CHAPTER **9**

Message Storage

Cisco Unity Connection uses separate databases to store the system configuration and the information in voicemails. This chapter covers the following information:

About Mailbox Stores

Consider the following points to understand the importance of mailbox stores in Unity Connection:

- During installation, Unity Connection automatically creates:
  - A directory database to store system configuration information, such as user data and templates.
  - A mailbox store database to store information, such as the sender of each message and the location of the .wav file associated with a particular voice message.
  - An operating system directory to store voice message .wav files.
- A Unity Connection server or cluster supports up to 20,000 users. You need to create a separate mailbox store for every 5000 users. Creating additional mailbox stores allow you to backup selected mailboxes and ensure that backup gets completed during non-business hours.
- You can modify the default 15 GB size of the Unity Connection mailbox stores depending on your requirements. The maximum mailbox size supported by Unity Connection is 30 GB.
- An administrator with the required permissions can create up to four additional mailbox stores. Each additional mailbox store includes a separate mailbox store database and a separate operating system directory.
- The directory information of all the users in a Unity Connection server or cluster remain in one directory database created during Unity Connection installation.
- After you create a new mailbox store, you can either move the existing mailboxes into the new mailbox store or create new mailboxes in the new mailbox store. For more information, see the Moving Mailboxes between Mailbox Stores, page 9-4 section.
- In case of a Unity Connection cluster, all the mailbox stores are replicated to both publisher and subscriber.

See the following sections:

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User Templates Settings

The user template selected at the time of creating a new user account specifies some settings that are used as a default value for the user account. The mailboxes of the user accounts based on the default user template are created in the default mailbox store. If you create new mailbox stores, you can change the mailbox settings in the default user templates or in any new user templates that you create.

Note   If a mailbox store is applied to one or more user templates, you cannot delete that mailbox store until the user template setting is changed or the user template is deleted.

For more information changing the mailbox settings in a user template, see the "Configuring User Templates" section on page 3-6.

Maximum Size Supported for a Mailbox Store

You must specify the maximum amount of disk space that the voice messages for a mailbox store can occupy at the time of creating a new mailbox store. The maximum size of mailbox store is not an absolute maximum but specifies a limit. On exceeding the limit specified for a mailbox, warnings or errors are logged into Unity Connection.

Consider the following information related to the maximum size supported for a mailbox store:

- The size of a mailbox store is still less than the maximum specified value if:
  - Unity Connection saves new messages in the mailbox store.
  - You can create new mailboxes in the mailbox store.
  - You can move other mailboxes into the mailbox store.
- When the size of the mailbox store reaches 90 percent of the specified maximum size, a warning is logged in the system log.
- When the size of the store reaches 100 percent of the specified maximum size, an error is logged in the system log. In addition, in Cisco Unity Connection Administration, an error appears in the **Status** bar on the Edit Mailbox Store page.
- If you want to maintain the mailbox store below 100 percent of the specified maximum limit, do any of the following:
  - Increase the maximum size of the mailbox store, if an additional space is available on the hard disk.
  - Create another mailbox store and move some mailboxes into the new mailbox store.
  - Revise the mailbox size quotas and message aging policy to reduce the individual mailbox size and the size of mailbox store. You can also delete the voice messages to reduce the size of the mailboxes that reduces the total size of the mailbox store. However, before deleting the mailboxes, make sure to backup the mailbox stores to preserve any important information.

> **Note**   When users delete messages, the deleted messages are not removed from the mailbox store until the next time the **Clean Deleted Messages** task runs. The task runs every 30 minutes and the schedule for the task cannot be edited.

To Change the Maximum Size Supported for a Mailbox Store

Step 1   In Cisco Unity Connection Administration, expand **Message Storage** and select **Mailbox Stores**.

Step 2   On the Search Mailbox Store page, select the applicable mailbox store.

Step 3   On the Edit Mailbox Store page, change the value in the **Maximum Size Before Warning** field. (For more information on each field, see **Help> This Page**).

> **Note**   Do not change the value of this field if the mailbox store is already at the maximum size that can be backed up during non-business hours.

Step 4   Select **Save**.

