS protocol to exchange directory synchronization updates.

For message exchange, the Interoperability Gateway for Microsoft Exchange functions as the messaging gateway for the Cisco Unity site. The Interoperability Gateway can be installed on either a Microsoft Exchange 2007 server configured with the Hub Transport role or a Microsoft Exchange 2003 server. (For up-to-date version support and requirements for the Interoperability Gateway, see the *Networking Options Requirements for Cisco Unity (Version 5.x and Later)* at http://www.cisco.com/en/US/docs/voice_ip_comm/unity/compatibility/matrix/cunetoptionsreqs.html.)

Figure 5-3 depicts—at a high level—the role of the Interoperability Gateway for Microsoft Exchange, the site gateways, and the intersite link in connecting Cisco Unity Connection and Cisco Unity sites.

Figure 5-3 Cisco Voicemail Organization Consisting of a Cisco Unity Connection Site Linked to a Cisco Unity Site



Note that in order to link Cisco Unity and Cisco Unity Connection sites, all servers in the Connection site must be running Connection 9.x. Intersite Networking is not supported for use with Cisco Unified Communications Manager Business Edition.

The Cisco Unity site gateway must be running Cisco Unity 9.x. Other Cisco Unity servers in the Cisco Unity site may be running Cisco Unity 7.0 and later with Microsoft Exchange provided that the applicable engineering special is installed to add Connection Networking support. For additional details and requirements for Cisco Unity, see the *Networking Options Requirements for Cisco Unity (Version 5.x and Later)* at http://www.cisco.com/en/US/docs/voice_ip_comm/unity/compatibility/matrix/cunetoptionsreqs.html.

When you link a Cisco Unity site and a Connection site, a contact is added to the Cisco Unity directory and to Active Directory for each Connection user. Likewise, a user is added to the Connection site global directory for each Cisco Unity user. Connection system contacts and VPIM contacts are not replicated to Cisco Unity, nor are Cisco Unity networking contacts (AMIS, Bridge, VPIM, Internet, or Trusted

Internet subscribers) replicated to Connection. Also, the site gateways do not relay messages for other types of networking (AMIS, Bridge, VPIM, and so on) across the intersite link. To deploy VPIM in the entire organization, you must independently configure each site for VPIM.

You can choose whether to replicate system distribution lists between sites, and choose which lists to replicate. Lists that contain system contacts or networking contacts cannot be configured to allow replication to other sites. For those lists that are replicated, only the list name and other information used in addressing are replicated; list membership is not replicated.

All of the optional cross-server features that are available within a Connection site or Cisco Unity Digital Network (cross-server sign in, cross-server transfers, and cross-server live reply) are also available between the sites.

When you use a Connection cluster as the Connection site gateway, only the publisher server in the cluster participates in directory synchronization with Cisco Unity. However, the subscriber server can continue to provide message exchange over the intersite link if the publisher server is down. Likewise, when you use a Cisco Unity failover pair as the Cisco Unity site gateway, only the primary Cisco Unity server participates in directory synchronization with Connection, although message exchange can continue even when the secondary Cisco Unity server is active.

For more information on intersite networking, see the “[Overview of Networking Concepts in Cisco Unity Connection 9.x](#)” chapter of the *Networking Guide for Cisco Unity Connection Release 9.x*, at http://www.cisco.com/en/US/docs/voice_ip_comm/connection/9x/networking/guide/9xcucnetx.html.

Designing a Cisco Unity Connection Network with Intrasite and Intersite Links

If you have a requirement to mix Cisco Unity Connection servers running releases 7.x, 8.x, and 9.x, or if you have more than 10 locations to network, the design is fairly straightforward—you must use only intrasite links if mixing release versions, and you must use a combination of intrasite links and an intersite link if you have more than 10 locations. However, if you have up to 10 Connection locations and have the flexibility to run version 9.x on all of them, you can choose whether to link all locations in the same Connection site or to create two sites and link them together.

[Table 5-1](#) helps you compare and contrast the benefits and drawbacks of each type of link.

