

Clearspan[®] Voice Messaging Solutions

RELEASE 22

March 2018



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1 REVISION HISTORY

The following represents the revision history of this publication.

REVISION NUMBER	DATE COMPLETED	POINT OF CONTACT	DESCRIPTION
2767-006	1/2018	Clearspan	R22.0
2767-005	12/2016	Technical Publications	R21.0
2767-004	08/2014		R20.0
2767-003	09/30/13	Bev Marsh	R19.0
2767-002	12.08.08	D Woelfle / D Bechtloff	Changes and additions.
2767-001	09.08.08	D Woelfle / D Bechtloff	Initial release of this publication.

2 SUMMARY OF CHANGES

This section describes the changes to this document for each release and document version.

2.1 CHANGES FOR RELEASE 22.0

This version of the document includes the following changes:

- Updated *Appendix A: Mail Server Considerations* to specify that the mailbox limit in minutes is really in multiples of 33 KB, so that the actual time limit maybe different, depending on the codec use.

2.2 CHANGES FOR RELEASE 21.0

This version of the document includes the following changes:

- Updated section *3.2.1.3.1 Configure System-wide Voice Portal Menu Settings for Personal Assistant*.
- Updated *Appendix A: Mail Server Considerations* regarding storage needs differences between low definition and high definition codec recordings.

2.3 CHANGES FOR RELEASE 20.0

This version of the document includes the following changes:

- Updated section *Configure System-wide Voice Portal Menu Settings for Flexible Seating* (modified the *Hoteling Voice Portal* main menu entry) and *Announcement Repository* (added a *Voice Portal* main menu entry), and updated the remainder of the section to reflect the current *Voice Portal* sub-menus.

2.4 CHANGES FOR RELEASE 19.0

- Updated section *4.2.2.2 Message Retrieval*.
- Added section *6.3.1.4 System Configuration*.
- Updated section *11.4.2 Media Server Configuration*.
- Updated section *4.2.1.3 Configure the Clearspan Voice Portal* and added section *4.2.1.3.3 Configure Network Voice Portal*. Also reordered some 3.2.1 subsections.

2.5 CHANGES FOR RELEASE 18.0

- Updated *Appendix A: Mail Server Considerations* to include an additional note for extra storage space considerations when messages are recorded using a wide-band codec.

- Updated section [4.2.2.2 Message Retrieval](#).

2.6 CHANGES FOR RELEASE 17.0, DOCUMENT VERSION 1

There were no changes to this document for Release 17.0.

2.7 CHANGES FOR RELEASE 15.0, DOCUMENT VERSION 1

There were no changes to this document for Release 15.0.

2.8 CHANGES FOR RELEASES 14.SP1 THROUGH 14.SP6, DOCUMENT VERSION 1

There were no changes to this document for Releases 14.sp1 through 14.sp6.

3 INTRODUCTION

Clearspan can be used to accommodate three voice messaging solutions:

- **Stand-alone:** Clearspan is used to provide both the basic phone service and voice messaging.
- **Network Voice Mail:** Clearspan is used solely as a voice messaging system, while the user's phone is hosted externally, such as on a Class 5 switch in the Public Switched Telephone Network (PSTN).
- **External Voice Mail:** The user's phone is hosted by Clearspan, while the user's voice mailbox resides on an external system, such as on a legacy voice mail system in the PSTN.

This document describes how to set up Clearspan for each of these solutions. Note that these solutions are not mutually exclusive; a single Clearspan Application Server can support a mix of these three solutions concurrently.

4 VOICE MAIL AND PHONE SERVICE PROVIDED BY CLEARSPAN

This section describes how to set up Clearspan when both the phone service and voice messaging service are provided by Clearspan. For this solution, voice messages are stored on a mail server. This section describes how Clearspan uses the mail server as well as the mail server parameters that must be set.

4.1 CLEARSPAN VOICE MESSAGES DEPOSIT AND RETRIEVAL – MESSAGE FLOWS

To simplify the description of the various configurable elements of the Clearspan Voice Messaging solution, a basic understanding of the message flow between the Application Server (AS), Media Server (MS), and mail server is required.

4.1.1 VOICE MAIL DEPOSIT

A simple voice mail deposit scenario is shown in *Figure 1 Voice Mail Deposit High-level Message Flow*. In this scenario, extension 501 calls extension 500, which is busy. The call is answered by the Clearspan voice mail system and the caller records a voice message and then hangs up.

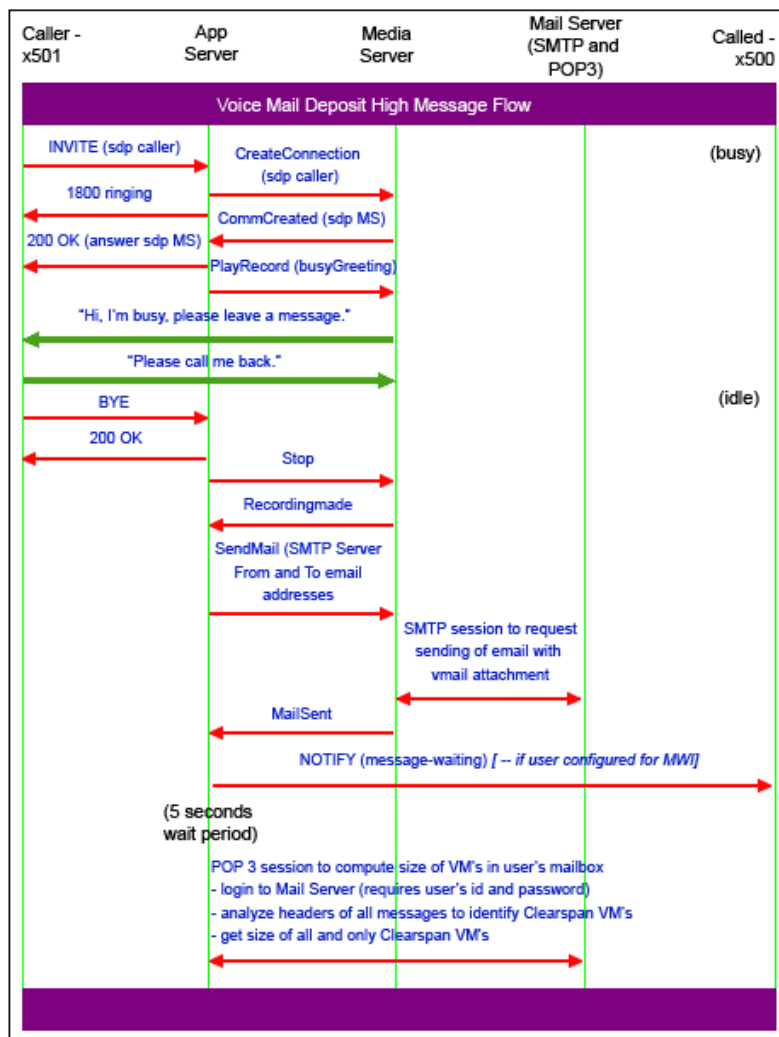


Figure 1 Voice Mail Deposit High-level Message Flow

With the SendMail command, the Application Server is requesting the Media Server to deliver the recorded message to the subscriber. The Media Server does so by sending an e-mail with the recorded message as an attachment. The Media Server sends the e-mail using one of the Simple Mail Transfer Protocol (SMTP) servers (a primary and a backup), as well as the SMTP FROM and TO, specified by the Application Server in the SendMail command. Once the Media Server receives confirmation from the SMTP server that the e-mail has been accepted, the Media Server notifies the Application Server with a "MailSent" response.

Upon reception of that response, the Application Server sends a message waiting indicator to the user's device(s) immediately. Furthermore, if the user's box has a maximum size constraint, it waits five seconds (to allow some time for the message to reach the user's mailbox), and then logs in to the user's e-mail account to compute the size of all voice mails in the user's box. This information is used to update a flag indicating whether or not the user's box is full.

4.1.2 VOICE MAIL RETRIEVAL

A simple voice mail retrieval scenario is shown in *Figure 2 Voice Mail Retrieval High-level Message Flow*. In this example, extension 500 starts a voice mail retrieval session. The call is answered by the Clearspan voice mail system, and the caller is prompted for a pass code. At the same time, a connection to the user's e-mail account is initiated (in this example, POP3 is assumed; however, IMAP is also supported). The user's in box is analyzed for new and saved messages, and the first message to be played is downloaded. Usually by the time the user has completed the login process, Clearspan is ready to play the introduction announcement (which announces the number of new and saved messages in the box) as well as the first message.

The following interactions with the mail server occur whenever the user starts listening to a voice message. At this point, the download of the next message to be played (if any) is initiated in parallel, so that this message is available when the user is ready to listen to it.

The final interaction with the mail server occurs when the user hangs up. During the session, as the user deletes messages, they are only marked for deletion and not actually deleted. This allows the user to review the mailbox, and restore a deleted message if need be. The mail server is instructed to delete a message only when the session with the mail server is closed, when the user hangs up.

At the end of a voice mail retrieval call, when the user hangs up, the Application Server always sends a message waiting indicator (MWI) to the user's device(s) (if the user has the MWI option enabled), reflecting the status of the box at the end of the call.

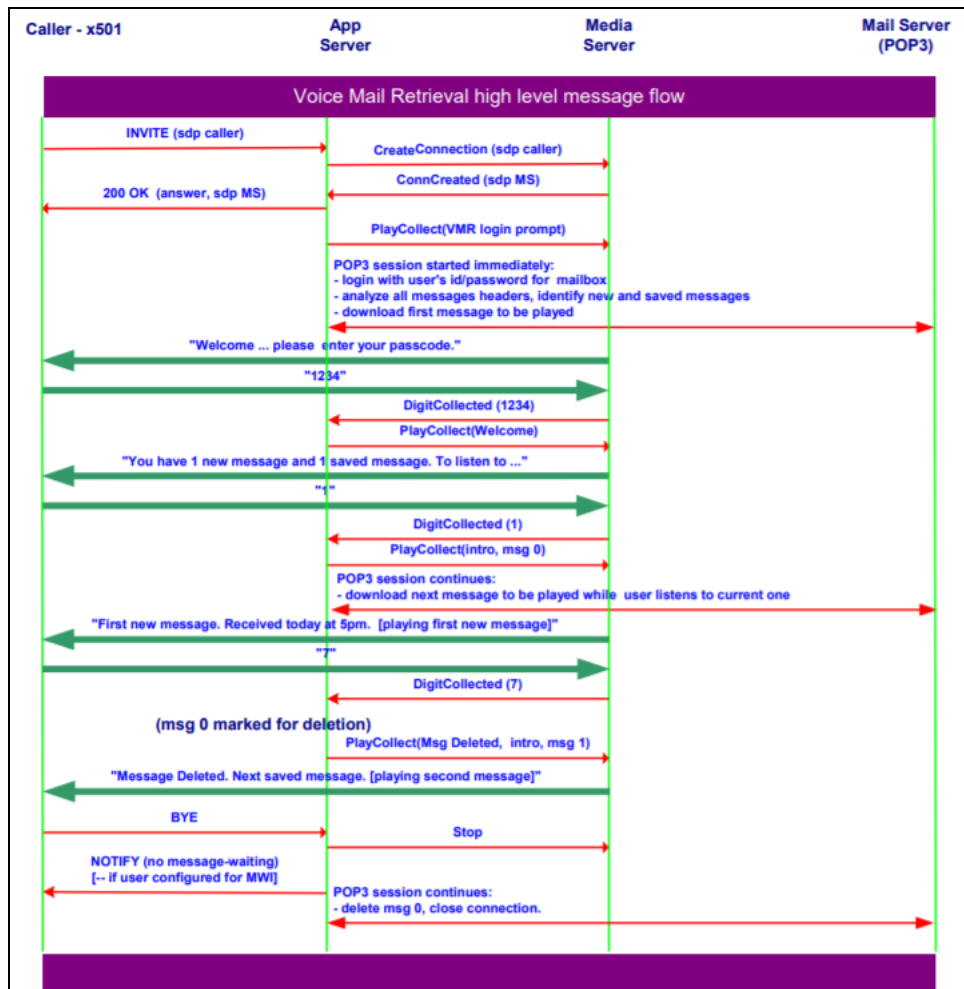


Figure 2 Voice Mail Retrieval High-level Message Flow

4.2 DEPLOYMENT AND CONFIGURATION

This section describes the steps to configure Clearspan Voice Messaging service. The Voice Messaging service allows end users to receive voice messages when they are busy or unable to answer their phone. When a voice message is left for a Clearspan user, Clearspan handles the message in one of the following ways depending on the user's preference:

- Use unified messaging for phone and e-mail retrieval.
- Send message to an e-mail account specified by the user.

No matter which method is used, a voice message is first "wrapped" in an e-mail message.

Use unified messaging for phone and e-mail retrieval

This option stores voice messages on a mail server for retrieval via phone and/or e-mail. In both cases, the retrieval is done using either POP3 or IMAP, which are standard protocols for retrieving e-mail from an Internet mail server.

With this option, users can retrieve the messages by dialing the designated Clearspan voice portal access number or their own phone number, and then use a pass code to access their mailbox. Clearspan retrieves voice messages from the mail server and replays them to users over the phone.

Send message to an e-mail account specified by the user

For this option, users retrieve messages using their e-mail client only. The e-mail client shows new mail for each voice message when the voice message is an audio attachment (.WAV file). Users can use any standard desktop media resource, for example, Media Player or WinAmp, to play the voice message via their PC.

To support these storage and retrieval methods, the system provider must configure Clearspan and the external mail server(s). Note that the SMTP and mail servers must not be the same machine. Also note that an enterprise or group can use multiple mail servers.

When selecting the "Use Unified Messaging" option, it is recommended to use an IMAP4 e-mail account for the user. If a user selects "Use Unified Messaging", and the e-mail account is POP3, the e-mail client should be configured to "leave a copy of the message on the server"; otherwise the e-mail client deletes the messages from the server upon retrieval of e-mails, and thus makes it impossible to access the messages from the phone. However, in this case, the user must manage the voice messages via the phone and via e-mail. Deleting a message from the phone does not cause it to be deleted from the user's e-mail on the PC, and vice versa.

4.2.1 VOICE MESSAGING SERVICE DEPLOYMENT

To deploy the Voice Messaging service, the system or enterprise administrator must perform the following steps:

1. Select a mail server solution.
2. Configure the mail server.
3. Configure Clearspan Voice Portal.
4. Configure Clearspan Voice Messaging for the group and for individual users.

The following subsections describe each of these steps.

4.2.1.1 Select Mail Server

The system or enterprise administrator must provide a POP3 or IMAP server. (For trials, Clearspan can provide test accounts.)

4.2.1.1.1 Use Existing Mail Server

If the enterprise already has a mail server, it can be used in conjunction with Clearspan. Clearspan interoperates successfully with any standard POP3 or IMAP (including Microsoft Exchange) server software on the market.

Clearspan relies on streaming media (specifically, .WAV files), so disk I/O and space are important considerations. Clearspan recommends that the mail server platform have approximately 6.5 MB of storage per expected voice messaging user (about 20 minutes). Administrators may need to adapt storage requirements based on the particular usage patterns of their customers. Scalability may also be limited by the mail server's throughput.

4.2.1.1.2 Mail Server Provided by Clearspan

Upon request for trial customers, Clearspan can provide a mail server solution. The mail server is installed on the Clearspan Media Server, an existing Clearspan component. However, this solution is intended for demonstrations or trial installations of Clearspan, since the Media Server's available disk space only supports a limited number of users. Alternatively, Clearspan suggests a tested mail server for installation by the customer on a customer-provided platform. For more information, contact your Clearspan representative.

4.2.1.2 Configure Mail Server

If Clearspan provides the mail server, Clearspan installs the mail server software according to the specifications outlined by the software provider. If the customer provides an existing mail server or installs one, the e-mail server must be configured to:

- Relay messages not intended for this mail server to a valid SMTP server.

All e-mails generated by Clearspan are sent to one of the two configured SMTP servers. This server may be the final destination for e-mail with voice mail attachments, when this server is also the mail server hosting the accounts of voice mail users. However, other e-mails, such as call notifications must be forwarded to another SMTP server so they can be delivered to the proper server.

In particular, make sure the *Default From E-mail Address* used for *Voice Messaging Delivery* and *Voice Messaging Notification* (in the system-wide *Voice Messaging service* parameters) is a valid e-mail originator. Some SMTP servers can be configured to verify the Return-path of an incoming e-mail, and the SMTP server could reject an e-mail if the *Default From E-mail Address* is not set to a value that is acceptable to the SMTP server. For more information, refer to your SMTP server documentation.

- Grant limited, but sufficient amount of storage space for all users.

The mailbox size on the Application Server and on the POP3/IMAP mail server must be properly coordinated. If they are coordinated, Clearspan plays an announcement when the mailbox is full and does not attempt to record and store a voice message for that user.

The POP3/IMAP quota must be slightly larger than the mailbox size on the Application Server. This is because the Application Server is not strict about the mailbox limits. If a mailbox is almost but not completely full, it still allows a caller to leave a message. The POP3/IMAP however, has strict limits so you cannot set them to equivalent sizes. The recommended setting should be:

POP3/IMAP quota \geq bw-mailbox-size + bw-max-message-size

If necessary, the POP3/IMAP quota can be much larger.

- Ensure that the *session inactivity time-out* parameter is adequate.

The inactivity time-out value should be 10 minutes or higher for POP3 accounts and 30 minutes or higher for IMAP4 accounts.

When the server has been installed, it is the responsibility of the system administrator to set up user accounts.

There must be an e-mail account established for each end user of the Voice Messaging service. Voice messages for an end user can only be stored and retrieved on an existing account on the server. If a UNIX-based mail server is used, the account name must begin with a lower case alpha character.

4.2.1.2.1 Example E-mail User Account Configuration

If the system administrator was to begin offering service to a new company with two users (with the user IDs set to BSmith and AGiles), the administrator creates the users' e-mail accounts as follows:

- For BSmith's account:
 - The user ID is set to BSmith.
 - The password is set to bsmithPW756.
 - The e-mail address: bsmith@broadsoft.com.
- For AGiles' account:
 - The user ID is set to AGiles.
 - The password is set to agilesPW439.
 - The e-mail address: agiles@broadsoft.com.

The e-mail addresses, user IDs, and passwords associated with the mail server accounts must correspond with those to be used later when configuring the user's Voice Messaging settings on the Application Server. This e-mail account information on the

mail server should be set uniquely and stored for future use. This information is required when the voice mail user settings are configured in Clearspan.

4.2.1.3 Configure the Clearspan Voice Portal

The Clearspan Voice Portal is the entry point for Clearspan users to access their Voice Messaging services. Clearspan users can directly access their Voice Messaging services by dialing the designated Clearspan voice portal access number or by dialing their own phone number, and then using a passcode to access their mailbox.

Clearspan Voice Portal can be configured at the group or system level. To configure the voice portal at the group level, the Voice Messaging Group service license is required. To configure the voice portal at the system level, the System Voice Portal service license is required.

4.2.1.3.1 Configure System-wide Voice Portal Menu Settings

Whether the Clearspan Voice Portal is configured at the group level or at the system level, the same Voice Portal/Voice Messaging menus and options are available to the user. The Voice Portal/Voice Messaging menus and options are customizable via the *System – Voice Portal* web interface. Information on this page is system-wide and pertains to all users in all groups, and should be set up accordingly.

1. On the *System – Services* menu page, click on **Voice Portal**.

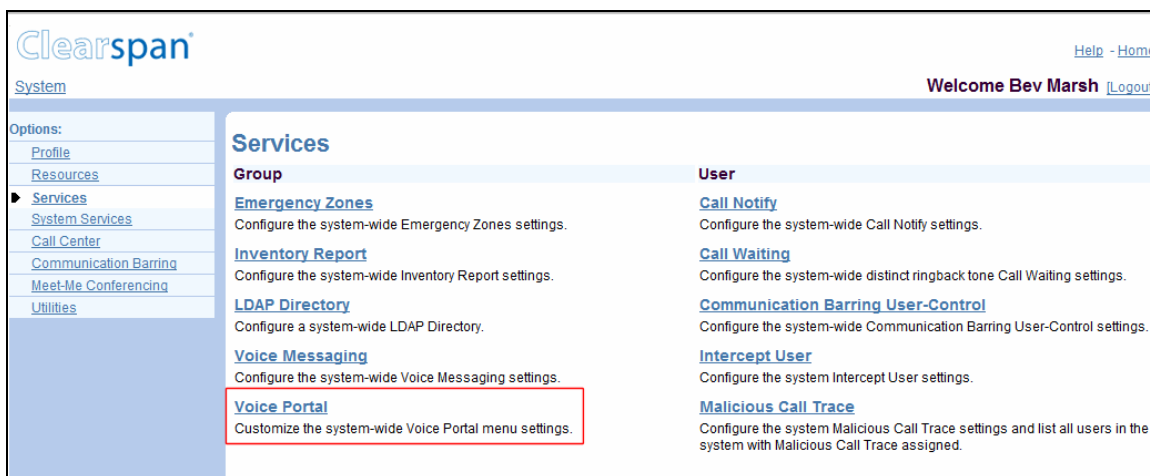


Figure 3 System – Services Menu

The *System – Voice Portal* page appears.

