Chapter 5: Using Exchange 5.5 for the Directory and Message Store

Overview

This chapter focuses on using Exchange 5.5 as the message store and directory for Cisco Unity.

Throughout this chapter, when we refer to a single Cisco Unity server, we mean a dedicated Cisco Unity server running as a single physical server. Note that some single-server configurations may actually require several servers:

- Cisco Unity failover requires two Cisco Unity failover servers (primary and secondary) running as member servers in a domain.
- A dedicated domain controller, running either Windows 2000 or Windows NT, is required.
- A single Cisco Unity server requires one or more separate Exchange 5.5 servers, up to a recommended maximum of ten Exchange 5.5 servers. A customer can have more Exchange 5.5 servers in its environment, but a single Cisco Unity server (including failover configurations), can service a recommended maximum of ten Exchange 5.5 servers.

Cisco Unity and Exchange 5.5

A Cisco Unity for Exchange 5.5 installation is very likely the easiest of all the messaging stores and directories supported by Cisco Unity to work with. The primary reason for this is the ease of establishing the necessary directory access and information store access for a single Cisco Unity service account. In addition, because Exchange 5.5 contains its own directory, the complication of establishing the account permissions required by Cisco Unity for Exchange 2000 is not an issue for Cisco Unity for Exchange 5.5.

Cisco Unity 4.0 supports Exchange 5.5 in nearly any configuration supported by Microsoft, with the exception of Exchange 5.5 clusters. An Exchange 5.5 server can home only a single information store, also called a private information store. Cisco Unity does not use the Exchange 5.5 public information store.

New installations of Cisco Unity 4.0 can use Exchange 5.5 only in a Unified Messaging configuration. If you want to set up a new installation in a Voice Messaging configuration, you must use Exchange 2000 and Active Directory for the message store and directory.

When a Cisco Unity 2.4(6) or 3.x system is configured as Voice Messaging, and when Exchange 5.5 is installed on the Cisco Unity server, Cisco Unity can be upgraded to version 4.0 without removing Exchange 5.5 from the server.

Homing Cisco Unity Subscribers on Both Exchange 2000 and Exchange 5.5

Cisco Unity for Exchange 5.5 can service only Exchange 5.5 mailboxes. If the customer wants some Cisco Unity subscribers to be homed in Exchange 5.5 and others to be homed in Exchange 2000, the customer must use Cisco Unity for Exchange 2000. The Cisco Unity partner Exchange server must be an Exchange 2000 server, and an Exchange mixed-messaging environment must be configured as described in Chapter 6, "Migrating from Exchange 5.5 to Exchange 2000 for the Message Store."

Exchange 5.5 Directory

Cisco Unity for Exchange 5.5 uses the Exchange 5.5 directory as its directory service. However, the majority of information about Cisco Unity subscribers and other Cisco Unity objects appears only in a SQL Server/MSDE database. For the small amount of data that appears both in the Exchange 5.5 directory and in the Cisco Unity database (for example, subscriber extensions), Cisco Unity periodically checks the Exchange 5.5 directory for changes, and replicates any changes in the Cisco Unity database. Likewise, a portion of the changes that are made in the Cisco Unity Administrator are replicated to the Exchange 5.5 directory. When a Cisco Unity system is installed and running, changes to the directory and to settings in the Cisco Unity Administrator are relatively few in number, so this replication does not hurt performance.

A dedicated domain controller is not required for Cisco Unity; Unity can use an existing domain controller. A highly-available domain controller is required for Cisco Unity, or slow response times will affect its performance.

Exchange 5.5 Mailstore

Cisco Unity stores voice messages in the Exchange 5.5 private information store. No data other than voice messages is stored in the private information store. Cisco Unity does not use the Exchange 5.5 public mailstore.

When you install Cisco Unity, the Cisco Unity system mailbox (alias: Unity_<ServerName>) is added to Exchange. This is the mailbox that originates voice messages from outside callers.

Exchange 5.5 Organizations and Sites

An Exchange 5.5 installation consists of an Exchange 5.5 organization and one or more Exchange 5.5 sites. A single Cisco Unity server (or a group of Cisco Unity servers installed into one Exchange 5.5 organization) can service only the subscribers in that organization. A single Cisco Unity server can service only the subscribers in a single Exchange 5.5 site; therefore, every Exchange site that will home Cisco Unity subscribers must have at least one Cisco Unity server. An Exchange 5.5 site includes one or more recipient containers. By default, a single Cisco Unity server services one container per Exchange site. However, Cisco Unity can be configured to service multiple recipient containers in a single site by changing the scope for mailusers from the Recipients container to the site name. (Note that changing the scope to the site level can adversely affect Cisco Unity performance.)