Table 5-1 *Intrasite Networking Versus Intersite Networking*

	Intrasite Networking	Intersite Networking
Benefits	<ul style="list-style-type: none"> • Easier to administer: <ul style="list-style-type: none"> – System distribution list membership is replicated throughout the site, so you do not have to decide which site should home a list. – For each remote messaging server that you connect to via VPIM, you only have to configure VPIM location details once. • The message recall feature works across all locations in the site. • You can mix Cisco Unity Connection release 7.x, 8.x, and 9.x servers. • You have the flexibility to add an intersite link to a Cisco Unity Digital Network or to another Cisco Unity Connection site in the future. 	<ul style="list-style-type: none"> • Supports up to 20 locations (in combination with intrasite networking). • Requires less bandwidth than intrasite networking for replication traffic over the intersite link, particularly if there are many locations on each side of the link. <ul style="list-style-type: none"> – Data is replicated once between the gateways over the link rather than being replicated directly to all nodes in the network. – System distribution list membership is not replicated across the link. – Replication can be scheduled to occur only during off-hours. – The intersite link uses a synchronous protocol that is more bandwidth-efficient than SMTP.
Drawbacks	<ul style="list-style-type: none"> • Requires higher bandwidth for replication than intersite networking. • Supports only up to 10 locations. 	<ul style="list-style-type: none"> • Requires more administrative overhead, especially when both sites must be configured for VPIM locations. • Message recall does not work between sites. • All locations must be running Connection release 9.x. • Does not allow for linking to a Cisco Unity Digital Network.

**Note**

Dispatch messaging does not work between locations either within the same site or across sites.

VPIM Networking

Cisco Unity Connection 9.x supports the Voice Profile for Internet Mail (VPIM) protocol, which is an industry standard that allows different voice messaging systems to exchange voice and text messages over the Internet or any TCP/IP network. VPIM is based on the Simple Mail Transfer Protocol (SMTP) and the Multi-Purpose Internet Mail Extension (MIME) protocols.

VPIM Networking is supported for use with Cisco Unified Communications Manager Business Edition.

VPIM Networking is a licensed feature. Connection supports internetworking with voice messaging systems that support the VPIM version 2 protocol, as defined in Internet RFC 3801. For a list of messaging systems that are supported by Connection for VPIM networking, see the “Requirements for VPIM Networking” section in the *System Requirements for Cisco Unity Connection Release 9.x*, at http://www.cisco.com/en/US/docs/voice_ip_comm/connection/9x/requirements/9xcucsysreqs.html.

Each Connection server, cluster pair, or site has a maximum number of VPIM locations and VPIM contacts that it can support. For limit information, see the “Directory Object Limits for Cisco Unity Connection 9.x” section in the *System Requirements for Cisco Unity Connection Release 9.x*, at http://www.cisco.com/en/US/docs/voice_ip_comm/connection/9x/requirements/9xcucsysreqs.html. When intrasite networking is configured, VPIM location and contact information is replicated to all locations in the site. If you deploy both VPIM and intrasite networking, we recommend that you designate a single Connection location in the site as the bridgehead to handle the configuration of VPIM locations and contacts. Managing these objects from a single location simplifies maintenance tasks and avoids potential overlaps in contact information that could cause confusion to users when they attempt to address messages. VPIM locations and contacts are not replicated over intersite links, and site gateways do not relay VPIM messages to other sites. Therefore, if you deploy VPIM in a Cisco Voicemail Organization consisting of two Connection sites or of a Connection site and a Cisco Unity site, you must independently configure each site for VPIM.