Backup with Multiple Mailbox Stores

The duration of backup depends on the size of a mailbox store. The Disaster Recovery System takes the backup of an entire mailbox store and the corresponding database during a single backup session. The default size of a mailbox store is limited to 15 GB so that the backup can be completed during non business hours. For more information on how to backup the multiple mailbox stores, see the "Backing Up and Restoring Cisco Unity Connection Components" chapter of the *Install, Upgrade, and Maintenance Guide, Release 10.x*, available at www.cisco.com/c/en/us/td/docs/voice_ip_comm/connection/10x/install_upgrade/guide/10xcuciumgx/10xcuciumg020.html.

Configuring Mailbox Stores

Consider the following points when creating, editing, or deleting the mailbox stores:

- You can create or edit the settings of one mailbox store at a time.
- You cannot delete a mailbox store if:
    - The mailbox store still contains one or more mailboxes.
    - The mailbox store is still referenced by one or more user templates.
    - The administrator is trying to delete the default mailbox store (**UnityMbxDb1**).

To Configure a Mailbox Store in Unity Connection

Step 1   In Cisco Unity Connection Administration, expand **Message Storage** and select **Mailbox Stores**.

The Search Mailbox Store page displays the currently configured mailbox stores.

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Note   A user account without the **System Administrator** role cannot create a new mailbox store.

Step 2   Configure one or mailbox stores (For more information on each field, see **Help> This Page**):

- To add a new mailbox store:

    a. On the Search Mailbox Store page, select **Add New**.

    b. On the New Mailbox Store page, enter the values of the required fields and select **Save**.

    c. The new mailbox store appears on the Search Mailbox Stores page. The value in the **Access Enabled** column is **Yes** and the value of the **Status** column is **OK**.

- To edit an existing mailbox store:

    a. On the Search Mailbox Store page, select the mailbox store that you want to edit.

    b. On the Edit Mailbox Store page, enter the values of the required fields and select **Save**.

- To delete one or more mailbox stores:

    a. On the Search Mailbox Store page, check the check boxes to select the users with mailboxes that you want to delete.

    b. Select **Delete Selected** and **OK** to confirm.

Moving Mailboxes between Mailbox Stores

When moving mailboxes from one mailbox store to another, note the following:

- The MWI status is retained after a mailbox is moved from one mailbox store to another.
- (*Unity Connection cluster only*) Sign in to the server with **Primary** status to move the mailboxes.
- Moving the mailboxes from one mailbox store to another fails, if:
    – The user do not have sufficient permissions in Cisco Unity Connection Administration and is not authorized to move a mailbox.
    – The source or the target mailbox store is disabled.
    – The user with mailbox that you are moving is a system user. System mailboxes cannot be moved out of the default mailbox store(**UnityMbxDb1**).

To Move the Mailboxes from One Mailbox Store to Another

Step 1   In Cisco Unity Connection Administration, expand **Message Storage** and select **Mailbox Stores Membership**.

Step 2   On the Search Mailbox Stores Membership page, in the **Choose Membership Type** list, select **User Mailbox**.

Step 3   In the **User Mailbox Search Results** section, specify the mailbox store from which you want to move the mailboxes.

Step 4   Select the mailbox store to which you want to move the mailboxes and check the applicable check boxes for the users with mailboxes that you want to move.

Step 5   Select **Move Selected Mailboxes**.

Disabling and Re-Enabling a Mailbox Store

Each mailbox store is automatically disabled when you take the backup of that mailbox store using Disaster Recovery System. When a mailbox store is disabled:

- You cannot create a new mailbox in the store.
- You cannot move existing mailboxes into or out of the store.
- New messages for users with mailboxes that are in the disabled store are queued for delivery until the store is re-enabled.

Cisco Unity Connection Administration provides an option to manually disable a mailbox store but you should not disable a mailbox store that is in use.

To Disable and Re-Enable a Mailbox Store

Step 1   In Cisco Unity Connection Administration, expand **Message Storage** and select **Mailbox Stores**.

Step 2   On the Search Mailbox Stores page, select the mailbox store that you want to disable.