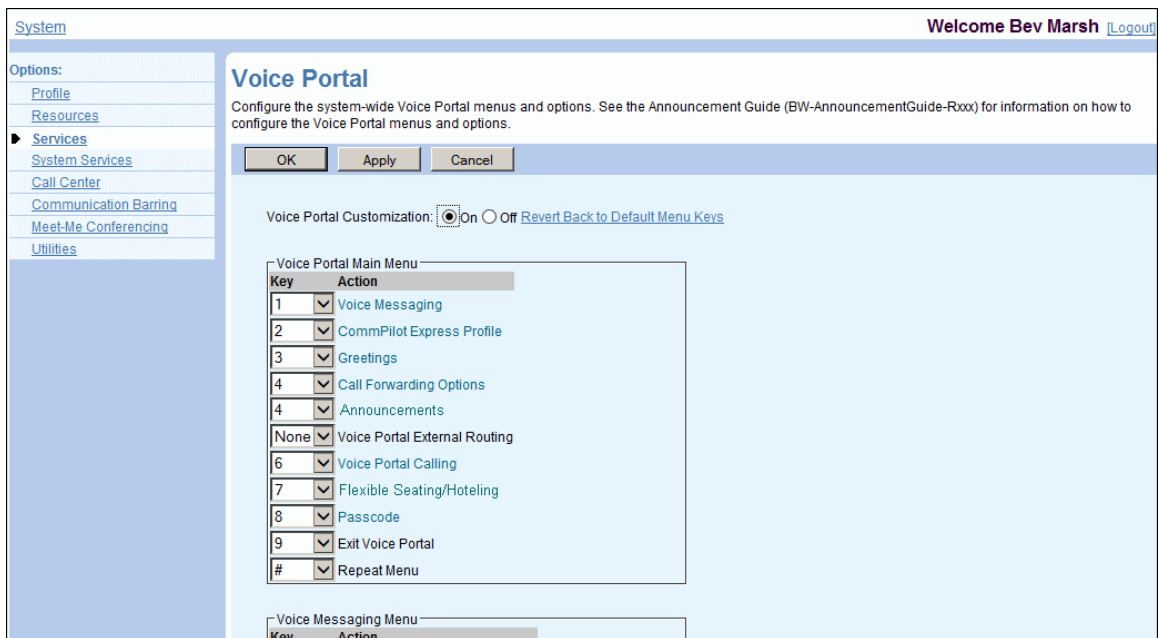


Figure 4 System – Voice Portal Menus and Options (Part 1 of 11)

2. Select *On* to use the customized voice portal settings. Select *Off* to have the default settings used by the system and heard by callers.
3. For a customized voice portal, enter information as follows:

Voice Portal Main Menu	
Key	Action
1	Voice Messaging
2	CommPilot Express Profile
3	Greetings
4	Call Forwarding Options
5	Announcements
None	Voice Portal External Routing
6	Voice Portal Calling
7	Flexible Seating/Hoteling
8	Passcode
9	Exit Voice Portal
#	Repeat Menu

Voice Messaging Menu	
Key	Action
1	Play Messages
2	Change Busy Greeting
3	Change No Answer Greeting
4	Change Extended Away Greeting
5	Compose Message
7	Delete All Messages
None	Passcode
None	Personalized Name
8	Message Deposit
*	Return To Previous Menu
#	Repeat Menu

Figure 5 System – Voice Portal Menus and Options (Part 2 of 11)

Following is a table of the voice portal input boxes. To move between input boxes, use the TAB key or click in the input box. Select a key from the drop-down list to map to the following menu selections.

**VOICE PORTAL MAIN
MENU**

ACTION

Voice Messaging	Accesses the <i>Voice Messaging</i> menu.
CommPilot Express Profile	Accesses the <i>CommPilot Express Profile</i> menu.
Greetings	Accesses the <i>Greetings</i> menu.
Call Forwarding Options	Accesses the <i>Call Forwarding Options</i> menu.

VOICE PORTAL MAIN MENU	ACTION
Announcements	Accesses the <i>Announcements</i> menu
Voice Portal External Routing	Accesses the <i>Voice Portal External Routing</i> menu
Voice Portal Calling	Accesses the <i>Voice Portal Calling</i> menu.
Flexible Seating/Hoteling	Accesses the <i>Flexible Seating/Hoteling</i> menu.
Passcode	Accesses the <i>Passcode</i> menu.
Personal Assistant	Accesses the <i>Personal Assistant</i> menu.
Exit Voice Portal	Exits the Voice Portal.
Repeat Menu	Repeats the current menu.
VOICE MESSAGING MENU	ACTION
Play Messages	Accesses the <i>Play Messages</i> menu.
Change Busy Greeting	Accesses the <i>Change Busy Greeting</i> menu.
Change No Answer Greeting	Accesses the <i>Change No Answer Greeting</i> menu.
Change Extended Away Greeting	Accesses the <i>Change Extended Away Greeting</i> menu
Compose Message	Accesses the <i>Compose Message</i> menu.
Delete All Messages	Accesses the <i>Delete All Messages</i> menu.
Passcode	Accesses the <i>Passcode</i> menu.
Personalized Name	Accesses the <i>Personalized Name</i> menu.
Message Deposit	Accesses the <i>Message Deposit</i> menu
Return To Previous Menu	Returns to the previous menu. This menu item is mandatory.
Repeat Menu	Repeats the current menu.

Play Greeting Menu	
Key	Action
1	▾ Skip Backward
2	▾ Pause/Resume
3	▾ Skip Forward
4	▾ Jump To Begin
#	▾ Jump To End

Change Busy/No Answer Greeting Menus	
Key	Action
1	▾ Record New Greeting
2	▾ Listen To Current Greeting
3	▾ Revert To System Default Greeting
* ▾	Return To Previous Menu
#	▾ Repeat Menu

Change Extended Away Greeting Menu	
Key	Action
1	▾ Activate Extended Away Greeting
2	▾ Deactivate Extended Away Greeting
3	▾ Record New Greeting
4	▾ Listen To Current Greeting
* ▾	Return To Previous Menu
#	▾ Repeat Menu

Record New Greeting/Personalized Name Menus	
Key	Action
#	▾ End Recording

Figure 6 System – Voice Portal Menus and Options (Part 3 of 11)

Following is a table of the voice portal input boxes shown above. To move between input boxes, use the TAB key or click in the input box. Select a key from a drop-down list to map to the following menu selections.

Note that the *Play Greeting Menu* applies only to the Voice Messaging greeting-only mode, (which does not allow message deposit).

PLAY GREETING MENU	ACTION
Skip Backward	Plays the VM deposit greeting from three seconds before the current position.
Pause/Resume	The first execution of this command pauses the playing of the greeting. The second execution of this command plays the greeting from the current location.
Skip Forward	Plays the greeting from three seconds beyond the current position.
Jump To Begin	Plays the greeting from the beginning.
Jump To End	Moves to the end of the greeting.
CHANGE BUSY/NO ANSWER GREETING MENUS	ACTION
Record New Greeting	Permits the user to record a new greeting and accesses the <i>Record New Greeting/Personalized Name</i> menu.
Listen To current greeting	Plays the current greeting.
Revert To system default greeting	Changes the current greeting to the default system greeting.
Return To previous menu	Returns to the previous menu. This menu item is mandatory.
Repeat Menu	Repeats the current menu.
CHANGE EXTENDED AWAY GREETING MENU	ACTION
Activate Extended Away Greeting	Activates the extended away greeting.
Deactivate Extended Away Greeting	Deactivates the extended away greeting.
Record New Greeting	Records a new extended away greeting and accesses the <i>Record New Greeting/Personalized Name</i> menu.
Listen To current greeting	Plays the current extended away greeting.
Return To previous menu	Returns to the previous menu. This menu item is mandatory.
Repeat Menu	Repeats the current menu.
RECORD NEW GREETING/PERSONALIZED NAME MENUS	ACTION
End Recording	Stops the current recording. This menu item is mandatory.

Delete All Messages Menu	
Key	Action
1	Confirm Deletion
*	Cancel Deletion

Message Deposit Menu	
Key	Action
1	Enable Message Deposit
2	Disable Message Deposit
3	Listen To Message Deposit Status
*	Return To Previous Menu
#	Repeat Menu

Disable Message Deposit Menu	
Key	Action
1	Disconnect After Greeting
2	Forward After Greeting
3	Change Forwarding Destination
*	Return To Previous Menu
#	Repeat Menu

Greeting Only Forward Destination Menu	
Key	Action
#	Greeting Only Forwarding Destination

CommPilot Express Profile Menu	
Key	Action
1	Activate "Available-In Office" Profile
2	Activate "Available-Out Of Office" Profile
3	Activate "Busy" Profile
4	Activate "Unavailable" Profile
5	No Profile
*	Return To Previous Menu
None	Repeat Menu

Figure 7 System – Voice Portal Menus and Options (Part 4 of 11)

Following is a table of the voice portal input boxes shown above. To move between input boxes, use the TAB key or click in the input box. Select a key from a drop-down list to map to the following menu selections.

DELETE ALL MESSAGES MENU	ACTION
Confirm Deletion	Deletes all messages. This menu item is mandatory.
Cancel Deletion	Cancels the delete messages command. This menu item is mandatory.
MESSAGE DEPOSIT MENU	ACTION
Enable Message Deposit	Enables message deposit (disabling the greeting-only mode).
Disable Message Deposit	Disables message deposit (enabling the greeting-only mode) and accesses the <i>Disable Message Deposit</i> menu.
Listen To Message Deposit Status	Listens to the current message deposit status.
Return To Previous Menu	Returns to the previous menu. This menu item is mandatory.
Repeat Menu	Repeats the current menu.
DISABLE MESSAGE DEPOSIT MENU	ACTION
Disconnect After Greeting	The greeting-only Voice Mail service is set to disconnect the call after the greeting.
Forward After Greeting	The greeting-only Voice Mail service is set to forward the call after the greeting. At this point, if the forwarding destination has not yet been set, the user is prompted for a destination.
Change Forwarding Destination	Sets or modifies the greeting-only forwarding destination.
Return To Previous Menu	Returns to the previous menu. This menu item is mandatory.
Repeat Menu	Repeats the current menu.
GREETING ONLY FORWARD DESTINATION MENU	ACTION
Greeting Only Forwarding Destination	Terminates the greeting-only forwarding destination digit entry.
COMMPILOT EXPRESS PROFILE MENU	ACTION
Activate "Available-In Office" Profile	Activates the user's <i>Available-In Office</i> CommPilot profile.
Activate "Available-Out of Office" Profile	Activates the user's <i>Available-Out of Office</i> CommPilot profile.

Activate "Busy" Profile	Activates the user's <i>Busy</i> CommPilot profile.
Activate "Unavailable" Profile	Activates the user's <i>Unavailable</i> CommPilot profile.
No Profile	Deactivates all CommPilot profiles.
Return To Previous Menu	Returns to the previous menu. This menu item is mandatory.
Repeat Menu	Repeats the current menu.

Greetings Menu

Key	Action
1	Personalized Name
2	Conference Greeting
*	Return To Previous Menu
#	Repeat Menu

Personalized Name Menu

Key	Action
1	Record New Personalized Name
2	Listen To Current Personalized Name
3	Delete Personalized Name
*	Return To Previous Menu
#	Repeat Menu

Conference Greeting Menu

Key	Action
1	Activate Conference Greeting
2	Deactivate Conference Greeting
3	Record New Conference Greeting
4	Listen to Current Conference Greeting
*	Return To Previous Menu
#	Repeat Menu

Call Forwarding Options Menu

Key	Action
1	Activate Call Forwarding
2	Deactivate Call Forwarding
3	Change Call Forwarding Destination
4	Listen To Call Forwarding Status
*	Return To Previous Menu
#	Repeat Menu

Figure 8 System – Voice Portal Menus and Options (Part 5 of 11)

Following is a table of the voice portal input boxes s shown above. To move between input boxes, use the TAB key or click in the input box. Select a key from the drop-down list to map to the following menu selections.

GREETINGS MENU	ACTION
Personalized Name	Permits the conference host or delegate to access the <i>Personalized Name</i> menu for the conference.
Conference Greeting	Accesses the <i>Conference Greeting</i> menu.
Return To Previous Menu	Returns to the previous menu. This menu item is mandatory.
Repeat Menu	Repeats the current menu.

PERSONALIZED NAME MENU	ACTION
Record New Personalized Name	Permits the user to record a new personalized name and accesses the <i>Record New Greeting/Personalized Name</i> menus.
Listen To Current Personalized Name	Plays the current personalized name recording.
Delete Personalized Name	Deletes the current personalized name.
Return To Previous Menu	Returns to the previous menu. This menu item is mandatory.
Repeat Menu	Repeats the current menu.

CONFERENCE GREETING MENU	ACTION
Activate Conference Greeting	Activates the conference greeting.
Deactivate Conference Greeting	Deactivates the conference greeting.
Record New Conference Greeting	Records a new conference greeting.
Listen To Current Conference Greeting	Plays the current conference greeting.
Return To Previous Menu	Returns to the previous menu. This menu item is mandatory.
Repeat Menu	Repeats the current menu.

CALL FORWARDING OPTIONS MENU	ACTION
Activate Call Forwarding	Activates the Call Forwarding service.
Deactivate Call Forwarding	Deactivates the Call Forwarding service.
Change Call Forwarding	Permits the user to change the <i>Call Forwarding Destination</i>

Destination	<i>Number and accesses the Change Call Forwarding Destination menu.</i>
Listen To Call Forwarding Status	Plays the current Call Forwarding status information.
Return To Previous Menu	Returns to the previous menu. This menu item is mandatory.
Repeat Menu	Repeats the current menu.
CHANGE CALL FORWARDING DESTINATION MENU	ACTION
Finish Entering New Destination Number Menu	Prompts the user to enter the new <i>Call Forwarding Destination Number</i> .
VOICE PORTAL ANNOUNCEMENT MENU	ACTION
Audio Recording	Records a new audio greeting.
Audio and Video Recording	Records a new audio/video greeting.
Return To Previous Menu	Returns to the previous menu. This menu item is mandatory.
Repeat Menu	Repeats the current menu.
VOICE PORTAL ANNOUNCEMENT RECORDING MENU	ACTION
Accept Recording	Accepts the recording that has just been made and re-enters the <i>Voice Portal Announcement</i> menu.
Reject and Re-record	Rejects the recording that has just been made, and returns to the recording prompt.
End Recording	Stops the current recording. This menu item is mandatory.
Return To Previous Menu	Returns to the previous menu. This menu item is mandatory.
Repeat Menu	Repeats the current menu.
VOICE PORTAL CALLING MENU	ACTION
End Current Call And Go Back To Previous Menu	Ends the current call and returns to the previous menu. Type either two or three digits (0-9), * or #.
Return To Previous Menu	Return to the previous menu. This menu item is mandatory.

Greetings Menu	
Key	Action
1	Personalized Name
2	Conference Greeting
*	Return To Previous Menu
#	Repeat Menu

Personalized Name Menu	
Key	Action
1	Record New Personalized Name
2	Listen To Current Personalized Name
3	Delete Personalized Name
*	Return To Previous Menu
#	Repeat Menu

Conference Greeting Menu	
Key	Action
1	Activate Conference Greeting
2	Deactivate Conference Greeting
3	Record New Conference Greeting
4	Listen to Current Conference Greeting
*	Return To Previous Menu
#	Repeat Menu

Call Forwarding Options Menu	
Key	Action
1	Activate Call Forwarding
2	Deactivate Call Forwarding
3	Change Call Forwarding Destination
4	Listen To Call Forwarding Status
*	Return To Previous Menu
#	Repeat Menu

Figure 9 System – Voice Portal Menus and Options (Part 6 of 11)

FLEXIBLE SEATING/HOTELING MENU	ACTIONS
Check Host Status	If selected, the system provides an indication of whether or not the host is associated with a guest, and the identity of the guest user.
Associate With Host	If you select this option and the host is not currently associated with a guest, then the user is played a message indicating the association was successful. The guest association timeout is set to the association time limit value configured on the host.
Disassociate From Host	This option is available when the voice portal call is originated from the Leased Device. When you select this option, the associated guest user's service profile is disassociated from the host user's device. If the guest user is not the current user associated with the host, then the request is denied and the user is informed that the user is not currently associated with the host.
Disassociate From Remote Host	This option is available when the guest user is associated with a host and the voice portal call is originated from a phone other than a Leased Device. When you select this option, the associated guest user's service profile is disassociated from the host user's device.
Return To Previous Menu	Return to the previous menu. This menu item is mandatory.
Repeat Menu	Repeats the current menu.
FAX MESSAGING MENU	ACTIONS
Save Fax and Skip to Next Message	Saves the current fax and skips to the next message.
Previous Message	Skips to the previous message.
Play envelope	Plays the envelope of the current message.
Next message	Skips to the next message.
Delete Message	Deletes the message.
Print Fax	Prints the current fax.
Return to the previous menu	Returns to the previous menu. This menu item is mandatory.
PASSCODE MENU	ACTION
Finish Entering/Re-entering Passcode	Permits the user to enter or re-enter a passcode. This menu item is mandatory.
Return To Previous Menu	Return to the previous menu. This menu item is mandatory.



Figure 10 System – Voice Portal Menus and Options (Part 7 of 11)

Following is a table of the voice portal input boxes illustrated above. To move between input boxes, use the TAB key or click in the input box. Select a key from a drop-down list to map to the following menu selections.

PLAY MESSAGES MENU	ACTION
Save Message	Saves the current message.
Delete Message	Deletes the current message.
Play Message	Plays the current message and accesses the <i>Play Message</i> menu.
Previous Message	Skips to the previous message.
Play Envelope	Plays the envelope of the current message.

Next Message	Skips to the next message.
Callback Caller	Places a return call to the originator of the current message.
Compose Message	Accesses the <i>Forward/Compose Message</i> menu.
Reply Message	Accesses the <i>Reply Message</i> menu.
Forward Message	Accesses the <i>Forward/Compose Message</i> menu.
Additional Message Options	Accesses the <i>Additional Message Options</i> menu.
Personalized Name	Accesses the <i>Personalized Name</i> menu.
Passcode	Accesses the <i>Passcode</i> menu.
Return To Previous Menu	Returns to previous menu. This menu item is mandatory.
Repeat Menu	Repeats the current menu.
PLAY MESSAGE MENU	ACTION
Skip Backward	Plays the message from ten seconds before the current position.
Pause/Resume	The first execution of this command pauses the playing of the message. The second execution of this command plays the message from the current location.
Skip Forward	Plays the message from ten seconds beyond the current position.
Jump To Begin	Plays the message from the beginning.
Jump To End	Moves to the end of the message.



Figure 11 System – Voice Portal Menus and Options (Part 8 of 11)

Following is a table of the voice portal input boxes illustrated above. To move between input boxes, use the TAB key or click in the input box. Select a key from a drop-down list to map to the following menu selections.

ADDITIONAL MESSAGE OPTIONS MENU	ACTION
Save Message	Saves the current message.
Delete Message	Deletes the current message.
Play Envelope	Plays the envelope of the current message.
Callback Caller	Places a return call to the originator of the current message.
Compose Message	Accesses the <i>Forward/Compose Message</i> menu.

ADDITIONAL MESSAGE OPTIONS MENU	ACTION
Reply Message	Accesses the <i>Reply Message</i> menu.
Forward Message	Accesses the <i>Forward/Compose Message</i> menu.
Personalized Name	Accesses the <i>Personalized Name</i> menu.
Passcode	Accesses the <i>Passcode</i> menu.
Return To Previous Menu	Returns to the previous menu. This menu item is mandatory.
Repeat Menu	Repeats the current menu.
FORWARD/COMPOSE MESSAGE MENUS	ACTION
Send To Person(s)	Permits the user to enter a destination number or an extension to forward the current message to and accesses the <i>Send to Person(s)</i> menu.
Send To All Group Members	Permits the user to send the current message to all group members and accesses the <i>Send to All Group Members</i> menu.
Send To Distribution List	Permits the user to send the current message to a distribution list and accesses the <i>Send to Distribution List</i> menu.
Change Current Introduction/Message	Permits the user to change the current introduction to a message or a composed message and accesses the <i>Change Current Introduction/Message/Reply</i> menu.
Listen To Current Introduction/Message	Plays the current introduction to a message or the composed message.
Set/Clear Urgent Indicator	The first execution of this command sets the "Urgent" indicator associated with the message. The second execution of this command clears the "Urgent" indicator associated with the message.
Set/Clear Confidential Indicator	The first execution of this command sets the "Confidential" indicator associated with the message. The second execution of this command clears the "Confidential" indicator associated with the message.
Return to Previous Menu	Returns to the previous menu. This message item is mandatory.
Repeat Menu	Repeats the current menu.

