integrated

Technical Brief

Nortel Networks CallPilot Desktop Messaging

Introduction

Unified messaging has become the standard in telecommunication requests for proposals. Unified messaging is very simply the combining of voice, fax, e-mail, or text messages so that the end user has access to all types of messages from the interface of their choice. How this is accomplished varies widely among the different vendor solutions. The goal of unified messaging is to make it easy for end users to retrieve and send any type of message, from any type of device. One of the most common interfaces for access to a unified messaging inbox is the user's traditional e-mail client. Benefits of unified messaging include access to messages via any Internet access point, the user's familiar e-mail client interface, or any telephone in the world. Regardless of the interface (e-mail client, Web browser, telephone), commands are intuitively designed and require little training for the end user to move from traditionally separate voice mailbox and e-mail accounts to a unified messaging inbox where voice, fax, text, and e-mail are available within a single user interface.

Nortel Networks CallPilot* Unified Messaging provides features and functionality to meet the needs of today's businesses, both large and small. This brief will describe the Desktop and Web Messaging features and functionality of CallPilot in depth. It will begin with how unified messaging fits into the overall messaging system, beginning with the architecture, hardware, and desktop messaging software of the CallPilot system and then describe each of the different client interfaces that are available. For each client interface option, communication, addressing, and remote access will be covered. A section on security that defines the specific protocols for each client will follow. Finally, a description of how we test and support the CallPilot Unified Messaging features will conclude the brief.

Note: The content of this brief is based on the CallPilot 2.5 Unified Messaging applications (Desktop Messaging and My CallPilot).

NØRTEL NETWORKS

BUSINESS WITHOUT BOUNDARIES

Architecture

CallPilot Desktop Messaging offers unified messaging in an architecture that the industry has coined "Integrated Unified Messaging." The term "integrated" means that all messages are "integrated" at the end user's desktop, not on an e-mail server. CallPilot accepts and stores voice and fax messages on the CallPilot server in the end user's multimedia mailbox. The end user's e-mail messages are received and stored by the customer-owned e-mail server. CallPilot does not require any software to be loaded on the e-mail server. When voice or fax messages are downloaded by the user, the messages do not pass through the e-mail server, but directly across the customer's LAN to the user's PC.

Nortel Networks "integrated" architecture provides industry-leading unified messaging at the desktop while preserving the customer's investment in their e-mail system. Several concerns that are often raised regarding the implementation of a unified messaging solution include impact to traffic on the LAN, availability of the LAN, storage, and additional software loaded onto the e-mail server. CallPilot's Desktop Messaging implementation answers each of these concerns based on its "integrated" architecture. Voice and fax messages don't travel over the LAN, end users still have access to voice and fax messages via the telset or PC if the e-mail server is down, reliable message waiting indication, and nothing is added to or stored on the customer's e-mail server. Because CallPilot does not require changes to the customer's e-mail server and provides the ability for administrators to control access to desktop messaging via Mailbox Class, we are able to alleviate concerns from IT Managers about adding unified messaging to their network. CallPilot can also be networked with any voice messaging system using VPIM (Voice Protocol for Internet Messaging), Enterprise Networking (Nortel Networks proprietary Analog Messaging), or AMIS (Analog Messaging Industry Standard) networking protocols.

Hardware

CallPilot Desktop Messaging and My CallPilot Web messaging and personal mailbox administration require that a CallPilot server be installed at the customer location and connected to the customer's LAN. The CallPilot system is available in three different options: the 201i, a Meridian 1/Communication Server 1000 in-skins configuration; a tower server; and a rackmount system. Both the tower and the rackmount systems are external servers that can support CallPilot on Nortel Networks switches, and have varying storage, user, traffic, and redundancy options. CallPilot Desktop Messaging software requires the end user to have an industry-standard desktop computer.

Although My CallPilot can be utilized from the CallPilot server, a customer-provided external Web server may be required based on engineering guidelines. Please refer to the CallPilot Planning and Engineering guide for detailed information on hardware specifications and configuring the external Web server. The guide is available for download from the following Web sites:

- Partner Information Center (PIC) at: *http://www.nortelnetworks.com/prd/picinfo/index.html*
- Helmsman Express at: *http://www.nortelnetworks.com/helmsman*

Software

The CallPilot system runs on a Windows 2003 server. All CallPilot servers have the ability to support Desktop Messaging and My CallPilot. The server is made aware that it will be supporting Desktop Messaging and My CallPilot via keycode. Steps to prepare the server to support Desktop Messaging and My CallPilot are guided by the CallPilot Administration client. Each user of the CallPilot system will be given a mailbox. A Mailbox Class will determine if the end user is a Desktop Messaging/My CallPilot end user, with or without fax capability. CallPilot Desktop Messaging (which includes My CallPilot) is sold by seat licenses, in increments of between 10 and 100. When a user's Mailbox Class of Service is "checked" as a Desktop Messaging user, one of the seat licenses is used.

The Desktop Messaging client software is required to be loaded on the end user's computer(s). Remember, because the licenses are controlled on the server, the end user can have the client loaded on as many computers as they desire. One exception to this is the My CallPilot feature that will be discussed in detail later since it does not require any desktop software to be loaded.

Two important parts of the CallPilot Desktop Messaging client are the formats used for voice and fax. CallPilot stores voice messages on the CallPilot server in a proprietary format called .vbk. This format ensures voice grade quality of audio messages as well as a 4-to-1 compression ratio. Any .vbk can be saved as a .wav format to the local PC using the Save As command. This can be useful when an end user needs to send a voice file to someone who is not on a CallPilot system. The Microsoft Outlook, Lotus Notes, and Novell GroupWise integrated clients offer specific flexibility where an end user can send a .vbk file to an e-mail address, and CallPilot will take care of the conversion for them. The voice message will arrive as an uncompressed .wav file.

