

NewWaveMail

Support Guide

(including an introduction to Windows & ~~NewWave~~)


PWD Online Support

Version 1.0

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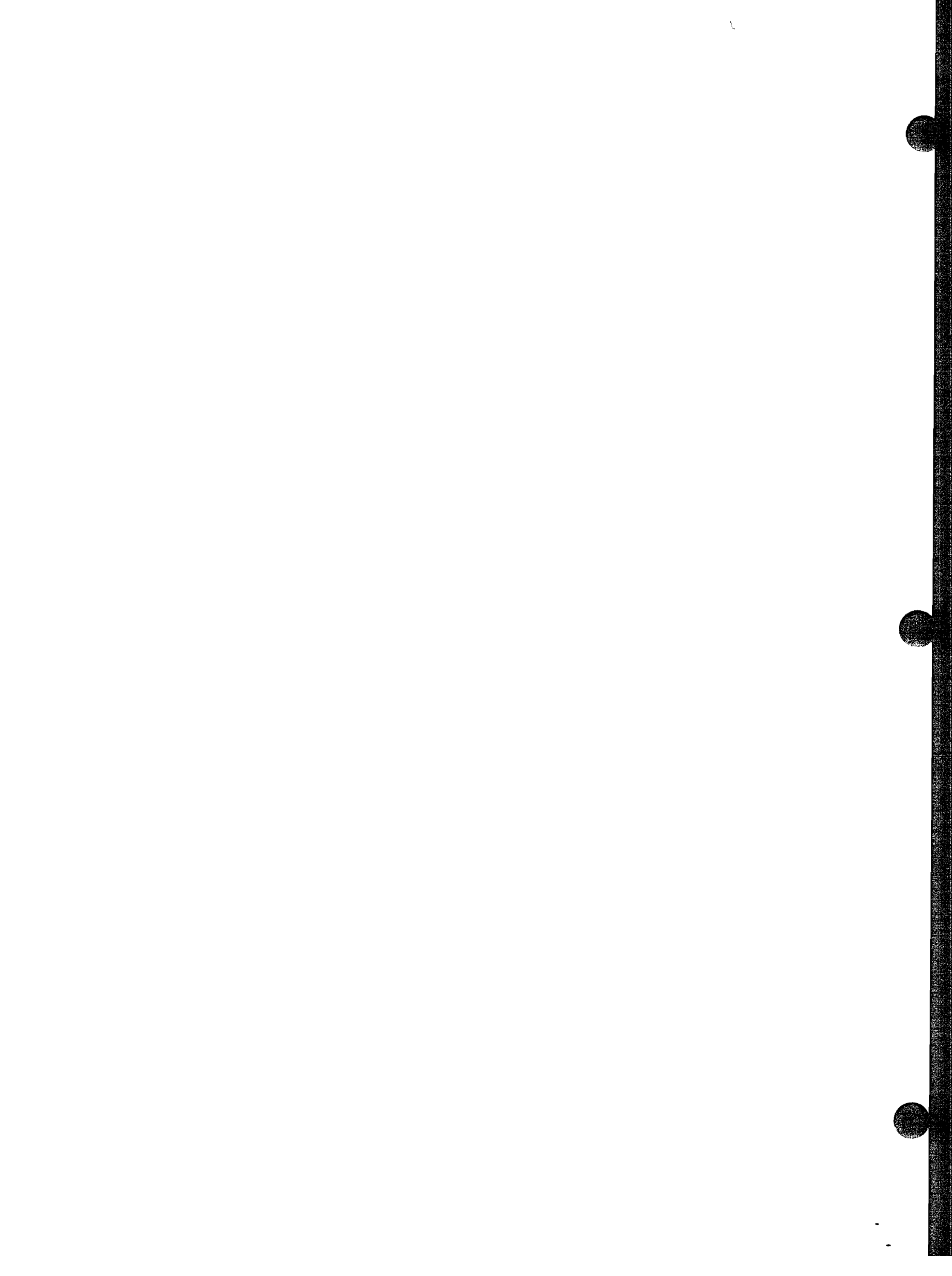


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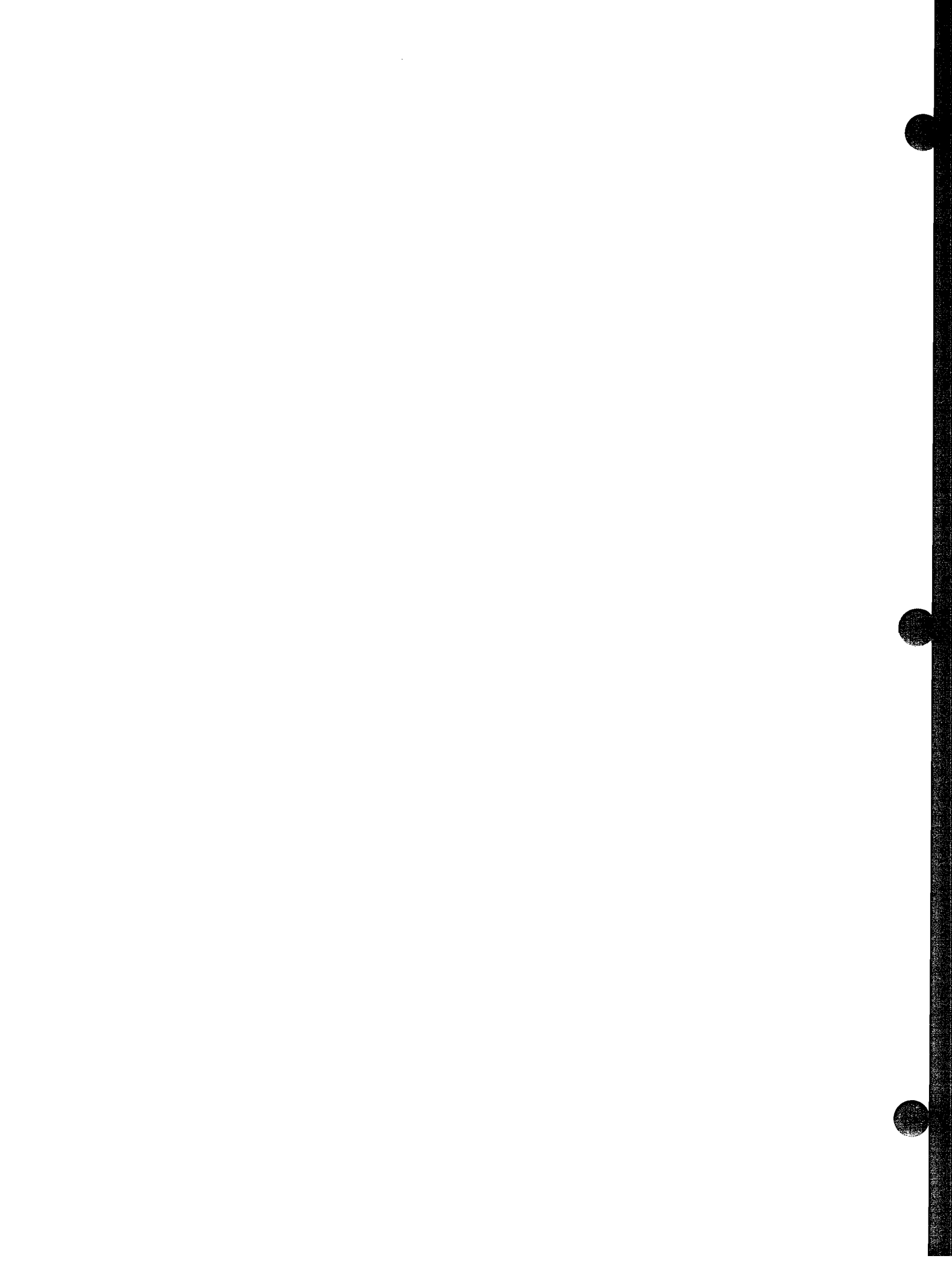
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



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-  **Appendix F: NewWave Diagnostic Utility**




This page is a bit of fun and shows the NewWave BitMap displayer, (Screenshot), tool in action, displaying NewWaveMail objects and Windows & NewWave logos and screenshots.

INTRAY		
Action	Edit	Objects
Subject	Sender	Type
Visa status update / L2 info.	Simon Boothroyd / pinewoo...	{Urg. New}
Answerback Issue-164	PWD ANSWERBACK / HP1...	{New, To}
Visa status update / L2 info.	CORINNE BARKOW / HP00...	{To, Rep}
NewWave Mail SRs	SANDRA STEPHENSON / H...	{To}
D5 Superpatch on PICARD	SAMANTHA DILLISTONE / ...	{Urg. New, To}

 OUTTRAY	 Transfer Summary	 Internet testing (Outgoing Message)	 Visa status update / L2 info. (Incoming Message)	 DISTRIBUTION (Distribution List)	 VERSION.EXE (File Container)
--	---	--	---	--	---

Main		Games	
 File Manager	 Control Panel	 Solitaire	 Minesweeper
 Print Manager	<div data-bbox="519 1060 1161 1354"> <p align="center">About Program Manager</p>  <p>Microsoft Windows Program Manager Version 3.1 Copyright © 1985-1992 Microsoft Corp.</p> <p>This product is licensed to: Simon Boothroyd</p> </div>		
 NewWave			

About NewWave Office



NewWave Office

Office 5010-6648 C.01.00
OMF 5010-6661 C.01.00
Agent/API 5010-6644 C.01.00
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OK



0. Introduction

0.1 Introduction

This document has been produced for NewWaveMail Online Support engineers to complement the other documentation available to those supporting NewWaveMail, specifically the NewWaveMail 3 and 4 Technical Guides and the NewWaveMail 3 Internal Maintenance Specification, (IMS).

It firstly aims to provide background information on the applications that NewWaveMail runs upon, (Windows and NewWave), because it is recognised that an effective support engineer must have an appreciation of other, related applications that the supported product is dependant upon.

0.2 Credits

There has been a concerted effort to include information that has been produced by others who have worked on the products covered here. Such information as Windows Memory Management and Performance Tuning have been covered well by others and their efforts are recorded here. The authors' names where known have been left with the documents and my thanks go to them all.

