

Chapter 7: Using Domino for the Directory and Message Store

This chapter focuses on using IBM Lotus Domino as the message store and a Domino address book as the directory for Cisco Unity.

Cisco Unity, Domino, and Notes

Cisco Unity 4.0 for Domino currently supports the Domino configurations described in this chapter, and will support additional Domino configurations as customers require them and ECSBU tests and approves them. Note in particular:

- Cisco Unity Unified Messaging configurations are supported.
- Voice Messaging configurations are not supported.
- Installing Domino on the Cisco Unity server is not supported.

Older Cisco Unity for Exchange systems, configured either for Voice Messaging or Unified Messaging, can be converted to Cisco Unity 4.0 for Domino, but only by reinstalling all software, and losing Cisco Unity settings and voice messages.

When a customer needs multiple Cisco Unity servers, subscribers on the separate servers can send voice messages to one another if Cisco Unity Digital Networking is configured. However, the initial release of Cisco Unity for Domino does not support exchanging voice messages with other voice messaging systems using the Cisco Unity Bridge, AMIS, or VPIM because the Internet Voice Connector has not been updated for Cisco Unity for Domino.

Domino Address Book Terminology

Names.nsf is the first address book (directory) file in a Domino domain, and is created when the first Domino server is installed. Each additional Domino server that is added to the domain receives a replica of Names.nsf. During Cisco Unity installation, the installer specifies a Domino address book on a Domino server that Cisco Unity will monitor. In general, the address book that Cisco Unity will monitor will be a replica of Names.nsf.

A secondary address book is an address book that is a subset of Names.nsf. Secondary address books are typically created to house non-local mail users (those who do not own a mailbox in the domain or enterprise). The Active Directory equivalent is contacts, and the Exchange 5.5 equivalent is custom recipients.



DUC for Cisco Unity on Domino Servers and on Client Workstations

For Cisco Unity to use Domino as the message store and directory, the customer must install components of IBM Lotus Domino Unified Communications Services (DUC) for Cisco Unity on the Domino servers, as follows:

- csServer must be installed on each Domino server that homes Cisco Unity subscribers.
- Both csServer and csAdmin must be installed on the Domino servers that contain the Domino address books that Cisco Unity monitors. However, csServer needs to be installed on the Lotus Domino server that contains the address book only if Cisco Unity users are also homed on that server.
- csServer must be installed on every Domino server in a cluster if any Cisco Unity subscribers are homed on the cluster. In addition, csAdmin must be installed on the server with which Cisco Unity connects in the cluster.

In addition, DUC client software must be installed on the client workstation of each Notes user who will be a Cisco Unity subscriber. Installing the client software adds VCR-style recording and playback controls to the message form. DUC provides message notification, message waiting indicators, and a Lotus Mail template for recording and playing voice messages. DUC was created and is supported by IBM Lotus, and is available only from IBM Lotus; it cannot be purchased from Cisco.

Note: DUC is currently available only for Domino servers running Windows 2000 or Windows NT 4.

Cisco Unity 4.0 initially supported the following Domino/Notes and DUC versions:

- On the Domino admin/address book server, and on message store servers, either Domino version 5.0.10 or 5.0.11 and DUC version 1.1
- On the Cisco Unity server, Notes version 5.0.10
- On client workstations, Notes client version 5.0.11 and DUC version 1.1

Refer to the Cisco Unity 4.0(3) or 4.0(4) product documentation for information on the recent versions of DUC software supported by Cisco Unity.

Changes That DUC Makes to the Domino Address Book

Table 1 shows the elements added to the Domino address book when the DUC admin client is installed on a Domino server. If the DUC admin client is uninstalled, these items are removed from the address book.

Table 1. Elements Added to the Address Book by Installing the DUC Admin Client

Element	Name
Forms	Unity Location



Element	Name
Views	<ul style="list-style-type: none">• Unity Locations• (\$UnityLocLookup)• (\$UnityNameLookup)
Agent	UC License Tracking
Subforms	<ul style="list-style-type: none">• \$CSUnityDLSubform• \$CSUnityUserSubform• \$GroupExtensibleSchema• \$PersonExtensibleSchema

Changes That the DUC Client Makes to the Mail File

When DUC for Cisco Unity client software is installed on a client workstation, the elements in Table 2 are added to the mail file. If DUC for Cisco Unity is uninstalled, these elements are removed from the mail file.