The CallPilot Player is a Nortel Networks proprietary audio player/recorder. This player is automatically loaded during installation. It provides the controls for recording and playback of .vbk files. It also allows the user to adjust the speed of the message, the volume of the message, and the playback device (computer speakers or telephone) via intuitive icon controls.

CallPilot uses a third-party fax print driver to support the TIFF-F (Tagged Image File Format-F) format for sending fax images. During the client installation, the driver is added to the printer list drop down menu and is used to turn any type of document such as a Word, Excel, or PowerPoint file into a fax image for sending to a fax address. This fax address can be an external fax machine number or another fax-enabled CallPilot user. The fax imaging controls that are built into the CallPilot desktop software allow for complete manipulation of the document, as well as the ability to print and save the file to your hard drive.

Fax Messaging is sold as a separate seat license and can be added to any CallPilot mailbox where Desktop Messaging is enabled.

Nortel Networks CallPilot Unified Messaging provides features and functionality to meet the needs of today's businesses, both large and small.

Client support

Nortel Networks CallPilot Unified Messaging provides support to clients that fall into the following categories:

- *Groupware clients:*
  - > Microsoft Outlook
  - > Lotus Notes
  - > Novell GroupWise

These groupware clients are all designed to work for companies that have enterprise e-mail systems supporting their end users. This is where CallPilot messages are integrated with the user's existing desktop e-mail environment.

- *Citrix Thin Client* is supported with the following groupware applications:
  - > Microsoft Outlook
  - > Lotus Notes
  - > Novell GroupWise

The Citrix Thin Client option allows software to be installed on one Windows 2000 Server or Windows 2003 server (depending on the CallPilot Desktop Messaging release) with Citrix Metaframe to be accessible by client PCs with Citrix ICA (Independent Computing Architecture).

- *Internet Mail Clients:*
  - > Netscape Messenger
  - > Microsoft Outlook Express
  - > Microsoft Outlook running in IMAP (Internet Messaging Application Protocol) mode
  - > Eudora Pro

- *My CallPilot supported Web browsers:*
  - > Internet Explorer
  - > Netscape Navigator

The CallPilot Web client, My CallPilot, contains no desktop client software, but is retrieved from the CallPilot server or loaded onto a customer-owned Web server, and accessed by the end user via a URL. Also, a Macintosh version of My CallPilot is available for Macintosh OS 9.0/9.1 and OS X 10.2.

Figure 1. CallPilot Unified Messaging server for voice and fax messages and a customer owned IIS Web server to host the My CallPilot Web application.

4
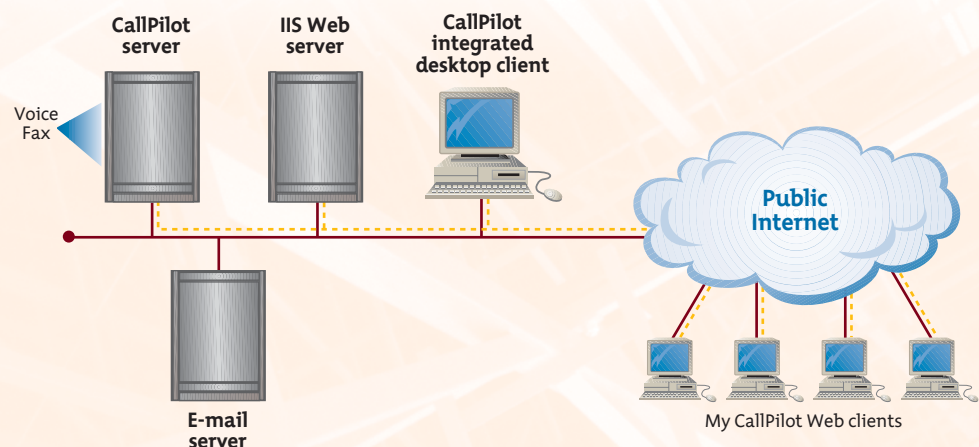
For a list of the latest supported Desktop Messaging and My CallPilot clients, please refer to the Desktop Messaging and My CallPilot Compatibility Matrix on the Partner Information Center (PIC) Web site at *http://www.nortelnetworks.com/prd/picinfo/index.html*.

Because CallPilot does not store messages on the e-mail server, or even send voice or fax messages through the e-mail server, the type of client(s) that is used does not matter to the CallPilot server. In fact, all client software options are delivered on one CD. A company that uses Lotus Notes in their HR department, but Microsoft Outlook in all other areas of the business, can load the appropriate client on the appropriate end user's machine, and those end users might be sitting right next to each other. CallPilot Desktop Messaging even allows a user to have more than one client loaded on the same machine. For an example, someone may have an enterprise Lotus Notes solution in the office, but prefer to access their CallPilot messages while at home from a laptop using the Internet Mail client for Netscape Messenger.

Note: Installing Novell GroupWise and Microsoft Outlook on the same PC is not recommended.

The implementation of the various client options is based on three Internet protocols:
• Internet Message Access Protocol (IMAP) version 4 revision 1
• Simple Mail Transfer Protocol (SMTP)
• Lightweight Directory Access Protocol (LDAP)

Both the IMAP and SMTP protocols transfer messages in Multipurpose Internet Mail Extensions (MIME) format. All desktop clients communicate with the CallPilot IMAP server to retrieve messages from the user's mailbox, the SMTP server to send messages to other users and recipients, and the LDAP server to look up addressing information and administer the user's mailbox options.

CallPilot Integrated Clients

The CallPilot Integrated Clients provide feature-rich integration with the leading groupware messaging products available today. These CallPilot clients are tailored to integrate specifically with Microsoft Outlook, Lotus Notes, and Novell GroupWise e-mail products. The CallPilot software that supports each of these clients is installed onto each end user client PC and takes approximately 10 to 40 MB of space depending on the e-mail application.

