Introduction

What is Electronic Mail?

Basically, electronic mail is a means of communication very similar to traditional letter writing, with some modern twists and some very real advances over traditional correspondence.

Electronic mail systems allow people to exchange information with other people using the same (or a connected) electronic mail system very quickly. The two biggest differences between electronic correspondence and the more traditional correspondence methods are the much greater speed of "E-mail", and the ability to transfer more than the traditional "written" or "text" messages commonly associated with traditional mail. Computers today (and computer users) use much more than simple text messages, and correspondence today requires an increased capability in communicating information. "E-mail" systems of today allow transfer of the traditional text messages, but also allow users to exchange computer data in many forms. This data might be in the form of spreadsheets, binary computer data, or even computer programs.
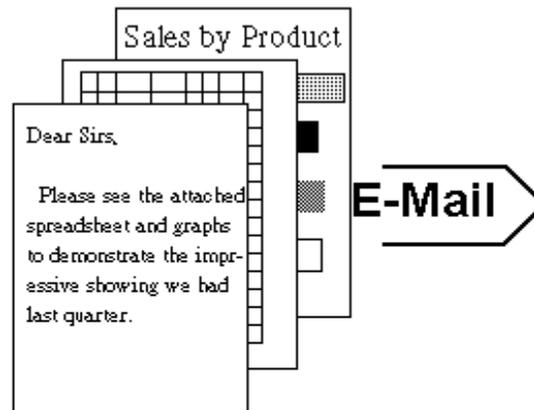
Still, at the root of all electronic mail systems there are two primary functions -- Sending mail, and Reading mail. Each person using the E-mail system has his or her own "mailbox" to which incoming mail is delivered, and from which you select and read your messages.

Sending mail requires that you have something prepared to send. In computer terms, this means that you must have a file that you want to transmit. This file can be a text message you entered using a word processing or text-editor program, or a special file created by some other program. (DeskLink will help you create a text message if that's what you want to send.) In addition, you must be able to tell the computer who you want your message delivered to (what is the address on the letter). E-mail addresses for computer users are a little different than what you may be used to in traditional mail -- see the section on MAIL ADDRESSES for details on this.

When you receive electronic mail from someone, you will "read" it - as you would a traditional piece of mail. Electronic mail messages are each assigned a unique number to aid you in specifying what you want to read in the event you have several messages in your "mailbox" at the

same time. After you have read a message, you may choose to hold the message for future refer-ence, or DELETE it from your mailbox. In addition, some messages may require responses or some manner or confirmation. You also may choose to print a copy of the message on a local printer, or even forward a copy of the message to someone else electronically.

What DeskLink Does

DeskLink is an electronic mail gateway for HP3000 computers using Hewlett-Packard's HPDesk or HP OpenDesk electronic mail software, but has been designed to meet the needs of a much larger family of computer systems. DeskLink is designed to the specifications of the "SMTP" (Simple Mail Transfer Protocol), a "language" specified by the designers of the Internet -- a worldwide communications network. "SMTP" was designated as a standard to which all mail systems that communicate on the Internet must meet, and has since become much broader due to its availability on so many computer platforms.
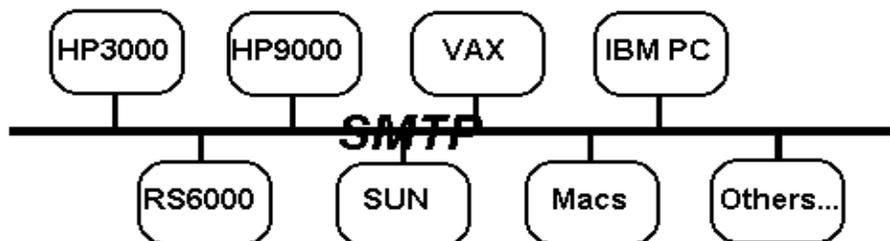
DeskLink will allow you to exchange electronic information with any computer system with an electronic mail system which either conforms to the "SMTP" standard, or which provides a "gateway" to translate "SMTP" to their own local mail format. This is available on almost all computers using Unix@ variations, as well as most other major computer systems in the world and most major PC based e-mail systems. Some examples;

Unix 'sendmail' (comes with all Unix systems) - SMTP compatible

Lotus' cc:Mail - has (at least) two different SMTP gateways available for it

Microsoft MS Mail - has (at least) two different SMTP gateways available for it

WordPerfect Office - has an SMTP gateway available

Pegasus mail (freeware) - has two SMTP gateways available (also shareware)

Banyan Vines has an SMTP gateway available from Banyan

All MHS-based PC Mail systems - MHS to SMTP gateway available

Examples of some MHS based PC Mail packages:

Table 1: MHS Compatible mailers

Beyond Mail	Supertime	Noteworks	Timail
Calendar	Workman	DaVinci	Winmail
Complete	Electronic Campus	Coordinator	Prime Time Network
Einstein	Xpost	Monitrix	ELF forms
Magic Mail	Executive	InocuLAN	Expressit
Frameworks 4			

For those with large enterprise networks comprising of many disparate mail systems, you might look into one of the several mail "hubs" available from various companies that link multiple systems (including X.400 based systems) together through one "hub".