If you have more than one Exchange 5.5 site, Cisco Unity Digital Networking should be set up so that subscribers in different sites in the organization can communicate with one another. In addition, if

subscribers need to communicate between Exchange 5.5 organizations, Internet Subscribers or blind addressing will need to be set up. For more information on Cisco Unity Digital Networking, Internet Subscribers, or blind addressing, refer to the *Networking in Cisco Unity Guide*, which is available at http://www.cisco.com/en/US/products/sw/voicesw/ps2237/products_installation_and_configuration_guides_list.html.

Exchange Server Connected with Cisco Unity: The Partner Exchange Server

When Cisco Unity is installed, the installer specifies one Exchange server with which Cisco Unity connects as the partner Exchange server. The partner server has several purposes:

- It is the home of the Cisco Unity system mailbox (alias: Unity_<ServerName>), which is the mailbox that originates voice messages from outside callers. (Voice messages from Cisco Unity subscribers originate from their own mailboxes.) Each Cisco Unity server must have its own system mailbox.
- It is the home for default mailboxes and groups (called distribution lists in Cisco Unity) that are created during installation.
- If Cisco Unity subscribers are homed on Exchange servers other than the partner server, all voice messages from outside callers pass through the partner server on their way to the home servers of the Cisco Unity subscribers. (Subscriber-to- subscriber messages originate from the Exchange server of the caller and are sent to the Exchange server of the recipient without passing through the partner Exchange server.)

Number of Exchange Servers Supported by a Single Cisco Unity Server

A single Cisco Unity 4.0(x) server can service several Exchange servers. We recommend a maximum of ten servers. Consider that the maximum number of users a Cisco Unity server can support is the primary factor in determining the number of servers that can be supported.

On the other hand, if you have smaller user densities on your Exchange 5.5 servers, and you would like one Cisco Unity server to service them, you should be able to do so as long as the number of subscribers does not exceed the maximum number that can be supported by your Cisco Unity server.

However, take into consideration that the more Exchange servers you connect to a single Cisco Unity server, the greater chance you have of experiencing performance degradation. The reason for this is simple: Cisco Unity must maintain access to the subscriber mailboxes in order to perform notification tasks, and it also logs in to mailboxes when subscribers leave and retrieve messages. If one Exchange server becomes unavailable and if Cisco Unity is performing subscriber activities on that server at the time it goes offline, subscribers on the other Exchange servers could experience slow response times. In order to prevent performance degradation, minimize the number of Exchange servers that each Cisco Unity is connected to.

Server Placement

Cisco Unity should reside in the same domain and well-connected LAN as Exchange 5.5. The further Cisco Unity is from the Exchange 5.5 servers it services, the more likely it is that Cisco Unity subscribers will experience delays in playing and recording messages over the phone (it is also possible that in this circumstance, Cisco Unity may stop processing calls altogether). These delays are caused by primary issues

such as slow Exchange servers, and secondary issues such as multiple network hops, domain authentication, and reestablishing RPC sessions for MAPI access.

Exchange 5.5 Clusters

Cisco Unity for Exchange 5.5 does not support mailboxes on Exchange 5.5 clusters, nor can a Cisco Unity server use an Exchange 5.5 cluster as its partner server. However, Cisco Unity can co-exist with an Exchange 5.5 cluster.

Exchange 5.5 Administrator

When Cisco Unity services Exchange 5.5 mailboxes, Exchange 5.5 Administrator must be installed on the Cisco Unity server, because Exchange 5.5 Administrator contains the MAPI service provider that Cisco Unity uses to perform messaging operations.

Outlook Web Access

Cisco Unity can work with Outlook Web Access (OWA), but the functionality of ViewMail for Microsoft Outlook, which is installed on client computers, is not available if subscribers use OWA instead of using ViewMail. OWA users receive voice messages as e-mails with attached wave files. These voice messages can be played by using the Windows Media Player (though there can be difficulties depending on the codec used to record the message in Cisco Unity). OWA users can reply to voice messages via e-mail, but cannot reply via a voice message. ViewMail for Microsoft Outlook does not have these OWA limitations. With ViewMail, voice messages can be played by using the VCR-like control that appears in the custom e-mail form, and subscribers can reply to voice messages and to e-mail messages with a voice message.