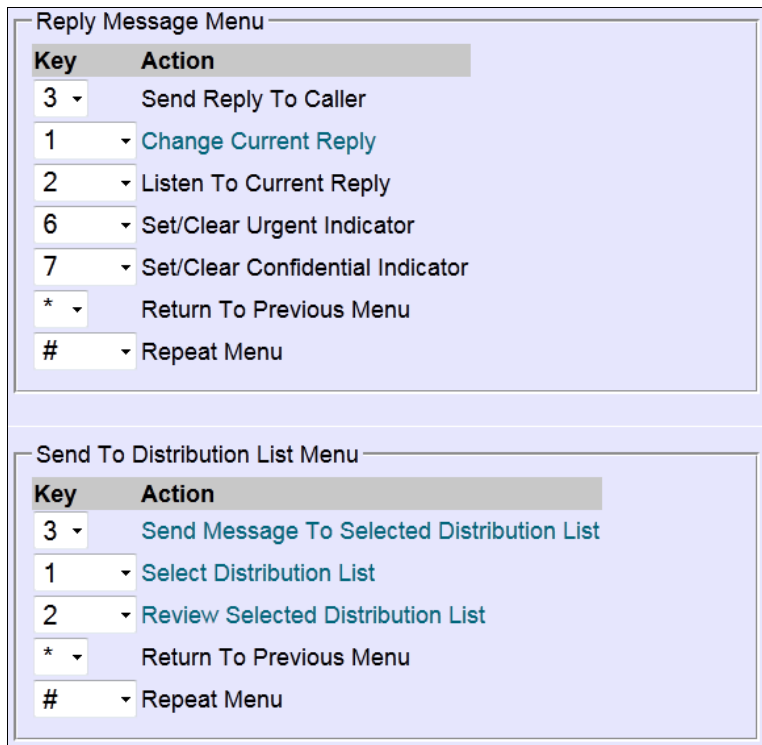


Figure 12 System – Voice Portal Menus and Options (Part 9 of 11)

Following is a table of the voice portal input boxes illustrated above. To move between input boxes, use the TAB key or click in the input box. Select a key from a drop-down list to map to the following menu selections.

REPLY MESSAGE MENU	ACTION
Send Reply To Caller	Sends a reply of the current message to the caller.
Change Current Reply	Accesses the <i>Change Current Introduction/Message/Reply</i> menus.
Listen To Current Reply	Plays the current reply.
Set/Clear Urgent Indicator	Sets or clears the “Urgent” indicator associated with the reply.
Set/Clear Confidential Indicator	Sets or clears the “Confidential” indicator associated with the reply.
Return To Previous Menu	Returns to the previous menu. This message item is mandatory.
Repeat Menu	Repeats the current menu.
SEND TO DISTRIBUTION LIST MENU	ACTION
Send Message To Selected Distribution List	Sends a reply of the current message to the caller.

Select Distribution List	Accesses the <i>Select Distribution List</i> menu.
Review Selected Distribution List	Accesses the <i>Review Selected Distribution List</i> menu.
Return To Previous Menu	Returns to the previous menu. This message item is mandatory.
Repeat Menu	Repeats the current menu.

Select Distribution List Menu	
Key	Action
* ▾	Return To Previous Menu
# ▾	Repeat Menu Or Finish Entering Distribution List Number
Review Selected Distribution List Menu	
Key	Action
# ▾	Interrupt Playback And Return To Previous Menu
Send Message To Selected Distribution List Menu	
Key	Action
# ▾	Confirm Sending To Distribution List
* ▾	Cancel Sending To Distribution List
Send To All Group Members Menu	
Key	Action
# ▾	Confirm Sending To Entire Group
* ▾	Cancel Sending To Entire Group
Send To Person(s) Menu	
Key	Action
# ▾	Confirm Sending Message
* ▾	Cancel Sending Message
# ▾	Finish Entering Number Where To Send Message To
* ▾	Finish Forwarding/Sending Message
Change Current Introduction/Message/Reply Menus	
Key	Action
# ▾	End Recording
Voice Portal Login Menu	
Key	Action
* ▾	Access Using Other Mailbox ID

Figure 13 System – Voice Portal Menus and Options (Part 10 of 11)

Following is a table of the voice portal input boxes illustrated above. To move between input boxes, use the TAB key or click in the input box. Select a key from a drop-down list to map to the following menu selections.

SELECT DISTRIBUTION LIST MENU	ACTION
Return To Previous Menu	Returns to the previous menu. This message item is mandatory.
Repeat Menu or Finish Entering Distribution List Number	Repeats the current menu or finishes entering distribution list.
REVIEW SELECTED DISTRIBUTION LIST MENU	ACTION
Interrupt Voicing And Return To Previous Menu	Interrupts the playback of the distribution list and returns to the previous menu.
SEND MESSAGE TO SELECTED DISTRIBUTION LIST MENU	ACTION
Confirm Sending To Distribution List	Confirms the request to send the current message to the selected distribution list. This menu item is mandatory.
Cancel Sending To Distribution List	Cancels the request to send the current message to the selected distribution list. This menu item is mandatory.
SEND TO ALL GROUP MEMBERS MENU	ACTION
Confirm Sending To Entire Group	Confirms the request to send the current message to the entire group. This menu item is mandatory.
Cancel Sending To Entire Group	Cancels the request to send the current message to the entire group. This menu item is mandatory.
SEND TO PERSON(S) MENU	ACTION
Confirm Sending Message	Confirms the request to send the current message to the identified person. This menu item is mandatory.
Cancel Sending Message	Cancels the request to send the current message to the identified person. This menu item is mandatory.
Finish Entering Number Where To Send Message To	Prompts the user to finish entering the destination number. This menu item is mandatory.
Finish Forwarding/Sending Message	Returns to the previous menu. This menu item is mandatory.
CHANGE CURRENT INTRODUCTION/MESSAGE/ REPLY MENUS	ACTION
End Recording	Stops the current message recording. This menu item is mandatory.
VOICE PORTAL LOGIN MENU	ACTION
Access Using Other Mailbox ID	Permits the user to access the Voice Portal with another Mailbox ID. Type either two or three digits (0 – 9), * or #.

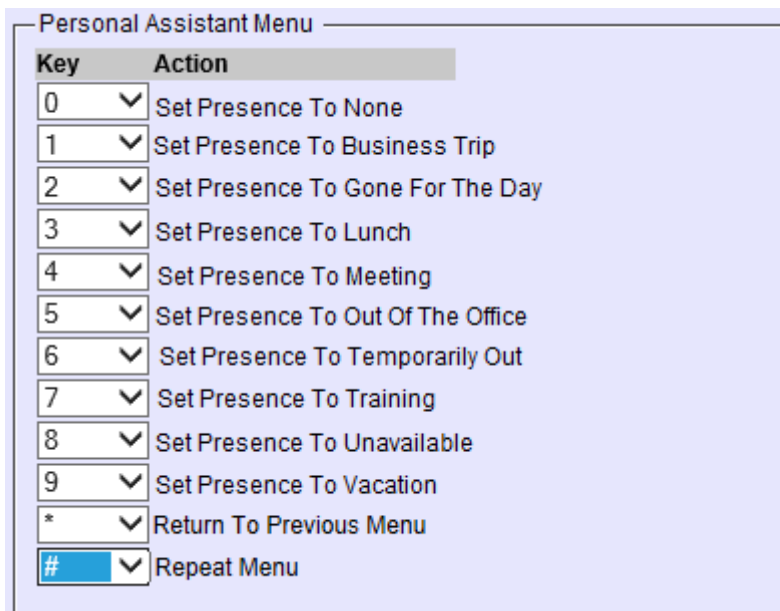


Figure 14 System – Voice Portal Menus and Options (Part 11 of 11)

Following is a table of the voice portal input boxes illustrated above. To move between input boxes, use the TAB key or click in the input box. Select a key from a drop-down list to map to the following menu selections.

PERSONAL ASSISTANT MENU	ACTION
Set Presence to None	Disables the Personal Assistant.
Set Presence to Business Trip	Enables the Personal Assistant and sets the presence to Business Trip.
Set Presence to Gone For The Day	Enables the Personal Assistant and sets the presence to Gone For The Day.
Set Presence to Lunch	Enables the Personal Assistant and sets the presence to Lunch.
Set Presence to Meeting	Enables the Personal Assistant and sets the presence to Meeting.
Set Presence to Out Of The Office	Enables the Personal Assistant and sets the presence to Out Of The Office.
Set Presence to Temporarily Out	Enables the Personal Assistant and sets the presence to Temporarily Out.
Set Presence to Training	Enables the Personal Assistant and sets the presence to Training.
Set Presence to Unavailable	Enables the Personal Assistant and sets the presence to Unavailable.
Set Presence to Vacation	Enables the Personal Assistant and sets the presence to Vacation.

PERSONAL ASSISTANT MENU	ACTION
Return To Previous Menu	Returns to the previous menu. This message item is mandatory.
Repeat Menu	Repeats the current menu.

4.2.1.3.2 Configure Group Voice Portal

4.2.1.3.2.1 Authorize Voice Messaging Group and Voice Messaging User service to the group

In order to use a Group Voice Portal, the Voice Messaging Group service must be authorized for use by this group. From the Groups listing on the Enterprise – *Groups* page, select the group to be configured. From the group's *Options* list click **Resources**. The *Group – Resources* menu page appears. Click **Services**. The *Group – Services* page appears. Check the *Voice Messaging Group* (from the Group Services section) and *Voice Messaging User* (from the User Services section) services, and then click **OK**. Both *Voice Messaging Group* and *Voice Messaging User* must be authorized.

4.2.1.3.2.2 Assign Voice Messaging Group Service to the Group

From the *Group – Resources* menu page, click *Assign Group Services* and assign the *Voice Messaging Group* service to the group. Click **OK**.

4.2.1.3.2.3 Assign Voice Messaging User Service to Users

From the *Group – Resources* menu page, click **Existing User Services** and/or **New User Services Template** and assign the Voice Messaging User service to the desired users. Click **OK**.

4.2.1.3.2.4 Configure Group Voice Portal Service

From the Groups listing on the Enterprise – *Groups* page, select the group to be configured. From group's *Options* list, click *Services*. The *Group – Services* menu page appears. Click **Voice Portal**. Turn the service on and assign a directory number that can be dialed by users to retrieve the voice messages by phone. Click **OK**.

The screenshot displays the 'Voice Portal' configuration page in the Clearspan web provisioning interface. The page title is 'Voice Portal' and it includes a sub-header: 'Enable users to call from any phone and configure some of their user services.' The interface features a left-hand navigation menu with options like Profile, Resources, Services, and Utilities. The main configuration area includes fields for Voice Portal status (On/Off), Voice Portal ID (231767414_VMR), Name (Voice Portal), Phone Number (9722221024), Extension (1024), Language (English), Time Zone (GMT-05:00), and Aliases. There are also checkboxes for 'Allow Phone Numbers or Voice Mail Aliases on login' and 'Use Voice Portal Wizard'. External routing options are available, including 'Use System Settings' and 'Use Group Settings'. A 'Reset Administrator Password' section is at the bottom with 'Type Password' and 'Re-type Password' fields. The page is titled 'Welcome Bev Marsh' and includes 'OK', 'Apply', and 'Cancel' buttons.

Figure 15 Voice Portal Settings for Group

4.2.1.3.2.5 Configure Group Voice Portal Branding

To customize the Group Voice Portal greeting that is played to users when they login, go to the web provisioning interface of the service provider or enterprise, select *Utilities* and click on **Voice Portal Branding**. Alternatively, the Group Voice Portal admin could directly access the Group Voice Portal and record the voice portal branding for the group.

The screenshot shows the Clearspan web interface. At the top left is the Clearspan logo. Below it is the breadcrumb navigation: System > Bulk Provisioning > Group_G. At the top right, there is a user greeting: Welcome Bev Marsh [Logout].

On the left side, there is a navigation menu under 'Options:' with the following items: Profile, Resources, Services, Service Scripts, Acct/Auth Codes, Call Center, Calling Plan, Communication Barring, Meet-Me Conferencing, and Utilities (which is selected).

The main content area is titled 'Utilities' and is divided into two columns: 'Basic' and 'Advanced'.

Basic Utilities:

- Common Phone List:** Display or modify common group phone lists.
- Custom Contact Directories:** Define new custom contact directories that contain a subset of the users in the group or enterprise.
- Feature Access Codes:** Specify feature access codes (also known as star codes) and feature code prefixes associated with the group's services.
- Enterprise Directory:** Display the enterprise directory list.
- Inventory Report:** Generate a report on the resources used in your group. Resources include phone numbers, devices, services, users, and departments.
- Password Rules:** Define the password rules that users and administrators must follow to create and update passwords.
- Passcode Rules:** Define the passcode rules that users must follow to create and update voice portal passcodes.

Advanced Utilities:

- Device Configuration:** Load or modify the default configuration file for an access gateway.
- Extension Dialing:** Provide the ability to configure extension dialing for your group.
- Intercept Group:** Allows the system to intercept calls terminated to or originated from a group that has been decommissioned.
- LDAP Directory:** Configure the LDAP directory for your group.
- Voice Portal Branding:** Customize the voice portal entry greeting that is heard by users logging in to the voice portal. (This item is highlighted with a red box in the screenshot.)

Figure 16 Voice Portal Branding Settings for Group

4.2.1.3.2.6 Configure Scope of the Group Voice Portal

To allow each service provider or enterprise defined on the Application Server to set the voice portal scope, under *System – Services*, select *Voice Messaging* and then select *Configured by Service Providers or Enterprises*. This allows the enterprises to choose between having an independent voice portal for each group or to link all group voice portals together.

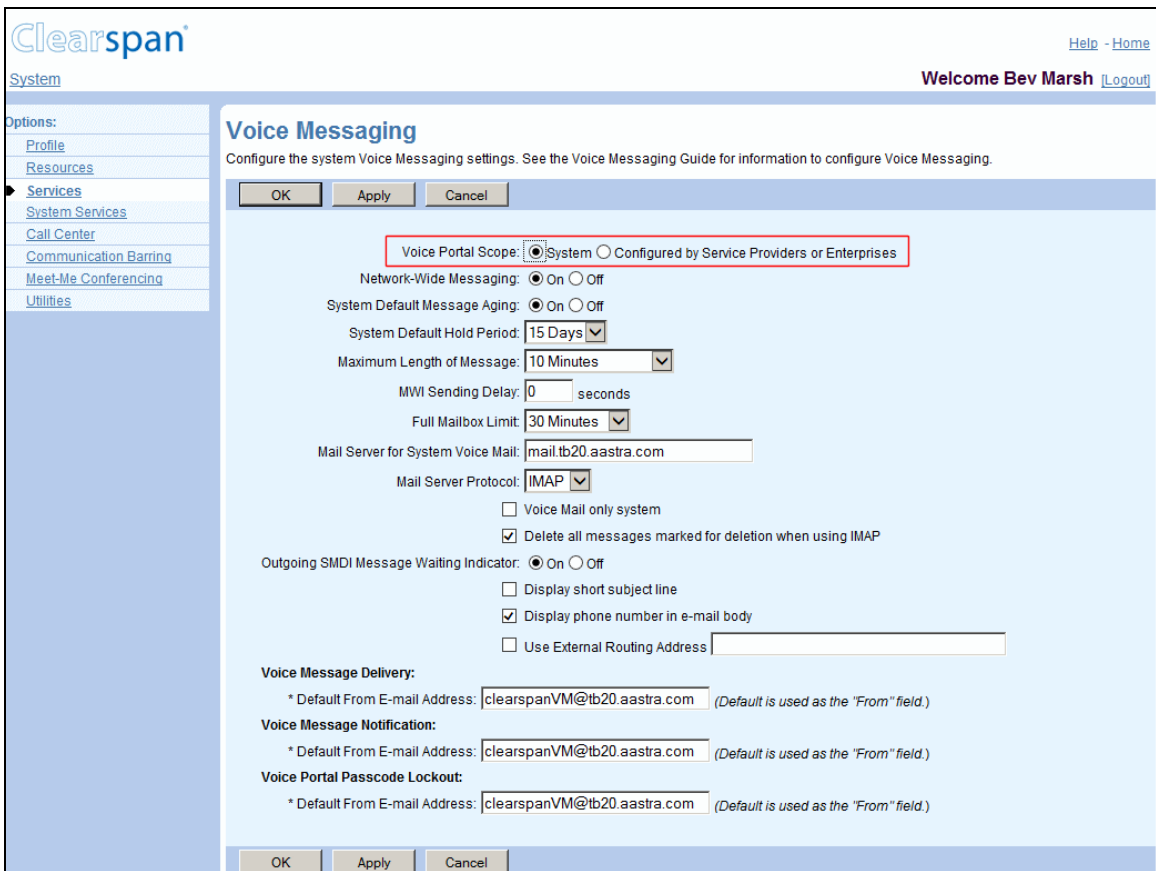


Figure 17 Voice Messaging Service Configuration

Linking group voice portals together allows a user to call any of the voice portals within the defined scope to log in. If the called voice portal is not the user’s own voice portal, the user is redirected to their home voice portal, where the user’s Voice Mail settings reside. It also means that Compose/Forward/Reply functions work across the entire scope and are not restricted to users belonging to the same group. The redirection of the user from the called voice portal to user’s home voice portal is a standard redirection, and requires the target voice portal number to be reachable from the called voice portal. This means that:

- When the scope is within an enterprise, a location code + extension is sufficient, so it is possible to assign a Direct Inward Dialing (DID) to only one of all the voice portals for the enterprise, and assign phantom numbers to all other voice portals for the same enterprise.
- When the scope is within an enterprise or system-wide, the redirection can be done in two ways:
 - Using a DID, in which case all voice portals must have a DID.
 - Using a phantom number, in which case only one of the voice portals within the selected Voice Portal scope must have a DID. Note that in this case, the group should have a group Calling Line ID (CLID) set. (This configuration is common for residential deployments.)

Otherwise, to link all group voice portals on the Application Server together select *System*. Note that the Voice Portal Enterprise feature must be purchased for the *System* option to be available.

When the voice portal scope is set to “Configured by Enterprises”, you configure the voice portal scope for each enterprise or enterprise as described in the next step.

First, select a service provider or enterprise. Then to configure the scope of that provider/enterprise voice portal, select the *Voice Portal* menu item on the *Service Provider/Enterprise – Services* menu page. The *Service Provider/Enterprise – Voice Portal* page appears.

You can set the voice portal scope to “Group” or “Enterprise”. Choosing the “Enterprise” scope allows the voice portal of any group within the enterprise to redirect users to the voice portal of any other group within the enterprise. Choosing the “Group” scope keeps the voice portals of the enterprise’s groups completely separate.

4.2.1.3.3 Configure Network Voice Portal

Configuring a Network Voice Portal allows all users within the network to access Voice Messaging via a single voice portal number. The Network Voice Portal solution consists of two components: the System Voice Portal service and the Network Voice Portal Number.

The System Voice Portal is hosted on a single Application Server and can be directly accessed by a System Voice Portal phone number. Alternatively, if a Network Voice Portal phone number is configured, then all users in the Network can dial the same Network Voice Portal number and they are redirected to the System Voice Portal on their hosting Application Server.

The System Voice Portal service configuration consists of two steps:

- Configure the System Voice Portal service.
- Configure a System Service Number.

This step is required if you want to assign a System Voice Portal phone number to the System Voice Portal. When the System Voice Portal has an assigned phone number, it can be used to directly access the System Voice Portal. If the System Voice Portal does not have an assigned phone number, it is accessible by dialing the Network Voice Portal Number to which it is assigned.

The Network Voice Portal configuration consists of two steps:

- Configure the Network Voice Portal Number.
- Configure the Network Voice Portal Routing Policy.

The Network Voice Portal configuration steps are required if:

- You do not want to assign a System Service Number to the System Voice Portal and instead assign a Network Voice Portal Number to it.
- You have multiple Application Server clusters and you want to use the Network Voice Portal Number to access the System Voice Portals that have that Network Voice Portal Number assigned.

The following rules should be noted:

- The System Voice Portal must have an assigned Network Voice Portal Number or an assigned System Service Number for terminating the voice portal call.
- The same Network Voice Portal Number can be assigned to different System Voice Portals at different Application Server clusters but not to different System Voice Portals on the same Application Server cluster.
- The Network Server must have knowledge of the following information about the System Voice Portal in order to route the voice portal call: System Voice Portal ID, System Voice Portal Number, and the System Voice Portal(s) that are associated with a given Network Voice Portal Number.

There are few ways for the Network Server to know about the System Voice Portal information:

Enable the Network Server Synch mechanism before configuring the System Voice Portal

Use the Application Server Dump / Application Server Upload method; or

With the Network Server Synch turned off, configure the System Voice Portal at the Application Server and at the Network Server separately using the same data.

4.2.1.3.3.1 Add System Service Number

This step is optional if the System Voice Portal does not need to be directly accessed by a phone number.

Go to *System – Resources* and select the **System Service Numbers** to add phone number(s) to be used to directly access the System Voice Portal.