Step 3   To disable a mailbox store:

On the Edit Mailbox Store page, uncheck the **Mounted** check box and select **Save**.

Step 4   To re-enable a mailbox store:

On the Edit Mailbox Store page, check the **Mounted** check box and select **Save**.

Controlling the Size of Mailboxes

You can specify mailbox size quotas and change the message aging policy in Cisco Unity Connection Administration to control the size of the user voice mailboxes.

Mailbox Size Quotas

To help control the size of the user voice mailboxes, Unity Connection allows you to specify quotas or limits on the maximum size of voice mailbox. You can configure quotas so that Unity Connection:

- Issues a warning when a mailbox reaches a specified size.
- Prevents a user from sending messages when the mailbox reaches the limit.
- Prevents a user from sending or receiving messages when the mailbox reaches the limit.

By default, Unity Connection is configured with the system-wide mailbox size quotas listed in Table 9-1. However, to handle the varying needs of users in your organization, you can override the system-wide quotas for individual mailboxes and for user templates.

Table 9-1   Mailbox Size Quotas Defined in Unity Connection

Quota Level	Mailbox Size that Triggers Quota Action	Action When Quota is Reached	Recording Time Before Quota is Reached/ Disk Space Used[1]					
			G.711 Mu-Law	G.711 A-Law	G.726	PCM 8 kHz	G.729a	GSM 6.10
Warning	12 MB	The user is warned that the mailbox is reaching the maximum size allowed.	18 min./ 11 KB/sec	18 min./ 11 KB/sec	37 min./ 5.53 KB/sec	9 min./ 22 KB/sec	122 min./ 1.67 KB/sec	91 min./ 2.25 KB/sec
Send	13 MB	The user is prevented from sending any more voice messages.	20 min./ 11 KB/sec	20 min./ 11 KB/sec	40 min./ 5.53 KB/sec	10 min./ 22 KB/sec	132 min./ 1.67 KB/sec	98 min./ 2.25 KB/sec
Send/ Receive	14 MB	The user is prevented from sending or receiving any more voice messages.	21 min./ 11 KB/sec	21 min./ 11 KB/sec	43 min./ 5.53 KB/sec	10 min./ 22 KB/sec	143 min./ 1.67 KB/sec	106 min./ 2.25 KB/sec

1. Here "Disk Space Used" is not limited to size of the file but includes complex metadata.

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Caution   Quotas alone can control the size of mailboxes for the users who regularly check Unity Connection voice messages using the telephone user interface. Web Inbox and Cisco ViewMail for Microsoft Outlook do not notify users that the mailbox has reached its limit. If users check messages using Web Inbox or Cisco ViewMail for Microsoft Outlook, you need to configure message aging so that the old messages are automatically deleted.

To Change the Default System-wide Mailbox Quotas in Unity Connection

Step 1   In Cisco Unity Connection Administration, expand **Message Storage**> **Mailbox Quotas** and select **Mailbox Quotas**.

Step 2   On the Edit System-wide Mailbox Quotas page, enter the values of the required settings. (For more information on each field, see **Help**> **This Page**).

Step 3   Select **Save**.

For information to override system-wide mailbox quota settings for Unity Connection users and user templates, see the "User Attributes" and "Users" chapters.

Mailbox Quota Alert

Unity Connection allows you to specify the maximum quota for the voice mailbox of every user. In Unity Connection 10.0(1) and later releases, when the mailbox size of a user starts reaching its specified threshold limit, the user receives a quota notification message.

A quota notification message is an email that is sent automatically by Unity Connection to the corporate email address of the mailbox of the user when its exceeds the threshold limit. You can use Cisco Unity Connection Administration to view the default quota notification message or to create, view, and edit the

quota notification messages. The quota notification message is sent by the **Quota Notification Mail** task to the configured corporate addresses of the users whose mailbox has reached the size specified for warning quota.

To Configure the Quota Notification Settings

Step 1   In Cisco Unity Connection Administration, expand **Tools** and select **Task Management**.

Step 2   On the Task Definitions page, select **Quota Notification Mail**.

Step 3   On the Task Definition Basics (Quota Notification Mail) page, select **Edit > Task Schedules**.