Client Access Licenses

You may need to purchase Client Access Licenses (CALs), depending on your Cisco Unity configuration.

Cisco Unity ships with the Voice Mail Run-Time Edition of Exchange Server version 5.5. This is a full version of Exchange, and it can be used for any Cisco Unity configuration. If you are using the shipped version of Exchange, if Exchange contains only voice messages, and if subscribers access messages by using only a phone or the Cisco Unity Inbox, you do not need to purchase CALs.

In Unified Messaging configurations, you need CALs for all Cisco Unity subscribers. However, if you are adding Cisco Unity to an existing Exchange deployment, you probably already have the necessary CALs.

Windows Domain Configurations

The operating system on the Cisco Unity server must be Windows 2000 server or Windows 2000 Advanced Server. Other operating systems, including other versions of Windows, are not supported.

Domain for the Cisco Unity Server

The Cisco Unity server can be in a Windows 2000 domain or a Windows NT domain (for Unified Messaging configurations only):

- **Windows 2000**—Cisco Unity for Exchange 5.5 can reside in a Windows 2000 domain. The domain is considered an accounts domain and not a directory because Cisco Unity and Exchange 5.5 look to the Exchange 5.5 directory as the primary source of information for subscribers it services.
- **Windows NT**—Cisco Unity for Exchange 5.5 can reside in a Windows NT domain. This is possible because Exchange 5.5 can reside in a Windows NT domain.

The Cisco Unity server can be:

- A member server in a Windows 2000 domain
- A member server in Windows NT domain

However, because of the resource requirements of a domain controller, using a Cisco Unity server as a domain controller is discouraged, except in single server Voice Messaging only configurations.

Domains for Exchange 5.5 Servers

Cisco Unity uses the Exchange 5.5 directory, and thus it uses the domain as an accounts domain rather than as a directory. Therefore, Cisco Unity functions properly regardless of whether Exchange 5.5 is running in a Windows 2000 domain or a Windows NT domain.

In a pure Windows 2000 domain or a pure Windows NT domain, Cisco Unity can support Exchange 5.5 in:

- A single domain
- A master/resource domain
- A multimaster domain

In any of these configurations, the Cisco Unity server and the Exchange 5.5 servers should be in the same domain. If the servers must be in different domains, it is necessary to ensure that the domains will not lose connectivity (for example, because of broken trust relationships, changed permissions, or an inaccessible Windows 2000 DC or Windows NT primary/ backup domain controller), or Cisco Unity will not be able to deliver messages to Exchange 5.5 mailboxes or retrieve the messages for playback. Regardless of the domain configuration, the best design for Cisco Unity is one in which the risk of losing access to Exchange 5.5 is minimized or eliminated.

Cisco Unity can support subscribers that are homed on Exchange 5.5 servers in a maximum of three Windows 2000 or Windows NT domains. If subscribers will be homed on Exchange servers in more than three domains, an additional Cisco Unity server is required. Windows 2000 domains should be well connected and all be a part of the same tree in the forest. Windows NT domains should also be well connected and the necessary access provided via trust relationships between domains.

Best Practices

It is possible to have any combination of Windows 2000 domains, Windows NT domains, master/resource domains, and parent/child domains. However, the following best practices are recommended for Cisco Unity servicing Exchange 5.5 sites:

- The Cisco Unity server must be installed into the same domain as the Exchange 5.5 servers on which subscribers are homed.
- Cisco Unity can be configured to use the same accounts to run its services as the Exchange 5.5 servers. In most cases, this is recommended. However, it is not required, and larger installations will typically require that Cisco Unity have its own accounts. This is perfectly acceptable.
- Cisco Unity should use the same name resolution as the Exchange 5.5 servers it services.
- As previously mentioned, each Exchange 5.5 site in which Cisco Unity subscribers are homed must have its own Cisco Unity server. One Exchange site can have multiple Cisco Unity servers, but one Cisco Unity server cannot service more than one Exchange site.

Voice Messaging Configurations

Installing a new Cisco Unity 4.0 for Exchange 5.5 system and configuring it as Voice Messaging is not supported.