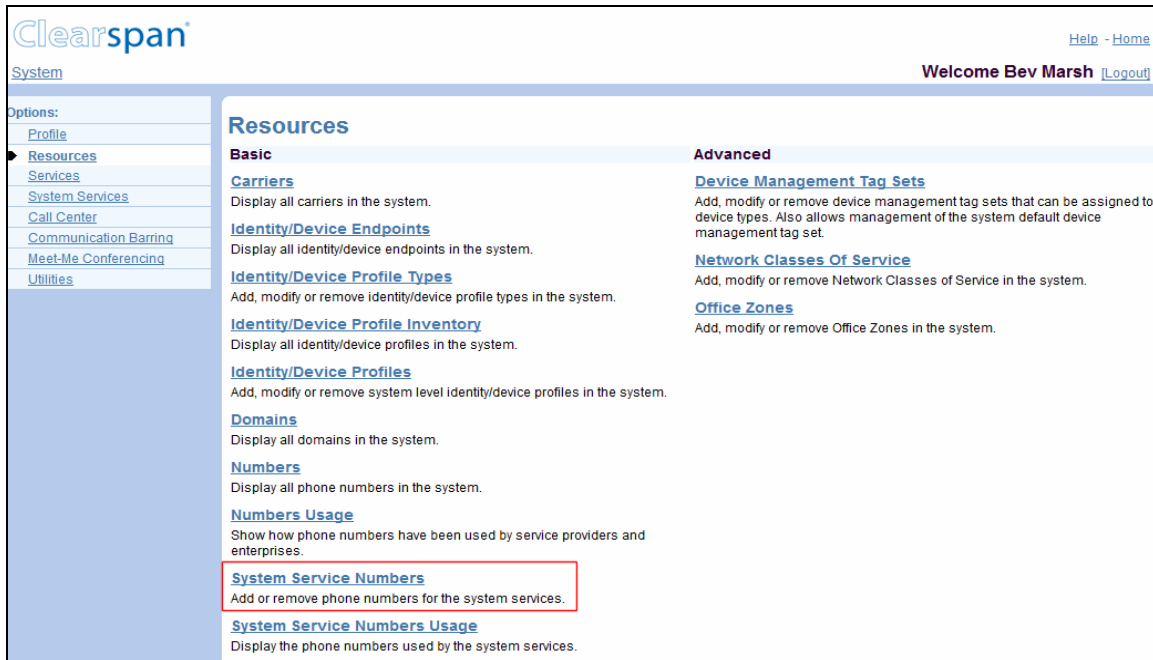


Figure 18 System – Resources – System Service Numbers

At the *System – Resources – System Service Numbers* web interface, click **Add** to add the system service number(s).

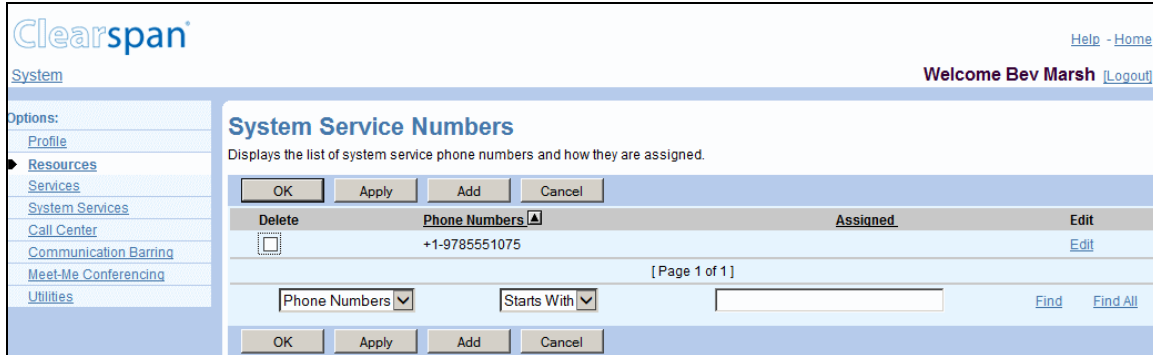


Figure 19 System – List System Service Numbers

As stated above, the Network server must have knowledge of the added System Service Numbers. If the Network Server Synch is turned off when configuring the System Service Numbers, the same system service numbers must be manually added using the Network Server CLI interface as follows:

```
NS_CLI/SubscriberMgmt/SystemServices/Dn> add AS-1 {19726997801}
```

4.2.1.3.3.2 Configure System Voice Portal Service

Go to the *System – System Services* and select the **System Voice Portal** as shown below.

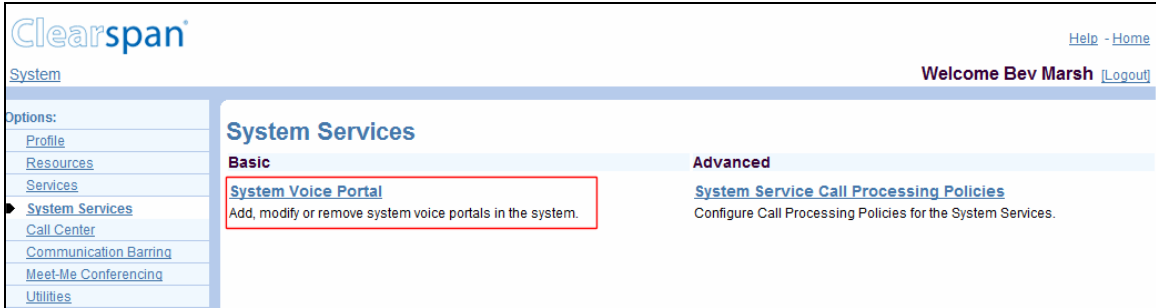


Figure 20 System – System Voice Portal

Select *Add* to add a new System Voice Portal. The *System Voice Portal Add* page Appears.

Note that the System Voice Portal ID must be unique within the network as the Network Server uses it for routing if the System Voice Portal does not have an assigned phone number. The Network Voice Portal Number is configured on the Network Server.

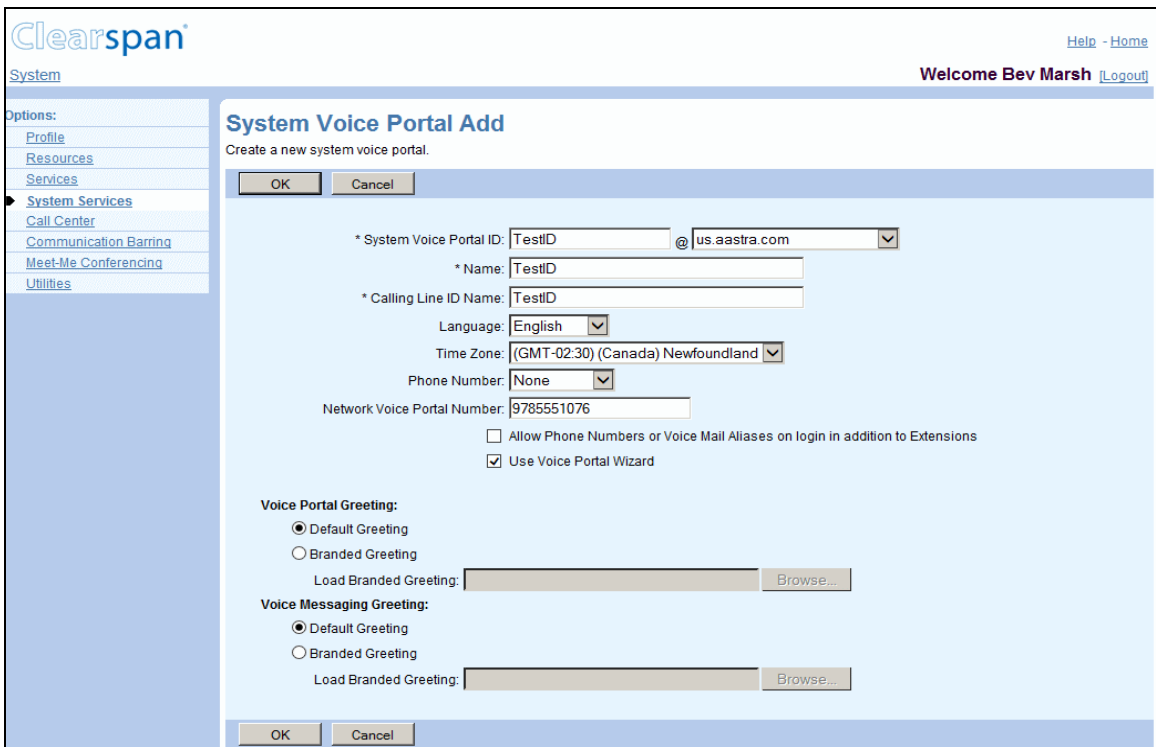


Figure 21 Add System Voice Portal

As stated above, the Network Server must have knowledge of System Voice Portal information for routing purposes. Network Server Synch should be turned on when entering the information above. If the Network Server Synch is turned off when configuring the System Voice Portal service, the same information must be entered manually using the Network Server CLI interface as follows:

```
NS_CLI/SubscriberMgmt/SystemServices/Service> add AS-1  
as1_svp1@broadworks SVP
```

```
NS_CLI/SubscriberMgmt/SystemServices/Service> set AS-1  
as1_svp1@broadworks systemDN 19726997801
```

```
NS_CLI/SubscriberMgmt/SystemServices/Service> set AS-1  
as1_svp1@broadworks networkDN 19726997901
```

4.2.1.3.3.3 Configure Network Voice Portal Number

The Network Voice Portal Number is configured via the Network Server CLI. Under the *SubscriberMgmt/NetworkVoicePortal* level, the Network Voice Portal Number can be added individually or in a range as follows:

```
NS_CLI/SubscriberMgmt/NetworkVoicePortal> add {19726997901}
```

4.2.1.3.3.4 Configure Network Voice Portal Routing Policy

For the Network Server to route the Network Voice Portal call, the Network Voice Portal Routing Policy must be added to the appropriate Profile that is assigned to the Hosting NE and Routing NE that originates the Network Voice Portal call. In the following example, the Network Voice Portal Routing Policy is added to the “ProfASDevTx” profile.

```
NS_CLI/Policy/Profile> add ProfASDevTx NetVoicePortalRtg DefaultInst;
```

Enable the Network Voice Portal Routing Policy as follows:

```
NS_CLI/Policy/NetVoicePortalRtg> get DefaultInst
```

```
NS_CLI/Policy/NetVoicePortalRtg> set DefaultInst enable true
```

4.2.1.4 Configure Clearspan Voice Messaging

When a mail server has been set up and end-user accounts have been established, Clearspan must be configured to use the server, the *Voice Messaging Group* service assigned to the group, and the *Voice Messaging User* service assigned to the users.

4.2.1.4.1 Configure System-wide Voice Messaging Settings

To configure the system voice messaging settings, on the *System – Services* menu page, click **Voice Messaging**.

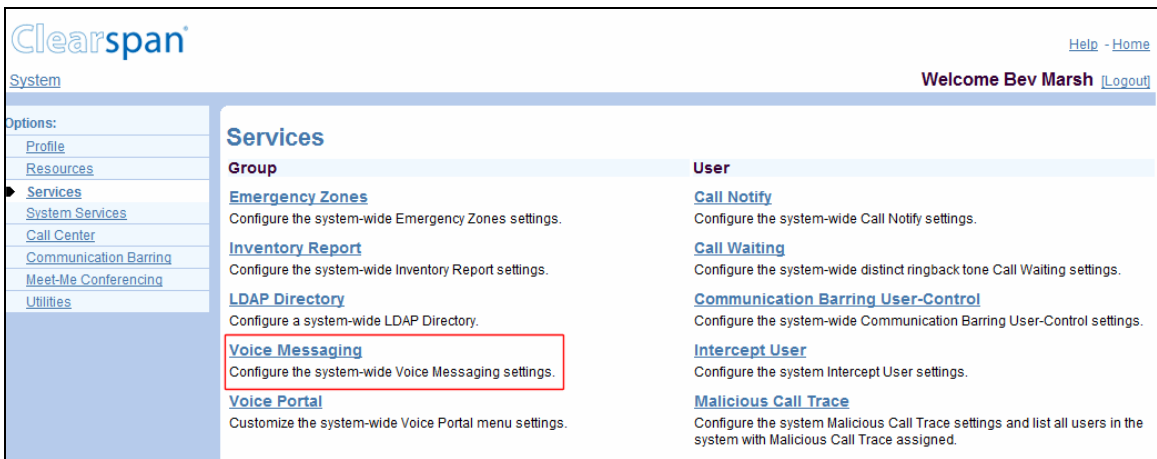


Figure 22 Voice Messaging

The System –Voice Messaging page appears. Enter mail server information for the system voice mail and mail server protocol fields. For Voice Messaging Delivery and Voice Messaging Notification, ensure that the Default From E-mail Address is not blocked by the SMTP server. This address is used for the From field for delivery and notification e-mails.



Note: The Voice Portal Scope settings are applicable when the voice portal is configured at the group level only. It is not applicable when the voice portal is configured at the system level.

Clearspan®
Help - Home

System
Welcome Bev Marsh [Logout](#)

Options:

- [Profile](#)
- [Resources](#)
- [Services](#)
- [System Services](#)
- [Call Center](#)
- [Communication Barring](#)
- [Meet-Me Conferencing](#)
- [Utilities](#)

Voice Messaging

Configure the system Voice Messaging settings. See the Voice Messaging Guide for information to configure Voice Messaging.

OK
Apply
Cancel

Voice Portal Scope: System Configured by Service Providers or Enterprises

Network-Wide Messaging: On Off

System Default Message Aging: On Off

System Default Hold Period: 15 Days

Maximum Length of Message: 10 Minutes

MWI Sending Delay: 0 seconds

Full Mailbox Limit: 30 Minutes

Mail Server for System Voice Mail: mail.tb20.aastra.com

Mail Server Protocol: IMAP

Voice Mail only system

Delete all messages marked for deletion when using IMAP

Outgoing SMDI Message Waiting Indicator: On Off

Display short subject line

Display phone number in e-mail body

Use External Routing Address

Voice Message Delivery:
 * Default From E-mail Address: clearspanVM@tb20.aastra.com (Default is used as the "From" field.)

Voice Message Notification:
 * Default From E-mail Address: clearspanVM@tb20.aastra.com (Default is used as the "From" field.)

Voice Portal Passcode Lockout:
 * Default From E-mail Address: clearspanVM@tb20.aastra.com (Default is used as the "From" field.)

OK
Apply
Cancel

Figure 23 Voice Messaging Service Configuration

4.2.1.4.2 Configure Group Voice Messaging Settings

From the Groups listing on the *Enterprise – Groups* page, select the group to be configured. From group’s Options list, click **Services**. The *Group – Services* menu page appears. Click **Voice Messaging**. The *Voice Messaging* page appears.

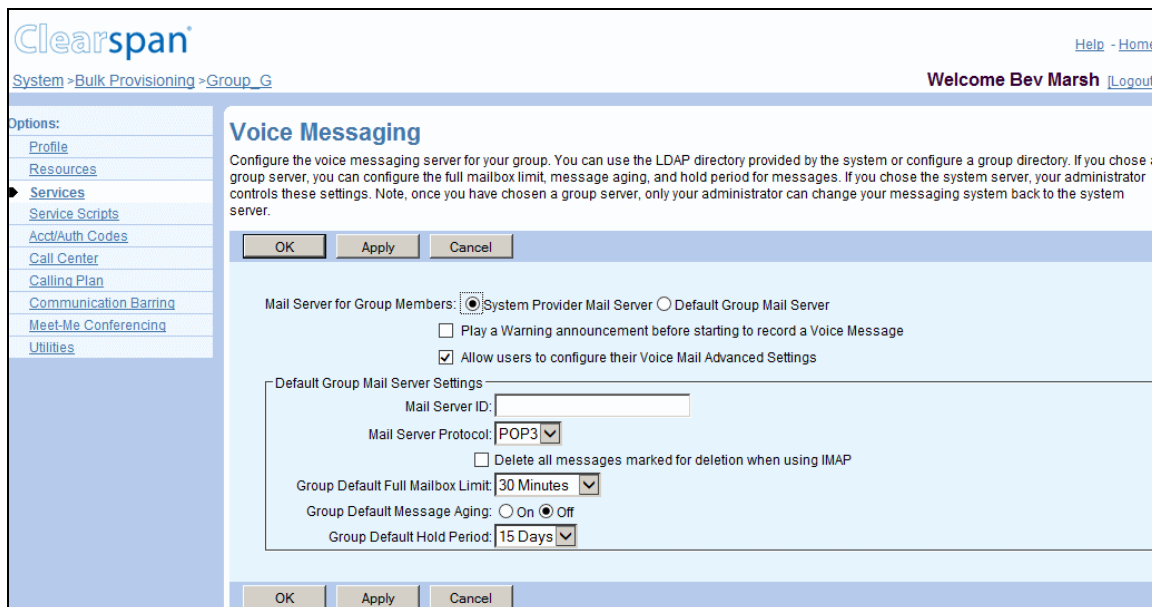


Figure 24 Voice Messaging Group Settings Configuration

If using the Default Group server, configure the default mail server for the group, and type or select information for the server and its settings in the *Default Group Mail Server Settings* area of the page.

Other options can be added or changed as follows:

- To have the system play a warning message before transferring callers to voice mail, check the Play a Warning announcement before starting to record a Voice Message box.
- To allow or restrict access to advanced voice mail settings for users’ own accounts, check or uncheck the Allow users to configure their Voice Mail Advanced Settings box.
- To allow or prevent users forwarding voice mail to all other users in the group, check or uncheck the Allow “Send Message to Entire Group” in Voice Message Retrieval Compose/Forward Menus box. This control only appears when you have limited the scope of the Voice Portal service to the group level.

4.2.1.4.3 Configure Internet Mail Facility Interface Parameters

As a system administrator, use the command line interface (CLI) from the `Interface/Mail` level, to define the Internet mail facility interface parameters. Set up the voice messaging server as the primary SMTP server by supplying the IP address or

server name of the voice mail server. If available, provide a secondary SMTP server, as well. Note that the POP3/IMAP and SMTP servers do not have to be the same machine.

Use the CLI command, `set <attribute>` where:

VARIABLE	FIELD	TYPE	VALID VALUES	DESCRIPTION
<attribute>	primarySMTPServer	String	0 to 80 characters	The primary SMTP server address used to send e-mail to users.
	defaultSubject	String	0 to 80 characters	The default <i>Subject</i> heading to be used when the sender's e-mail subject is not available, for example, "Subject Not Available".
	secondarySMTPServer	String	0 to 80 characters	The secondary SMTP server address used to send e-mail to users.
	defaultFromAddress	String	0 to 80 characters	The default From address to be used when the sender's address is not available.

4.2.1.4.4 Ensure IP Connectivity to Mail Server

Ensure that the Application Server and Media Server can communicate with the mail server by setting the hosts files (`/etc/hosts`) on the Application Server and Media Server. System administrators may have to update the `/etc/hosts` file to add group information.

4.2.1.4.5 Configure User Passwords for Voice Messaging Phone Retrieval

Select the user for whom to configure passwords from the *Group – Users* page. From the *User – Profile* menu page, click **Passwords**. Select *Set portal password* and type in the password (four to eight digits) that is required to log in to the portal. If that step is not performed, the user's portal password keeps its default value of "0000". Click **OK**.

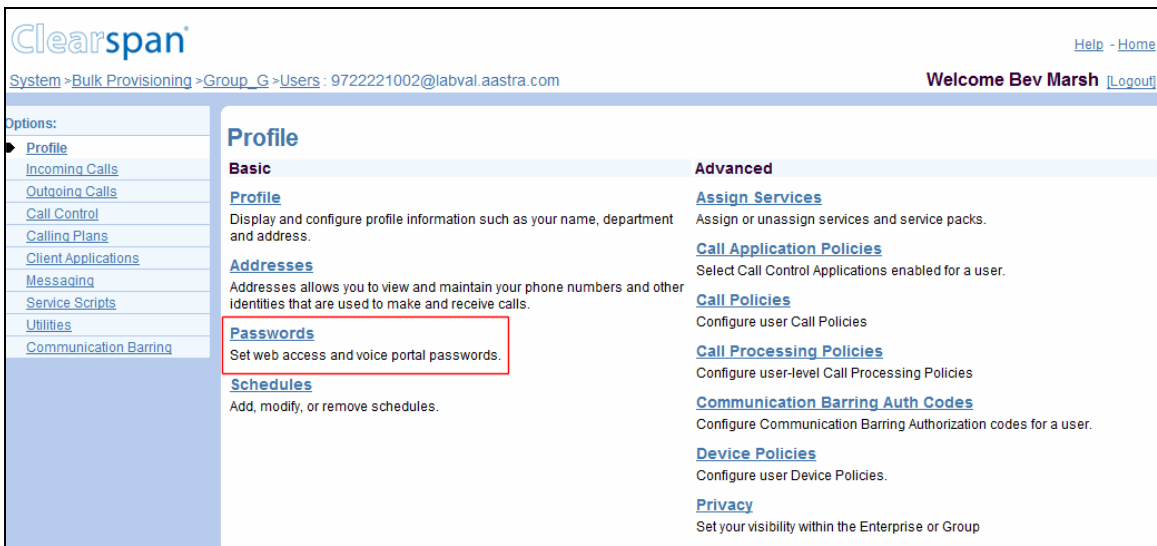


Figure 25 User Voice Portal Password Configuration

4.2.1.4.6 Configure User Voice Messaging

Select the user for whom to configure passwords from the *Group – Users* page. From user’s Options list, click **Messaging**. The *User – Messaging* menu page appears. Click **Voice Management**. For Voice Mail service to be active, check *Voice Messaging “On”*. The user has the option to use unified messaging (which allows retrieval via both phone and e-mail), or to simply forward any voice messages to a given e-mail address (retrieval can then only be done via an e-mail client), as shown in *Figure 26 User Voice Management*. When using unified messaging, the information for the underlying e-mail account must be configured. This is done by following the **Advanced Settings** link.