Windows and NewWave information

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0.3 Pointers used in the guide

The WingDings font installed with Windows 3.1 is used in several places throughout the document to improve it's readability. Below is the key to these characters. by pointing to other documents, telling the reader that and in place of the normal NOTE



= 'Here is mention of other documentation in this paragraph'



= 'The accompanying support disk contains an item mentioned here'









= 'NOTE:'

0.4 The NewWaveMail Support Disk

I have created a 'support disk' which contains a selection of interesting and useful utilities. In both the contents page and the main text of this guide I have used the disk drive symbol, (described in the previous page), to highlight that the reader should reference the disk for the items described.

Below is a list of the directories on the disk and their contents:-

NWMSUPP

-  BITMAPS : NewWave BitMap displayer tool
-  NEWWAVE3 : Contributed bridges, OMF errors, Trace files
-  NEWWAVE4 : NewWave 4 patches
-  NWMAIL : DL trace files, NWM4 Func. Spec, Install info, ERRORS.TXT
-  RECOVERY : NewWave Recovery tool
-  WINDOWS : Windows (network) USE tool

1. MS-Windows, Memory and PC Tuning

1.1 Memory Tuning Using DOS 5.0 Memory Management Tools

PROBLEM RESOLUTION TOOL Memory Tuning Using DOS 5.0 Memory Management Tools

By Robert Jones
CCSY Technical Support & Services
February, 1992

One of the great personal computer challenges through the years has been how to run sophisticated computer programs on MS-DOS, which only allows 640KB of conventional memory. And the 640KB Conventional Memory area is also used to load the MS-DOS operating system, as well as any number of Terminate-and-Stay-Resident programs, such as those associated with Lan Manager, and ARPA/NS Services.

Of course, the advent of Extended Memory, and Windows 3.0 solved some of the problem - programs written specifically to take advantage of Windows memory management could, indeed, break the 640KB barrier. But there are still many non-Windows programs around which can't take advantage of Extended Memory.

Unless extensive memory tuning is done, a system with Lan Manager and ARPA/NS Services loaded can easily end up with less than 350KB of memory available for programs.

The problem came to a head when DOS 4.x came out. One was faced with an almost Faustian dilemma. Everyone wanted to make use of disk partitions larger than 32KB (which was the main feature of DOS 4.x), but to take advantage of this important new ability, (as well as some other new "features" of DOS 4.x), more memory was taken up by the basic MS-DOS operating system. And to further the complication, it was around this time that Lan Manager and ARPA/NS Services started to be widely used. The resultant crunch on Conventional Memory forced many people to buy and use third-party memory managers, such as 386MAX or QEMM, just to be able to use their DOS 4.x-based PCs in a NewWave Office client/server environment.

With the recent release of MS-DOS 5.0, many of the DOS 4.x memory pressures have eased, as DOS 5.0 now gives the user the option to do some memory tuning using basic operating system tools that heretofore were only available using third-party memory managers. It should be noted that there are still some things that CAN'T be done by DOS 5.0 on its own (such as specifying what REGION of memory you wish TSRs or drivers to load), so there may be situations where QEMM or 386MAX is still the best solution. But for many people, the new DOS 5.0 memory commands will be sufficient.

In the discussion that follows, we will examine a generic CONFIG.SYS file which could be used on many 386 or 486-based machines, running DOS 5.0 in an HP environment using Lan Manager and ARPA/NS Services. The system that produced the results below was a Vectra 486/33, with no cards in addition to the basic configuration. (Generally, one could expect slightly better results using, say, a 386 RS/20 or RS/25).

```
DEVICE=C:\DOS\SETVER.EXE
DEVICE=C:\DOS\HIMEM.SYS
DEVICE=C:\DOS\EMM386.EXE 256 RAM i=b000-b7ff frame=e000
DOS=HIGH,UMB
FILES=50
BUFFERS=20
STACKS=0,0
LASTDRIVE=H
DEVICEHIGH=C:\WINDOWS\SMARTDRV.SYS 2048 512
DEVICE=C:\3OPEN\DOSWKSTA\LANMAN\DRIVERS\PROTMAN.DOS /
I:C:\3OPEN\DOSWKSTA\LANMAN\DRIVERS
DEVICEHIGH=C:\3OPEN\DOSWKSTA\LANMAN\DRIVERS\NEMM.DOS
DEVICEHIGH=C:\3OPEN\DOSWKSTA\LANMAN\DRIVERS\TCPDRV.DOS /
I:C:\3OPEN\DOSWKSTA\LANMAN\DRIVERS
DEVICE=C:\3OPEN\DOSWKSTA\LANMAN\DRIVERS\HPLAN.DOS
```

Let us examine this CONFIG.SYS on a line-by-line basis.

```
DEVICE =C:\DOS\SETVER.EXE
```

Conventional Wisdom has it that the SETVER command should always be the first driver loaded, and it should never be "loaded high" (to be discussed shortly). Not to worry, though - it only takes about .5KB of conventional memory. (See Chapter 14 of the DOS 5.0 manual for a discussion of the function of SETVER).

```
DEVICE=C:\DOS\HIMEM.SYS
```

Next is the familiar HIMEM program, using the XMS Version 2.00 specification. This driver gives us the following benefits:

1. Acts as an Extended Memory manager. This allows programs to use "Protected Mode" on the Intel 386 or 486 chip. Protected Mode means that protection is provided against two programs using the same area in Extended Memory at the same time.
2. Allows use of the 64KB area above the first megabyte of memory, called the High Memory Area. In DOS 5.0, this area can be used to load most of the operating system. (The reason that this area is available is because DOS uses two 16 bit addresses to form its 20 bit addressing convention. Normally, memory would end at approximately FFFF:0000, which is the one megabyte boundary. However, the area from FFFF:0010 to FFFF:FFFF can be addressed by DOS without going into Protected Mode.)

```
DEVICE=C:\DOS\EMM386.EXE 256 RAM frame=e000 i=b000-b7ff
```

One of the changes in DOS 5.0 was a greatly enhanced EMM386. Prior to DOS 5.0, EMM386 was usable solely as a low-end Expanded Memory Manager. In DOS 5.0, its functionality has been vastly improved. In addition to its ability to be used as an EMM, it now has an even greater role - it can be used to provide the user some control over the use of the area of memory which resides between 640KB and 1MB of memory, called Reserved High Memory. The ability to load TSRs and

drivers in Reserved High Memory is an important part of the DOS tuning puzzle - everything which can be taken out of conventional memory and loaded somewhere else allows more room for programs to execute in conventional memory.

The particular parameters I use are defined below:

256 This specifies how much of our Extended Memory we wish to logically allocate to use by Expanded Memory. On most 386 and above machines, Expanded Memory cards are no longer used. All memory is located in SIMM chips. HIMEM gives us access to all of that memory (above 1MB), and EMM386 allows us to request that a portion of that memory be set aside for use as Expanded Memory.

Why would we want to allocate part of our Extended Memory for use as Expanded Memory? Because many of the TSRs used by Lan Manger and ARPA/NS services will load in Expanded Memory if it exists. This produces MAJOR savings in the Conventional Memory area. At this point, none of the Lan Manager or ARPA/NS Services TSRs can use Extended Memory, so we are forced to logically allocate a small bit of Expanded Memory. Note that you may need to make this number larger than 256KB if you have other programs on your PC which use Expanded Memory (such as LOTUS).

RAM This parameter tells DOS that we want to use EMM386 as both an Expanded Memory Manager, and as a Reserved High Memory manager. (Its use as an Expanded Memory Manager can be disabled by using NOEMS instead of RAM for this parameter).

frame=E000 On many 386 and 486 systems, the area of memory between E000 and F000 in Reserved High Memory is empty. By specifying "frame=E000", we are pushing up the 64KB page frame for Expanded Memory. This often results in significant memory savings, as it allows a larger contiguous area for loading TSRs and drivers in Reserved High Memory.

i=B000-B7ff On many systems, the area from B000-B7ff is reserved for use with Monochrome monitors. Thus, it is usually wasted if you are using a color EGA or VGA monitor. By using the "i" (for "include") parameter, we can force DOS to use this 32KB area for loading TSRs and drivers.

DOS=HIGH,UMB

The new "DOS=" command is the heart of the new DOS 5.0 memory management capability. The "DOS=HIGH" part specifies that we want DOS to load as much of the operating system itself in the High Memory Area which resides in the 64KB area above the 1MB boundary. (This area is managed by HIMEM). The "UMB" part of the command works with the EMM386 manager, to provide the user access to the Reserved High Memory area to load TSRs and drivers. ("UMB" is DOS-speak for "Upper Memory Blocks", giving us yet another name for the area between 640K and 1MB.)

FILES=50

The use of the FILES command is the same as in earlier versions of DOS. It specifies how many files can be open on a system at the same time. If you specify a smaller number, it will take up less memory, but it will increase the chance of "Unrecoverable Application Errors" in Windows 3.0. Generally, between 40-60 is recommended for use with NewWave.

BUFFERS = 20

In prior versions of DOS, it was generally recommended that for NewWave use, BUFFERS be set low, to 4 or 8, to save on Conventional Memory. (Each BUFFER takes about .5KB of space) With DOS 5.0, the buffer space is allocated in the High Memory Area (assuming "DOS=HIGH" has been specified), so there is no reason to keep this figure low anymore. The higher the number of buffers allocated, the faster the access to your floppy drives will be.

STACKS=0,0

No big deal on this one, but specifying STACKS=0,0 will save about 1.8KB of conventional memory. (DOS automatically allocates something like STACKS=9,128 as a default, and this takes up over 1KB of memory space).

LASTDRIVE=H

The higher your last drive, the more memory it takes. If you don't need 26 drives available to you at the same time, don't set LASTDRIVE to "Z"!!

DEVICEHIGH=C:\WINDOWS\SMARTDRV.SYS 2048 512

The command DEVICEHIGH tells DOS to load this driver "high", or in the Reserved High Memory area, if there is room. Note that "DOS=UMB" and "C:\DOS\EMM386.EXE" must be specified prior to the execution of this command.