Table 2. Elements Added to the Mail File by Installing the DUC Client

Element	Name
Forms	<ul style="list-style-type: none">• UCDisplayInfo• Voice Message• (Display Received Voice Message)• (UCMemo)
Views	<ul style="list-style-type: none">• Voice Inbox• (\$UCInbox)—this view is added when the user is imported into Cisco Unity
Agents	<ul style="list-style-type: none">• (UCEnable)• (UCPreferences)
Images	<ul style="list-style-type: none">• Phone.jpg• act_EDIT.GIF• act_Listen.GIF



Element	Name
Subforms	<ul style="list-style-type: none">• UCPlayer• (DisplayFwrContent)• (UCItems)• (UCVoiceNote)• (VoiceDeliveryOptions)
Script libraries	<ul style="list-style-type: none">• Core UC Classes• Core UC Strings• Unified Communications

Domino Server Connected with Cisco Unity: The Partner Domino Server

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

- It is the home of the Cisco Unity system mailbox, which is the sender of voice messages from outside callers. (Voice messages from Cisco Unity subscribers are identified as coming from those subscribers.) There must be a system mailbox for each Cisco Unity server.
- It is the server on which Cisco Unity creates contact address book entries for default system accounts (for example, Default Admin and distribution lists).
- All Cisco Unity voice messages, from outside callers and from subscribers, are placed in Mail.box of the partner server for routing.

Windows Domains, Domino Domains, and Server Placement

A Cisco Unity 4.0 server must run Windows 2000 Server and must be one of the following:

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

If the Cisco Unity server is a member server, it should reside in the same highly available and connected network as a domain controller for that domain.

The Cisco Unity server should reside in the same highly available and connected network as the partner Domino server and any Domino servers that home Cisco Unity subscribers, or the customer will experience delays in message access, in directory replication, and in directory lookups.



For the Cisco Unity 4.0 release, the customer will need at least one Cisco Unity server for each Domino domain that will home Cisco Unity subscribers.

Windows Accounts and Permissions

Cisco Unity 4.0 requires that three Windows domain accounts be created during installation, as described in the *Cisco Unity Installation Guide*. One account is used to install Cisco Unity, one is the account that most Cisco Unity services log on as, and one account is used to access the Cisco Unity administration interface, the Cisco Unity Administrator. (Some services, including the Text to Speech (TTS) service and the service that controls Cisco Unity licensing, log on as the local system account.)

The permissions required by each of the accounts are set by the Cisco Unity Permissions Wizard. The account that owns most Cisco Unity services can be used by more than one Cisco Unity server in the same domain. 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*, available at http://www.cisco.com/en/US/products/sw/voicesw/ps2237/prod_installation_guides_list.html.

These accounts and permissions are required for Cisco Unity-specific functionality and are separate from Domino permissions. When setting Domino-specific permissions, as described in the “Domino Permissions” section, the Permissions Wizard is not used nor required.

Domino users who are Cisco Unity subscribers do not need Windows accounts, and Cisco Unity administrators and subscribers are not required to use Windows authentication.

Authentication

Cisco Unity subscribers whose class of service (COS) allows them access to the Cisco Unity Administrator can log on to the Cisco Unity Administrator by using Domino authentication, Integrated Windows authentication, or Anonymous authentication, depending on how the system is configured. Subscribers whose COS allows them access to the Cisco Unity Assistant can log on to the Cisco Unity Assistant by using the same authentication methods.

Domino Permissions

Before Cisco Unity is installed, the Cisco Unity installer or a qualified Domino administrator needs to create a group for Cisco Unity servers named UnityServers, and grant the group “editor” permissions for Admin4.nsf and “editor with delete-documents” permissions for Names.nsf. With these permissions, Cisco Unity acts as a Notes user to:

- Create Cisco Unity subscribers, contacts, and distribution lists, by importing them from the Domino address book.
- Change the Domino address book by using the Cisco Unity Administrator.
- Submit voice messages through Domino.
- Retrieve and play messages left for subscribers.