An advantage to the Microsoft Outlook, Lotus Notes, and Novell GroupWise implementations of CallPilot Desktop Messaging is the fact that the desktop client communicates to the e-mail environment via the e-mail client. The e-mail client then makes requests to the e-mail server via their native format. This ensures that CallPilot is not sensitive to changes in the software on the customer-owned e-mail server.

Microsoft Outlook

#### How the client communicates

The CallPilot Desktop Messaging client supports several versions of Microsoft Outlook. CallPilot adds a service to Microsoft Outlook by creating a CallPilot message store. This store provides an inbox that displays message header information about voice and fax messages within the user's CallPilot mailbox on the CallPilot server. Once the CallPilot Desktop Messaging client is installed onto the end user's PC, the end user will be presented with a CallPilot login box each time they login to Outlook. If not disabled by the administrator, the

user has the option to check the "Remember Password" feature. By checking the "Remember Password" feature, the user will not be prompted to login to CallPilot each time they login to Outlook and will automatically be presented with their CallPilot inbox once successfully logged into their e-mail account. Notification of new CallPilot messages takes place by the client software 'listening' on a socket for arrival of new messages. This process creates less LAN traffic than polling. When a new voice or fax message is present, the header of the message is sent directly from the CallPilot server to the CallPilot client message store within Outlook. The end user then immediately sees a new message listed in their CallPilot Inbox. The action of double clicking on that message sends a command to the CallPilot server to send the body of the message, over the LAN (not through the e-mail server), to the user's desktop. The message can then be played or viewed by the end user.

The message will remain in the user's mailbox on the CallPilot server until such time it is deleted using the commands within their desktop client, deleted using the telset commands, or is dragged outside of the CallPilot message store. While it remains on the CallPilot server mailbox, it will be accessible via the client or the telephone interface. Once it is taken off the CallPilot server by moving it from the CallPilot message store on the client, it will only be accessible via the user's PC since it is now stored on the computer's local hard drive.

Figure 2. Outlook client accessing a CallPilot voice message through the CallPilot integrated desktop client.

Below is a picture of a typical Outlook 2003 inbox with an open multimedia message playing over the PC speakers. This picture shows the CallPilot custom form. The CallPilot custom form allows users to create voice and fax messages as well as access other CallPilot features
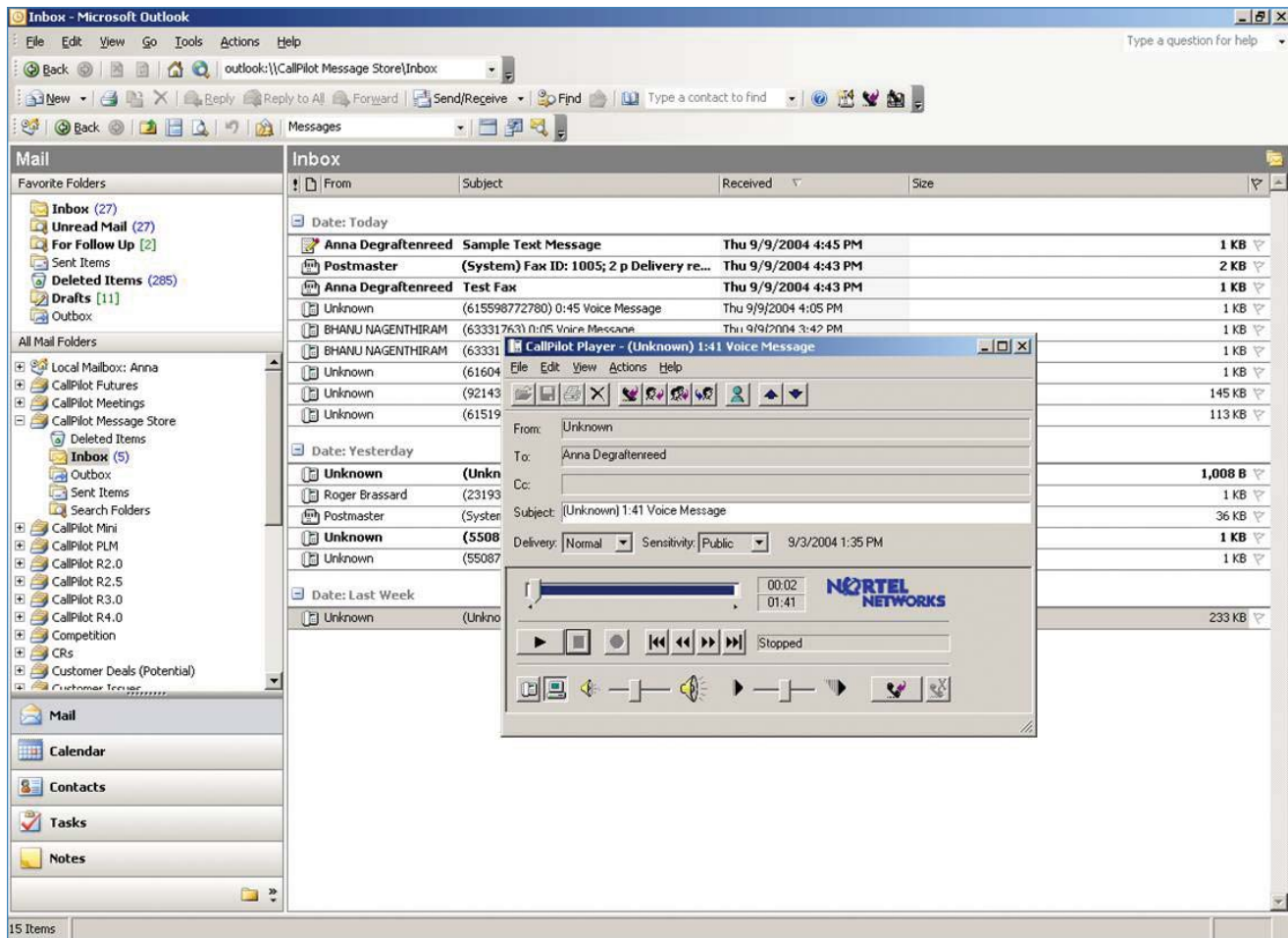
accessible through the custom form. Voice and fax messages created within the custom form can be addressed to fax machine numbers, other CallPilot users, and to e-mail addresses.