Upgrading a Voice Messaging system from a previous version of Cisco Unity to Cisco Unity 4.0 is supported. However, we recommend that a customer who wants to upgrade to Cisco Unity 4.0 also upgrade to Exchange 2000.

Unified Messaging Configurations

Cisco Unity uses the Exchange 5.5 Directory Monitor. Because Cisco Unity does not use the Active Directory as its primary directory, Cisco Unity treats any Active Directory domain controller as if it were a Windows NT domain controller.

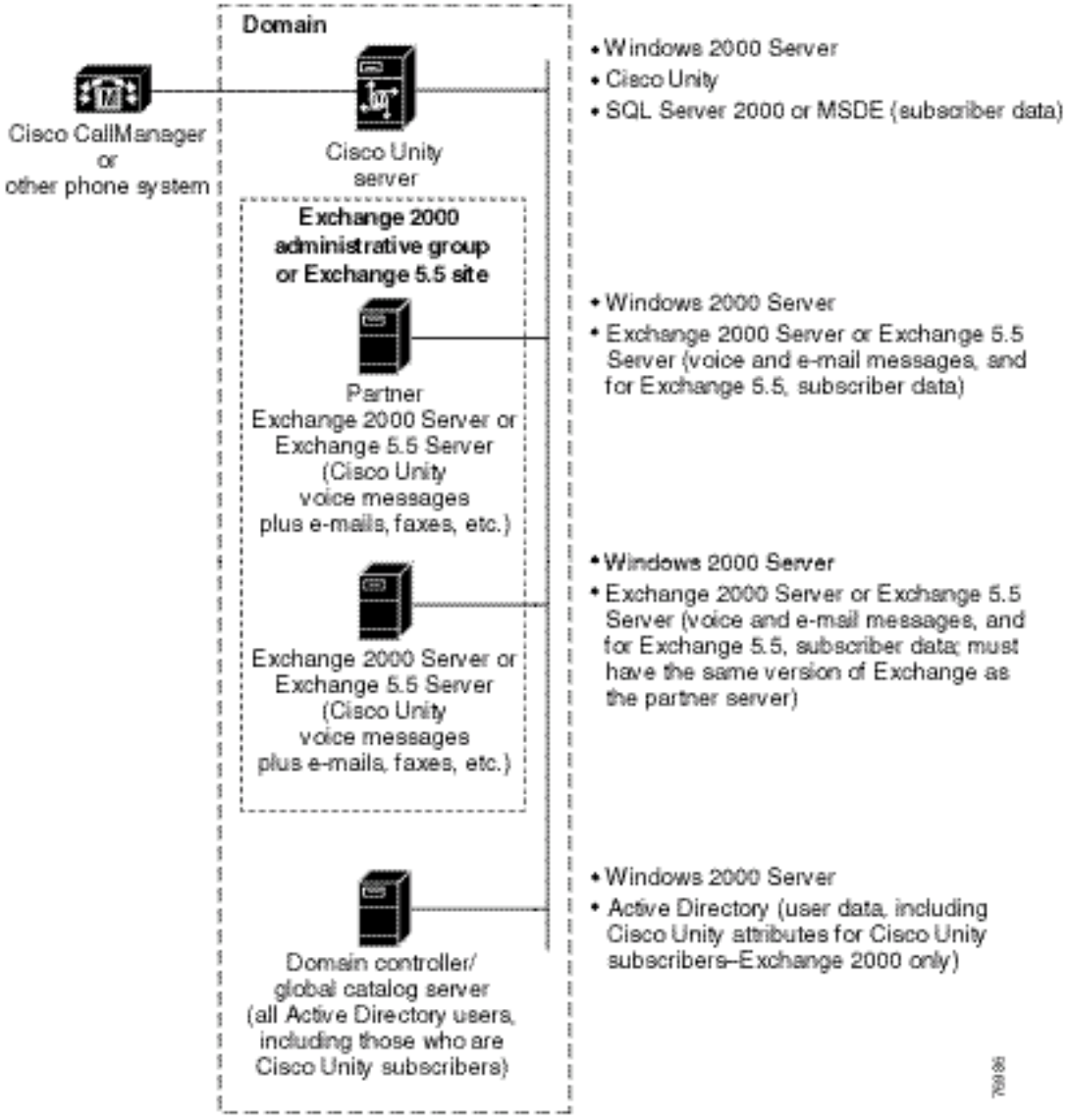
Setting up Cisco Unity in a Unified Messaging configuration offers significant benefits over setting up Cisco Unity in a Voice Messaging configuration:

- Administrative overhead is significantly lower than with separate voice messaging and e-mail servers.
- No dedicated infrastructure is required for Unified Messaging configurations. Cisco Unity uses the existing messaging infrastructure by voice-enabling the e-mail environment.
- In a medium or large enterprise, Unified Messaging is easier to install and maintain than a dedicated Voice Messaging system.
- If the customer eventually wants Unified Messaging, beginning with a Unified Messaging configuration eliminates the tasks required to migrate from a Voice Messaging configuration.

Configuration 1: Cisco Unity Subscribers in One Exchange 5.5 Site

In this configuration, one or more Cisco Unity servers, running as domain member servers, service Exchange 5.5 mailboxes in a single Exchange 5.5 site. A single Cisco Unity server can never span more than one Exchange 5.5 site in this configuration. Cisco Unity can be running in a failover configuration as domain member servers in a Windows 2000 or Windows NT domain servicing Exchange 5.5 mailboxes in a site.

The domain and domain controller can be Windows NT instead of Windows 2000. Cisco Unity can support up to ten off-box message stores.



Configuration 2: Cisco Unity Subscribers in Two or More Exchange 5.5 Sites

If the customer has more than one Exchange 5.5 site:

- At least one Cisco Unity server is required per site.
- If using Cisco Unity Digital Networking, Cisco Unity in one Exchange 5.5 site can communicate with a Cisco Unity server in other Exchange 5.5 sites in the organization.
- Cisco Unity can be running in a failover configuration.
- Cisco Unity must be a member server running on Windows 2000.
- One Cisco Unity server can service a single Exchange 5.5 site.
- The diagram for each Cisco Unity server in this configuration looks like the diagram in the Configuration 1 section. If the phone system has ports available, you can hook up more than one Cisco Unity server to each phone system.

Deploying Cisco Unity for Exchange 5.5

Cisco Unity for Exchange 5.5 can be deployed in the following ways. The list is arranged in order, with the easiest deployment first:

- One or more Cisco Unity servers servicing multiple Exchange 5.5 servers in the same Exchange 5.5 site. The Cisco Unity and Exchange 5.5 servers are installed in the same-well connected network. We also recommend connecting Cisco Unity to the same VLAN as the Exchange 5.5 servers it is servicing.

  If there are multiple Cisco Unity servers, set up Cisco Unity Digital Networking to allow subscribers on one Cisco Unity server to address voice messages to subscribers on another Cisco Unity server. For information on setting up Digital Networking, refer to the *Networking in Cisco Unity Guide*, available at http://www.cisco.com/en/US/products/sw/voicesw/ps2237/products_installation_and_configuration_guides_list.html.

- Two or more Cisco Unity servers servicing two or more Exchange 5.5 sites (with at least one Cisco Unity server per Exchange site). To allow subscribers on one Cisco Unity server to address voice messages to subscribers on another Cisco Unity server, set up Cisco Unity Digital Networking.
- A Cisco Unity system with access to the CPCA and to ViewMail for Outlook (VMO).
- A Cisco Unity system that requires AMIS interoperability with other voice messaging systems.

Administrative Access and Control

To manage administrative access to the Cisco Unity server and its resources, the customer may want different levels of access for different operations, for example, backing up the server or gathering performance information for trending.

When installing Cisco Unity in a Unified Messaging configuration, it is best to allow administrative access to the server to be governed by the server administration policies of the customer. However, the customer policies should not detract from the administrative access required for normal Cisco Unity operations, which includes:

- Managing the server resources (hardware, operating system, file system, and other supporting software).
- Managing the Cisco Unity application, including:
  - Web access
  - Support of components such as SQL Server/MSDE, IIS, and Internet Explorer
  - Cisco Unity application log files
  - Utilities such as the Windows Event Viewer and the Performance Monitor
- Administering Cisco Unity subscribers, distribution lists, call handlers, and so on.
- Administering Cisco Unity switch connectivity to Cisco CallManager or to a circuit-switched phone system.