- Get information about the read/unread status of voice messages, e-mail, and fax messages in a subscriber mailbox, and send notification when there are new messages.

In addition, when a Domino user is imported into Cisco Unity, Cisco Unity submits an AdminP request to grant the user access to the imported user mail file.

For more information on setting Domino-specific permissions, refer to the *Cisco Unity Installation Guide*.

Cisco Unity Subscribers and Domino Users

A Cisco Unity subscriber is a Domino user who has been DUC-enabled and imported into Cisco Unity. The person document of each subscriber has Cisco Unity attributes, and the mail file has DUC attributes. The only way to create a Cisco Unity subscriber is to import an existing Domino user into Cisco Unity. Cisco Unity cannot create Domino users by using the Cisco Unity Administrator.

Domino Clusters

Cisco Unity supports homing Cisco Unity subscribers on Domino clusters. The Domino cluster must meet all IBM Lotus requirements, particularly those related to the maximum number of users and to supported hardware. A Cisco Unity server can support up to 7,500 subscribers on up to five Domino mailstores; a cluster counts as one mailstore. Depending on the number of users on a cluster, the customer may want to install one Cisco Unity for each Domino cluster.

The customer is responsible for installing, configuring, and maintaining the Domino cluster.

For more information on Domino clusters, refer to the Lotus Domino documentation, available on the Lotus Domino website.

Message Routing

Cisco Unity voice messages are routed to Domino mailboxes by Domino. When someone leaves a voice message (whether an outside caller or a subscriber), Cisco Unity submits the messages to Mail.box on the partner Domino server. The partner server determines the routing path to the mail file of the recipient. When Cisco Unity has given the message to the partner Domino server, the Domino services are responsible for delivery.

Notes Client on the Cisco Unity Server

For Cisco Unity to interact with a Domino server, a Notes Client must be installed on the Cisco Unity server. No other Domino software is installed on the Cisco Unity server. In order to determine the correct version of the Notes Client to use, refer to the applicable Cisco Unity Release Notes documentation.

Client Access Licenses

The Cisco Unity for Domino customer needs to purchase a DUC license for:

- Each server that will home Cisco Unity subscribers.



- The Cisco Unity partner Domino server, which contains the Domino address book monitored by Cisco Unity (and which can also be the administration server for the Domino domain).

DUC licenses are available only through IBM Lotus. Customers should contact their local IBM Lotus representatives for information on purchasing DUC. Cisco will not sell DUC.

The customer is responsible for purchasing and maintaining any other Lotus licenses that may be required.

Backing Up and Restoring Data

Backing up mailboxes is important in any Unified Messaging deployment. The customer should use a backup program qualified by IBM Lotus for use with Domino.

Cisco Unity and the Domino Address Book

Cisco Unity for Domino uses a Domino address book as its directory service. However, the majority of information on 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 Domino address book and in the Cisco Unity database (for example, extension), Cisco Unity periodically checks the Domino address book for changes and replicates those changes in the Cisco Unity database. Some of the changes that are made in the Cisco Unity Administrator are replicated to the Domino address book. After a Cisco Unity system is installed and running, changes to the address book and to settings in the Cisco Unity Administrator are relatively few in number, so this replication will not hurt performance.

Cisco Unity requires “editor with delete-documents” permissions for the address book that Cisco Unity monitors. In the Cisco Unity 4.0 release, a Cisco Unity server can monitor the address books for one domain, including Names.nsf and any secondary address book that may be supporting proxy/remote users (users who do not have mail files in the Domino domain).

For more information on permission requirements, refer to the *Cisco Unity Installation Guide*.

Supported and Unsupported Configurations

In the first release of Cisco Unity 4.0 for Domino, the supported configurations will be restricted to those that have been thoroughly tested to ensure the success of each installation. More supported configurations will be added as customers require them and ECSBU tests them.

Cisco SEs, ECSBU TMEs, and others will determine whether a customer environment will work with Cisco Unity 4.0. Additional testing may be required before Cisco Unity can be deployed. If a customer configuration does not meet the criteria in this chapter, contact ECSBU TMEs before making any commitments to the customer.