Clearspan[®] [Help](#) - [Home](#)

System > Bulk Provisioning > Group_G > Users : 9722221002@labval.aastra.com Welcome Bev Marsh [Logout](#)

Options:

- [Profile](#)
- [Incoming Calls](#)
- [Outgoing Calls](#)
- [Call Control](#)
- [Calling Plans](#)
- [Client Applications](#)
- [Messaging](#)**
- [Service Scripts](#)
- [Utilities](#)
- [Communication Barring](#)

Voice Management

Voice Management allows you to specify how to handle your messages. Use Unified messaging if you want to use your phone to retrieve messages. You can also just choose to send the message to your e-mail and not use the phone for messaging. Note that the message settings here also apply to other types of messaging such as fax if enabled.

OK Apply Cancel

Voice Messaging: On Off

- Send All Calls to Voice Mail
- Send Busy Calls to Voice Mail
- Send Unanswered Calls to Voice Mail

When a message arrives...:

- Use unified messaging [Advanced Settings \(Also saves current screen data\)](#)
- Use Phone Message Waiting Indicator
- Forward it to this e-mail address:

Additionally...:

- Notify me by e-mail of the new message at this address
- E-mail a carbon copy of the message to
- Transfer on '0' to Phone Number

OK Apply Cancel

Figure 26 User Voice Management

- Select *Use unified messaging* and configure the advanced settings, or elect for private e-mail delivery of messages only by entering an e-mail address in the space provided.
- Administrators also have the option to use a visual or audible indicator when messages are waiting to be heard. Note that the indicator is not impacted by retrieval of messages via e-mail.
- If a check mark appears in the *Notify me by e-mail of the new voice message at this address*: box, a short e-mail message informing the user about the new caller and date/time of the message is sent. In the text box, type the e-mail address where these notifications are sent.
- The user may also elect to receive an e-mail notification for each voice message received, in which case an e-mail address must also be supplied. The notification e-mail address is typically an e-mail address that would be associated with a mobile phone with e-mail/text capability.
- When a second e-mail address requires a copy of the voice message, it can be specified. This is especially useful for professionals who want a separate copy of all voice messages in an offsite location.
- The Transfer on '0' to phone number option permits the user to record a message such as "I cannot take your call right now. Please leave a message or press 0 to reach my assistant." When a number is entered in this box, the caller can transfer to the number if 0 is pressed while the message is playing.
- Configure the user's e-mail account parameters under Advanced Settings (required only if the *Use unified messaging* option was selected).

Clearspan[®] Help - Home

System > Bulk Provisioning > Group_G > Users : 9722221002@labval.aastra.com Welcome Bev Marsh [Logout]

Options:

- Profile
- Incoming Calls
- Outgoing Calls
- Call Control
- Calling Plans
- Client Applications
- Messaging**
- Service Scripts
- Utilities
- Communication Barring

Voice Management Advanced Settings

Voice Management allows you to specify how to handle your messages. Use Unified messaging if you want to use your phone to retrieve messages. You can also just choose to send the message to your e-mail and not use the phone for messaging. Note that the message settings here also apply to other types of messaging such as fax if enabled.

OK Apply Cancel

Store voice messages on...:

the Group's Mail Server

E-mail Address:

User ID:

Password:

Full Mailbox Limit: ▾

a Personal Mail Server

Mail Server ID:

Mail Server Protocol: ▾

Delete all messages marked for deletion when using IMAP

E-mail Address:

User ID:

Password:

OK Apply Cancel

Figure 27 Management Advanced Settings for Unified Messaging Retrieval

When using the group's defined mail server, four parameters must be provided:

- The user's e-mail address.
- The user ID for that user's account on the mail server.
- The password for that account.
- The Full Mailbox Limit, which can be left to "Use Group Default Minutes", or overridden with a different value for that user. Note that this value must be kept consistent with the mail server quota that has been set for the e-mail account being used.

The user can be configured to bypass the group's defined mail server and use any other e-mail server (as long as it supports a POP3 or IMAP access protocol). In this case, no mailbox size limit is enforced and five parameters must be configured:

- The mail server ID, either in a Fully Qualified Domain Name (FQDN) format (such as mailserver.someothercompany.com) or in an IP address format.
- The access protocol to use to connect to this account (POP3 or IMAP). You can also select *Delete all messages marked for deletion when using IMAP*.
- The user's e-mail address on this mail server.
- The user ID for that user's account on that same mail server.
- The password for that account.

4.2.1.4.7 Configure User Voice Messaging Greetings

The Voice Messaging service allows you to configure the messages callers hear or see when the user's phone is busy or the user does not answer. On the *User – Messaging* menu page click **Greetings**. The *User – Greetings* page appears.

Figure 28 User Voice Messaging Greetings

You can configure the *Busy Greeting*, *Extended Away*, *No Answer Greeting*, as well as *Alternate No Answer Greetings*. You can also select the number of rings you want callers to hear before the greeting. Other services, such as Call Forwarding No Answer, share this setting, and if it is changed in one service, that change affects all other services using this value. For more information on how to configure greetings, see the *Clearspan User Web Interface Administration Guide*.

4.2.1.5 Example Configuration

This section shows the steps a system administrator, group administrator, and end user would follow to configure voice messaging.

The system administrator performs these configuration steps:

1. A system administrator selects the *System – Services* menu page and then *Voice Messaging* to define the parameters. If the address of the mail server is

“mail.xcompany.com”, then set the *Voice Messaging domain* field to “mail.xcompany.com”.

2. In */etc/hosts*, ensure that “mail.xcompany.com” is mapped to the IP address of the mail server. This must be done for the Application Server and for each Media Server. Alternatively, the domain name system (DNS) may be used to map the domain to an IP address.
3. Set all other *Voice Messaging service* fields (maximum message length and so on) to the appropriate values.
4. Using the command line interface, from the InterfaceMail level, set the SMTP server address. The SMTP and mail servers do not have to be the same machine.
5. Create a new group.
6. Create administrator accounts for the group.
7. On the mail server, set up user accounts for each member of the group (that is, bsmith, agiles, and so on). Save passwords for each user account. (This step may be delegated to a group administrator.)
8. Authorize and assign the *Voice Messaging User* service to the group
9. If the intention is to configure Group Voice Portal at the group, authorize and assign the *Voice Messaging Group* service to the group. Otherwise, create the System Voice Portal, assign System Service Phone Number, and/or assign the Network Voice Portal Number to it.

The group administrator would then perform these configuration changes:

1. Set the voice portal dial-in number for the Group Voice Portal if it is created.
2. Create new users in the group.
3. For each user’s *Passwords* page, set the voice messaging server password to that entered by the system administrator.
4. If desired, reset the passcode value for each subscriber.
5. The user has the option to retrieve voice messages via the phone, e-mail, or both. For delivery to both the phone and e-mail, check the first option *Use unified messaging*, and select and complete the *Advanced Settings* for the voice mail server.

For private e-mail delivery, an e-mail address must be supplied. In this case, the user is electing to not retrieve messages via the phone.

The end user would then set up voice messaging preferences:

1. Users also have the option to use a visual or audible indicator when messages are waiting to be heard. Note that the indicator is not impacted by retrieval of messages via e-mail.
2. The user may also elect to receive an e-mail notification for each voice message received, in which case an e-mail address must also be provided.
3. The user can send a carbon copy of the message to another e-mail location by providing an e-mail address.
4. The transfer option permits the user to record a message such as “I cannot take your call right now. Please leave a message or press 0 to reach my assistant”. When a

number is entered in this box, the caller can transfer to the number if 0 is pressed while the message is playing.

4.2.2 CONFIGURE CLEARSPAN MESSAGING REDUNDANCY

Clearspan messaging deposit and retrieval redundancy setup varies depending on the mail server architecture (for example, high available pair using clustering and one IP address or stand-alone servers with unique IP addresses).

4.2.2.1 Message Deposit

Message recording and deposit is performed by the Clearspan Media Server. Once recorded, the Media Server relays the message using Simple Mail Transfer Protocol (SMTP) to the user's mail server. Information related to the user's account and how to deliver the message are passed to the Media Server by the Application Server that controls the recording session.

There are two ways to forward the recorded message to the user's mail server:

- **Application Server provided SMTP relay destination:** The Application Server passes the Media Server a primary SMTP and secondary SMTP server that should be used to relay the recorded message. The SMTP servers are defined at a system level on the Application Server under CLI level *AS_CLI/Interface/Mail* using the *primarySMTPServer* and *secondarySMTPServer* parameters.
- **Media Server Mail Exchanger (MX) record lookup:** The Media Server can optionally be enabled to perform an MX lookup on the user's e-mail domain in the user account information provided by the Application Server. Mxlookup can be enabled on the Media Server at the CLI *MS_CLI/System* by enabling the *MXRecordLookup* parameter.

The choice of deposit redundancy setup depends on the mail server architecture. If primary and secondary SMTP server architecture are used, it is important that the SMTP server (if not the local mail destination) is setup for queuing if the destination account is not reachable.

Media Server MX lookup requires properly defined DNS MX records. MX lookup deposit redundancy is ideally suited for solutions where the mail server redundancy is provided by independent mail servers running at different IP addresses. In this manner, the two mail servers can be defined and MX records as well as the selection algorithm can be set using MX record priority (the lower the priority, the higher the selection weighting). In the following example, the redundant mail servers are represented with the MX records for *lab.com*. *vm1.lab.com* is always the first priority.

Example:

vm1.lab.com.	IN	A	192.168.1.107
vm2.lab.com.	IN	A	192.168.2.119
lab.com.	IN	MX	10 vm1.lab.com.
lab.com.	IN	MX	20 vm2.lab.com.

4.2.2.2 Message Retrieval

Message retrieval is performed by the Application Server. The Application Server sets up a POP3 or IMAP session to the user's mail server. If the mail server has multiple IP addresses, redundancy can be achieved using of service locator (SRV) records. Message retrieval SRV lookup can be enabled at the Application Server CLI level `AS_CLI/Interface/Mail` by enabling the `supportDnsSrvForMailServerAccess` parameter. Proper DNS SRV records must be defined for the mail server instances. These records can be defined externally on an external DNS or locally on each Application Server by adding them to the `/usr/local/broadworks/bw_base/conf/namedefs` file. If added locally, each Application Server's DNS cache should be refreshed using the reload command from the `AS_CLI/ASDiagnostic/DNS>` level.

Example:

vm1.lab.com.	IN	A	192.168.1.107			
vm2.lab.com.	IN	A	192.168.2.119			
_pop3._tcp.lab.com.	IN	SRV	0	0	110	vm1.lab.com.
_pop3._tcp.lab.com.	IN	SRV	1	0	110	vm2.lab.com.
_imap._tcp.lab.com.	IN	SRV	0	0	143	vm1.lab.com.
_imap._tcp.lab.com.	IN	SRV	1	0	143	vm2.lab.com.

The Application Server deems a mail server non-responsive based on the following CLI level `AS_CLI/Maintenance/ContainerOptions` configurable timers (values in milliseconds), used by the `com.sun.mail` package.

```
execution mail.imap.connectiontimeout 5000
execution mail.pop3.connectiontimeout 5000
execution mail.imap.timeout 5000
execution mail.pop3.timeout 5000
```

Note that the connection timeout parameters are slightly different from the input/output (I/O) timeout, which is relevant when an I/O exception occurs during a treatment. Generally, both the connection timeout and timeout values should be set the same. Any modification to these parameters requires an Application Server restart.

To avoid trying to connect to an unreachable address numerous times (and being penalized by the connection timeout each time), the Application Server maintains a list of suspect addresses. Suspect addresses are addresses that have caused a connection failure or a connection timeout, and are placed in the suspect list for 20 minutes, during which time the Application Server does not try that mail server.

5 VOICE MAIL PROVIDED BY CLEARSPAN, EXTERNAL PHONE SERVICE

This section covers the configuration procedures to use Clearspan as a network voice mail system (VMS), when the actual phone service is external to Clearspan. This solution means that end users have their phone lines hosted on a Class 5 switch or a Private Branch Exchange (PBX) while voice mail is offered through Clearspan.

In this configuration, all Voice Mail Recording, Deposit, Playback, and Routing features are provided by Clearspan. Clearspan also provides message waiting indicators (MWI) for those end users. An off-the-shelf terminal server connected to a Class 5 switch or PBX (via a TCP/IP interface) allows Clearspan to provide support for MWI. The Class 5 switch or PBX is responsible for setting and clearing the appropriate MWI on the user's station, which can be an MWI lamp or a stutter dial tone.

This document provides configuration information related to the network voice mail solution. This includes configuration of Clearspan, configuration of recommended third-party terminal servers, and configuration requirements for a Class 5 switch or PBX.

5.1 OVERVIEW

5.1.1 FORWARD CALL TO CLEARSPAN VOICE MAIL SERVICE

An incoming call to a user on an external system is forwarded to Clearspan when that user is busy or does not answer in a certain amount of time. The external system may be a Class 5 switch, wireless switch, PBX, or key system. The forwarding number is programmed on the external system with the Clearspan voice portal directory number that is associated with the group to which the user belongs.

The signaling information associated with the forwarded call includes the called number (that is, the Clearspan voice portal directory number) and the redirection information, composed of a redirecting number (for example, the user's directory number) and redirection reason (for example, busy or no answer). The call is routed through the PSTN to Clearspan in the exactly the same manner as a forwarded call is routed today. The signaling information is interworked from the PSTN domain to the IP domain by a softswitch or media gateway.

Upon receiving the call, Clearspan uses the called number (voice portal number), redirecting number (user's directory number) and redirection reason (busy or no answer) to provide the user's personal greeting to the caller. The caller listens to the greeting and records a message for the user.

After the message is deposited, Clearspan provides an indicator and/or notification that a new message has been received. To signal a message waiting indicator, Clearspan uses a Simplified Message Desk Interface (SMDI) to the external system, as described

later in this document. Clearspan can also send an e-mail or short message notification, providing details about new messages in the user's mailbox.

When forwarding a video message recorded in H.264 using the voice portal, only the audio portion of the message is forwarded.

5.1.2 RETRIEVE VOICE MAIL MESSAGES

The user can retrieve voice mail messages from anywhere by calling the Clearspan voice portal directory number. The user is prompted for his/her mailbox identity (either an extension or full public number) and password. If the user calls the voice portal number from his/her line, then only the password is required. Once validated, the user can listen to messages and manage the mailbox.

A user can also dial his/her number while at his/her line to access the voice portal. In this case, the external system forwards the call to his/her mailbox. Since the calling line identity matches the user's mailbox directory number in the redirection information, then the user is provided with the voice portal login prompt instead of his/her personal greeting. The user simply logs in with his/her password to listen to messages and manage the mailbox.

After the message(s) is retrieved, Clearspan provides an indicator to deactivate MWI. Clearspan uses a SMDI command to the external system, to signal an MWI deactivation, as described later in this document.

5.1.3 CLEARSPAN MWI CONTROL

Control of a user's message waiting indicator (MWI) status is signaled from Clearspan to an external system via SMDI. The network configuration that provides a message waiting indicator is composed of several network elements (as shown in *Figure 29 Clearspan Control of User's Message Waiting Indicator*):

- Clearspan provides the Voice Mail service and initiates the outgoing SMDI MWI message (over TCP/IP).
- A terminal server converts the SMDI TCP-based message to a SMDI serial data message (over RS-232).
- A PBX or Class 5 switch receives the SMDI message, and either:
 - Interworks the SMDI MWI message to the user's set (over GR30 or other possible protocols), or
 - Interworks the SMDI MWI message to a Transactional Capabilities Application Part (TCAP) MWI message (over SS7, if the user is not located on that switch, and if the TCAP MWI Network service is made available).

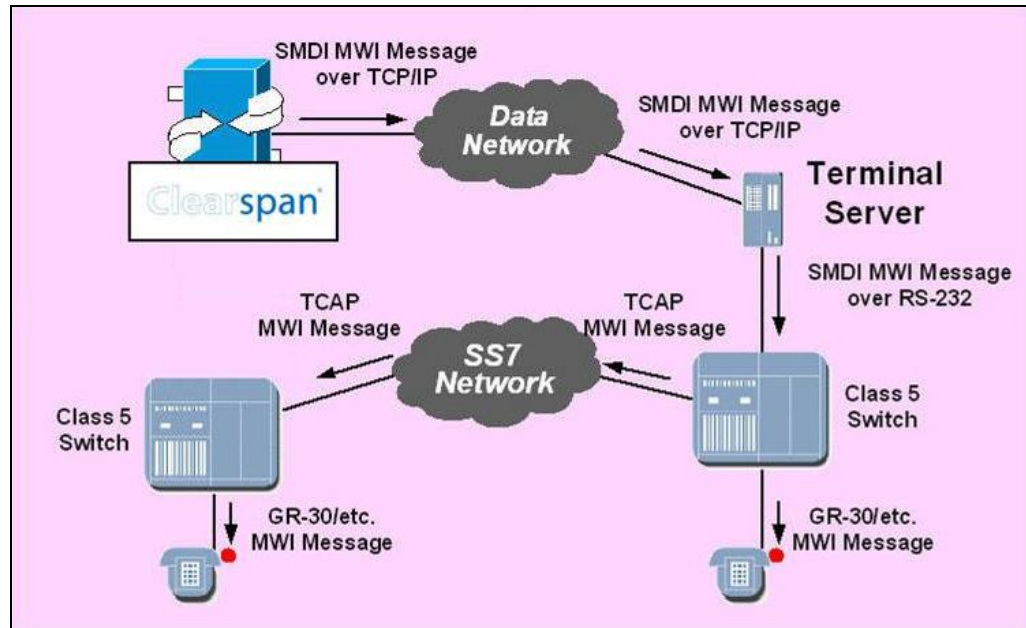


Figure 29 Clearspan Control of User's Message Waiting Indicator

The following information is important to note regarding Clearspan control of a user's MWI:

- Clearspan provides a mapping of users' directory numbers (for example, NPANXX) to a SMDI link.
- If the TCAP MWI Network service is not made available, then an SMDI link is required for each Class 5 switch on which Clearspan voice mail users are hosted. The same applies to users on a PBX.
- The RS-232 SMDI link can be transported (that is, transported via a 202T analog modem or a 3A BRI translator).

5.2 CONFIGURATION

5.2.1 CONFIGURATION FLOW

Figure 30 shows the configuration flow:

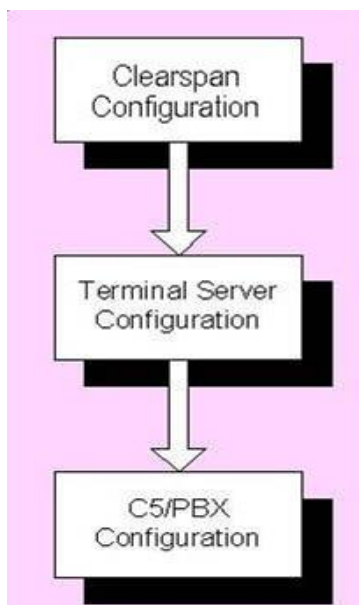


Figure 30 Configuration Flow

5.2.2 APPLICATION SERVER CONFIGURATION

5.2.2.1 Server and End-user Voice Messaging Configuration

For information on the server and end-user voice messaging configuration, see section [4.2 Deployment and Configuration](#).

5.2.2.2 Server SMDI Configuration

Clearspan provides support to configure multiple terminal servers simultaneously. The association between end users and a terminal server is defined through route lists.

As shown in *Figure 31 Server SMDI Interface Configuration*, there is a one-to-one mapping between a terminal server port and a Class 5 switch (end office). For example, user A with phone number 234-555-0000 has Voice Mail service on Clearspan. The Application Server sends the MWI request over either TS1 port1 or TS2 port1 depending on the last request sent and the availability of the terminal server.