Step 4   On the Task Schedule page, enter the values of the required fields and select **Save**. (For more information on each field, see **Help> This Page**).

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Note   The quota notification messages are not sent to the users that do not have corporate email addresses configured.

You can also execute the following command through CLI to run the **Quota Notification Mail** task:

```
run cuc sysagent task Umss.QuotaNotificationMailTask
```

Umss.QuotaNotificationMailTask is the name of the **Quota Notification Mail** task.

For more information on the above command, see the "run cuc sysagent task" section of the "Run commands" chapter of *Command Line Interface Reference Guide for Cisco Unified Communications Solutions*, *Release 10.0(1),* available at
http://www.cisco.com/c/en/us/td/docs/voice_ip_comm/cucm/cli_ref/10_0_1/CUCM_BK_CBEED39F_00_cucm-cli-reference-guide-100/CUCM_BK_CBEED39F_00_cucm-cli-reference-guide-100_chapter_0101.html#CUCM_CL_R812A687_00.

To Customize the Subject Line or Body Text of Mailbox Quota Alert Text

Step 1   In Cisco Unity Connection Administration, expand **Message Storage> Mailbox Quotas** and then select **Quota Alert Text**.

Step 2   On the Edit Mailbox Quota Alert Text page, in the **Language** list, enter the values of the required fields. (For more information on each field, see **Help> This Page**).

Step 3   Select **Save**.

Step 4   Repeat Step 2 through Step 3 for each language installed on the system.

Message Aging Policies

In a single inbox configuration, messages that users delete using Outlook are only moved to the Deleted Items folder in Outlook but are not permanently deleted. To keep a check on the mailbox size for users, you need to configure a message aging policy for the Unity Connection users.

Message aging policies ensure that the databases storing the voice messages are not filled up. The message aging policies are managed through Cisco Unity Connection Administration> Message Storage> Message Aging> **Aging Policies**.

Each policy allows you to specify message aging rules that automatically perform the following operations mentioned on the Message Aging Policy page:

- **Move New Messages to the Saved Messages Folder** after the specified number of days.

- **Move Saved Messages to the Deleted Items Folder** after the specified number of days.

- **Permanently Delete Messages in the Deleted Items Folder** after the specified number of days. This is the only rule enabled in the **Default System Policy** message aging policy, this is the only rule that is enabled.

- **Permanently Delete Secure Touched Messages That are Older Than** a specified number of days. The secure messages are considered as touched messages if we mark the messages as new, read or deleted messages.

- **Permanently Delete All Secure Messages That are Older Than** a specified number of days. This policy is regardless of whether users have listened to or touched the messages in any way.

For each policy, you can enable or disable each message aging rule and can specify a different number of days for each rule. For each message aging rule, you can also specify whether Unity Connection sends an email alert to the users prior to aging the message.

Depending on the system requirement of a company, Unity Connection may need only one or additional message aging rules. If you are using only one set of message aging rules, you can change the specifications for the default message aging policy and apply it to all users and user templates. If you need to allow some users to retain messages longer than other users or send messaging alerts only to a few users, you can create additional policies and assign different policies to user templates and to individual users.

You can also enable or disable an entire message aging policy. Unity Connection includes a default policy, **Do Not Age Messages**, that is disabled and for which all of the rules are disabled.

Some of the message aging rules are based on when a message was last modified. To edit a message, you must do one of the following:

- In the Web Inbox or Messaging Inbox, mark the message as new, mark the message as deleted, or change the message subject, and select **Save**.

- From the phone interface, select the options to mark the message as new, save the message again, delete the message, or restore a deleted message as saved.

Note   The schedule for message aging is controlled by the message aging task that can be managed from the Task Management page in Cisco Unity Connection Administration.

To Configure a Message Aging Policy in Unity Connection

Step 1   In Cisco Unity Connection Administration, expand **Message Storage> Message Aging** and select **Aging Policies**.

Step 2   Configure message aging policies, do the following steps (For more information on each field, see **Help> This Page**):

- To add a new message aging policy:

    a. On the Search Message Aging Policy page, select **Add New**.

    b. Enter the display name of the policy and select **Save**.

    c. On the Message Aging Policy page, enter the values of the required fields and check the **Enabled** check box. Select **Save** to apply the changes in the policy.