Users also have the option to send CallPilot voice and fax messages using the standard Outlook e-mail form in lieu of the CallPilot custom form. This requires a simple change in the user's configuration that will use the standard form as default. The user can utilize the CallPilot voice recorder to record messages, or the Nortel Networks Fax driver to create .tif images for fax, and then simply attach them in a regular e-mail message and send to any e-mail address. During the send process, if the message is addressed to a non-CallPilot user, CallPilot will convert the .vbk (Nortel Networks proprietary voice format) to a .wav that can be played via any multi-media device. Note that this option does eliminate the efficient file compression provided with the CallPilot .vbk format and the convenient access to CallPilot feature functionality when using the custom form.

Addressing

The CallPilot Address Book is an address book of all of the users that have a mailbox on the CallPilot server, regardless of whether or not they are Desktop Messaging users. This address book can either be downloaded from the server to the client where it is available for addressing voice and fax messages between CallPilot users, or be accessed dynamically from the CallPilot server. If the user chooses to keep a current address book locally on their PC, they will need to configure their client to download the address book at specific time intervals. The CallPilot Address Book cannot be edited. It is possible to add new CallPilot addresses, but they are added to the Personal Address Book or Outlook Contacts. It is also possible to add addresses from the CallPilot Address Book to the Personal Address Book or Outlook Contacts. Both of these functions are accomplished just like adding new e-mail users.

The CallPilot Desktop Messaging client that integrates with Outlook allows addressing in several ways. Messages can be forwarded or sent as new by accessing the different address books available including a corporate, CallPilot, Personal Address Book, or Outlook Contacts. If a user is sending a message to another CallPilot user on the same system, they can simply choose their name from the CallPilot Address Book. If they are sending a message to someone on a different CallPilot system, or an external user, they can choose the person from their personal contacts list within Microsoft Outlook. A drop-down menu is provided to assist in creating CallPilot addresses in the proper format. The Outlook clients that CallPilot supports also have the ability to send a .vbk message to an external e-mail address, and have it arrive in the recipient's mailbox as a .wav file that can be listened to easily.

Remote access

Accessing CallPilot messages via the end user's PC when the PC is at a remote location, or in a dial setting such as hoteling, is very simple. The messages are all stored on the CallPilot server which sits on the corporate network. A RAS or VPN type of connection is required to access the corporate LAN and have full control of their CallPilot inbox. The end user must be able to "Ping" the CallPilot server from their client. If the user does not have direct network access to the CallPilot server, they will not be able to access their messages via their Microsoft Outlook e-mail client.

Another feature that allows for productivity is the "Download All Messages" feature that can be invoked from the client. This allows the user to download a copy of all of the messages that are on the CallPilot server, into their CallPilot inbox on their own PC. This action would be taken while the user is connected to the corporate LAN. They can then pack up their PC, get on a long flight, and playback, save, and respond to voice messages via the PC speakers and microphone. All accessed messages while offline (deleted, sent, read) will synchronize with the CallPilot server as soon as the client is re-connected to an active network. This means that once on the network, messages 'sent' while offline and in the CallPilot Outbox will be delivered, messages that were deleted will be removed from the CallPilot server, and messages that were accessed will be marked as read/listened to on the CallPilot server. Note that all incoming messages are still on the server. If, for example, the user on the airplane deletes and responds to several messages while in flight, then walks off the plane and checks voice messages via a cell phone, the CallPilot server will reflect the status of the CallPilot client when it was last online.
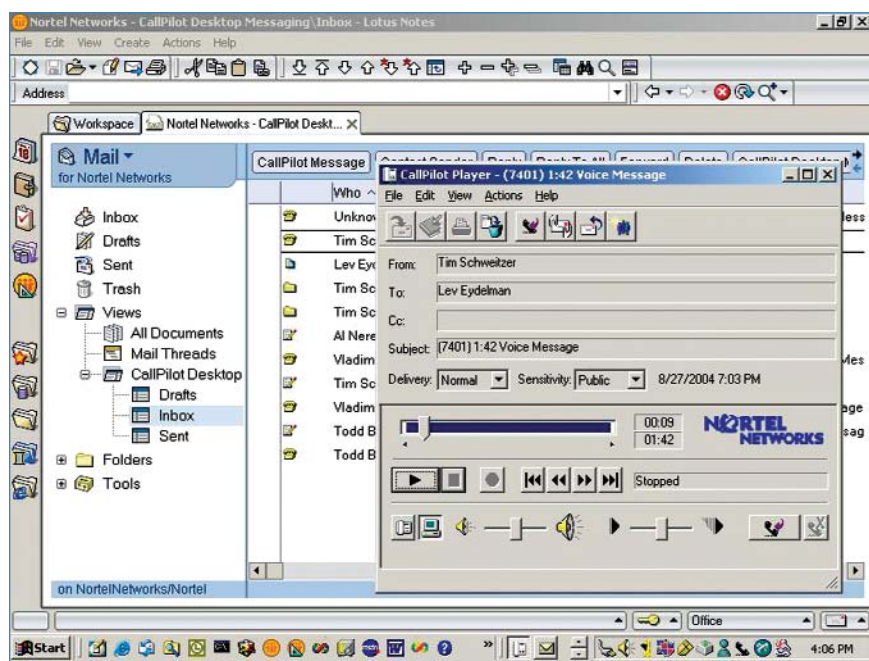
Lotus Notes

How the client communicates

The Lotus Notes e-mail client and its integration with the CallPilot Desktop Messaging client varies substantially from the Microsoft implementation under the surface, but will be user friendly to the most sophisticated Notes users. All of the Notes icons have been intuitively designed in the Notes format, therefore making the interface between the e-mail client functions and those added to support CallPilot voice and fax messages seamless.