Unfortunately, DOS 5.0 doesn't give us any control over WHERE a DRIVER or TSR is loaded in Reserved High Memory, but at least it's now possible to load a program there.

```
DEVICE=C:\3OPEN\DOSWKSTA\LANMAN\DRIVERS\PROTMAN.DOS /
I:C:\3OPEN\DOSWKSTA\LANMAN\DRIVERS
DEVICEHIGH=C:\3OPEN\DOSWKSTA\LANMAN\DRIVERS\NEMM.DOS
DEVICEHIGH=C:\3OPEN\DOSWKSTA\LANMAN\DRIVERS\TCPDRV.DOS /
I:C:\3OPEN\DOSWKSTA\LANMAN\DRIVERS
DEVICEHIGH=C:\3OPEN\DOSWKSTA\LANMAN\DRIVERS\HPLAN.DOS
```

The rest of the CONFIG.SYS is standard Lan Manager drivers. Note that PROTMAN does not have a DEVICEHIGH command in front of it - various problems have been reported trying to load PROTMAN (as well as SETVER and COMMAND.COM) high, so it is probably best to not try it. Note also that NEMM is the driver that manages the loading of Lan Manager and ARPANS Services TSRs in Expanded Memory.

There are no particular secrets to the AUTOEXEC.BAT file used in this test, which is shown below:

```
@ECHO OFF
PROMPT $p$g
SET
PATH=C:\WINDOWS;C:\3OPEN\DOSWKSTA\LANMAN\NETPROG;C:\DOS;C:\TOOLS;C:\NORT
ON;C:\
```



```

REM **LMx** top HP Networking Products - Do not Remove ***
echo off
CALL C:\3OPEN\NET_START
REM **LMx** bot HP Networking Products - Do not Remove ***
LOADHIGH c:\dos\mouse
SET TEMP=C:\DOS

```

Note the use of the "LOADHIGH" command. This is the TSR equivalent of the DEVICEHIGH command for drivers. By specifying LOADHIGH, we are telling DOS to load this TSR in Reserved High Memory if there is room. If you are using Lan Manager 1.2, the "UMB" program executed in the NET_START.BAT file will automatically tell DOS to "load high" the TSRs started in NET_START.BAT. If you are using 1.1 or below, you will have to edit the NET_START.BAT file yourself, to add LOADHIGH to the Lan Manager and ARPA/NS Services TSRs.

On the test system, the above configuration produced about 544KB of memory. The only TSRs not started in NET_START.BAT were CVT, DNRTSR, VFIX, and NMTSR. REDIR started the LIGHT-WORKSTATION option. Keep in mind that on your system, there may be need for other drivers and/or TSRs. Also, the addition of more hardware cards (HPIB, voice cards, etc.) could drastically alter your results.

Using the DOS 5.0 "MEM /c" convention, the name and size (but not location) of all TSRs and drivers are shown:

Conventional Memory :

Name	Size in Decimal		Size in Hex
MSDOS	13744	(13.4K)	35B0
SETVER	464	(0.5K)	1D0
HIMEM	1136	(1.1K)	470
EMM386	9424	(9.2K)	24D0
PROTMAN	96	(0.1K)	60
HPLAN	7136	(7.0K)	1BE0
COMMAND	2624	(2.6K)	A40
UMB	256	(0.3K)	100
TCPTSR	256	(0.3K)	100
TINYRFC	256	(0.3K)	100
EMSBFR	256	(0.3K)	100
REDIR	34288	(33.5K)	85F0
SOCKETSR	256	(0.3K)	100
TN	256	(0.3K)	100
BAPI	256	(0.3K)	100
PROBE	256	(0.3K)	100
TICL	256	(0.3K)	100
VT	10032	(9.8K)	2730
MOUSE	12784	(12.5K)	31F0
FREE	64	(0.1K)	40
FREE	256	(0.3K)	100
FREE	176	(0.2K)	B0
FREE	3232	(3.2K)	CA0
FREE	557120	(544.1K)	88040
Total FREE :	560848	(547.7K)	



Upper Memory :

Name	Size in Decimal		Size in Hex
SYSTEM	131104	(128.0K)	20020
UMB	672	(0.7K)	2A0
TCPTSR	47952	(46.8K)	BB50
TINYRFC	2256	(2.2K)	8D0
EMSBFR	1168	(1.1K)	490
SOCKETSR	8736	(8.5K)	2220
TN	2208	(2.2K)	8A0
BAPI	16304	(15.9K)	3FB0
PROBE	2368	(2.3K)	940
TICL	4944	(4.8K)	1350
SMARTDRV	37328	(36.5K)	91D0
NEMM	2112	(2.1K)	840
TCPDRV	1040	(1.0K)	410
FREE	176	(0.2K)	B0
FREE	1072	(1.0K)	430
FREE	2416	(2.4K)	970
Total FREE :	3664	(3.6K)	

Total bytes available to programs (Conventional+Upper) : 564512 (551.3K)

Largest executable program size : 557120 (544.1K)

Largest available upper memory block : 2416 (2.4K)

655360 bytes total EMS memory

98304 bytes free EMS memory

7340032 bytes total contiguous extended memory

0 bytes available contiguous extended memory

4685824 bytes available XMS memory

MS-DOS resident in High Memory Area

Other tools which are useful when doing memory tuning include NWMAPMEM, (distributed with NewWave), which gives a graphical depiction of the first megabyte of memory, and QEMM's Manifest.

Remember, the purpose of this article was to suggest a possible DOS 5.0 configuration that would work on some systems. You will have to adapt it to your own individual machine. As Tim King used to say, "PC Tuning is an art, not a science".

1.2 Running Fast and Lean & Recovering Disk Space

Running Fast and Lean on NewWave (running 3.0/3.04)

Are you running out of space on your hard disk? Do you sometimes get "Not enough memory to continue" messages when you use NewWave? Here are some practical tips you can use to conserve disk space, memory, and to generally tune your computer so that it runs "Fast and Lean."

STEP 1: FREE UP SOME DISK SPACE =====

1) Remove the NewWave Tutorials and Guided Tour.

Removing the tutorial can recover about 2.4 MB of disk space. Here are the steps to do this:

- a. In the NewWave Office, select Tutorial from the Help menu.
- b. Press the Ctrl-Alt-X keys.
- c. Click Manage CBT.
- d. Click Deinstall.
- e. Highlight the Main Topic that you want to deinstall, click Deinstall, and OK.
- f. Repeat Step e until you have deinstalled all of the Main Topics.
- g. Click Done and OK.

2) Delete the "What's New Folder"

The "What's New" folder contains a LOT of good information about NewWave, agent task tips, etc. However, once you have read or printed these objects, some of the items (or even the whole folder) may be deleted from your disk. The whole folder can be removed for a savings of about 156 KB.

You can store a copy of the folder and its contents on a flexible disk by using the Export To Disk File command from the Objects menu of the NewWave Office desktop.

3) Empty your Waste Basket frequently.

4) Delete unnecessary Window's files and applications

You can conserve disk space by deleting Windows accessories you don't use. For example, deleting all the Windows 3.0 files that have a base file name of CALC removes the Windows Calculator (a savings of 63 KB). Also, the Window's bitmap files (*.BMP) consume about 240KB of disk.

Do this only when you are sure you don't need the accessories or bitmaps. Again, you should back up them up before deleting them.

Step 2: CONSERVE MEMORY =====

You may be able to gain extra memory for NewWave by making changes to CONFIG.SYS and AUTOEXEC.BAT -- the two files that establish the system configuration for your computer. Both of these files are in the root directory of the default drive on your hard disk (usually Drive C). Before you change these files, it is a good idea to make a backup copy of each in case you need to restore your old configuration. Note that changes to either file do not go into effect until you restart your computer.

Here are the changes you can make to conserve memory:

- 1) Remove any unnecessary device drivers from your CONFIG.SYS file.

Device drivers are loaded through the DEVICE= command. To remove a device driver, delete its command line from CONFIG.SYS. Examples of device drivers not needed by NewWave are ANSI.SYS or MOUSE.SYS. These files may be needed by some DOS applications, however, so make sure you that you don't need a device driver before you remove it.

If you are loading a disk caching program, you do not need (and should not load) the FASTOPEN program provided with DOS.

- 2) In CONFIG.SYS, set BUFFERS to a low value if you are using disk caching software (such as Microsoft's SMARTDRV.SYS).

The BUFFERS= command allocates a small amount of buffer memory to hold data as it is read from disk. Each buffer uses from 528 up to 4000 bytes, depending on the size of your hard disk partition. The recommended number of buffers for NewWave is 8 when running disk caching software and 16 to 20 when you are not using any disk caching software.

If you are using the DOS 5.0 CONFIG.SYS entry DOS=HIGH, changing the BUFFERS= entry may have no effect on base memory (the buffer memory goes into extended memory when using DOS=HIGH).

- 3) In CONFIG.SYS, remove any unneeded logical drives.

The LASTDRIVE command specifies the drive letter of the last logical drive. Each drive you don't need uses approximately 85 bytes. If you don't have any physical, ramdrive, substituted, or network drives past drive C:, you can set LASTDRIVE=C.

- 4) Remove any unnecessary terminate-and-stay resident programs (TSRs) from AUTOEXEC.BAT.

TSRs occupy a small amount of memory at all times while your computer is running. Often, they are loaded through a command line in AUTOEXEC.BAT.

- 5) Use a memory manager that can load device drivers and TSR programs into upper memory blocks (UMB's, or high DOS memory). Common examples of these are Qualitas' 386Max, Quarterdeck's QEMM, and Microsoft's EMM386.EXE. Be sure that you obtain a version that is compatible with Windows 3.0 in Enhanced Mode. If you have a 286 based PC, Qualitas provides MOVE'EM, and Quarterdeck has QRAM, which can provide UMB support for PCs with certain models of add-on memory cards.

STEP 3: TUNE DISK PERFORMANCE

=====

- 1) On 386 PC's create a permanent swap file. This file typically should be 4 to 6 MB in size, and should be placed on your fastest hard disk. Follow the instructions for this in the Windows 3.0 manual.
- 2) Defragment your disk drive often. Performance of many applications can be improved by using a disk defragmenting program. There are various programs available on the market that can do this, such as those provided in Norton Utilities and PC Tools. Be sure to run these programs OUTSIDE of Windows 3.0.