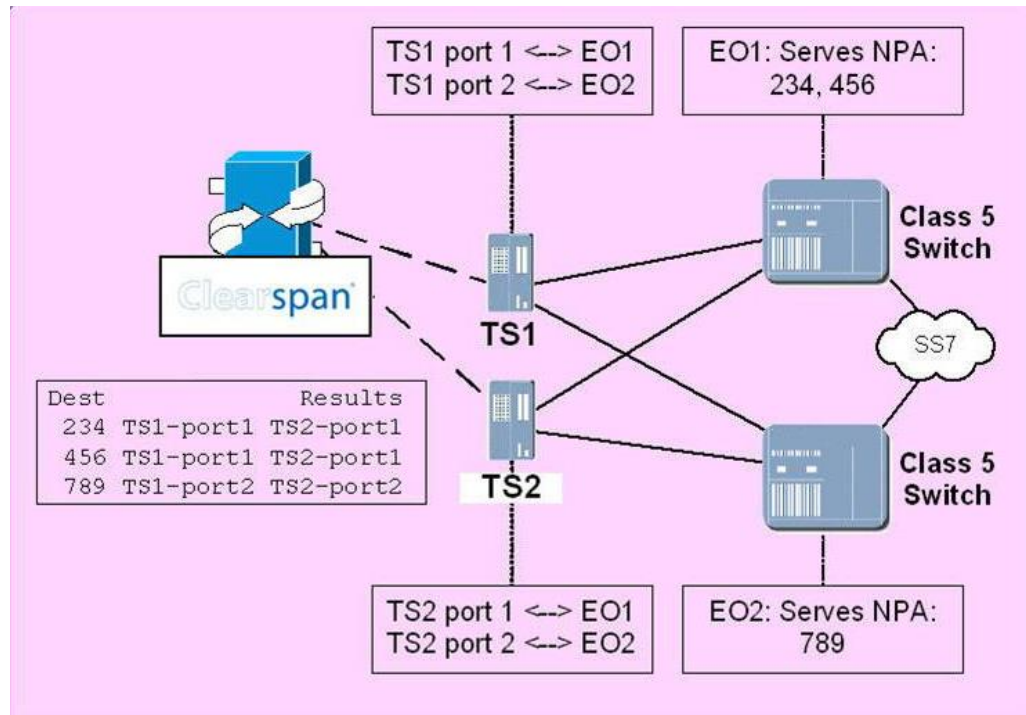


Figure 31 Server SMDI Interface Configuration

The following steps must be performed using the CLI to enable outgoing SMDI:

1. Define the terminal servers.

To define a new terminal server, an operator must go to the `AS_CLI/System/Device/SMDI` level. A terminal server is defined with a unique name, an address, and a port. An optional description can also be provided.

Example:

```
AS_CLI/System/Device/SMDI> add TS1-Port1 192.168.13.143 2100 "Terminal
Server 1 serial port 1"
...Done
```

2. Associate route list to terminal servers.

To associate route lists with terminal servers, an operator must go to the `AS_CLI/System/Device/SMDI/RoutingList` level. The mapping between a terminal server port and a destination consists of the following information:

- A prefix digit string. The application performs prefix matching for end-user phone numbers with all the phone number ranges defined.
- A list of matching terminal server names. Once matched, the MWI message is sent to only one server on the list. The selection is made using a round-robin algorithm.

Example:

```
AS_CLI/System/Device/SMDI/RoutingList> add 234 TS1-Port1
... Done
```

3. Activate Outgoing SMDI.

To activate outgoing SMDI, an operator must go to the `AS_CLI/Service/VoiceMsg` level. The `OutgoingMWIONSMDI` attribute must be set to “true”.

Example:

```
AS_CLI/Service/VoiceMsg> set outgoingMWIONSMDI true
...Done
```

This last step can also be performed using the Application Server web portal, assuming the administrator has system administrator privileges. To activate Outgoing SMDI, go to the *System – Voice Messaging* page.

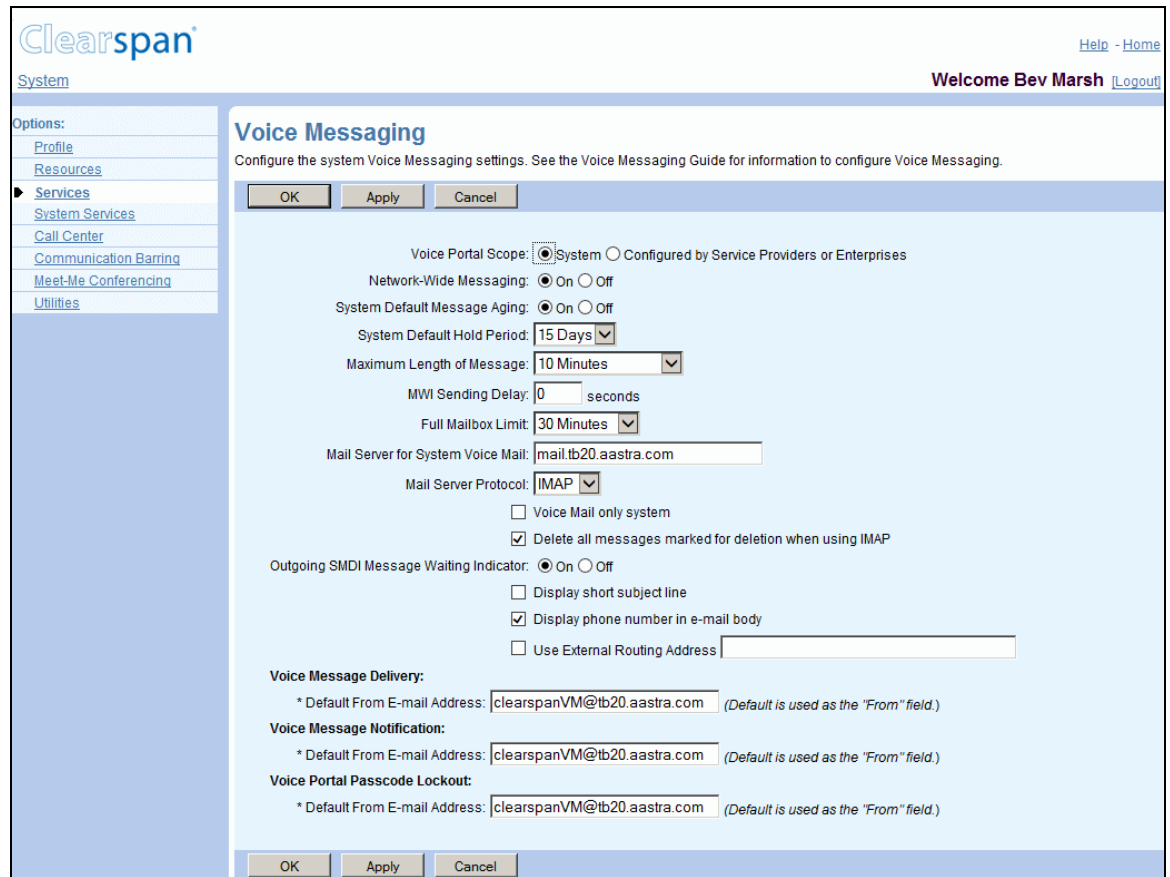


Figure 32 System Voice Messaging Page

5.2.2.3 End-user SMDI Configuration

Outgoing SMDI configuration for end users is performed using the Application Server web portal. Note that only a Clearspan administrator, with at least system privileges, can view and configure the outgoing SMDI-related attributes for users.

For administrators with at least system privileges, there is an additional menu item on their *User – Messaging* page called *Outgoing MWI*.

The screenshot shows the Clearspan web portal interface. The header includes the Clearspan logo, a breadcrumb trail: System > Bulk Provisioning > Group_G > Users : 9722221002@labval.aastra.com, and a welcome message for Bev Marsh with a Logout link. The left sidebar contains a navigation menu with options like Profile, Incoming Calls, Outgoing Calls, Call Control, Calling Plans, Client Applications, Messaging (selected), Service Scripts, Utilities, and Communication Barring. The main content area is titled 'Outgoing Message Waiting Indicator' and contains the following elements:

- A description: 'Outgoing MWI enables the system to send a message to other devices to allow your Message Waiting Indicator (MWI) to work on your phone.'
- Buttons: OK, Apply, Cancel
- Configuration option: 'Outgoing SMDI Message Waiting Indicator: On Off'
- A section titled 'Outgoing SMDI MWI Phone Numbers' containing:
 - A text input field for 'Phone Number:' followed by an 'Add' button.
 - A table with a 'Delete' button and a 'Phone Number' column.
 - The text 'No Entries Present' below the table.
 - A 'Delete' button below the table.
- Buttons: OK, Apply, Cancel

Figure 33 User Outgoing Message Waiting Indicator

In this example, user A has the phone number 234-555-0000 on a Class 5 switch or PBX, and this same number has to be set on the *Outgoing Message Waiting Indicator* page. If required, more numbers can be added. To enable Outgoing SMDI for a particular user, the “Outgoing SMDI Message Waiting Indicator” option should be selected.

Additional configuration is required to set up the user's Voice Messaging, as described in section [4.2 Deployment and Configuration](#). Since outgoing SMDI support is an extension of the existing MWI support, the *Use Phone Message Waiting Indicator* option on the *Voice Messaging – Management* page must be selected for the Outgoing SMDI to work, as shown in [Figure 34 User Voice Management Page](#).

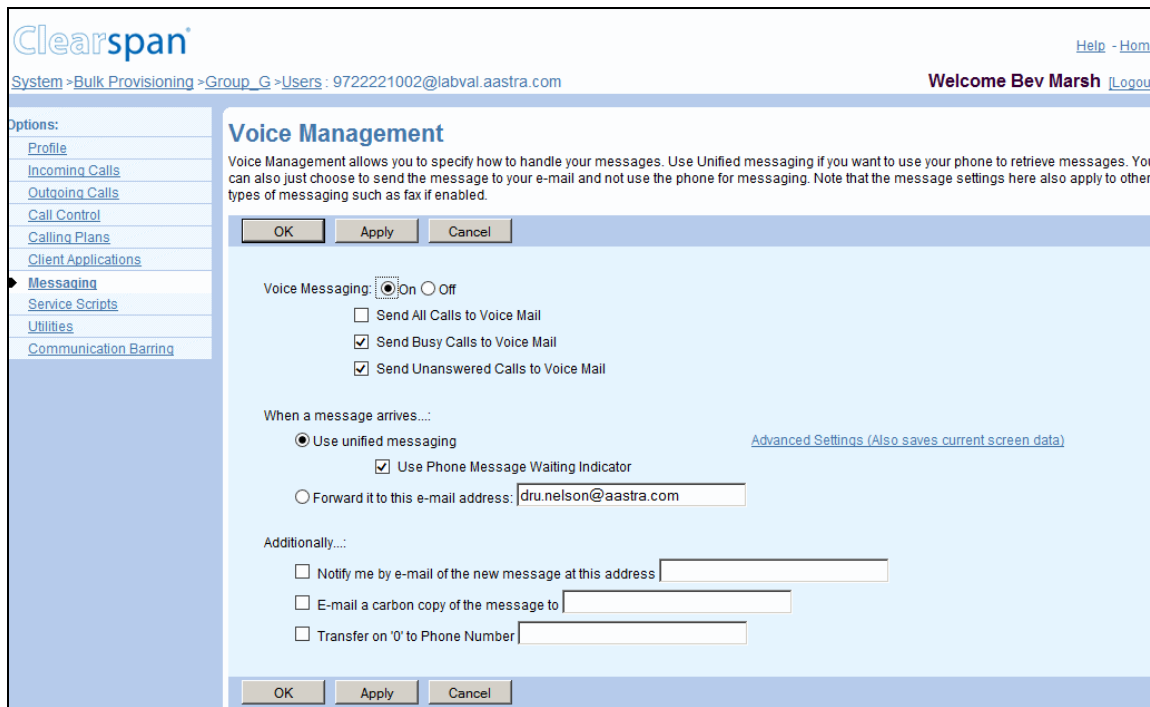


Figure 34 User Voice Management Page

5.2.3 TERMINAL SERVER CONFIGURATION

Any off-the-shelf terminal server can be used for this solution. Interoperability testing has been performed with the MRV® LX-4000T platform. For more information on this particular terminal server configuration, see [Appendix C: MRV LX-4000T Configuration for External Phone Service](#).

The terminal server port has to be configured to control a console of a remote server. The port modem configuration must match the configuration of the SMDI link data communications equipment (DCE) device.

5.2.3.1 Recommended Terminal Servers

Clearspan has successfully tested the MRV LX-4000T terminal server with Clearspan.

The MRV LX-4000T terminal server series is recommended for a central office deployment that requires network equipment building standards (NEBS) level-3 reliability, DC power, and rack mounting. The MRV LX-4000T series terminal server is a low-cost option with AC power, which is recommended for enterprise-based voice mail solutions.

For technical specifications, go to www.mrv.com.

5.2.4 CLASS 5 SWITCH OR PBX CONFIGURATION

Clearspan voice mail users can configure any Call Forwarding feature on their hosting Class 5 switch or PBX to forward calls to the Clearspan Network Voice Mail service. These features may include:

- Call Forwarding Busy
- Call Forwarding No Answer
- Call Forwarding Always
- Call Forwarding Selective

The user must set the forward-to number in any or all of these Call Forwarding features to the Clearspan voice portal directory number. This routes calls through the PSTN to Clearspan. In addition, call signaling must include redirection information, so that Clearspan can go to the correct voice mailbox and retrieve the appropriate personalized greeting.

When message(s) are deposited or retrieved and Clearspan must send an MWI notification to the user's hosting Class 5 switch or PBX, the MWI feature must be provisioned for the user's line on the Class 5 switch or PBX for the notification to be completed.

A SMDI link from the terminal server to the Class 5 switch or PBX is required to transport MWI notifications.

To configure the SMDI Message Desk service, see section Configure SMDI Message Desk Service in the Clearspan Application Server Group Web Interface Administration Guide.

6 PHONE SERVICE PROVIDED BY CLEARSPAN, EXTERNAL VOICE MAIL SYSTEM

6.1 OVERVIEW

Voice mail functionality is integrated into the Clearspan product. However, many carriers have existing voice mail systems in their networks, and wish to have the option to continue to use these voice mail platforms. For that purpose, Clearspan can also be integrated with an external voice mail system (VMS).

In this configuration, all Voice Mail Recording, Deposit, Playback, and Routing features are provided by the voice mail system. The Clearspan Application Server is responsible to:

- Transfer incoming calls to a user to the voice mail system on a busy or no-answer condition.
- Set and clear the appropriate MWI on a user's station, which can be a message waiting indicator lamp or a stutter dial tone. The voice mail system instructs the Application Server to set or clear the MWI. Two Clearspan Application Programming Interfaces (APIs) are available to control the MWI status for a Clearspan user from an external system: SMDI-based and Session Initiation Protocol (SIP)-based (NOTIFY). Typically, legacy (TDM-based) voice mail systems use SMDI signaling to set MWI on a switching system, while next generation voice mail systems use SIP for both the call setup to the voice mail system and the MWI notification to the switching system.

Two Clearspan features allow integration of an external voice mail system. One of the two must be used. To integrate Clearspan with an external voice mail system, select the feature that is most appropriate for your deployment model. Note that the two features support both SMDI-based voice mail systems and SIP-based voice mail systems. The two features are:

- Third-Party MWI Control feature:
 - Transfers a user's incoming calls to the voice mail system using the Call Forwarding No Answer and Call Forwarding Busy services.
 - Allows MWI status notifications to reach a user's phone(s), via either SIP or SMDI.
- Third-Party Voice Mail Support feature:
 - Transfers a user's incoming calls to the voice mail system by configuring the destination address of the external voice mail system once at the group level, and by assigning this feature to each user. The Call Forwarding Busy and Call Forwarding No Answer services are not used to redirect incoming calls to the external VMS, and therefore remain available for the user. If the Call Forwarding Busy service or Call Forwarding No Answer service is used by a user, that service takes precedence over the redirection to the VMS.

- Allows MWI notifications to reach a user's phone(s), via either SIP or SMDI. In addition, the user's mailbox ID can be defined so that it differs from the user's phone number on Clearspan. If so, this mailbox ID is automatically synchronized with the Network Server, so that the routing of an incoming NOTIFY by the Network Server works automatically.

Usually, calls sent to a legacy VMS are routed through a Hunt Group. A Clearspan Hunt Group can be used for hunting a free line to the VMS. When a Clearspan Hunt Group is used for this purpose, the SMDI Message Desk feature must be assigned to that Hunt Group, for the SMDI-MD message to be sent to the VMS, and allow the VMS to properly answer the call.

6.2 CLEARSPAN INTERFACES USED TO ACCEPT INCOMING MESSAGE WAITING NOTIFICATIONS

This section describes the two APIs that Clearspan supports for incoming message waiting notifications: SIP and SMDI.

6.2.1 INCOMING MESSAGE WAITING NOTIFICATION VIA SIP NOTIFY

The Clearspan SIP MWI network-signaling interface allows an external VMS to control the MWI status for Clearspan users. The external VMS can be:

- An IP-based VMS, which uses this interface to Clearspan directly, or
- A PSTN-based legacy VMS, which uses an interworking network element (for example, a softswitch or SIP signaling gateway) to convert the legacy MWI update message to the relevant SIP message.

This interface is based on the standardized SIP NOTIFY mechanism, using the Message Summary and Message Waiting Indication Event Package. For the standards and drafts supported by Clearspan, see the *Clearspan SIP Access Interface Interworking Guide* and *Clearspan SIP Network Interface Interworking Guide*. Note that Clearspan is NOT sending SUBSCRIBEs to the VMS, but rather expects the VMS to send the NOTIFYs without prior SUBSCRIBEs.

With the SIP NOTIFY interface, the VMS or the softswitch can send all NOTIFYs to the Clearspan Network Server, which replies with a "302 moved temporarily" to provide the actual destination. This leverages the information available for each user on the Network Server, and makes provisioning of the VMS or softswitch minimal.

Figure 33 SIP MWI Network Signaling shows how the MWI is carried from a legacy VMS to the Clearspan user's customer premises equipment (CPE). For an IP-based VMS, the softswitch or signaling gateway is not required and the VMS uses the SIP NOTIFY MWI interface directly.

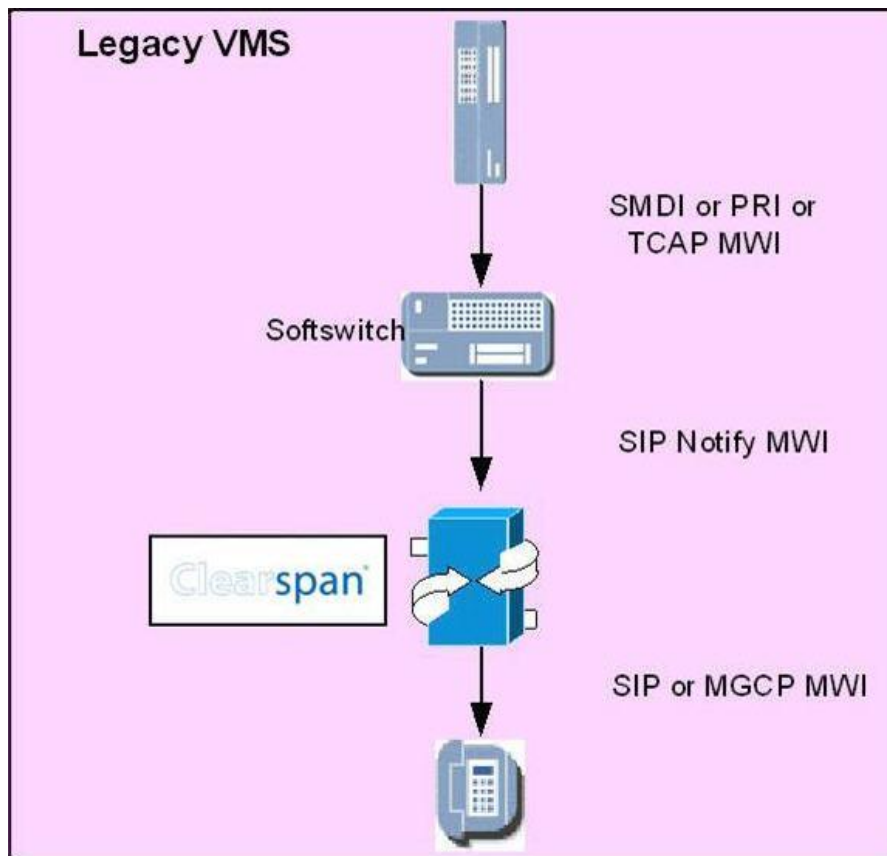


Figure 35 SIP MWI Network Signaling

The legacy VMS initiates an SMDI-based or Primary Rate Interface (PRI) based MWI notification, which in turn, can be interworked with a TCAP MWI message; interworking with TCAP occurs when the legacy VMS is not hosted directly by the softswitch. The legacy SMDI, PRI, or TCAP MWI message is then converted to a SIP NOTIFY message by the softswitch or signaling gateway.

The following provides a sample message flow for third-party control of MWI status. This set of messages is initiated after a voice mail message is deposited or retrieved at an external VMS, and the MWI status of a Clearspan-based user requires updating.

Typically, the NOTIFY message that starts the message flow is sent outside of established dialogs.