Before discussing exactly how messages are sent between the Lotus Notes Server and the CallPilot server, there are some specific items that are set up in the Notes client software during the installation stage for the CallPilot Desktop Messaging client. The Lotus Notes product is based on a database architecture that requires specific processes to add or update information. In order for CallPilot messages to appear inside the user message list, the Mail database design must be updated. This updating of the database adds a new "view" to the user's Mail database on the server. This is done via a call to the Notes API that adds a "CallPilot Desktop Messaging" view that includes folders labeled 'Inbox", "Drafts", and "Sent". The updating of this database can be done automatically during CallPilot installation. There will be a check box available allowing the user to Update Lotus Notes database during the installation. If this is checked at installation, there is nothing else to do, and the end user will see a CallPilot inbox added to their message list. By not making this selection during installation, several manual steps can be taken to replace the Mail database and allow the user to have their CallPilot messages displayed in the same box as their e-mail messages.

In either instance, CallPilot is modifying the Mail database, and therefore Lotus Notes requires the user's Notes password be input

Figure 3. Lotus Notes client accessing a CallPilot voice message through the CallPilot integrated desktop client.

8

during installation. The installation program also adds the "People (CallPilot)" and "Groups (CallPilot)" views to the user's local address book. These views display the CallPilot Address Book and any Groups (similar to Personal Address Books), that the user creates. No other changes are made to the user's databases. If automatic updating of the Mail database is chosen at installation, all existing customizations will remain unaffected by the CallPilot Desktop Messaging client. If the mail database is manually replaced to allow for access of CallPilot voice and fax messages from within the Notes inbox, all customizations will be removed.

Once the CallPilot Desktop Messaging client is installed onto the end user's PC, the end user will be presented with a CallPilot login box each time they login to Notes. If not disabled by the administrator, the user has the option to check the "Remember Password" feature. By checking the "Remember Password" feature, the user will not be prompted to login each time they login to Notes and will automatically be presented with their CallPilot inbox once success-fully logged into their e-mail account. From there, the end user will be able to access their Lotus Notes Mail database and work with their existing messages while CallPilot runs in the background. If the client detects changes, it sends the changed header information to the Lotus Notes Mail database, which triggers the refresh agent and causes the view to be refreshed with new header information.

The message will remain in the user's mailbox on the CallPilot server until such time it is deleted using the commands within their desktop client, deleted using the telset commands, or is dragged outside of the CallPilot message store. While it remains on the CallPilot server mailbox, it will be accessible via the client or the telephone interface. Once it is taken off the CallPilot server by moving it from the CallPilot message store on the client, it will only be accessible via the user's PC since it is now stored on the computer's local hard drive.

Addressing

As mentioned above, "People" and "Groups" address book entries are created for use with CallPilot. This address book can either be downloaded from the server to the client where it is available for addressing voice and fax messages between CallPilot users, or be accessed dynami-cally from the CallPilot server. If the user chooses to keep a current address book locally on their PC, they will need to configure their client to download the address book at specific time intervals. The CallPilot Address Book cannot be edited. Groups can then be built from the CallPilot People address book entries. Another option in Lotus Notes is to have the CallPilot Address Book remain on the Lotus Notes server. To achieve this configuration, an empty Lotus Notes database (callpilot.nsf) for the CallPilot Address Book is installed in the Notes/data directory on the Lotus Notes Server. This database is then added to the Lotus Notes Workspace. This setup also allows the administrator to create Groups (distribution lists) which can be used by all CallPilot users.

Remote access "Off-line Mode"

Accessing CallPilot messages via the end user's PC when the PC is at a remote location, or in a dial setting such as hoteling, is very simple. The messages are all stored on the CallPilot server, which sits on the corporate network. A RAS or VPN type of connection is required to access the corporate LAN and have full control of their CallPilot inbox.

Another feature that allows for productivity is the "Download All Messages" feature that can be invoked from the client. In conjunction with the Lotus Notes Replication feature, this allows the user to download a copy of all of the messages that are on the CallPilot server into their

CallPilot inbox on their own PC. This action would be taken while the user is connected to the corporate LAN. They can then pack up their PC, get on a long flight and play back, save, and respond to voice messages via the PC speakers and microphone. All accessed messages while offline (deleted, sent, read) will synchronize with the CallPilot server as soon as the client is re-connected to an active network. This means that once on the network, messages 'sent' while offline and in the CallPilot Outbox will be delivered, messages that were deleted will be removed from the CallPilot server, and messages that were accessed will be marked as read/listened to on the CallPilot server. Note that all incoming messages are still on the server. If, for example, the user on the airplane deletes and responds to several messages while in flight, then walks off the plane and checks voice messages via a cell phone, the CallPilot server will reflect the status of the CallPilot client when it was last online.

Novell GroupWise

How the client communicates

The Novell GroupWise e-mail client and its integration with the CallPilot Desktop Messaging client is similar to Lotus Notes and also user-friendly to GroupWise users. All of the GroupWise icons have been intuitively designed in the GroupWise format, therefore making the interface between the e-mail client functions and those added to support CallPilot voice and fax messages seamless.