TIP: If your disk optimizing program can place certain directories first on the disk (in the fastest access areas), place the files in the HPNWDATA directory at the front of the list. This is where the NewWave Object Management Facility (OMF) resides, which is where most of the disk reading and writing will occur.

- 3) Use a disk caching program, such as Microsoft's SMARTDRV.SYS. It is best that you use a cache program that is compatible with Windows 3.0, and "relinquish" memory from cache back to Windows, in case your Window's application runs short on memory.
- 4) If you have a SET TEMP= statement in your AUTOEXEC.BAT file, make sure that you have adequate non-fragmented disk space on that drive. This is particularly important for printing large graphics from within Window's/NewWave.

We hope that with the above suggestions, you too, can make your computer run "Fast and Lean".

RECOVERING DISK SPACE FROM NEWWAVE 3.0 / 3.04 & WINDOWS 3.0

If you are looking for some ways of saving disk space on NewWave installations here are some things that you can delete and the resulting savings you obtain:

NewWave files and objects:

- | | | |
|----|----------------------------|--------|
| 1. | What's New folder (object) | 156 K |
| 2. | Tutorials (*): | 2381 K |
| | NewWave Guided Tour | (941K) |
| | NewWave Mouse Skills | (802K) |
| | NewWave Office Skills | (638K) |
| 3. | \\HPNWPROG\HPNLS*.TAB | 58 K |

EXCEPT for the following 3 files:

<yourcountry>.TAB (appropriate keyboard for your country, example: AMERICAN.TAB)
CONFIG.
MAPPING.

- | | | |
|----|-------------------------|-----|
| 4. | \\HPNWDATA\HPINSTAL.BAK | .1K |
|----|-------------------------|-----|

NewWave Total 2595 K

 Windows Files and Applications:

5.	Windows accessories: CALC.*, CALENDAR.*, CARDFILE.*, REVERSI.*, SOL.*, TERMINAL.*, RECORDER.*	743 K
6.	WINDOWS*.BMP (Windows Bitmaps	242 K
7.	WINDOWS*.TXT	208 K
8.	WINDOWS\WRITE.*	262 K
9.	WINDOWS\PBRUSH.*	229 K
Windows Total		1684 K
Combined Total		4279 K

In addition, on a Developer system, you can delete:

10.	WINDEV*.WRI	80 K
11.	WINDEV*.TXT	44 K
Developer's Total		124 K

(*) To delete the tutorials, follow these instructions:

- a. In the NewWave Office, select Tutorial from the Help menu.
- b. Press the Ctrl-Alt-X keys.
- c. Click Manage CBT.
- d. Click Deinstall.
- e. Highlight the Main Topic that you want to deinstall, click Deinstall, and OK.
- f. Repeat Step e until you have deinstalled all of the Main Topics.
- g. Click Done and OK.

NOTE: The above information regarding deleting the tutorials was taken from the "Additional Information and Precautions" text object, located in NewWave's "What's New" folder.

It is a good idea to archive these files before deleting them from your system, with the exception of the NewWave Tutorials, which can be recovered by simply reinstalling (updating) NewWave over your current directories.

1.3 Windows 3.0 and Memory

INTRODUCTION

A new angle on memory management

Version 3.00 of Microsoft Windows brings a new angle to PC memory management. It provides a protected mode graphical operating environment that runs existing DOS applications and allows Windows applications to break the 640K barrier. Windows 3.00 memory management is simpler in many ways than that of previous versions. However, its flexibility continues to present a challenge to those who want to understand its operation in depth. This document examines the three types of memory that Windows 3.00 can use (conventional, extended, and expanded) and discusses how the three modes of Windows 3.00 (real, standard, and enhanced) operate and use memory.

MEMORY TYPES

There are three different kinds of memory that can be installed in your machine. These are conventional, extended, and expanded. In addition, IBM PC-compatible machines contain a 384K reserved I/O address space.

CONVENTIONAL MEMORY

Conventional memory is the first 640K of memory in your machine (see Figure 1). DOS has a limit of 640K of addressable memory, and all DOS applications have to run within this conventional memory. All of the Windows 3.00 operating modes share this limitation for running DOS applications, but standard and enhanced modes break the 640K limitation for running Windows applications. Windows 3.00 enhanced mode can create multiple virtual DOS machines (for more information on virtual DOS machines, see the "Enhanced Mode and Conventional Memory" section of this application note).

NOTE: Enhanced mode Windows 3.00 also allows DOS applications to break the 640K barrier if they are written to use the Microsoft DOS Protected Mode Interface (DPML) specification. DPML allows DOS applications to run in protected mode under Windows 3.00, using up to 16 megabytes of extended memory directly. Applications must be specifically written for DPML to provide this feature.

384K RESERVED I/O ADDRESS SPACE

Between the top of conventional memory at 640K and the start of extended memory at 1024K lies the 384K reserved I/O address space (see Figure 2). This area does not contain physical memory. Mapped into the 384K reserved I/O address space are the BIOS (basic input/output system) ROM chips and the display adapter memory. When you install other accessory cards, such as network adapters, they occupy space within the 384K reserved I/O address space as well. It is important to remember that the 384K reserved I/O address area is always located in the same area of the IBM PC-compatible computer's address space: from 640K to 1024K (A000 to FFFF hexadecimal). There are no exceptions to this rule.

This means that a standard IBM-compatible machine with 640K of conventional memory installed really has 1 megabyte of address space. The system memory occupies the first 640K, and the

384K reserved I/O address space occupies the area from 640K to 1 megabyte. This does not mean that the machine has 1 megabyte of memory. A machine with 1 megabyte of physical memory has an address space of 1408K. This consists of the 640K conventional memory, the 384K reserved I/O address space, and the 384K of extended memory starting at 1024K. The IBM PS/2 Models 50, 50Z, and 60 are examples of machines that always ship with at least 1 megabyte of memory installed.

EXTENDED MEMORY

Extended memory is the simplest type of add-on memory to understand (see Figure 1). It is also the type of memory used by Windows 3.00 running in standard or enhanced operating mode. Extended memory is simply a seamless continuation of the original 1 megabyte address space on 80286 and 80386 computers. Extended memory always starts exactly at 1024K, where the 384K reserved I/O address space ends. There are no exceptions.

It is not possible for an 8086 or 8088 machine to have extended memory. This is a hardware limitation of the 8086/8088 processors, which can handle only 1024K of total address space (that is, 640K system memory plus 384K reserved I/O address space). The 80286 processor can address 16 megabytes of total memory and the 80386 processor can address up to 4 gigabytes. Note that PC manufacturers often refer to extended memory as expansion memory, which is not to be confused with expanded memory.

Windows 3.00 and all applications running under Windows access extended memory via the Microsoft eXtended Memory Specification (XMS). Rather than accessing extended memory directly, access is made via an XMS driver. This driver is called HIMEM.SYS. Older DOS applications that check available extended memory via the interrupt 15 service 88H will not see any extended memory with an XMS driver loaded. These applications must use the XMS, instead of interrupt 15, to access extended memory.

EXPANDED MEMORY

Older versions of Windows use mostly expanded memory. Today, Windows 3.00 uses expanded memory only when running in real mode. However, it is important to understand the concept of expanded memory if you still run DOS applications that use it. There are two different kinds of expanded memory, differentiated by their Lotus/Intel/Microsoft (LIM) Expanded Memory Specification (EMS) version number.

LIM 3.2 Expanded Memory

We discussed earlier that the old PC/XT machines with 8086/8088 processors can address only 640K of memory. You can't add more than 640K of standard memory to the system, but you can provide more than 640K through a technique called bank switching. Expanded memory uses an empty area in the 384K reserved I/O address space of the machine to provide this functionality.

Figure 3 shows the memory addressing range of an 8088-family processor on the left and an expanded memory card on the right. To use an expanded memory card, you must load a device driver to let the card know how to communicate with the PC. This device driver is called an Expanded Memory Manager, or EMM. The LIM 3.2 EMM establishes a 64K page frame within the 384K reserved I/O address space to perform EMS bank switching. The 64K page frame consists of four 16K contiguous pages. LIM 3.2 expanded memory won't work without a 64K contiguous page frame.

The page frame is the area where the expanded memory manager maps information into and out of the RAM of the expanded memory card. Information is

not physically copied from the EMS card to the RAM of the computer. The device driver simply changes the card's page registers to make the page frame point to the data on the expanded memory card. The data then appears in the page frame, and your application can access it.

LIM 4.0 Expanded Memory

The LIM 3.2 standard is fine for storing data such as spreadsheets in expanded memory, but it does not help for multitasking. This is why Lotus, Intel, and Microsoft created the LIM 4.0 standard.

Comparing Figures 3 and 4 shows two of the major differences between LIM 3.2 and 4.0. First, you can have more than four 16K pages, much more. LIM 4.0 supports up to 64 pages, which are enough to bank 1 megabyte of memory at once. Second, the page frame itself no longer has to be four contiguous 16K pages. In fact, you need no page frame at all. Whichever EMS version you are dealing with, the basic operating principle of bank switching is still at work.

Backfilling

With LIM 4.0's limit of 64 16K pages, you have enough pages to bank switch the entire conventional address range of the processor. Yet there must be no active ROM or RAM of any sort where you put an expanded memory page. This means you can't map EMS pages on top of anything that is already occupying address space in your machine (such as loaded DOS or video/system ROM). On the 80286 processor, this means you should disable as much motherboard memory as possible (down to 256K) and let the expanded memory card supply that memory. This process is called backfilling. This doesn't mean that your computer will have only 256K – your programs still see a 640K machine. But since the expanded memory card is now supplying the memory, it can bank switch the memory. This capability is called (erroneously) "large page frame."

The 80386 processor has a built-in ability to readdress any page of memory to any other location. This means you don't have to backfill on an 80386 to get large page frame LIM 4.0 functionality, nor do you need an expanded memory board. It's easy to convert your 80386's extended memory to expanded with an 80386 Expanded Memory Manager such as Microsoft EMM386.SYS.