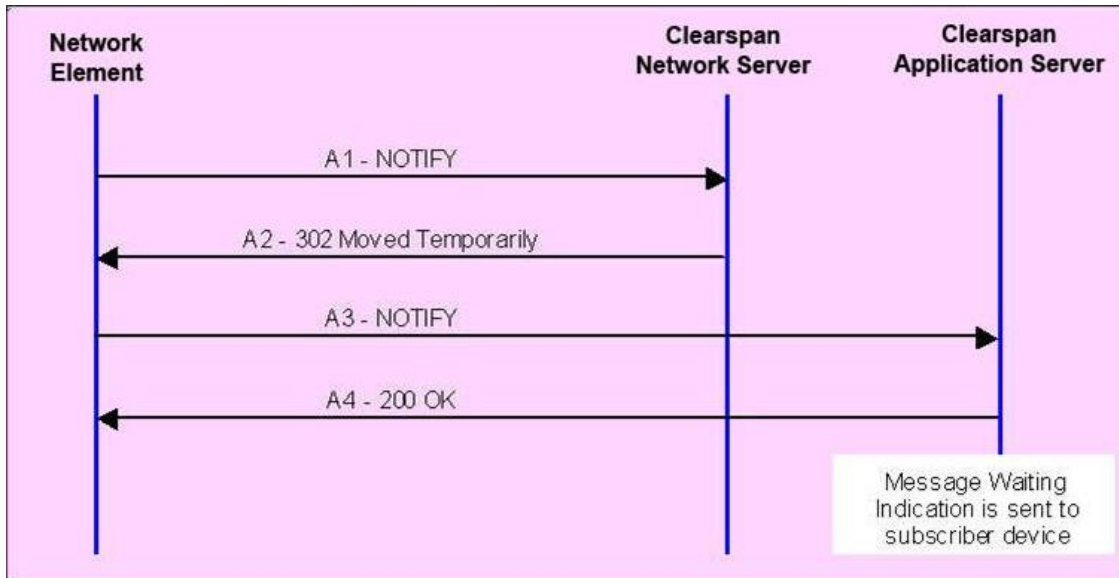


Figure 36 Sample Message Flow for Third-Party Control of MWI Status

6.2.2 INCOMING MESSAGE WAITING NOTIFICATION VIA SMDI

The Voice Mail service provided on an external voice mail system is integrated by sending calls from Clearspan to the voice mail system. The mailbox ID is carried in the *diversion* header in the resulting outgoing SIP INVITE, and if the voice mail system is in the PSTN, interworked over PSTN signaling so that the voice mail system receives the calling party information, as well as the forwarding party information and forwarding reason. This allows the external voice mail system to point to the correct mailbox and provide the voice mail user's personalized greetings.

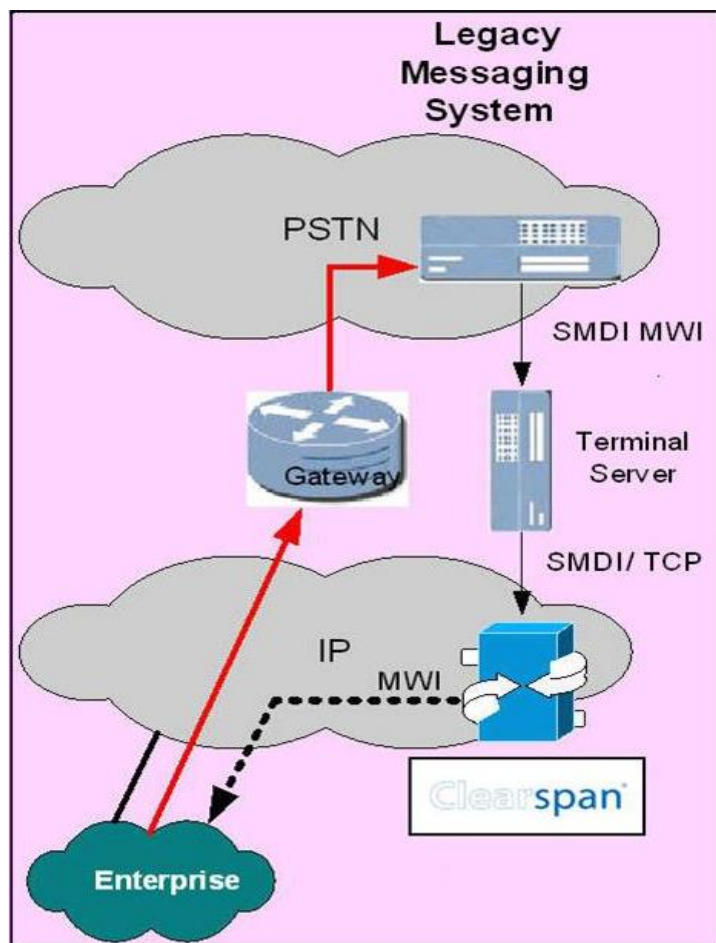


Figure 37 Clearspan SMDI Integration

The integration of SMDI MWI into Clearspan is composed of two key components:

- A third-party terminal server converts an SMDI MWI request sent by the legacy voice mail system over a serial connection (RS-232) to an SMDI MWI message to Clearspan over a TCP connection.
- A TCP-based API on Clearspan accepts multiple terminal server connections.

This interface is available on the Clearspan Application Server, which is characterized by a TCP server socket accepting multiple terminal server clients, up to 32 simultaneous terminal servers connected to a single Application Server.

Redundancy is supported using DNS load balancing. Any Application Server in a cluster can receive an SMDI notification.

The Clearspan SMDI MWI network signaling interface allows a PSTN-based legacy VMS to control the MWI status for Clearspan users. Legacy voice mail systems typically use SMDI messages to update the MWI status. By providing SMDI support on Clearspan, this type of interface can continue to be used by the legacy voice mails systems.

The following figure shows how the MWI is carried from the legacy voice mail system to the Clearspan user's CPE.

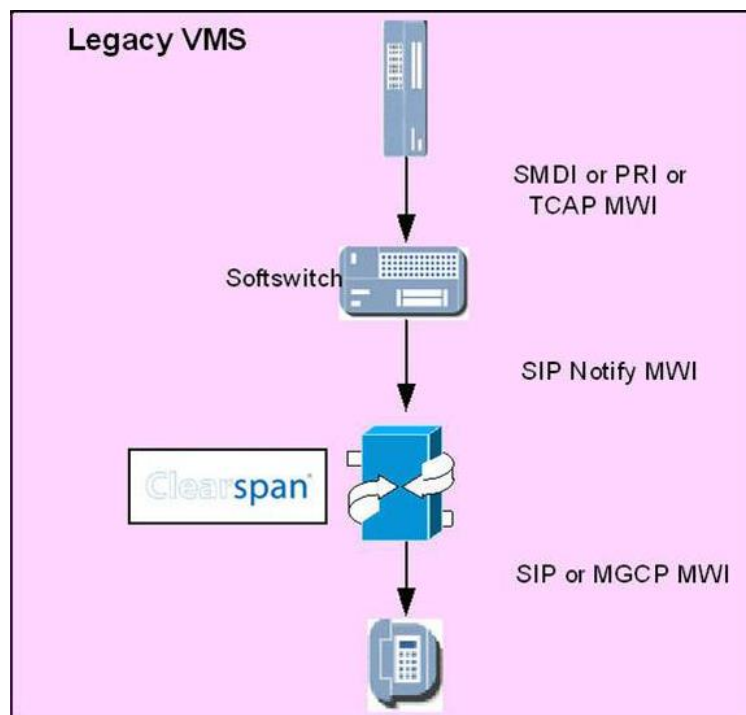


Figure 38 SMDI MWI Network Signaling

The VMS initiates the process by sending an MWI update message (that is, activation or deactivation) over an RS-232 analog serial data link. This message is sent to a terminal server, which simply interworks the SMDI message to a different transport layer, TCP. (An off-the-shelf terminal server is used.) The message is then transported over TCP to the Clearspan Application Server, which in turn, interworks the MWI update message to either a SIP or MGCP message (depending on the type of CPE).

The underlying requirement is that the MWI message is sent by the VMS over a different SMDI link than that which is used when the call is originally forwarded to the VMS. This link is used for Clearspan users only, and is used for MWI requests only. Hence, a VMS must be capable of configuring a new SMDI link, and configuring this link for MWI requests for the specified users. This is a common capability on legacy voice mail systems; however, confirmation should be obtained from your administrators to ensure the VMS platforms support this requirement.

Note that since RS-232 is a short-reach interface, the terminal server is usually deployed in the same central office as the voice mail systems. This approach is feasible when voice mail systems are deployed in a centralized fashion (that is, in one or two central offices). Alternatively, the RS-232 data can be transported over a Data Modem service to a remote location where the terminal server can be centralized to support voice mail systems distributed across various central offices.

6.3 CONFIGURATION FLOW

The configuration flow is performed in three main steps:

1. Configure Clearspan.
2. Configure the terminal server (when using SMDI).
3. Configure the external voice mail system (when using SMDI).

The following sections describe each step.

6.3.1 APPLICATION SERVER CONFIGURATION

6.3.1.1 SMDI Interface Configuration

The SMDI interface is configured only if the external VMS is sending MWI status notifications over SMDI. If the external VMS is sending MWI status notifications using SIP NOTIFY, then go to the next section.

6.3.1.1.1 Basic SMDI Interface Configuration

The SMDI interface on the Clearspan Application Server is composed of the following attributes, which are configured using the Application Server command line interface (CLI):

- Enable/disable flag, which enables or disables SMDI MWI control on the Application Server. The default is “disable”.
- Server listening port. The default is “11234”.
- Maximum number of terminal server TCP connections. The default is “16” with a maximum of “32”.

To enable SMDI, an operator sets the SMDI enabled flag to “true” using the Application Server CLI `Interface/SMDI` level.

6.3.1.1.2 SMDI Access Control List Configuration

A terminal server’s IP information must be configured in the Application Server’s SMDI network access control list (ACL) to be “authorized”. Either the terminal server IP address or host name (DNS reverse lookup resolvable) can be configured in the access control list using the Application Server CLI `System/NetworkAccessList/SMDI` level.

6.3.1.2 Group Configuration

No configuration is required at the group level for the Third-Party MWI Control feature.

If the Third-Party Voice Mail Support feature is used, then the service must be enabled at the group level and the address (a SIP URL) of the third-party voice mail system configured. Only a system administrator can do this.

The screenshot shows the Clearspan web interface. The top left has the 'Clearspan' logo. The top right shows 'Help - Home' and 'Welcome Bev Marsh [Logout]'. The breadcrumb trail is 'System > Bulk Provisioning > Group_G'. On the left is a navigation menu with 'Options:' and sub-items: Profile, Resources, Services (selected), Service Scripts, Acct/Auth Codes, Call Center, Calling Plan, Communication Barring, Meet-Me Conferencing, and Utilities. The main content area is titled 'Third-Party Voice Mail Support' and contains the text 'Allows an administrator to configure a third-party voice mail system for a group'. Below this are two sets of 'OK', 'Apply', and 'Cancel' buttons. The first set is at the top, and the second is at the bottom. In the center, there is a radio button selection for 'Third-Party Voice Mail:' with 'On' selected and 'Off' unselected. Below that is a text input field for 'Third-Party Voice Mail Server:'.

Figure 39 Group Configuration

6.3.1.3 End-user Configuration

With the Third-Party MWI Control feature, an Application Server end user that receives Voice Mail service from an external voice mail system must have the following end-user services assigned:

- Call Forwarding Busy and Call Forwarding No Answer configured to forward to the voice mail system directory number (DN)
- Third Party MWI Control service, to be able to receive an MWI from an external voice mail system

With the Third-Party Voice Mail Support feature, the user configuration consists only of enabling the service, choosing if it applies for busy or no-answer conditions, and setting how many rings define a no-answer condition.

Clearspan[®] Help - Home

System > Bulk Provisioning > Group_G > Users : 9722221002@labval.aastra.com Welcome Bev Marsh [Logout](#)

Options:

- [Profile](#)
- [Incoming Calls](#)
- [Outgoing Calls](#)
- [Call Control](#)
- [Calling Plans](#)
- [Client Applications](#)
- [Messaging](#)**
- [Service Scripts](#)
- [Utilities](#)
- [Communication Barring](#)

Third-Party Voice Mail Support

Third-Party Voice Mail Support allows you to specify how to handle your voice messages. You can choose to send busy and/or unanswered calls to your voice mail, as well as the number of rings before an incoming call is considered unanswered.

OK Apply Cancel

Third-Party Voice Mail Support: On Off

Send All Calls to Voice Mail

Send Busy Calls to Voice Mail

Send Unanswered Calls to Voice Mail

Third-Party Voice Mail Server:

Group Mail Server

User Specific Mail Server:

Mailbox ID on Third-Party Voice Mail Platform:

User's (or Group's) Phone Number

SIP-URI:

Number of rings before greeting: ▼

OK Apply Cancel

Figure 40 End-user Configuration

If the mailbox ID is the same as the user's phone number, no further information is required. However, when the mailbox ID differs from the user's phone number, the ID can be specified, as shown above (by a system administrator only). This mailbox ID is used in two ways. First, it is used to populate the forwarding information when a call to the user is sent to the external voice mail system. Second, an incoming NOTIFY addressed to that mailbox ID is also accepted and directed to the user's phone(s), although an incoming NOTIFY addressed to the user's phone number will be accepted too.

If the external voice mail system is to send MWI messages over SMDI, then the following configuration is recommended: set the user's custom mailbox ID to `number@terminalserver`, where *number* is the number of the user as defined on the external voice mail system (typically 10 or 7 digits in North America), and *terminalserver* is the hostname of the terminal server (as configured on the Clearspan Application Server), that is to be used to relay the incoming SMDI MWI messages from the external voice mail server to the Clearspan Application Server. (For more information, see section [5.2.2.2 - Server SMDI Configuration](#)). When using this configuration, the SMDI MWI messages have to be addressed to either *number*, or directly to the national number of the user as defined on the Clearspan Application Server.

6.3.1.4 System Configuration

6.3.1.4.1 Third-Party Voice Mail Destination Provisioning

It is optionally possible to configure a list of numbers used for Third-Party Voice Mail destinations (either via Call Forwarding Busy and Call Forwarding No Answer or the Third-Party Voice Mail Support feature), and for which some blocking and CLID override services are bypassed.

When directly calling or redirecting to one of these DN's, the calls are allowed even if the Communication Barring, Outgoing Calling Plan, and Account Authorization Code services would otherwise have blocked the call.

Likewise, Group Calling Line ID or User Configurable Calling Line ID policies are overridden when there are direct calls or redirections to a third-party voice mail number that is provisioned on the third-party voice mail destinations list.

To configure the list of third-party voice mail destinations, an operator must go to the `AS_CLI/Service/ThirdPartyVoiceMailSupport/Destinations` level.

Example:

```
AS_CLI/Service/ThirdPartyVoiceMailSupport/Destinations> add +14185556667
description VM2
...Done

AS_CLI/Service/ThirdPartyVoiceMailSupport/Destinations> get numberStarts
""
  Phone Number  Description
  =====
+1-4185556666      VM1
+1-4185556667      VM2

  2 entries found.
```

6.3.1.4.2 Voice Mail Retrieval Diversion/History-Info Header Suppression

When voice mail retrieval is triggered by the user self-dialing (triggers BUSY, which can then redirect the call to a third-party voice mail DN for voice mail retrieval), the Application Server removes any incoming *Diversion/History-Info* header. It does not add a *Diversion/History-Info* entry for the redirection if the *stripDiversionOnVMDestinationRetrieval* system parameter is set to "true" or to a DN that is provisioned on the third-party voice mail destinations list.

To configure the *stripDiversionOnVMDestinationRetrieval* system parameter, an operator must go to the `AS_CLI/Service/ThirdPartyVoiceMailSupport` level.

Example:

```
AS_CLI/Service/ThirdPartyVoiceMailSupport> set
stripDiversionOnVMDestinationRetrieval true
...Done
```

6.3.2 TERMINAL SERVER CONFIGURATION

For the terminal server configuration, when using SMDI, the terminal server must be installed and configured only if the external VMS is sending MWI status notifications over SMDI. If the external VMS is sending its MWI status notification using SIP NOTIFY, then go to the next section.

The terminal server must be configured in a “dummy terminal mode” such that:

- It automatically connects to the Application Server at startup or when a byte is received on a serial connection.
- It connects using a client-negotiated telnet session, that is, there is no login and no password negotiated by the terminal server. The terminal server simply connects to the Application Server, and the Application Server verifies the terminal server’s IP information against the access control list (ACL).

Any off-the-shelf terminal server can be used for this solution. Interoperability testing has been performed with the MRV® In-Reach 8000 and 9000 platforms. For more information on the configuration for this particular terminal server, see [Appendix B: MRV® In-Reach 9000 Configuration for External Voice Mail](#).

6.3.2.1 Recommended Terminal Servers

Clearspan recommends two off-the-shelf terminal servers that have been successfully tested with Clearspan.

The MRV In-Reach 9000 terminal server series is recommended for a central office deployment that requires NEBS-level 3 reliability, DC power, and rack mounting. The MRV In-Reach 8000 series terminal server is a low cost option with AC power, which is recommended for enterprise-based voice mail solutions. Both the In-Reach 8000 and In-Reach 9000 series are available with 4-port, 8-port, 20-port, and 40-port configurations.

For more information on In-Reach configurations, see the *Clearspan Recommended Hardware Guide* or for information on technical specifications, go to www.mrv.com.

6.3.3 VOICE MAIL SYSTEM CONFIGURATION

If the external VMS is sending message waiting notifications using SMDI, it must be configured so that the MWI indicator is sent over an RS-232 link to the terminal server. This means that the legacy voice mail system must be able to accept SMDI messages for incoming voice mail deposit or retrieval calls via one set of SMDI links, while sending MWI requests via another SMDI link. This configuration is required for each user that is hosted on Clearspan and also receives Voice Mail service from the legacy voice mail system.

7 APPENDIX A: MAIL SERVER CONSIDERATIONS

7.1 USER MAILBOX CONSIDERATIONS

For detailed message storage and throughput requirements, see the *Clearspan System Engineering Guide*.



Note: Users are subject to a configurable maximum mailbox size limit when configured to use the group's or system's mail server. When a user chooses to use a personal mail server, no mailbox size limit is configurable or applied.

The size of a voice messaging box (on a group or system mail server) is controlled by Clearspan (with the default value of 30 minutes). However, it is important to restrict the size of an account on the mail server, rather than depend on Clearspan. Clearspan voice messaging configuration allows the size of the voice mailbox to be set to between 10 to 900 minutes, but Clearspan cannot control overload of the mail server.

The mailbox size on the Application Server and on the POP3 or IMAP mail server must be properly coordinated. If they are coordinated, Clearspan plays an announcement when the mailbox is full and does not attempt to record and store a voice message for the user.



Note: The general rule is to allow 330 KB per minute for voice messaging and 2.2 MB per minute for video when using low bitrate codecs (for example, G.711 for audio). The maximum mailbox limit in minutes, as configured on Clearspan, is in fact a multiple of 330 KB, so depending on the codec used, the actual time limit may be different.

The POP3 or IMAP quota must be a little larger than the mailbox size on the Application Server. This is because the Application Server is not strict about the mailbox limits. If a mailbox is almost but not completely full, it still allows a caller to leave a message. The POP3 or IMAP mail server however, has strict limits so you cannot set them to equivalent sizes. The recommended setting should be as follows:

POP3/IMAP quota \geq bw-mailbox-size + bw-max-message-size

For example, if you want to allow the size of a mail account to be set on Clearspan to a maximum of 100 minutes (no video) and the maximum message size to 6 minutes, you should restrict the size of the mail server to:

$330 * 100 + 330 * 6 = 33 \text{ MB} + 1.98 \text{ MB}$ (that is, about 35 MB)



Note: Voice messages recorded with wide-band codecs (such as G.722) are recorded in an audio format with superior quality that requires about eight (8) times the storage space of narrow-band codecs (such as G.711 and G.729).

The mailbox or account name on the mail server must always match Clearspan Voice Messaging user's name and password.



Note: If a UNIX-based mail server is used, the account name must begin with a lower case alpha character.

7.2 SESSION INACTIVITY TIME-OUT

Mail servers drop a connection when the client that opened the connection leaves it idle for a certain period of time. The POP3 standard recommends a 10-minute time period. The IMAP standard recommends a 30-minute time period. Clearspan works appropriately with those values or larger values.

Lower values should not be used with e-mail accounts used for Clearspan voice messaging; otherwise the connection to the mail server can be lost during the voice mail retrieval call. If this happens, any voice mail status changes (saved, deleted) performed by the user during the session may be lost.

7.3 CLEARSPAN VOICE MESSAGING USERS

Clearspan uses a mail server as a storage device to hold voice messages. It does this by sending an e-mail to a specific e-mail account with the message attached. This mechanism is built into Clearspan and it is the responsibility of the Clearspan system administrator to create the correct accounts to receive and store these messages.

Mail server accounts should always match Clearspan voice messaging user's name and password.



Note: If a UNIX-based mail server is used, the account name must begin with a lower case alpha character.

8 APPENDIX B: MRV® IN-REACH 9000 CONFIGURATION FOR EXTERNAL VOICE MAIL

This information is required only when using an external voice mail system instead of the Clearspan Voice Mail service. The information in this section is provided as a base to configure the terminal server to integrate with Clearspan. However, the operator must also refer to the MRV documentation.