Once the CallPilot Desktop Messaging client is installed onto the end user's PC, the end user will be presented with a CallPilot login box each time they login to GroupWise. If not disabled by the administrator, the user has the option to check the "Remember Password" feature. By checking the "Remember Password" feature, the user will not be prompted to login to CallPilot each time they login to GroupWise and will automatically be presented with their CallPilot inbox once successfully logged into their e-mail account.

If the client detects changes such as new or deleted messages, it sends the changed header information to the GroupWise client. As new CallPilot messages arrive, they are presented to the GroupWise client as e-mail messages. The GroupWise client then requests the GroupWise server to display the message header information in the CallPilot Inbox. Upon double-clicking

Figure 4. Novell GroupWise client accessing a CallPilot voice message through the CallPilot integrated desktop client.

10
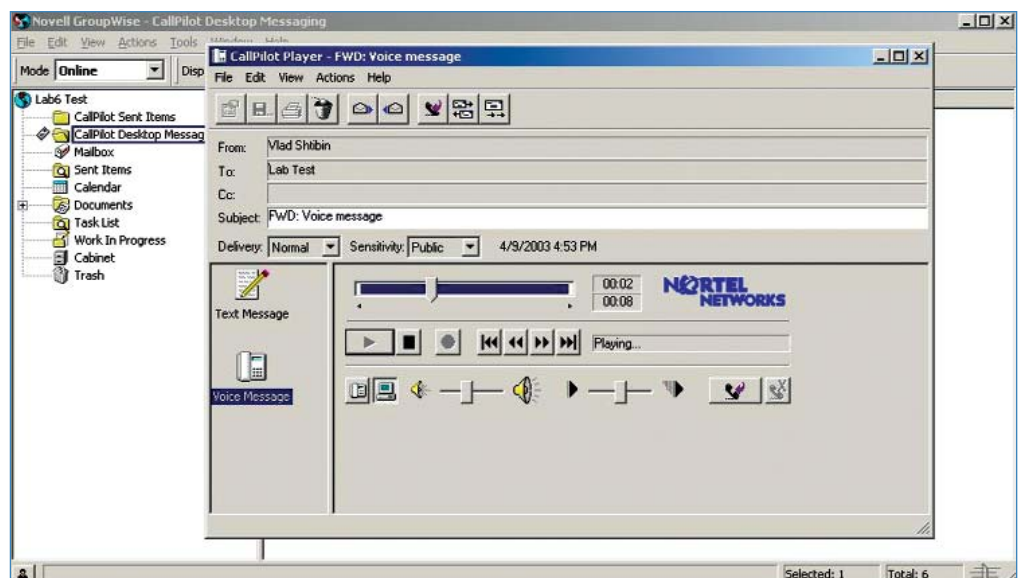
or downloading of the CallPilot message, the entire body of the message travels from the CallPilot server, over the LAN, to the desktop client. The message body does not pass through the e-mail server. The message is then cached on the client, so re-playing of a message a second or third time is quicker than the initial download.

The message will remain in the user's mailbox on the CallPilot server until such time as it is deleted using the commands within their desktop client, deleted using the telset commands, or is dragged outside of the CallPilot message store. While it remains inside their CallPilot server mailbox, it will be accessible via the client or the telephone interface. Once it is taken off the CallPilot server by moving it from the CallPilot message store on the client, it will only be accessible via the user's PC since it is now stored on the computer's local hard drive.

Addressing

The CallPilot Address Book is an address book of all of the users that have a mailbox on the CallPilot server, regardless of whether or not they are Desktop Messaging users. This address book can either be downloaded from the server to the client where it is available for addressing voice and fax messages between CallPilot users, or be accessed dynamically from the CallPilot server. If the user chooses to keep a current address book locally on their PC, they will need to configure their client to download the address book at specific time intervals. The CallPilot Address Book cannot be edited. It is possible to add new CallPilot addresses, but they are added to the Personal Address Book. It is also possible to add addresses from the CallPilot Address Book to the Personal Address Book. Both of these functions are accomplished just like adding new e-mail users.

The CallPilot Desktop Messaging client that integrates with the GroupWise e-mail client allows addressing in several ways. Messages can be forwarded or sent as new by accessing the different address books available, including a corporate, CallPilot, or Personal Address Book. If a user is sending a message to another CallPilot user on the same system, they can simply choose their name from the CallPilot Address Book. If they are sending a message to someone on a different CallPilot system or an external user, they can choose the person from a previously created address in their Personal Address Book, or they can create a new CallPilot address. A drop-down menu is provided to assist in creating CallPilot addresses in the proper format. The GroupWise e-mail client that CallPilot supports also has the ability to send a .vbk message to an external e-mail address, and have it arrive in the recipient's mailbox as a .wav file that can be listened to with any standard WAV player.

Remote access

Accessing CallPilot messages via the end user's PC when the PC is at a remote location, or in a dial setting such as hoteling, is very simple. The messages are all stored on the CallPilot server which sits on the corporate network. A RAS or VPN type of connection is required to access the corporate LAN and have full control of their CallPilot inbox. The end user must be able to "Ping" the CallPilot server from their client. If the user does not have direct network access to the CallPilot server, they will not be able to access their messages via their GroupWise client.