If you're using an expanded memory board on an 80386 machine, read your manual carefully before you backfill. Not all memory boards have the register support to supply more than four 16K pages (LIM 3.2). Though a memory driver may conform to the LIM 4.0 specification, that does not mean the hardware can provide more than four pages. Also, since Windows 3.00 supports extended memory directly, backfilling expanded memory will not give you any advantages unless you plan to run only real mode Windows.

LIMulators

There are some programs available that emulate expanded memory using extended memory and/or hard disk space. These programs are sometimes known as LIMulators. They are not much of an advantage because although they supply expanded memory, they are not hardware. They must place a 64K EMS page frame in conventional memory and also take up space for the driver itself. LIMulators generally take upward of 80K conventional memory to run. Since conventional memory is the most precious memory on your machine, we do not recommend these types of programs. They are also extremely slow.

Expanded Memory Difficulties

Expanded memory requires a page frame to work, and the page frame is located within the 384K reserved I/O address space of your machine. Unfortunately, your EMM is not the only competitor for that memory space. Add-on boards such as network cards, 3270 emulation cards, ESDI disk controllers, and others can contend for this address space. Several potential difficulties can arise due to this contention:

1. Lack of Space

The major problem is simply finding at least 64K of contiguous free space in which to place the page frame. LIM 4.0 does not require a 64K page frame but is almost useless without it. Frequently the address areas of various adapter cards need to be shuffled about to open a contiguous 64K page frame. Complicating this process are such boards as the IBM 3270, which have nonmovable addresses in most machines.

2. Mapping Conflicts

Most EMMs (such as EMM386.SYS and Windows 3.00 enhanced mode) use a search algorithm to find unused memory between C000 and DFFF located in the 384K reserved I/O address space to use as page frames. Some cards (adapters) do not reserve their address space until you access the card, so the memory manager can inadvertently map EMS pages on top of an address the card will request. This can cause hanging and intermittent operation. This problem is fairly rare because the page search routine can locate almost all popular adapters.

In case of problems, the first thing to do is to disable expanded memory. This will show if a page conflict really is causing the symptom you are experiencing. If the problem goes away without expanded memory, the memory manager must be told to exclude the address the adapter is occupying from consideration as a page location. The adapter also may have to be moved. You do this different ways with different memory managers. Consult your memory manager's documentation for information on how to exclude an address range.

WINDOWS 3.00 MODES AND MEMORY USAGE

How it works in each mode

This section examines how the three different modes of Windows 3.00 (real, standard, and enhanced) use the different types of memory we have discussed (conventional memory, the 384K reserved I/O address space, extended memory, and expanded memory).

REAL MODE WINDOWS 3.00

Real Mode and Conventional Memory

Windows 3.00 in real mode is similar in most respects to Windows/286 versions 2.x. Real mode Windows 3.00 executes entirely within conventional memory. It requires 384K of free conventional memory (393,216 bytes reported by CHKDSK) to start up successfully.

Real Mode and the 384K Reserved I/O Address Space

Windows 3.00 does not access the 384K reserved I/O address space directly in real mode. Remember though, if an external EMM is present (such as EMM386.SYS), the EMM will use areas of the 384K reserved I/O address space.

NOTE: Windows 3.00 real mode operation is similar in most respects to Windows/286 versions 2.x. Real mode can use most Windows 2.x device drivers and runs applications written for Windows 2.x.

Real Mode and Expanded Memory

SMALL VERSUS LARGE PAGE FRAME MODE

Real mode Windows 3.00 will automatically switch into large page frame mode when 280K (plus or minus 8K) of free, mappable expanded memory pages in conventional memory are available after all Windows code has been loaded. The ending position of Windows code in memory plus the amount of Windows global memory determine the start of free expanded memory pages. Global memory is a memory segment that Windows puts aside to store things that need to be globally available to all applications, such as printer drivers and fonts. The point at which the free mappable expanded memory pages begin is called the EMS line.

ADJUSTING THE EMS LINE

There is no way to set the position of the EMS line explicitly, because real mode Windows sets it automatically, as discussed above. However, you can adjust the EMS line position in a manner relative to its current position with the command line parameters discussed below.

REAL MODE WINDOWS EXPANDED MEMORY COMMAND-LINE PARAMETERS

The /N Switch

Starting real mode Windows with the /N command-line switch disables real mode Windows' use of expanded memory for banking of Windows applications. This effectively eliminates an EMS line.

The /N switch does not disable expanded memory but only real mode Windows' use of it. Your external EMM will still be present. A page frame will be established, and applications can still use LIM 3.2 (if a 64K contiguous page frame is present). This means that this switch is not useful for debugging possible expanded memory page frame conflicts. The /N switch disables only real mode Windows' use of expanded memory, not the expanded memory itself. To disable the expanded memory itself, you must remove the external EMM.

The /L Switch

Starting real mode Windows with the /L+nnn parameter moves the EMS line up or down the specified amount of kilobytes (rounded to 16K increments). The command line WIN/L+16 moves the EMS up 16K, possibly fine-tuning Windows with your system, provided you are already in large page frame. Do not use the /L-16 parameter to move the EMS down, as it will infringe on global memory and cause problems with printing or displaying fonts.

Real mode Windows normally starts in large page frame. Start real mode Windows with WIN /L+200 (where 200 is simply an arbitrarily large number) to force real mode Windows to small page frame mode. There is almost never a practical use for any other positive parameter.

The /E Switch

The /Ennn parameter gives you the ability to adjust the 280K default point at which real mode Windows will go into large page frame mode (see above). Keep in mind that real mode Windows does not automatically use one mode or the other without a good reason. Explicitly

setting small or large page frame mode, as opposed to Windows' automatic choice, may cause problems. Windows' automatic choice is usually the best choice to take.

However, if you want to explicitly set one mode or the other, you can use this switch. For example, starting real mode Windows with `WIN /E100` causes Windows to go into large page frame mode if only 100K of bankable conventional EMS pages are free after Windows code initialization (this effectively switches real mode Windows to large page frame mode). Conversely, starting real mode Windows with `WIN /E600` forces small page frame mode in all circumstances. You should normally use the `/L+200` switch for this purpose.

Real Mode and Extended Memory

CODE CACHING USING EXTENDED MEMORY

Real mode Windows 3.00 does not access extended memory directly. However, if extended memory is present and `HIMEM.SYS` is loaded, real mode Windows can speed its operation considerably by performing code caching to extended memory.

All Windows applications are segmented, that is, divided into segments that have certain attributes. These attributes include movable attributes, which means that the segment can be moved around in memory, and discardable attributes, which means that the segment can be discarded (that is, forgotten about, overwritten, and reloaded from disk when necessary). The largest portion of a given Windows application has both the movable and discardable attributes.

Under real mode Windows, a lot of discarding goes on because real mode is limited to conventional memory. Windows applications are frequently 600K or larger, much larger than available free memory on a 640K machine with real mode Windows loaded. A Windows application keeps a minimum amount of code loaded in memory; this is known as its swapsize. As the program executes and you choose various functions, whenever Windows runs out of memory, it discards part of the application and overwrites it with new code loaded from the executable file on the hard disk.

If XMS memory is accessible to Windows 3.00 via `HIMEM.SYS`, Windows will effectively discard code to extended memory. Rather than forgetting about the code segment and overwriting it with new code from the executable file, Windows copies the code segment to extended memory. Then, instead of having to reload from the executable file, Windows can fetch the code from extended memory when it is required again. This feature speeds up real mode operation considerably; code caching is not present in Windows/286 versions 2.x. Note that this feature does not replace the Windows SMARTDrive disk caching utility. SMARTDrive should still be loaded whenever possible.

USING XMS MEMORY IN DOS APPLICATIONS

DOS applications that use XMS memory can also be run from real mode Windows if the required amount of XMS memory is specified in the PIF (Program Information File). One important point about running such applications is that real mode Windows is already using all of the available XMS memory for code caching. Therefore, to run a DOS application PIF that requires XMS memory, you must swap extended memory to disk. For example, assume your machine has 2048K of extended memory. You specify in the PIF that your DOS application requires 1024K of XMS. Real mode Windows is already using all 2 megabytes of extended memory. When you run the DOS application, the first megabyte of XMS memory is swapped to disk, and the DOS application is given access to that megabyte. When you `alt+tab` back to real mode Windows, the original 1024K of XMS memory is reloaded from disk. Since this

process can be slow, you should not request any more XMS memory than is absolutely necessary to run your application.

SWAPPING DOS APPLICATIONS TO EXTENDED MEMORY

Real mode Windows 3.00 can also swap DOS applications to extended memory. To do this, create a virtual hard disk in extended memory with the RAMDRIVE.SYS driver. Then, set the `swapdisk=` line in the `[nonwindowsapp]` section of the SYSTEM.INI file to point to the drive letter that RAMDrive creates. Note that you must have a RAMDrive that is at least three times larger than the largest DOS application you want to use. Also, be advised that using extended memory to create the RAMDrive will reduce real mode Windows' extended memory code caching ability and make it run more slowly.

Note: Windows/286 versions 2.x have the ability to swap DOS applications directly to expanded memory. Since expanded memory is rarely used under Windows 3.00, this capability was removed. If you want to swap DOS applications to expanded memory, set up a RAMDrive in expanded memory and swap to the RAMDrive.

RUNNING PROTECTED MODE DOS APPLICATIONS

Windows real mode allows DOS applications that use a DOS extender technology such as VCPI (Virtual Control Program Interface) to run in protected mode. Extended memory allocation for such applications must be made in the PIF.

STANDARD MODE WINDOWS 3.00

Breaking the 640K barrier on 286 machines

Standard Mode and Conventional Memory

When standard mode Windows 3.00 is executed, it adds the amount of free conventional and extended memory and looks at the total amount as one contiguous block of memory. Conventional memory has no special meaning under standard mode, except when running DOS applications. Running real or standard mode Windows 3.00 has the same DOS application support, and DOS applications must run within conventional memory.