8.1 BASIC CONFIGURATION

To set a terminal server's basic IP configuration, either Dynamic Host Configuration Protocol (DHCP) or a fixed IP address can be used. The following example shows the commands for a fixed IP address configuration.

```
# ... Set IP address
DEFINE SERVER IP ADDRESS 192.168.200.98
# ... Disable autconfiguration...
DEFINE SERVER IP SUBNET MASK AUTOCONFIGURE DISABLED
# ... Set netmask,
DEFINE SERVER IP SUBNET MASK 255.255.255.0
# ... Set default gateway
DEFINE SERVER IP PRIMARY GATEWAY ADDRESS 192.168.200.1
# ... Set DNS
DEFINE SERVER IP PRIMARY DOMAIN ADDRESS 192.168.71.249
```

8.2 DEFINE DEDICATED SESSIONS TO CLEARSPAN

The In-Reach 9000 series should be configured with a dedicated telnet session to the Clearspan system. To activate the session, use the following commands at the terminal server console or over a telnet session. Note that the Application Server domain name (a record list) or IP address must be configured along with the listening port on Clearspan.

```
# Enable the configuration mode to PRIVILEGED
SET PRIVILEGED
pw> SYSTEM
# Configure the BW dedicated telnet session to the
# BroadWorks AS server
DEFINE PORT 1 ACCESS LOCAL
DEFINE PORT 1 TELNET DEDICATED SERVICE 192.168.8.46:11234
DEFINE PORT 1 DEFAULT SESSION MODE TRANSPARENT
# Active the change
LOGOUT PORT 1
```

Note that these commands must be executed for each port on the terminal server with a voice mail system serial connection.

8.3 ADDITIONAL CONFIGURATION COMMANDS

The following is a list of additional configuration commands that can be executed on a terminal server:

```
# Update server time..
SET SERVER TIME hh:mm:ss
# Update server time... Where month is the first 3 letters of
# a month, e.g. JAN, FEB, ...
SET SERVER DATE date month year
# Show a port basic config..
SHOW PORT 1 CHAR
```

9 APPENDIX C: MRV LX-4000T CONFIGURATION FOR EXTERNAL PHONE SERVICE

This information is required only when Clearspan is used for the Voice Mail service, and only while the phone service is provided externally. The information in this section is provided as a base to configure the terminal server to integrate with Clearspan. However, the operator must also see the MRV documentation.

9.1 CONNECTORS AND PIN-OUT DIAGRAM

This section provides basic pin-out information that is used to connect the terminal server to either a 3A translator or 202 modem. However, for correct pin-out information, always refer to your equipment vendor's documentation. Cables can be ordered directly from your terminal server vendor.

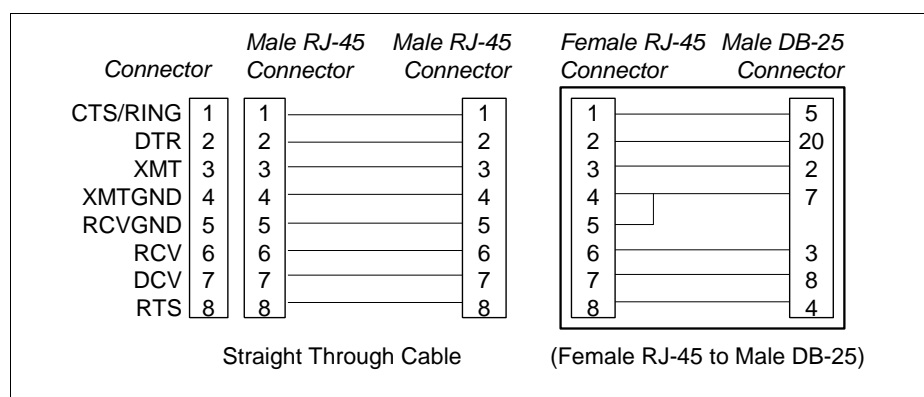


Figure 41 Connectors and Pin-out Diagram

9.2 BASIC CONFIGURATION

To set a terminal server's basic IP configuration, either DHCP or a fixed IP address can be used. The following example shows the commands for a fixed IP address configuration.

```
# Enable the configuration mode to PRIVILEGED
SET PRIVILEGED
pw> SYSTEM
# ... Set IP address
DEFINE SERVER IP ADDRESS 192.168.200.98
# ... Set netmask,
DEFINE SERVER IP SUBNET MASK 255.255.255.0
# ... Set default gateway
DEFINE SERVER IP PRIMARY GATEWAY ADDRESS 192.168.200.1
# ... Set DNS
DEFINE SERVER IP PRIMARY DOMAIN ADDRESS 192.168.71.249
```

9.3 DEFINE PORT ATTRIBUTES

Each terminal server port connected to a 3A translator or 202 modem must be configured with the correct parity, baud rate, and stop bit configuration. For the exact settings, refer to your Class 5 switch or PBX equipment vendor's documentation. By default, all ports are configured with the following attributes:

- Size: 8 bits
- Parity: null
- Stop/start bit: 1
- Flow control: XON
- Modem control is disabled

At the very least, the default value for the flow control and modem control must be changed. The flow control must be set to "CTS" and the modem control must be set to "enabled".

```
# Configuring a port modem communication attributes.
DEFINE PORT 1 FLOW CONTROL CTS
DEFINE PORT 1 MODEM CONTROL ENABLED
# Optional configuration for the port attributes.
DEFINE PORT 1 PARITY NULL
DEFINE PORT 1 SIZE 8
DEFINE PORT 1 STOP BIT 1
# Active the change
LOGOUT PORT 1
```



Note: These commands must be executed for each port connected to a voice mail system serial connection.

9.4 ADDITIONAL CONFIGURATION COMMANDS

The following is a list of additional configuration commands that can be executed on a terminal server:

```
# Update server time..
DEFINE SERVER TIME hh:mm:ss
# Update server time... Where month is the first 3 letters of
# a month, e.g. JAN, FEB, ...
DEFINE SERVER DATE date month year
# Show a port basic config..
SHOW PORT 1 CHAR
```

10 APPENDIX D: TEST SMDI LINK

An operator can test an SMDI link with a PC serial connection. The operator can use the same cabling as it does for the terminal server, along with a DB9 to RJ-45 converter to connect to a personal computer.

The operator can then use a terminal application (for example, "HyperTerminal") to connect over the serial port and send MWI commands to the Class 5 switch or PBX.

10.1 VERIFY CONNECTION

For the 3A translator, once the terminal application is connected and has the correct modem configuration, the serial connection light on the 3A translator should be green. If the light does not turn green, verify that the 3A translator and serial port communication attributes are the same, and that the cabling matches the vendor's specifications.

To troubleshoot a SMDI connection, refer to your vendor's documentation.

10.2 TEST MWI OVER SMDI

Once the connection is up, the operator can test the MWI over SMDI by sending ASCII messages. The following messages should be used:

- Activate indicator service to station: `OP:MWI<space><station>!^D`
- Type 2 deactivate indicator service to station: `RMV:MWI<space><station>!^D`

When incoming messages can be processed, no acknowledgement is required for these messages. However, if an incoming message cannot be processed, a negative acknowledgement can be returned to the message desk as follows:

- Negative acknowledgement: `<cr><lf>MWI<station><space>AAA<cr><lf>`

Where:

- *OP* means activate the *MWI* indicator from the specified directory number.
- *RMV* means deactivate the *MWI* indicator from the specified directory number.
- *<station>* is a station number, which can be seven digits, ten digits, or a variable length of one to ten digits. However, it should always be ten digits for Clearspan.
- *INV* is used for an invalid station number or service not assigned to the user or user group.
- *BLK* is for temporary blocked activity.
- ** is the end of medium character (ASCII code 25).

- <EOT> is the end of transmission character (ASCII code 4).

Example:

OP:MWI 5145551212!^D

... where ^D is entered by holding the CTRL key, while pressing the D letter key on your keyboard.

11 APPENDIX E: SURGEMAIL INSTALLATION AND CONFIGURATION

The Clearspan Voice Messaging service requires POP3 and/or IMAP message servers as its message repository. Any Request for Comments (RFC)-compliant POP3 or IMAP messaging server can be used.

If a customer has no preferred mail server, Clearspan has validated the SurgeMail mail server for use with Clearspan. SurgeMail provides an out-of-the-box redundancy architecture allowing two independent servers to work in a replicated pair, making it ideal for customers who require mail server redundancy at a very low cost.

This section provides basic SurgeMail installation and configuration information. For more information, consult the SurgeMail manual located at <http://www.netwinsite.com/surgemail/help/index.htm>.

11.1 SURGEMAIL INSTALLATION

This section covers the SurgeMail installation.

1. Download the latest SurgeMail image for the appropriate Operating System (OS) (for example, Linux, Solaris) at <http://netwinsite.com/cgi-bin/keycgi.exe?cmd=download&product=surgemail>.

For mail server OS installation, follow the Clearspan OS install recommendations outlined in the *Clearspan Software Management Guide*. You may need to create a user to allow for remote access to the mail server via telnet or ssh.

2. Copy the SurgeMail image to the mail server and unzip and untar.

```
$ unzip surgemail_39c_linux64.tar.gz
$ tar -xvf surgemail_39c_linux64.tar
```

3. As part of the initial installation, you are asked “Enter the full domain name that e-mail will be addressed to”. This should be set to whatever domain you plan to use as part of the Clearspan user voice messaging configuration that maps to the user’s domain.
4. As root, change directory to the *mtemp* directory and run the *install.sh* script.

```
[root@serv-vm1 mark]# cd mtemp
[root@serv-vm1 mtemp]# ./install.sh
SurgeMail 3.9c-1
Installing on (Linux serv-vm1 2.6.9-5.ELsmp #1 SMP Wed Jan 5 19:30:39 EST 2005 i
686 i686 i386 GNU/Linux)
Checking existing servers disabled... (expect 2 failures if all is well)
Checking port 110
Checking port 25
```

```
Creating directories
New Installation
Press <Enter> to accept the default values given in square brackets []

Enter installation path
[/usr/local/surgemail]?

Enter the full domain name that email will be addressed to, e.g. xxx.com for bob
@xxx.com
[serv-vm1]?eng.broadsoft.com

Enter the actual host name, normally this will match your mail address [e.g.
xxx.com] but might be a specific host like mail.xxx.com.
[eng.broadsoft.com]?vm1.eng.broadsoft.com

It appears the name (vm1.eng.broadsoft.com) points to some other system. If this
is the case then for testing purposes you may want to add (127.0.0.1
vm1.eng.broadsoft.com) to the hosts file which can typically be found at
(C:\windows\system32\drivers\etc\hosts)

Enter the Username for web administration
[]?admin

Enter the Password for web administration
[]?*****

Re-Enter Password
[]?*****

Enter email address for management emails & alerts
[admin@eng.broadsoft.com]?mkushnir@broadsoft.com

Setting admin details
Copying templates
Copying images
Copying help
Copying dlist
Copying webmail
Remove old webmail 'backup' files
Backup current webmail templates
Copy new webmail templates
Copying exe
Copying misc
Email account (admin@eng.broadsoft.com) created
Stopping sendmail...
Spawn (/etc/rc.d/init.d/sendmail stop)
Shutting down sendmail: [FAILED]
```



```
Disabling sendmail startup
/etc/rc.d/rc2.d/S80surgeemail: File exists

Starting SurgeMail now...
Spawn (/usr/local/surgeemail/surgeemail_start.sh)
Startmail starting surgeemail using configuration file /etc/surgeemail.ini
Setting owner and mode for startmail binary, chown root:root, chmod 04775
startmail
Starting surgeemail as uid=8 gid=12 based on /usr/local/surgeemail
Call execv (./surgeemail)
domuser reload Already loaded according to date
SendMax init
Set timing to () 28
Set log size to (2000000)
MAIL Running - Home /usr/local/surgeemail - log file is /usr/local/surgeemail/mail
.log
known: loading file (known_monthly.txt)
known: file could not be read (No such file or directory)
known: loading file (known_daily.txt)
known: file could not be read (No such file or directory)
Detaching server process

To complete installation/configuration use a web browser
  http://vml.eng.broadsoft.com:7026

Install complete

Please note, if you have a virus scanner like Norton Antivirus installed with
Auto Protect enabled, you should disable the auto protect feature which will
adversely affect performance of the mail server. Also if you have your virus
scanner enabled for incoming/outgoing mail you should disable that as well as it
could easily break the mail server protocol.

Press <enter> to exit
```

11.1.1 STOP AND START MAIL SERVER

The SurgeMail server can be stopped from the OS prompt using:

```
# /usr/local/surgeemail/surgeemail_stop.sh.
```

The SurgeMail server can be started from the OS prompt using:

```
# /usr/local/surgeemail/surgeemail_start.sh.
```

11.2 SURGEMAIL SERVER CONFIGURATION

This section outlines the required basic mail server configuration.

11.2.1 MAIL SERVER LOGIN

You can log in to the mail server web portal through either secure or non-secure access:

`http://<mail_server>:7026/`

-or-

`https://< mail_server>:7025/`

Default administrator login user ID and password are set to those entered during the installation.

11.2.2 SURGEMAIL LICENSING

SurgeMail requires a valid license. Upon installing SurgeMail, a temporary 30-day trial license should be automatically installed. To validate that the license is present, log in to the web portal and go to the *Register* tab. You should see the following:

```
Details:      Key OK, email=trial@netwinsite.com, Expires in 29 days
```



Note: A permanent license **MUST** be purchased before the trial license expires or the product ceases to function. For more information on SurgeMail license purchasing and activation, see <http://netwinsite.com/activate.htm#get>.

11.2.3 BASIC SERVER CONFIGURATION

Basic server configuration can be done from the web portal or by manually modifying the `/etc/surgemail.ini` configuration file. This section describes the modification or addition of parameters directly in the configuration file, since this allows the configuration file to be copied to the redundant server, if available. The same settings can be configured from the web portal. To find the web page location of any of the parameters that follow, just enter the parameter name into the *Find Config Setting*: search window provided.

The general assumption is that this e-mail server is dedicated to Clearspan and is in a trusted environment, meaning all the deposits/retrievals are from a known list of trusted servers, and thus antivirus and spam filtering is not really needed. As such, the basic configuration consists of following steps.

1. **SMTP Relay and Authenticated** Settings: By default, authenticated SMTP relay is enabled for all addresses. It is much more secure to disable SMTP relay for all but Clearspan Application Servers and Media Servers. In addition, SMTP authentication is disabled for these trusted addresses. As root, add/modify the following parameters in `/etc/surgemail.ini` to

include a list of all Application Servers and Media Servers. The `_relay_allow_ip` parameter should include the loopback address 127.0.0.1 as well.

```
g_relay_allow_ip "127.0.0.1,192.168.212.90,192.168.212.92"
g_smtp_noauth "192.168.212.90,64,215.212.92"
```

2. **Override IP/User Send Limits:** By default, each source IP address and user is limited to 500 deliveries a day. This must be disabled for Application Servers and Media Server source addresses. As root, add/modify the following parameters in `/etc/surgemail.ini` to include a list of all Application Servers and Media Servers.

```
g_user_send_white "192.168.212.90,192.168.212.92"
```

3. **Override Connection Limit Per IP Address:** By default, SurgeMail limits the number of SMTP/POP/IMAP connections from one source IP address to 15. This must be disabled for Application Servers and Media Servers. As root, add/modify the following parameters in `/etc/surgemail.ini` to include a list of all Application Servers and Media Servers.

```
g_con_perip_except "192.168.212.92"
g_con_perip_except "192.168.212.90"
```

4. **SMTP Forwarding (Optional):** For Clearspan services such as Call Notify and VM Notify, the e-mail notification may be directed to a public account. Depending on the security settings, the SurgeMail server may not be allowed to relay directly to the outside world, and may be required to forward all foreign SMTP traffic to another SMTP server. To configure a default SMTP forwarder, as root, add/modify the following parameter in `/etc/surgemail.ini` with the address of the SMTP destination.

```
g_gateway domain="*" to="12.2.3.4" user="" pass="" relay="" check="" sms=""
local=""
```

5. **Redundancy Configuration (Optional):** SurgeMail supports out-of-the-box redundancy replication between two SurgeMail servers. If this redundant configuration is to be used as root, add/modify the following parameters in `/etc/surgemail.ini`. Note that the `g_mirror_host` parameter represents the other SurgeMail server. On the primary SurgeMail server, it should point to the secondary server. On the secondary server, it should point to the primary server. The `g_mirror_mode` parameter must be set to "SLAVE" on the secondary SurgeMail server.

```
g_mirror_host "192.168.212.119"
g_mirror_nossl "TRUE"
g_mirror_mode "MASTER"
g_mirror_secret "mirrorme"
g_mirror_live "TRUE"
g_mirror_config "TRUE"
```

11.2.4 ACTIVATE CONFIGURATION CHANGES

Once the `/etc/surgemail.ini` file has been modified, it can be copied over to the secondary SurgeMail server (if applicable) and then it can be placed in the `/etc` directory. On the secondary server, `g_mirror_host` and `_mirror_host` parameters must be changed.

To activate the new configuration, stop and start each SurgeMail server. For more information see section [11.1.1 Stop and Start Mail Server](#).

11.3 SURGEMAIL DOMAIN/USER CONFIGURATION

A default domain was added as part of the SurgeMail installation. In general, this one domain is all that is required since all Application Server user's voice messaging accounts can belong to this same domain. If other domains are required, they can be added via the web portal by clicking the Add New Domain link under *Important tasks* on the *SurgeMail Manager Info* page.

The one domain setting that should be configured is the default per user quota (*quota_default* parameter). This can be set either directly in the */etc/surgemail.ini* configuration file for each domain or via the web portal. For information on calculating the default user quota, see the *Clearspan System Engineering Guide*.

Users can be added via the web portal by going to the Create User Account link under *Important tasks* on the *SurgeMail Manager Info* page. Select the desired user domain and set the *Username* and *Password* parameters, which must match those set as part of the user's voice messaging configuration on the Application Server. Optionally, user accounts can be created using an HTTP template. For more information, see <http://netwinsite.com/surgemail/help/accounts.htm>.

11.4 CLEARSPAN CONFIGURATION

This section outlines the Clearspan server configuration for SurgeMail.

11.4.1 APPLICATION SERVER CONFIGURATION

11.4.1.1 SMTP Server

The SurgeMail servers should be defined on the Application Server as the primary and secondary SMTP servers. From the Clearspan command line interface (cscli), set the *primarySMTPServer* and *secondarySMTPServer* parameters.

```
AS_CLI/Interface/Mail> set primarySMTPServer 192.168.1.107
AS_CLI/Interface/Mail> set secondarySMTPServer 192.168.2.119
```

11.4.1.2 Voice Mail Retrieval Redundancy

For redundant SurgeMail configurations to support voice mail retrieval redundancy, the user's mail server must resolve to both SurgeMail servers via DNS SRV records. These records can be defined on an external DNS or locally on each Application Server by adding them into the */usr/local/broadworks/bw_base/conf/namedefs* file. If added locally, each Application Server's DNS cache should be refreshed using the reload command at the *AS_CLI/ASDiagnostic/DNS>* level.

Sample Records:

vm1.lab.com.	IN	A	192.168.1.107		
vm2.lab.com.	IN	A	192.168.2.119		
_pop3._tcp.lab.com.	IN	SRV	0	0	110 vm1.lab.com.
_pop3._tcp.lab.com.	IN	SRV	1	0	110 vm2.lab.com.

_imap._tcp.lab.com.	IN	SRV	0	0	143	vm1.lab.com.
imap._tcp.lab.com.	IN	SRV	1	0	143	vm2.lab.com.

Once the DNS records are in place, the system voice mail server can be set to the fully qualified domain name (FQDN) representing the two SurgeMail servers. Although IMAP is supported, the mail server protocol should be set to “POP3” since there is no external mail client access to these mail servers.

```
AS_CLI/Service/VoiceMsg> set mailServerForSystemVM lab.com
AS_CLI/Service/VoiceMsg> set mailServerProtocolForSystemVM POP3
```

Voice mail access redundancy can now be enabled via the bwcli by setting *supportDnsSrvForMailServerAccess* to “true”.

```
AS_CLI/Interface/Mail> set supportDnsSrvForMailServerAccess true
```

11.4.2 MEDIA SERVER CONFIGURATION

On the Media Server, voice mail deposit redundancy is provided through the multiple SMTP contacts provided by the Application Server (the two SurgeMail servers). To ensure a quicker failover, the SMTP timer on is reduced to 15 seconds.

```
MS_CLI/Applications/MediaStreaming/GeneralSettings> set smtpTimeout 15
```

11.5 SURGEMAIL TROUBLESHOOTING

The SurgeMail server provides detailed logging for various protocols (for example, SMTP, POP3), which can be viewed either through the web portal under *Status & Reporting* → *Log* tab or the log files can be viewed directly on the server located in the */usr/local/surgemail* directory. Logging levels are controlled via the web portal under the Global settings → *Server* link.

SurgeMail also provides numerous other useful utilities such as monitoring queues, server status reports, and graphs showing trends through the web portal under the *Status & Reporting* link.

From the server prompt, as root, SurgeMail provides the “tellmail” utility that can be used for numerous tasks, such as finding a mail user or finding the mailbox location of a user (*# tellmail path <user@domain>*).



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