Active Directory or Windows NT Account That Owns Cisco Unity Services

The main Cisco Unity services are owned by an Active Directory or Windows NT account. These services fall into two categories:

- Message store services are responsible for sending and receiving messages on behalf of the subscriber.
- Directory services write to user, group, and contact objects when the objects are imported into Cisco Unity, and they write to individual subscriber properties when a subscriber or an administrator changes personal settings for the subscriber.

The service account can be used by more than one Cisco Unity server in the same domain.

Note: Several other services, including the Text to Speech (TTS) service and the service that controls Cisco Unity licensing, are owned by the local system account.)

To do the required tasks, these services require Exchange 5.5 permissions, Windows user rights, and a group membership. For detailed information on the rights and permissions required, refer to the chapters "Creating Accounts for the Installation and Setting Rights and Permissions," and "Permissions Set by the Cisco Unity Permissions Wizard," in the *Cisco Unity Installation Guide*. The *Cisco Unity Installation Guide* is available at http://www.cisco.com/en/US/products/sw/voicesw/ps2237/prod_installation_guides_list.html.

Establishing Support Policies

To make administering Cisco Unity more manageable, establish a support policy that separates Cisco Unity-specific administration from administration of the rest of the server. This allows Cisco Unity administrators

with limited class of service (COS) settings to access the Cisco Unity application only as designed by their COS settings.

Depending on the administrative model the customer uses, the GrantUnityAccess utility can be used to associate multiple Active Directory accounts with a single Cisco Unity subscriber that has an administration COS. (You can also use GrantUnityAccess to associate multiple Cisco Unity subscribers with a single Active Directory account.) Use of the GrantUnityAccess utility gives all of the associated Active Directory accounts the right to administer Cisco Unity by using the Cisco Unity Administrator.

To prevent unwanted access to GrantUnityAccess, limit file and directory access—of the Cisco Unity CommServer folder on the Cisco Unity server—to the administrators who are responsible for administering the entire server.

Network Services

Cisco Unity for Exchange 5.5 does not have a strict dependency on network services such as DDNS or WINS. However, if Cisco Unity for Exchange 5.5 is running in a Windows NT domain, it should use the same name resolution as the Exchange 5.5 servers it services. The same holds for Cisco Unity for Exchange 5.5 running in a Windows 2000 domain. It should use DDNS, which is the name resolution required by Windows 2000. A simple rule of thumb can be used to determine which name resolution system Cisco Unity should use: if the messaging clients in the existing messaging environment use WINS, DNS, or both, then configure the Cisco Unity system to use the same name resolution system(s).

Deployment Tasks

Consider the following deployment best practices:

- Define and create the accounts to be used in running the Cisco Unity services.
- Define and create the accounts to be used to administer Cisco Unity.
- Define the level of access to the local Cisco Unity server necessary for an administrator. Subscribers who are not administrators do not need direct access to the Cisco Unity server operating system or file system.
- Define a policy for Cisco Unity classes of service for each Cisco Unity server.
- Define the Cisco Unity templates to be used for subscribers.
- Define the Cisco Unity distribution groups needed for each installation.
- Define any audio-text applications that need to be created on each Cisco Unity server.
- Define dialing restrictions necessary to prevent subscribers from accessing unauthorized outside numbers.
- Verify that the number of subscribers serviced by each Cisco Unity server is known and documented.
- Verify that each Cisco Unity server is properly sized for the number of subscribers it will service.

- Verify that the total capacity for each Cisco Unity server is known and documented.
- Create and document a suitable disaster recovery plan.
- Verify that the switch integration is understood and supported.
- Decide the number of ports needed for message notification, and for recording and playing messages over the phone.
- Verify that all hardware and supporting components are set up correctly and properly sized.
- List the acceptance tests to be run after the server is installed and before going live.
- Verify that there is a fallback procedure in the event that problems are encountered.
- Define any measurements necessary to benchmark the initial performance of the server.

Operational Tasks

The following are best practices for an operational Cisco Unity system:

- Create and implement a regular maintenance schedule to gather logs, run reports, and monitor the use of server resources such as disk space, memory, and the CPU.
- Verify that regular backups are occurring.
- Make arrangements for any regular downtime necessary for offline maintenance activities.
- Make arrangements for any special administrative tasks, for example maintaining and creating audio text applications, and running cleanup utilities such as Directory Walker.
- Before reconfiguring the system, for example when migrating from Voice Messaging to Unified Messaging or when upgrading hardware, mock up the existing Cisco Unity system in a lab environment, and test and validate the work.