Voice Messaging Only Configurations

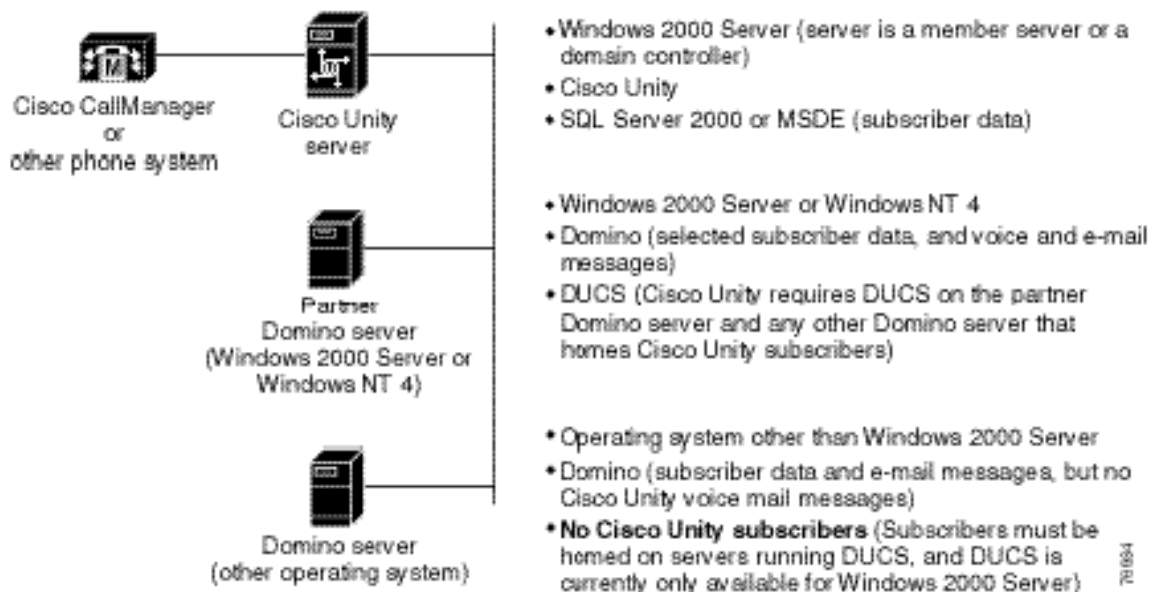
Cisco Unity 4.0 for Domino does not support Voice Messaging configurations. If the customer needs a Voice Messaging configuration, see Chapter 4, “Using Active Directory and Exchange 2000 for the Directory and Message Store.”

Unified Messaging Configurations

In a Unified Messaging configuration, Cisco Unity does not own the directory or messaging data but instead uses existing directory (Domino address book) and message store information. The benefits of Unified Messaging include:

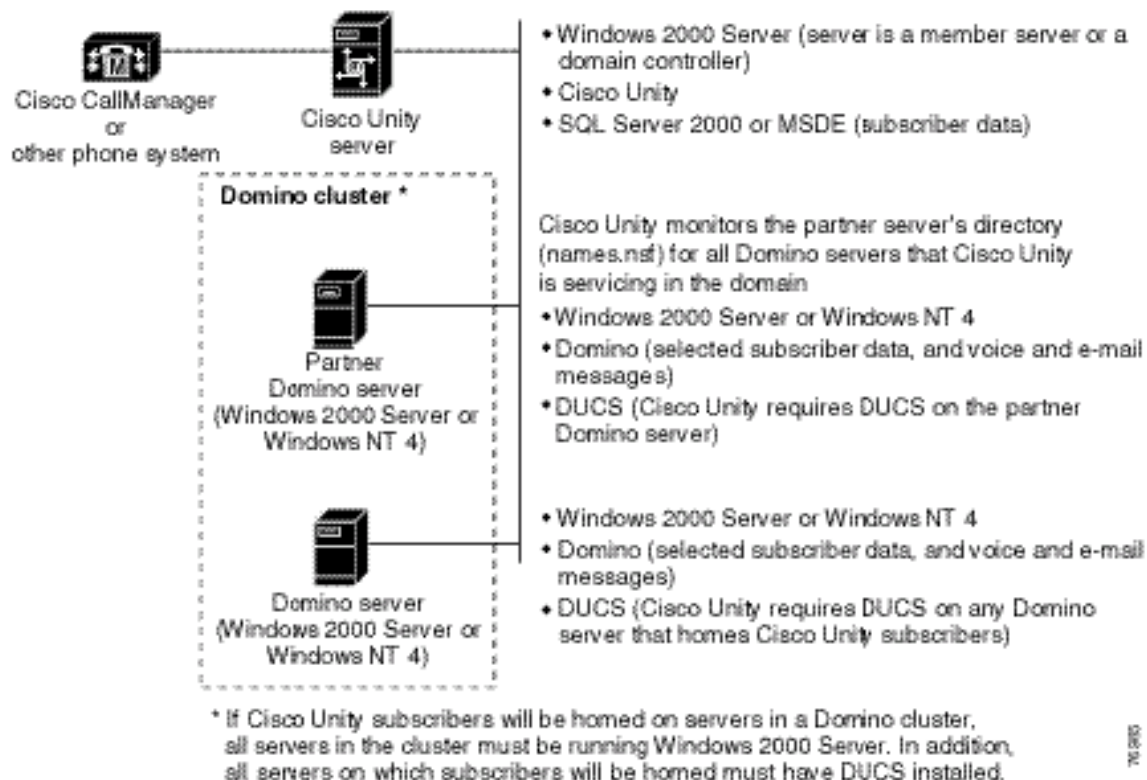
- Significantly reduced administrative overhead because the customer does not need to create and maintain separate accounts for e-mail and voice messaging applications.
- No dedicated infrastructure for a separate voice-messaging system. Cisco Unity uses the existing messaging infrastructure by voice-enabling the e-mail environment.
- Starting with Unified Messaging is administratively easier than starting with a Voice Messaging system and later migrating to Unified Messaging.

Unified Messaging, No Domino Cluster





Unified Messaging, Domino Cluster



Criteria for a Supported Configuration

CAUTION! If a proposed deployment does not meet the following criteria, contact an ECSBU TME before proceeding.

Requirements for supported configurations for Cisco Unity 4.0 for Domino include the following:

- Domino servers and Domino clusters must meet all IBM Lotus requirements, including requirements related to DUC.
- A Cisco Unity server can service a single physical site, meaning one or more well-connected LANs, such as a campus, single building, or other centralized facility where network bandwidth is not a problem.
- A Cisco Unity server can service mailboxes on up to a recommended maximum of ten Domino servers or clusters in a single physical site.
- A Cisco Unity server can service a single Domino address book (directory or Names.nsf file) for local Cisco Unity data (data for subscribers homed on the local Cisco Unity server) and global Cisco Unity data (data for subscribers homed on other Cisco Unity servers).



- A Cisco Unity server can service a single secondary address book for contacts. The secondary address book must have the same views as Names.nsf, and must be DUC enabled (must contain the DUC admin view). The secondary address book can reside on a different Domino server in the same Domino domain.
- Two or more Cisco Unity servers can be installed in a single Domino domain. Subscribers homed on one Cisco Unity server can send voice messages to subscribers homed on another Cisco Unity server by using Cisco Unity Digital Networking.
- Cisco Unity for Domino subscribers and Cisco Unity for Exchange subscribers cannot send voice messages to one another by using Cisco Unity Digital Networking.
- Cisco Unity for Domino subscribers in one Domino domain can only send voice messages to subscribers in another Domino domain using Internet subscribers.

Deploying Cisco Unity for Lotus Domino

Cisco Unity for Lotus Domino version 4.0 can be deployed in the following ways:

- Unified Messaging with one or more Cisco Unity servers servicing Cisco Unity subscribers on multiple Domino servers in the same Domino domain and the same well-connected network.
- Unified Messaging with access to Cisco Unity Assistant and DUC for Cisco Unity (the form in Notes that allows subscribers to play and record messages).
- Unified Messaging with multiple Cisco Unity servers. This requires either Cisco Unity Digital Networking (if two or more Cisco Unity servers are in the same Domino domain) or SMTP gateways and Internet subscribers (if two or more Cisco Unity servers are in separate Domino domains). For more information, 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.

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. This should not detract from the administrative access required for normal Cisco Unity operations, which include:

- Managing the server resources (hardware, operating system, file system, and other supporting software).