DeskLink's Primary Features

- DeskLink is built on the industry standard Internet SMTP (Simple Mail Transfer Protocol) - probably the most commonly implemented electronic mail protocol in the world. The SMTP (Simple Mail Transfer Protocol) standard was defined by the Internet community to support multi-vendor, platform independent electronic mail, and is endorsed by the DOD for electronic mail communication on the DDN (Defense Data Network).

- DeskLink is MIME compatible. MIME is the Multipurpose Internet Mail Extensions; the new electronic mail standard for transmitting multi-media electronic messages including audio, video, fax, and any other type of electronic data. Though standard HP terminals have no way of entering or displaying multi-media items, DeskLink can be used to transmit such items. PC emulator users can attach and save multimedia attachments and use pc-tools to view or play them.

- HPDesk users can easily route messages to other HPDesk users as well as users on any other SMTP compatible mail system. Outgoing message attachments are preserved (through MIME encoding) and incoming messages with attachments have the attachments already decoded and included in the HPDesk message. Full Internet mail headers are preserved in the "headers" section of the HPDesk message, but are not displayed unless requested.

- Incoming messages (into HPDesk) automatically set the correct "REPLY TO" address, so messages can be easily replied to using Desk's "REPLY" command.

- Sends and receives mail between your HP3000 and other HP3000s, HP9000s, UNIX systems, and IBM, DEC, and other platforms with SMTP compatible mail systems or compliant gateways (such as PC-Lan based systems like cc:Mail, Lotus Notes, Microsoft Mail, or WordPerfect Office).

- Users may read their mail from PC clients using the POP client-server protocol (with the optional POP Server option). Mail is received and held on the HP3000 and retrieved on demand by PC, Macintosh, or Unix clients. Client users do not need any logon or training regarding the host (HP3000) platform, they only use their local mail client programs. To the PC user, the mail system looks and feels like a PC lan e-mail package.

- Users may use any of the supported HP OpenDesk Manager clients (including cc:Mail, Microsoft Mail, or the HP clients) to send and receive mail. Operation with these clients is exactly the same and even non-text message attachments are handled consistently

- If you have HP9000s with HP's ARPA services, then your HP9000s already have the software you need for your HP9000 to communicate with DeskLink on your HP3000.

- You can communicate with other systems over any NS/3000 supported network link (802.3 LAN, X.25, Point-to-Point/Router, X.25-DDN, etc.).

- The gateway is available as a standalone product, or as an option along with the Net-Mail/3000 user interface, and is also available with the optional POP server.

- Messages are time-stamped, identify the sender and intended recipient of the message,

and the message subject.

Technical Features

DeskLink has a few technical features that you are not apparent to the end users (or even the administrator), but affect the overall performance and usefulness of the electronic mail system.

●● Storage and forwarding of mail

●A DeskLink system can be designated as the e-mail gateway for networks that only it has access to

●● Directory structure that simplifies mail addressing for users anywhere in the organization

●● Compatibility with non HP systems

●● Mail enabled applications can be accomplished via routing mailboxes to message files or "pipe"ing messages to user-defined command files

●● Attached non-text messages are automatically encoded (outgoing) and decoded (incoming) so mail users need not bother with add-on decoders. Non-text attachments send just as easily as text attachments, with no extra effort. PC filetypes are even automatically recognized and labelled for use by mail clients or for easy downloading.

●● EDI (Electronic Data Interchange) can be facilitated via electronic mailing of special files

●● Mail can be held for PC users and retrieved by POP client programs (with optional POP server software) or accessed by any support HP OpenDesk Manager clients (no extra software needed)

●● Interrupt driven background processes for minimal cpu use

●● Automatic grouping of mail messages for delivery to any remote system

●● No need for NS configuration of remote systems for mail delivery - computer systems can be added to DeskLink's configuration database on-line at any time

●● DeskLink automatically re-tries to send electronic mail in the event a receiving system goes down for a period of time

●● Message headers (sender and timestamp) are generated by DeskLink after it verifies the identity of the mail user (counterfeit messages are minimized)

●● DeskLink supports primary recipients, carbon copy (cc) recipients, and blind carbon copy (bcc) recipients

●● Mail messages transmitted across a network are broken into large blocks to minimize turnaround delays in slow networks and reduce overhead

●● DeskLink automatically recovers in the event a communications line or network link fails with no loss of messages

How DeskLink Works

DeskLink is an electronic mail gateway for HP3000 computer systems with HPDesk or HP OpenDesk that incorporates a background message transfer system for routing messages to other computer systems. To the end user, DeskLink adds the ability to transmit messages to other mail users on systems other than the local user's "home" system.