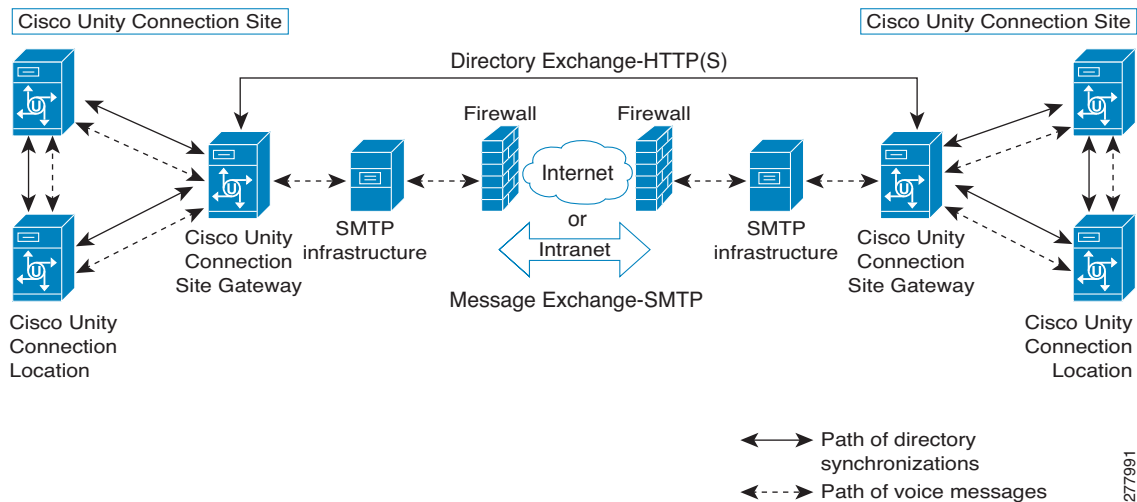
To internetwork with more VPIM locations than your server, cluster, or site can support, you can use the Cisco Unified Messaging Gateway (Cisco UMG). The Cisco UMG is configured as a single VPIM location in Connection, and acts as a central hub to handle message routing and delivery to other systems (Cisco Unity, Cisco Unity Connection, Cisco Unity Express, or Avaya Message Networking solution/Interchange) that are connected to it.

For more information on VPIM Networking, design considerations, and configuration details, see the “VPIM Networking in Cisco Unity Connection 9.x” chapter of the *Networking Guide for Cisco Unity Connection Release 9.x*, at http://www.cisco.com/en/US/docs/voice_ip_comm/connection/9x/networking/guide/9xcucnetx.html.

Using VPIM Between Cisco Unity Connection and the Avaya Message Networking Solution or Avaya Interchange

The Avaya Message Networking solution (or the Avaya Interchange) uses a hub-and-spoke topology to allow voice messaging between systems, by using a number of protocols, thus allowing a voice messaging system such as Cisco Unity Connection to send and receive network voice messages with any other system in the network. Connection uses the VPIM protocol to communicate with the Interchange, and the Interchange takes care of routing the messages to and from other systems on the network by using the applicable protocol. [Figure 5-4](#) illustrates an example topology.

Figure 5-4 Cisco Unity Connection Communicates with the Avaya Message Network Solution



Survivable Remote Site Voicemail

Revised December 03, 2012

Cisco Unity Connection Survivable Remote Site Voicemail (Connection SRSV) is a backup voicemail solution that works in conjunction with Cisco Unified Survivable Remote Site Telephony (SRST) for providing voicemail service to a branch during WAN outages.

Connection SRSV is used in the centralized Cisco Unified Communications Manager and Cisco Unity Connection environment with multiple branch offices or small sites. It provides limited voicemail and auto-attendant features that remain in synchronization with the central Connection voicemail service so that when the WAN outage or failure occurs, the Connection SRSV solution can provide voicemail service to the subscribers at the branch. However, as soon as the network is restored, all the voicemails received by the branch subscribers are automatically uploaded to the central Connection voicemail server.

For more information on how to configure Cisco Unity Connection SRSV at central Connection location, refer to the "[Managing Cisco Unity Connection Survivable Remote Site Voicemail in Cisco Unity Connection 9.1\(1\) and later](#)" chapter of the System Administration Guide for Cisco Unity Connection available at

http://www.cisco.com/en/US/docs/voice_ip_comm/connection/9x/administration/guide/9xcucsagx.htm

1. For more information on how to configure Cisco Unity Connection SRSV at branch location Connection, refer to the guide available at http://www.cisco.com/en/US/docs/voice_ip_comm/connection/9x/srsv/guide/9xcucsrsvx.html.