- Managing the Cisco Unity application, including web access; supporting components such as SQL Server/MSDE, IIS, and Internet Explorer; the Cisco Unity application log files; and utilities such as the Windows Event Viewer, Performance Monitor, and so on.
- Administering Cisco Unity subscribers, distribution lists, call handlers, and so on.
- Administering Cisco Unity switch connectivity to Cisco CallManager, a SIP proxy server, or a circuit-switched phone system.

Establishing Support Policies

To make administering Cisco Unity more manageable, establish a support policy that separates Cisco Unity-specific administration from administration for the rest of the server. This allows Cisco Unity administrators with limited COS settings to access the Cisco Unity application only as designed through their COS.

Network Services

Cisco Unity is a Notes client that uses Notes name resolution to resolve FQDNs in the Domino/Notes environment. Cisco Unity must be able to access and resolve server names across the deployment, or performance will suffer and some Cisco Unity operations will fail. Ideally, the name resolution server will be on the same highly available network as the Cisco Unity server. Because Cisco Unity for Domino can only be deployed in existing Domino environments, name resolution servers should already be available.

Because Cisco Unity still needs to be installed into a Windows domain, Cisco Unity relies on Windows DNS. If you install Cisco Unity into an existing Windows domain, there should be an existing DNS server highly available. If the customer does not have an existing Windows domain, DNS must be installed on the Cisco Unity server.

Deployment Tasks for Unified Messaging Configurations

In a Unified Messaging configuration, pay careful attention to the placement of Cisco Unity servers, how they are managed, and the accounts that are used to manage them.

Consider the following deployment best practices for Cisco Unity in a Unified Messaging configuration:

- 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.
- Create a group for Cisco Unity servers, and grant the group editor permissions for Admin4.nsf, and editor with delete- documents permissions for Names.nsf.
- 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 lists for each installation. (Other than the default distribution lists created during installation, you must either identify existing distribution lists in the Domino address book or create new distribution lists, and then import them into Cisco Unity.)
- 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 (there is a limit of 7,500 subscribers per Cisco Unity server).
- Verify that each Cisco Unity server is properly sized for the number of subscribers it will service. For additional sizing information, refer to the *Cisco Unity Supported Platforms List*, available at http://cisco.com/en/US/products/sw/voicesw/ps2237/products_data_sheets_list.html.
- Create and document a suitable disaster recovery plan.
- Verify that the switch integration is understood.
- 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.
- 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 system.
- Install the DUC client on workstations for Cisco Unity subscribers. This is necessary before a Domino user can be imported into Cisco Unity as a subscriber.

Operational Tasks

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

- Create and implement a regular maintenance schedule to gather logs and to 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 clean up 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.



Feature Parity Between Cisco Unity for Domino and Cisco Unity for Exchange

Cisco Unity 4.0 for Domino does not support:

- Communicating with other voice messaging systems by using the Cisco Unity Bridge, AMIS, or VPIM. Cisco Unity subscribers can send voice messages to and receive voice messages from non-Cisco Unity subscribers only by using SMTP-based Internet subscribers.
- Cisco Unity reports.
- The Cisco Unity Inbox (Note that in version 3.1 and earlier, the Cisco Unity Inbox was known as the Visual Messaging Interface, or VMI.)
- Cisco Unity failover.

The following capabilities of Cisco Unity for Exchange are not available in Cisco Unity for Domino:

- Preventing Cisco Unity from taking messages if the mailbox for a subscriber is full.
- Creating a Cisco Unity subscriber and the corresponding Domino user by using the Cisco Unity Administrator. In Cisco Unity for Domino, a subscriber must first be created as a Domino user and then imported into Cisco Unity.
- Functionality of the Deleted Items folder.
- Future delivery
 - Mailbox status
 - Mailbox size

The following Cisco Unity tools are not available with Cisco Unity for Domino:

- Audio Text Manager
- Disaster Recovery Tool Backup
- Disaster Recovery Tool Restore
- Extension Address Utility
- Failover Config
- Failover Monitor
- FullDB Import
- FullDB Export
- Message Store Manager
- Move Subscriber Data



- Public DL Builder
- GrantUnityAccess
- Remove Subscriber Properties