Another feature that allows for increased end user productivity is the "Download All Messages" feature that can be invoked from the CallPilot client. This allows the user to download a copy of all of the messages that are on the CallPilot server into their CallPilot inbox on their own PC. This action would be taken while the user is connected to the corporate LAN. They can then pack up their PC, get on a long flight, and playback, save, and respond to voice messages

via the PC speakers and microphone. All accessed messages while offline (deleted, sent, read) will synchronize with the CallPilot server as soon as the client is re-connected to an active network. This means that once on the network, messages 'sent' while offline and in the CallPilot Outbox will be delivered, messages that were deleted will be removed from the CallPilot server, and messages that were accessed will be marked as read/listened to on the CallPilot server. Note that all incoming messages are still on the server. If, for example, the user on the airplane deletes and responds to several messages while in flight, then walks off the plane and checks voice messages via a cell phone, the CallPilot server will reflect the status of the CallPilot client when it was last online.

Internet Mail clients

Netscape Messenger, Outlook Express, Eudora Pro, Outlook in IMAP mode

The Internet Mail client integration opportunities that exist between CallPilot and the above listed clients allow for small organizations that do not have enterprise e-mail systems, geographically dispersed organizations, or organizations with diverse user clients such as colleges or universities to provide unified messaging for their users. Installation of the client software is done via the client CD or LAN, and includes installation of the CallPilot Player and Nortel Networks Fax Driver. The CallPilot Player is accessed from the START menu of the client OS, and then messages are recorded and enclosed within the e-mail message forms of these clients. The custom form and access to CallPilot features through an extended GUI is not supported, but all of the functionality of sending, receiving, playing messages over the PC or telephone, and composing voice and fax messages is still available. A benefit of two of the Internet Mail clients—Outlook Express and Eudora Pro—is that they can be configured to view multiple mailboxes, both CallPilot and respective e-mail server, at the same time.

The Internet Mail clients support accessing a Directory Server. By configuring a Directory Server for the CallPilot server using the CallPilot FQDN and the CallPilot LDAP search base, the Internet Mail client can make requests to the CallPilot server for addresses of users specified by first name, last name, or any search criteria supported in the particular Internet Mail client environment. Messages can be recorded in .vbk format and sent to CallPilot addresses, or recorded in .vbk, saved as .wav, and sent to regular e-mail addresses. Remote access for these clients requires that the end user have a PC with the CallPilot client software loaded, and then have access to the LAN to which the CallPilot server is connected. Remember that CallPilot is sold by the seat license, so a user can have more than one PC with CallPilot desktop client software loaded and they are only using one CallPilot Desktop Messaging seat license.

A special consideration is worth noting about the Netscape Messenger client that does not apply to the Outlook Express or Eudora Pro Internet Mail clients. Netscape Messenger can only work with one type of e-mail server protocol at a time—either POP or IMAP, but not both simultaneously. If a customer is already using Netscape Messenger as their e-mail client via POP, and also wants to use it for CallPilot messages, they must use the profile feature of Netscape and set up a separate Netscape user profile for accessing their CallPilot mailbox. This will install a separate Netscape user icon on the desktop. The end user would start Netscape using this icon to access their CallPilot messages. Netscape does not permit two clients with different profiles to run at the same time. This work-around is also required to send messages to other CallPilot users if Netscape is set up as an e-mail server. This is due to the fact that Netscape only permits one SMTP server in its configuration.

My CallPilot

My CallPilot provides full access to voice, fax, and e-mail messages via a Web browser and requires no software to be installed on the end user PC. The software for My CallPilot is installed on the customer-supplied Web server or the CallPilot server and runs within the IIS (Microsoft Internet Information Server) software. This Web server is accessed via a URL by the end user. Most client and CallPilot server communications are implemented using HTTP (Hypertext Transfer Protocol) and the Web server. This allows the option of My CallPilot to be deployed across a company's firewall to the Internet, and the use of third-party certificates for security. Each end user requires a license for Desktop Messaging and a CallPilot mailbox built on the CallPilot server. By allowing Internet access, an end user can sit down at any Internet-enabled PC that has a supported browser and allows HTTP access and check their messages, i.e., a cyber café or kiosk.

By accessing the CallPilot URL, the end user is presented with their My CallPilot inbox, a list of their message headers, and the ability to click a Web link and listen to or read any message.

Figure 5. My CallPilot Web messaging and personal mailbox management interface.

The CallPilot Player supports all of the messaging voice functions. My CallPilot also supports playing messages back via the Windows Media Player. If messages are to be played back via the Windows Media Player, the message will be transcoded at the Web server. This is processor intensive and should be taken into account when choosing the player device.

Furthermore, from My CallPilot, not only can users access their CallPilot messages, but users can configure My CallPilot to access their corporate e-mail messages via IMAP. Also, users can manage their e-mail inbox from any PC on the LAN. From My CallPilot, users can manage their CallPilot accounts and have access to set up the E-mail By Phone feature, configure remote notification, configure their personal distribution lists, change their password, set telephone options, etc. In addition, user documentation and CallPilot service DNs can be accessed from the My CallPilot interface.

Security

All companies today have security concerns regarding the traffic on their LAN and the access to their corporate network. CallPilot Desktop Messaging clients and My CallPilot handle security in different ways depending on the application. Below are the specific security measures used for each client:

Microsoft Outlook, Lotus Notes, and Novell GroupWise
These integrated clients support CRAM MD5, challenge response authentication, when logging on, changing the password, and for downloading and sending messages. Additionally, SSL can be enabled for IMAP, SMTP, and LDAP from the desktop configuration.

Note: CallPilot supports an implementation of CRAM MD5 that does not require the CallPilot server to store a plain text version of the user's password.

13

Internet Mail clients

Outlook Express and Netscape Messenger support SSL for sending and receiving messages and address book lookups. IMAP with SSL must be configured on the CallPilot server. When IMAP with SSL is enabled via the Administration client, it generates a certificate on the CallPilot server that is valid for one year. This certificate is on the server side only. When IMAP clients are configured for an SSL connection, the IMAP client will be presented with the certificate from the CallPilot server and the user can ensure the server authenticity. This will also provide an encrypted channel for communication. Eudora Pro does not support SSL, but supports a type of security called Kerberos. Support for Kerberos is being assessed for potential inclusion in a future release.