Standard Mode and the 384K Reserved I/O Address Space

Windows 3.00 does not access the 384K reserved I/O address space directly in standard mode. Still, if a physical expanded memory board is present, the board's EMM will use areas of the 384K reserved I/O address space. If you suspect a 384K reserved I/O address space conflict is causing a problem, temporarily remove the external EMM for testing purposes.

Standard Mode and Expanded Memory

Standard mode Windows 3.00 does not use expanded memory at all. DOS applications running under standard mode can access expanded memory only if a physical expanded memory board along with the appropriate memory manager is present in the machine. Compatible 386 Expanded Memory Managers such as EMM386.SYS can be loaded to provide expanded memory outside of Windows. However, 386 Expanded Memory Managers cannot be used to provide expanded memory to DOS applications running from standard mode Windows. The 386 Expanded Memory Manager will be disabled when standard mode loads. See the "Expanded Memory for DOS Applications" section of this application note for more information on using EMS with standard mode.

Standard Mode and Extended Memory

Windows 3.00 standard mode can access extended memory directly. It adds the free conventional memory and free XMS extended memory. It then provides the total as memory for Windows applications to use (minus the memory required by standard mode Windows itself). Standard mode initially accesses extended memory through the XMS driver HIMEM.SYS. DOS applications that use XMS memory can also be run from standard mode Windows. Since standard and real mode Windows both use the same DOS application support, the same restrictions apply (see the "Real Mode and Extended Memory" section of this application note).

ENHANCED MODE WINDOWS 3.00

Entering the world of virtual memory

Enhanced Mode and Conventional Memory

Windows 3.00 enhanced mode deals with conventional memory in much the same way as standard mode. When enhanced mode Windows 3.00 is executed, it adds the amount of free conventional and extended memory, but in addition, Windows 3.00 combines a virtual hard drive memory factor and looks at the total amount as one contiguous block of memory. Conventional memory has no special meaning under enhanced mode, except when running DOS applications. Enhanced mode runs DOS applications by creating virtual DOS machines up to 640K in gross size.

Each virtual DOS machine inherits the environment that was present before Windows enhanced mode was executed. This means that every driver and TSR loaded before you run Windows is present and consumes memory in every subsequent virtual DOS machine. The net memory available within virtual DOS machines under enhanced mode is slightly less than the free memory at the DOS prompt before you start Windows.

Enhanced Mode and the 384K Reserved I/O Address Space

Windows/386 versions 2.x use the 384K reserved I/O address space only to place the expanded memory page frame, and then to a maximum of only four 16K pages. Windows 3.00 enhanced mode uses the 384K reserved I/O address space for two purposes: 1) to place DOS protected mode application program interface (API) translation buffers, and 2) to place the expanded memory page frame (if required). Frequently, all of the free pages in the 384K reserved I/O address space are utilized by enhanced mode.

API TRANSLATION BUFFERS IN THE 384K RESERVED I/O ADDRESS SPACE

Although Windows 3.00 enhanced mode breaks the 640K barrier for Windows applications, it still runs on top of DOS. The copy of DOS upon which Windows is running can execute and access data only within conventional memory. The same restriction applies to network software or other drivers loaded before enhanced mode Windows. Enhanced mode allocates buffers in the 384K reserved I/O address space to translate DOS and network API calls from protected mode to real mode. Since the 384K reserved I/O address space is within the first megabyte of address space, it can be accessed by DOS in real mode. The translation buffers are used as a window through which applications executing in protected mode can pass information to and from DOS and the network.

Ideally, there would be enough free space in the 384K reserved I/O address space to place both the translation buffers and the expanded memory page frame. Yet on many configurations there isn't enough room. This means you have to make a choice. Either the

expanded memory page frame can be eliminated or the translation buffers can be allocated in conventional memory instead of in the 384K reserved I/O address space. If the translation buffers are allocated in conventional memory, they take up space in every virtual machine from Windows that you create. You will have less space in virtual machines to run DOS applications. The translation buffers can be allocated either in the 384K reserved I/O address space or in conventional memory, but never half-and-half.

Fortunately, Windows 3.00 enhanced mode provides a method for specifying your preference. To do this, place the following switch in the [386ENH] section of the SYSTEM.INI:

```
ReservePageFrame=Boolean
```

If ReservePageFrame=true (the default), enhanced mode Windows allocates the page frame first and the translation buffers second. This makes it likely that the translation buffers will be forced into conventional memory but allows you to use expanded memory in DOS applications. If ReservePageFrame=false, the translation buffers are allocated first and the page frame second if there is still room.

This setting gives you the most free memory within virtual machines, but you may not be able to use expanded memory in DOS applications. However, remember that Windows applications do not need expanded memory to function; only DOS applications that can utilize expanded memory will be affected. One important note: If you are using the EMM386.SYS driver, translation buffers are always placed in conventional memory.

PAGE FRAME PLACEMENT IN THE 384K RESERVED I/O ADDRESS SPACE

As noted in the expanded memory discussion earlier in this document, expanded memory support requires a page frame located in the 384K reserved I/O address space. With LIM 4.0 expanded memory, it is not necessary to have a 64K contiguous page frame in this area. It's not necessary to have a page frame at all in LIM 4.0. Still, if you want to use expanded memory in your DOS applications, you must have a 64K contiguous page frame. This is composed of four contiguous 16K pages in the 384K reserved I/O address space.

On a typical IBM machine there are only eight free 16K pages in the 384K reserved I/O address space (refer to Figure 2). Four contiguous pages are required for expanded memory support in DOS applications, leaving only four other free pages. Other cards such as network adapters and ESDI hard disk controllers also need to occupy pages in the 384K reserved I/O address space. Frequently the combination of installed adapters can break up the free area in the 384K reserved I/O address space so there is no 64K contiguous area in which to place the page frame. In this case, you will not see any free expanded memory in your DOS applications running under Windows 3.00 enhanced mode.

If you experience this problem, you may need to rearrange your adapter memory locations to get expanded memory support for DOS applications. This is easiest to do on machines using the Micro Channel Architecture (MCA) or Extended Industry Standard Architecture (EISA) bus standards. IBM Personal System/2 models 50 and above are equipped with the Micro Channel bus. The PS/2 machines allow you to change adapter memory locations simply by booting with the PS/2 Reference Disk and choosing Change Configuration. A similar procedure is available on most EISA bus machines such as the COMPAQ SYSTEMPRO and HP Vectra 486. Normal Industry Standard Architecture (ISA) bus machines such as the IBM AT and COMPAQ 386 may require you to open the case and flip DIP switches on the cards to change their memory addresses. Use Figure 2 as a handy worksheet when readdressing adapters to open a 64K page frame.

If you want, you can disable expanded memory support entirely under Windows 3.00 enhanced mode by adding the `NoEMMDriver=yes` parameter in the `[386ENH]` section of the `SYSTEM.INI` file.

CONTROLLING ENHANCED MODE 384K RESERVED I/O ADDRESS SPACE MAPPING

In Windows/386 versions 2.x, the `WIN.INI` parameters `EMMExclude=` and `EMMInclude=` are used to control expanded memory page frame placement. These parameters are used under Windows 3.00 enhanced mode to control not only the expanded memory page frame but also the API translation buffer mapping. Under Windows 3.00 these switches begin with the letters `EMM` only for downward compatibility reasons. They no longer apply only to expanded memory. The `EMMPageFrame=` parameter still applies only to the expanded memory page frame. In Windows 3.00 these switches have been moved from the `WIN.INI` file to the `[386ENH]` section of the `SYSTEM.INI`. Windows/386 versions 2.x do not use the `E000-EFFF` area of the 384K reserved I/O address space unless specifically instructed. Windows 3.00 enhanced mode will use this segment unless the machine identifies itself as a PS/2.

To explicitly exclude an area of the 384K reserved I/O address space from mapping by Windows 3.00 enhanced mode, use the `EMMExclude=` statement. The `EMMExclude=` parameter accepts a four-digit hexadecimal memory range, such as `EMMExclude=E000-EFFF`. Since there is no standard for hardware implementation of the `E000-EFFF` area, it is frequently necessary to exclude this range for enhanced mode to function properly. Most adapter cards are automatically detected and excluded by Windows 3.00 enhanced mode. If you suspect a problem with a 384K reserved I/O address space memory conflict, use `EMMExclude=`.

There are very few uses for the `EMMInclude=` statement. Normally Windows 3.00 enhanced mode automatically uses all free pages in the 384K reserved I/O address space. Likewise, there are few uses for the `EMMPageFrame=` statement, since it controls only the expanded memory page frame and not the translation buffers. The Windows/386 2.x `LastEMMSeg=` parameter is not used by Windows 3.00.

Enhanced Mode and Expanded Memory

Windows 3.00 enhanced mode does not use expanded memory itself. It can create expanded memory for use by DOS applications written to use expanded memory, such as Lotus 1-2-3. Expanded memory required by a DOS application can be specified in the Advanced section of the application's PIF. It is no longer necessary for Windows applications to use expanded memory because they can now access extended memory directly. The main issues for expanded memory under Windows 3.00 are page frame conflicts, as discussed above.

Windows/386 versions 2.x provide large page frame expanded memory only for the Windows virtual machine. Windows 3.00 enhanced mode provides large page frame LIM 4.0 expanded memory in all virtual DOS machines. This is not currently useful for most DOS applications that use expanded memory. Most DOS applications use only the 64K page frame itself, not the additional bankable pages in conventional memory that large page frame LIM 4.0 supplies. However, this feature may be useful in the future.

A compatible external 386 memory manager such as `EMM386.SYS` can be loaded to provide expanded memory for DOS applications running outside of Windows 3.00 enhanced mode. Note: `EMM386.SYS` is specifically designed to work in conjunction with Windows 3.00. This driver is not needed to have expanded memory available inside of Windows 3.00 and is actually turned off when Windows 3.00 enhanced mode is run. See the "Expanded Memory for DOS Applications" section of this application note for more information.

Enhanced Mode and Extended Memory

Like standard mode, Windows 3.00 enhanced mode can access extended memory directly. It adds the free conventional memory and free XMS extended memory plus a virtual hard drive memory factor. It then provides the total as memory for Windows applications to use (minus the memory required by enhanced mode Windows itself). DOS applications that use XMS memory can also access XMS in virtual machines under enhanced mode Windows. The XMS memory supplied to DOS applications by Windows 3.00 enhanced mode can be virtualized.