- To edit an existing message aging policy:

    a. On the Search Message Aging Policy page, select the policy that you want to edit.

    b. On the Message Aging Policy page, change the values of the required fields and select **Save**.

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Caution Do not change the settings of the **Do Not Age Messages** policy.

- To delete a message aging policy:

    a. On the Search Message Aging Policy page, check the check boxes for the policies you want to delete.

    b. Select **Delete Selected** and **OK** to confirm.

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Note You should not delete the **Default System Policy** and the **Do Not Age Messages** policy. If you do not want to age messages, disable the **Default System Policy** instead of deleting it.

Message Aging Alerts

For each message aging rule, you can specify whether Unity Connection sends email alerts to users prior to taking the aging action associated with the rule. This gives the users time to review and act on the applicable messages. You specify the number of days between the time that Unity Connection sends the alert and the time that the message aging action takes place.

Alerts cannot be sent to users unless the **Corporate Email Address** field for each user on the Users > Users > Edit User Basics page contains a valid email address. Unity Connection must also be configured to relay messages through an SMTP smart host.

You can customize the text in the email alerts or you can use the default text. The default subject line and body text are different for the alerts related to each aging rule and they can be customized separately.

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Note As all the message aging policies use the same five rules, if you customize the alert text for a rule, the text is the same for any policy that uses that rule. (For example, if you customize the email subject line and body text for the **Move Saved Messages to the Deleted Items Folder** rule, that text is used for all alerts that are sent to users who are assigned to any message aging policy for which that rule is enabled with alerts.)

Message aging alerts can be customized for multiple languages.To enable Unity Connection to send message aging alert emails to users, you must configure the Unity Connection server to relay messages through an SMTP smart host. For more information on SMTP smart host, see the "Messaging" chapter.

To Customize the Message Aging Alert Text in Unity Connection

Step 1 In Cisco Unity Connection Administration, expand **Message Storage> Message Aging** and select **Aging Alert Text**.

Step 2 On the Edit Message Aging Alert Text page, in the **Language** list, select the applicable language.

Step 3 Enter the values of the required fields. (For more information on each field, see **Help> This Page**).

Step 4 Select **Save**.

Step 5 Repeat all the above steps for each language installed on the system.

Message Recording Expiration

The **Message Recording Expiration** feature allows you to specify an expiration date after which the voice message stored in Unity Connection database is not accessible, regardless of whether the message has been forwarded to another Unity Connection recipient. Message recording expiration is a system-wide setting and cannot be applied only to a subset of users. At expiration, message recordings are automatically replaced with a decoy recording that says, "**The message has expired**."

Typically, message aging rules are sufficient for enforcing message-retention policies. However, when a message is forwarded, it is considered as a new message and its age is reset. If you are concerned that users may forward messages in an attempt to circumvent the message-retention policy, consider enabling the **Message Recording Expiration** feature. The message recording and transcription (if any) expire based on the date when the original copy of the message has arrived, regardless of user forwarding.

By default, the **Message Recording Expiration** feature is not enabled.

To Enable and Configure Message Recording Expiration in Unity Connection

Step 1 In Cisco Unity Connection Administration, expand **Message Storage> Message Aging** and select **Message Recording Expiration**.

Step 2 On the Edit Message Recording Expiration page, specify the number of message expiry days and check the **Enabled** check box. (For more information on each field, see **Help> This Page**).

Step 3 Select **Save**.

Note The **Message Recording Expiration** feature does not apply to messages that have been forwarded to personal email addresses or to message recordings that have been saved locally to user workstations.

To prevent users from saving local copies or forwarding voice messages to personal email addresses, consider configuring Unity Connection to mark all messages as secure. Unity Connection applies the **Message Recording Expiration** feature to messages in the mailboxes of recipients that are homed on the Unity Connection server. For example, if User A homed on Unity Connection server A sends a message to User B homed on Unity Connection server B, the message is subject to message expiration only if the **Message Recording Expiration** feature is enabled on server B.