DeskLink uses a "protocol" or computer language for passing data between computer systems that was designed to work between as many different computer systems as possible. This protocol, called "SMTP", was designed in the early 1980s, and has since been implemented on almost all Unix@ based computer systems, DEC VAX, IBM mainframes and RS/6000 systems, SUN workstations, PCs, Macintosh, and many more. Large networks and the educational community have been utilizing "SMTP" based electronic mail systems for many years now, and it has become an international electronic mail exchange standard.

For the technically minded, SMTP is a protocol based on TCP/IP. It is a "socket" level protocol, which means logical connections are established without the need for any "log on" - socket level communications requires a "server" program listening for connections, and a "client" program which makes a connection request to a server.

In DeskLink's case, the server is a process run by the MAILMAN background job which stays logged on your system as long as you want your mail system active (If the job is not running, no incoming or outgoing mail will be sent, though DeskLink will queue all mail requests until the background job becomes active).

DeskLink users can also purchase an optional POP (Post Office Protocol) server for client-based retrieval of electronic mail. POP allows the HP3000 to accept and hold mail for PC, Macintosh, or other platform users who do not log onto the HP3000 to read their mail. This allows clients whose machines may not be available all the time to receive mail on demand to have a central repository where their mail is received for them at all hours, and where they can connect using a local application they are familiar with to retrieve any mail that has been received.

POP is also a TCP/IP based protocol. The protocol allows a client to connect to a POP server by providing a mailbox name and password, then retrieve and optionally delete messages from the host (server). DeskLink's POP interface also handles read-receipts and delivery receipts on behalf of the client.

DeskLink (with the POP server) supports any client that supports the Post Office Protocol version 2 (POP2) or version 3 (POP3). There are several commercial clients as well as some very nice public domain (free) IBM PC, Macintosh, and Unix based clients. You are free to use any POP client your users prefer. **(Please note that we cannot guarantee nor endorse any of the following packages; this list was merely compiled from a listing of known public domain POP clients. All packages listed are thought to be free, but as they are not in our control, we cannot guarantee them. Please check the ftp site(s) for details on distributions.)** 3k Associates keeps some popular POP clients on its ftp (ftp.3k.com) and www (http://www.3k.com/) sites as well. Some of the public domain packages that we know of are:

Platform	Program	Available from
MSDOS	PC POP 2.1	(ftp) trident.arc.nasa.gov

Platform	Program	Available from
MSDOS	POPmail/PC 3.0	(ftp) boombox.micro.umn.edu
MSDOS	Minuet	(ftp) boombox.micro.umn.edu
MSDOS	NUPop	(ftp) ftp.acns.nwu.edu
MSDOS	POP3 0.9	(ftp) ftp.indiana.edu
MSDOS	PC ELM	(ftp) lister.cc.ic.ac.uk
Windows	Windows ELM	(ftp) lister.cc.ia.ac.uk
Windows	Trumpet	(ftp) ftp.psychol.utas.edu.au
Windows	Eudora	(ftp) ftp.qualcomm.com
Windows	TechMail for Wind.	(ftp) net-dist.mit.edu
Windows	wnqvtnet	(ftp) ftp.cica.indiana.edu
OS/2	TechMail	(ftp) net-dist.mit.edu
MAC	MacPOP 1.5	(ftp) trident.arc.nasa.gov
MAC	MacPOP (Berkeley)	(ftp) ftp.cc.berkeley.edu
MAC	POPMail II	(ftp) boombox.micro.umn.edu
MAC	TechMail 2.0	(ftp) net-dist.mit.edu
MAC	MacMH	(ftp) jessica.stanford.edu
MAC	LeeMail 2.0.2	(ftp) chs.cusd.claremont.edu
MAC	Eudora	(ftp) ftp.qualcomm.com
UNIX	mh-6.7	(ftp) ftp.cc.berkeley.edu
NEXT	EasyMail	(ftp) ftp.cac.washington.edu

Several other commercial implementations are also available, including versions for Windows, DOS, Macintosh, X-servers, and others. ('ftp' means that the programs are accessible via the 'file transfer protocol' for free to any Internet-connected user. The name after the (ftp) is the name of the host computer on which the code is stored. Use 'anonymous' as the user id to log on to these systems, and enter your Internet e-mail address when prompted for a password.) You can also find some POP clients that are MIME compatible, which will assist you in transmitting non-text items. Spry's Airmail for windows is a commercial package that includes a POP client, as does NetManage's Chameleon package for windows (which is also MIME compatible in version 4.0 or later).

DeskLink uses a central database to coordinate all incoming and outgoing mail as well as keeping track of other mail systems it may communicate with. You are provided with an interactive maintenance program with which to maintain and verify this information, as well as certain global mail system options that affect what capabilities and levels of security you want to enforce on your (mail) network.