RUNNING PROTECTED MODE DOS APPLICATIONS

Windows enhanced mode allows DOS applications to run in protected mode if they are written to use the Microsoft DOS Protected Mode Interface (DPMI) specification.

NOTE: Enhanced mode uses the XMS to initially load itself and its drivers into extended memory before starting up. This is why enhanced mode requires the presence of HIMEM.SYS, the XMS device driver.

Enhanced Mode and Virtual Memory



A VIRTUAL MEMORY CONCEPTUAL ANALYSIS

Virtual memory gives you the ability to run more simultaneous programs than the amount of physical memory installed on your computer would normally allow. Virtual memory has been widely used for years in the world of mainframe computers and recently came to the IBM world with the introduction of the IBM/Microsoft OS/2 operating system, which is based on the 80286 processor. Windows 3.00 enhanced mode goes beyond the world of OS/2 to offer virtual memory using the special demand paging capabilities of the Intel 80386 processor.

The best thing about virtual memory in Windows 3.00 enhanced mode is that programs do not need to be written specifically to take advantage of it. When you start Windows 3.00 enhanced mode and from the Help menu, choose Help About Program Manager, you will see that much more memory is available than is installed in your machine. Windows applications can use this extra memory without being written specially for it because Windows applications are device independent. They let Windows handle the memory management and simply ask Windows for memory allocations. With virtual memory, Windows applications keep asking for more memory, which Windows 3.00 enhanced mode is now able to deliver. If you have less memory, the application runs slower; if you have more memory, it runs faster; but it is almost always able to run.

At any given moment during the execution of a program, some parts of its code and data are in physical memory; the rest is swapped to the hard disk. Whenever a reference is made to a memory address, if the information is currently in physical memory, it is used without program interruption. If the information isn't in physical memory, a page fault occurs. The Windows 3.00 enhanced mode virtual memory manager takes control.

The required code or data is pulled into physical memory from the hard disk, and if necessary, some other information is swapped out. Pages are swapped out on a least recently used (LRU) basis. The page(s) that have not been accessed for the longest time are the first to be swapped out. All this swapping occurs without notice to the user, who sees only a little hard disk activity.

Windows 3.00 enhanced mode virtual memory is a demand-paged system. This means that

pages of data are brought into physical memory when they are referenced. A demand-paged system does not attempt to predict what pages will be required in the future. The enhanced mode virtual memory subsystem is implemented by the Windows 3.00 Virtual Memory Manager (VMM) along with the pageswap device. The VMM maintains the virtual memory page table. The page table lists which pages are currently in physical memory and which are swapped to disk. Because Windows 3.00 enhanced mode is a multitasking environment, the VMM page table also contains a list of which memory pages belong to which process. When the VMM needs a page that is not currently in physical memory, it calls the pageswap device. Pageswap allocates and deallocates virtual memory and maps pages into and out of physical memory.

Some virtual memory systems rely on program segmentation to do their work. Windows applications are segmented. However, virtual memory under Windows 3.00 enhanced mode is not related to the segmentation of Windows applications. All memory, virtual and physical, is divided into 4K pages and the system is managed on this basis. Page mapping starts at 0 kilobytes and works up. There are two kinds of pages that can be allocated: physical pages and virtual pages. The amount of physical pages is simply the amount of physical memory in the machine divided by 4K. In contrast, memory allocated to an application is made up of virtual pages. At any given time, a virtual page can be in physical memory or swapped to the hard disk.

As mentioned above, Windows 3.00 enhanced mode virtual memory management uses the least recently used (LRU) page replacement algorithm. The virtual page table contains flags for each page that indicate whether the page has been "accessed" and if the page is "dirty." Accessed means that a process has made a reference to the page since it was originally loaded. Dirty means that a write has been made to the page since it was loaded. Because a memory write qualifies as an access, the Dirty attribute implies the Accessed attribute.

To illustrate, assume Windows 3.00 enhanced mode is out of physical memory space. A process requests additional memory. Windows has to decide which page(s) currently in physical memory it should swap to disk to fulfill the request. This decision is a three-step process:

1. The virtual memory manager scans the page table, looking for pages that have neither an Accessed nor a Dirty attribute. During the scanning process, it clears the Accessed attribute from all the pages.
2. If it can find enough pages meeting the not Accessed/not Dirty requirement, it fulfills the request. It swaps the pages to disk and gives the resulting free memory to the process.
3. If it can't find enough pages the first time through, it repeats the scan. Yet this time through, none of the pages has an Accessed attribute because it was cleared by the first scan. Theoretically, therefore, more pages will meet the requirements, and the request can be fulfilled. If the required pages are still not found by the second scan, Windows then swaps out the pages regardless of their attributes.

The benefit of Windows 3.00 enhanced mode virtual memory support is the ability to run more programs than could be supported by actual physical memory. The drawbacks are the disk space requirement for the virtual memory swap file and a decrease in overall execution speed when swapping is required. However, it's better to be able to run a program slowly in a virtual memory system than not to be able to run it at all.

VIRTUAL MEMORY PAGING FILE OPTIONS AND CONTROLS

Windows 3.00 enhanced mode can use one of two types of virtual memory paging files, or swap files: temporary or permanent. Only one type of swap file can be used when running Windows 3.00. Do not attempt to create a swap file on a RAMDisk. Creating a swap file on a RAMDisk is a self-defeating pursuit – you would be sacrificing physical memory to provide a place to create virtual memory to replace the physical memory you have used to create the RAMDisk. Windows 3.00 in 386 enhanced mode requires a minimum of approximately 1.5 megabytes of hard disk space free on the paging drive to provide virtual memory support with a temporary swap file.

A temporary swap file is simply a normal DOS file created on the hard disk that can shrink and grow in size as necessary. The temporary swap file is called WIN386.SWP. It does not have a Hidden or System attribute and can be deleted at any time you are not currently running Windows, if necessary. It is normally deleted automatically when you exit Windows 3.00 enhanced mode. This temporary swap file is the default swap file that Windows 3.00 uses and is created automatically when Windows 3.00 is started.

Temporary swap file location and size can be adjusted by inserting parameters in the [386ENH] section of the SYSTEM.INI file. The temporary swap file is always created in your Windows 3.00 directory unless you set the PagingDrive= parameter. If the PagingDrive= parameter is set (for example, PagingDrive=D:), the swap file will be created in the root directory of the specified drive. There is no way to specify a subdirectory for the temporary swap file location. Temporary swap file size is controlled by the MaxPagingFileSize= parameter. The size of the temporary swap file can also be limited in a different way by the use of the MinUserDiskSpace= parameter, which tells enhanced mode to leave the specified amount of disk space in kilobytes free when creating a temporary swap file.

A permanent swap file occupies a contiguous section of your hard disk. Because it is contiguous, using a permanent swap file moderately improves the speed of the Windows 3.00 virtual memory system, and its access requires less overhead than a normal DOS file. The permanent swap file is a hidden file called 386SPART.PAR, which also has a System attribute. It is always placed in the root directory. Since the permanent swap file must be contiguous, you can't create a permanent swap file larger than the largest contiguous free segment of your hard disk.

Permanent swap files are created and deleted with the Windows 3.00 SWAPFILE.EXE utility program. A SYSTEM.INI parameter is not used to point to the location of the permanent swap file. Instead, the Swapfile utility program creates a SPART.PAR file in your Windows 3.00 directory. Windows 3.00 enhanced mode reads the SPART.PAR file to find out where the permanent swap file is and how large it is. SPART.PAR is marked read-only to keep you from accidentally deleting it. If you delete SPART.PAR, Windows will not know about the permanent swap file. Also you can't delete the permanent swap file with the Swapfile utility because Swapfile also reads SPART.PAR.

The Swapfile utility makes DOS calls that cannot be made from protected mode Windows. Therefore, SWAPFILE.EXE can be run only from real mode Windows 3.00 to create or delete a permanent swap file and cannot run with other applications. If the Swapfile utility program says that the maximum swap file size it can create is smaller than your free disk space, your hard disk is fragmented.

If you want to create a larger permanent swap file, you must optimize your hard disk (optimizing is also known as unfragmenting, or compacting). This must be done with a third-party utility program such as Bridgeway Publishing FastTrax, Norton Utilities, Mace Utilities, Golden Bow VOpt, or Central Point PCTools. If you have already created a permanent swap file, make sure to delete it using the Swapfile utility program before optimizing your hard disk.

It is not necessary to delete the permanent swap file every time you optimize your hard disk -- only when you want to increase the size of the permanent swap file by optimizing, then re-creating it.

The Swapfile utility program supports only disks that use 512-byte sectors. If 512-byte sectors are not being used, this indicates a nonstandard configuration such as a third-party disk partitioning driver. Swapfile (and Windows 3.00 itself) supports drives with 512-byte sectors that have been partitioned with the DOS FDISK utility. Never run Swapfile on a drive that uses a partitioning driver in the CONFIG.SYS, with the exception of COMPAQ's ENHDISK.SYS. If you receive a message that your swap file is corrupted, run the Swapfile utility, delete the current swap file, and create a new one.

PAGING TO NETWORK DRIVES

Paging to a network drive, while certainly possible, is extremely slow and is not recommended. Only temporary swap files can be used on network drives. If you want to page to a net drive, the directory must not have a DOS Read-Only attribute. You must have Create and Write access to the directory. Note that because they are not MSNet-Redirector compatible, the root of a Novell network drive is the root of the server. Do not set the PagingDrive= parameter to a Novell network drive. If you do so and multiple users run Windows 3.00 enhanced mode, their computers will hang because they will overwrite each other's swap files, all with the same name and all created in the root directory of the server.