My CallPilot

My CallPilot operates using Internet components and might have limitations imposed on it by companies' network security policies. My CallPilot passes an encrypted user password over the network between the user's browser and the Web server. From the Web server to the CallPilot server, several different security precautions are taken. Whenever an end user authenticates to My CallPilot, My CallPilot in turn authenticates with the CallPilot LDAP and IMAP servers. LDAP communication will automatically utilize the SSL protocol if it is installed in the CallPilot server. This means, for example, if there is an LDAP SSL certificate on the server, the My CallPilot server will automatically download it from the server and use SSL whenever it communicates to the CallPilot server via LDAP. Note that if the server does not support any secure login, My CallPilot will still attempt a plain-text type of authentication.

Likewise, whenever My CallPilot authenticates with the IMAP or SMTP CallPilot servers, it will automatically use the most secure method (NORTEL_HMAC_MD5, SSL, etc.) available. This is also true for "external" e-mail accounts on other e-mail servers. Note that if the server does not support any secure login, My CallPilot will still attempt a plain-text type of authentication.

No user-specific information is stored in any files on the My CallPilot server, and all of the LDAP/IMAP/SMTP authentication code is in binary form only. Thus, compromising the My CallPilot server does not automatically mean there is a compromise of any CallPilot user data.

For customers who require medium to high security, Nortel Networks recommends the installation of an SSL Certificate in the Microsoft Internet Information Server (IIS, Web server) which allows the browser to connect to the server using a strongly encrypted network channel. This method is referred to as SSL. When SSL is enabled on the Web server, My CallPilot automatically detects this, and it uses the secure HTTP protocol to ensure that the user's mailbox and password are channeled through SSL. The Web server can also be configured so that SSL encryption is used for all data communications including message transfers; however, for performance reasons most customers will probably only secure the mailbox and password transmission. If the administrator chooses to install an SSL Certificate on their Web server, it allows the Web browser to connect to the CallPilot server through a strongly encrypted channel. This certificate is required in order for the browsers to start an SSL session to the server. Note that the certificate can be installed in two ways—one which causes all traffic to be encrypted (more secure, poor performance), and one which encrypts only the login dialog (protects the password only, but much better performance).

Another method to ensure high levels of security for remote workers is to deploy a Nortel Networks SSL VPN for secure connectivity to My CallPilot. The Nortel Networks SSL VPN is a high-performance, scalable, and easy-to-use solution that builds authenticated and encrypted sessions from any Web browser to a secure Web portal. Once users are authenticated to the portal, the Nortel Networks SSL VPN presents authorized users with their unique view of available applications, in this case My CallPilot.

Testing and support

CallPilot, as with all Nortel Networks products, is thoroughly tested internally and externally before we release the product as generally available. Once the CallPilot Unified Messaging software has successfully completed internal verification testing and technical trials, external testing begins. There are three phases of external testing in which the end user customers are involved: Alpha, Beta 1, and Beta 2. These phases provide Nortel Networks valuable feedback on how the Desktop Messaging client and My CallPilot will react in a real-world environment, as well as the way it will be used to accomplish the tasks required by a busy end user. We closely monitor these customer trials and modify the software to address any issues prior to general release of the product. Many ideas for new features are also captured during this customer involvement phase.

There are two tools that technology has built as part of the Unified Messaging software that can be very valuable in capturing information so that Nortel Networks Global Customer Care or Product Support personnel can better troubleshoot, investigate, and determine the cause of an issue. These tools are called CPTrace, CPTweak, Mtest, and WebTrace. CPTrace and CPTweak are the support tools used by the CallPilot Desktop Messaging client. CPTrace allows users, developers, and support personnel to collect information about a problem occurring within a desktop client in areas such as trouble connecting to the CallPilot server, player, address book, message sending, and notification. CPTweak can be used to gather low-level debugging information while the desktop client is running. Mtest is a client application that allows testing of connectivity between the client PC and the CallPilot server. This test can be done prior to the installation of the desktop software. The WebTrace utility is used to troubleshoot problems with My CallPilot such as not being able to send a voice message.

Nortel Networks "integrated" architecture provides industry-leading unified messaging at the desktop while preserving the customer's investment in their e-mail system.

In the United States:
Nortel Networks
35 Davis Drive, Research Triangle Park, NC 27709

In Canada:
Nortel Networks
8200 Dixie Road,Suite 100, Brampton, Ontario L6T 5P6

In Caribbean and Latin America:
Nortel Networks
1500 Concorde Terrace, Sunrise, FL 33323 USA

In Europe:
Nortel Networks
Maidenhead Office Park, Westacott Way, Maidenhead Berkshire SL6 3QH UK

In Asia:
Nortel Networks
Level 5, 495 Victoria Avenue, Chatswood, NSW 2067, Australia

In Greater China:
Nortel Networks
Sun Dong An Plaza, 138 Wang Fu Jing Street, Beijing 100006, China

Nortel Networks is an industry leader and innovator focused on transforming how the world communicates and exchanges information. The company is supplying its service provider and enterprise customers with communications technology and infrastructure to enable value-added IP data, voice and multimedia services spanning Wireless Networks, Wireline Networks, Enterprise Networks, and Optical Networks. As a global company, Nortel Networks does business in more than 150 countries. More information about Nortel Networks can be found on the web at:

www.nortelnetworks.com

For more information, contact your Nortel Networks representative, or
call 1-800-4 NORTEL or 1-800-466-7835 from anywhere in North America.

NN109680-092004

NORTEL
NETWORKS
BUSINESS WITHOUT BOUNDARIES