WIN.COM AUTOMATIC START-UP PARAMETERS

WIN.COM starts up automatically in the appropriate Windows 3.00 operating mode for your machine and the amount of memory installed. These modes are real mode (similar to Windows/286 2.x), 286 standard mode (also known as 286 protected mode), and 386 enhanced mode (also known as 386 protected mode). However, Windows may be forced into one of the three modes through the following command-line switches:

Command Line Mode -----

WIN /R Real

WIN /S or WIN /2 Standard

WIN /3 Enhanced

REAL MODE REQUIREMENTS

The requirements for WIN.COM to automatically start up in real mode are the following:

- * 8088 processor or above
- * 384K of free conventional memory (393,216 bytes reported by CHKDSK)

STANDARD MODE REQUIREMENTS

The requirements for WIN.COM to automatically start up in standard mode are the following:

- * 80286 processor or above

- * 192K of free extended memory
- * XMS driver loaded (HIMEM.SYS)

ACTUAL STANDARD MODE REQUIREMENTS

Standard mode conventional/extended memory requirements are mutually dependent and are not fixed. A typical installation requires a minimum of 128K free at the DOS prompt to run standard mode, assuming sufficient extended memory is free. Standard mode requires between 384K and 512K combined conventional and extended memory to run (approximately).

For example, if only the minimum 192K of extended memory is free, approximately 322K of conventional memory is required to run standard mode. However, if available extended memory is increased to approximately 208K or greater, only 128K of conventional memory is required. This example is intended to illustrate that memory requirements are interrelated and variable.

ENHANCED MODE REQUIREMENTS

The requirements for WIN.COM to automatically start up in enhanced mode are the following:

- * 80386 processor or above
- * 1024K of free extended memory
- * XMS driver loaded (HIMEM.SYS)

ACTUAL ENHANCED MODE REQUIREMENTS

See the above notes for standard mode regarding the interrelationship of conventional and extended memory requirements. A typical installation requires a minimum of 182K free at the DOS prompt to run enhanced mode, assuming sufficient extended memory is free. Enhanced mode requires between 580K and 624K combined conventional and extended memory to run (approximately).

Note that enhanced mode can start up in low memory situations only because it provides virtual memory support. However, it may be extremely slow due to the large amount of disk swapping it must perform.

All numbers are approximate and may vary widely depending on the configuration (for example, Windows device drivers chosen, DOS version, display adapter, etc.). 128K of extended memory is recovered from shadow RAM usage on COMPAQ 386 machines. Memory requirements take into account memory that can be recovered from SMARTDrive (down to the minimum cache size specified).

THE FREE SYSTEM RESOURCES PERCENTAGE

The Program Manager and File Manager Help About boxes in Windows 3.00 standard and enhanced modes give percentage figures for Free System Resources and Free Memory. To understand what the Free System Resources percentage means, you must understand some of the anatomy of Windows' internal structure.

The part of Windows that runs Windows applications is made up of three main segments called KERNEL, GDI (graphics device interface), and USER. KERNEL loads and executes Windows applications and handles their memory management. GDI manages graphics and printing. USER controls user input and output, including the keyboard, mouse, sound driver, timer, and communications ports. In Windows 2.x these modules are linked to the files WIN200.BIN and WIN200.OVL by the Setup program, so you can't see them in the Windows directory. In Windows 3.00, they're separate and are located in the SYSTEM subdirectory.

Both USER and GDI have storage areas that are limited to 64K in size. A storage area limited to 64K is known as a local heap. The Free System Resources percentage reflects the remaining free percentage of combined USER and GDI local heap space. Although Windows 3.00 allows you to run a much larger number of simultaneous Windows applications than any previous Windows version, it is not without limitations. If you receive an Out of Memory error and the Help About box shows a large amount of Free Memory, look at the Free System Resources percentage. Chances are you are low on system resources.

Every window, subwindow, and icon that is created requires GDI local heap space. It is theoretically possible to exhaust the system resources with only one application, such as Program Manager, if enough objects are created by the application.

Another important aspect of Windows application memory management that is not included in the Free System Resources percentage is the number of selectors. A selector is a memory pointer that is consumed with each memory allocation made by a Windows application. Windows 3.00 has a fixed number of selectors. If a Windows application allocates a very large number of small data objects, it is possible to run out of selectors. This will produce an Out of Memory error message.

Writing a Windows application to handle its own data objects more efficiently can help in this situation. If you experience a chronic problem with a particular application while few or no other applications are loaded, contact the application vendor. It is important that the vendor becomes aware of the problem so the problem can be corrected if possible. However, please note that this is a Windows 3.00 limitation, not an application problem. Writing an application to handle data objects efficiently can reduce, but not eliminate, the problem.

ENHANCED MODE PERFORMANCE TIPS

Getting the most from your machine

The following suggestions should assist in maximizing the performance of your Windows 3.00 enhanced mode installation. Many of these suggestions apply to standard and real modes as well.

1. Use SMARTDrive.

The Microsoft SMARTDrive disk caching driver can produce the largest single Windows 3.00 performance improvement. Use SMARTDrive whenever possible. Allocate the largest amount of memory to SMARTDrive without impairing your ability to run your desired applications. For basic information on SMARTDrive installation and operation, refer to the Microsoft Windows User's Guide version 3.0 manual.

2. Keep your hard disk optimized.

A fragmented hard disk greatly impacts Windows' performance, especially when a temporary swap file and/or SMARTDrive is installed. Use a hard disk optimizer program on a weekly basis to keep your disk contiguous.

3. Create a permanent swap file.

Using a permanent swap file improves performance over using a temporary one. See the "Enhanced Mode and Virtual Memory" section of this application note for more information on permanent swap file allocation.

4. Turn off graphics port trapping.

The speed of running DOS applications under enhanced mode can be noticeably improved by not selecting any of the Monitor Ports options in the Advanced section of the PIF Editor. The High Graphics option is on by default to provide the widest range of DOS application compatibility but is not required for most applications.

5. Turn off the FileSysChange= option.

Windows 3.00 enhanced mode can monitor disk access by DOS applications and send directory update messages to the File Manager. This allows the File Manager to be automatically updated by changes made to files or directories by DOS applications. However, it is not a necessity and leaving this option off (the default) speeds file access by DOS applications. To disable this feature, set FileSysChange=no in the [386ENH] section of the SYSTEM.INI file.

6. Turn off the ReservePageFrame= option.

Turn this option off if you do not require expanded memory support for DOS applications. Turning this option off ensures that you're getting the most possible memory in virtual machines. To disable this feature, set ReservePageFrame=no in the [386ENH] section of the SYSTEM.INI file.

7. Use the right number of DOS buffers.

If you are using SMARTDrive, set the number of DOS disk access buffers in your CONFIG.SYS file to 15 (that is, BUFFERS=15). Using a greater number of buffers with SMARTDrive will actually decrease efficiency. If you are not using SMARTDrive, use BUFFERS=30.

8. Use the lowest common display driver.

Using a display driver with a higher resolution or greater number of colors results in slower display performance. If you do not require the extra features of the display driver, use a driver with less capability. Usually this suggestion applies to display systems that are VGA compatible but offer an extended mode driver, such as the Video Seven or 8514. Using the standard VGA driver instead offers faster display performance but less resolution and/or color support.

9. Use the proper hard disk interleave.

Frequently, a hard disk is formatted with the wrong interleave at the dealer or factory. You can use a program such as Gibson Research's SpinRite to verify that you are using the proper interleave. Some utilities can correct your interleave without reformatting the hard disk.

EXPANDED MEMORY FOR DOS APPLICATIONS

UNDER REAL MODE WINDOWS 3.00

Real mode Windows 3.00 and DOS applications can both use the same external Expanded Memory Manager (EMM). Expanded memory can be provided either by a physical expanded memory board, or by a 386 Expanded Memory Manager. Common expanded memory boards include the Intel Above Board and AST RAMpage. Common 386 Expanded Memory Managers include Microsoft EMM386.SYS (included with the Windows product), COMPAQ CEMM.EXE (included with COMPAQ 386 machines), Qualitas 386 to the Max (386MAX.SYS), and Quarterdeck QEMM.SYS.

If a physical expanded memory board is used, you will get the best performance from real mode Windows by backfilling to provide large page frame LIM 4.0 support. Some boards do not have the hardware register support to provide large page frame LIM 4.0 – only small page frame (see the "Expanded Memory" section of this application note). All 386 Expanded Memory Managers provide large page frame LIM 4.0 support.

Remember that DOS applications require LIM 3.2 (a 64K contiguous page frame) to use expanded memory, but real mode Windows requires LIM 4.0 (does not require a 64K contiguous page frame). If you see expanded memory in Windows but not in your DOS applications, you probably do not have a 64K contiguous page frame (LIM 3.2), and you may need to rearrange adapter locations. Refer to the "Expanded Memory" section of this application note for more information.

UNDER STANDARD MODE WINDOWS 3.00

As noted in the standard mode section of "Windows 3.00 Modes and Memory Usage" of this application note, Windows 3.00 standard mode does not use expanded memory. DOS applications running under standard mode can use expanded memory only with a physical expanded memory card such as an Intel Above Board or AST RAMPAGE. 386 Expanded Memory Managers cannot be used to provide expanded memory support for DOS applications running from standard mode. Still, 386-compatible EMMs can be loaded to provide DOS application expanded memory support outside of standard mode.

UNDER ENHANCED MODE WINDOWS 3.00

Expanded memory emulation is provided internally for DOS applications running under enhanced mode. The only requirement is the presence of a 64K contiguous page frame. See the "Enhanced Mode and the 384K Reserved I/O Address Space" section of this application note for more information on page frame placement. Expanded memory for DOS applications can be allocated and/or limited via PIF parameters.

EXTERNAL 386 EXPANDED MEMORY MANAGERS

Some 386 Expanded Memory Managers have a special feature that allows standard or enhanced mode Windows to turn them off when Windows is run. Memory managers with this capability are EMM386.SYS and CEMM.EXE. Windows can turn off EMM386.SYS even if expanded memory is in use at the time. CEMM.EXE requires that no expanded memory be in use when standard or enhanced mode Windows is run. Other memory managers such as 386MAX and QEMM cannot be loaded with standard or enhanced mode Windows.

Some 386 Expanded Memory Managers provide the capability to load DOS device drivers into free areas of the 384K reserved I/O address space. This process works correctly under real mode Windows, and if you must run real mode, this is recommended for best performance. EMM386.SYS and CEMM.EXE do not provide this capability, but 386MAX.SYS and QEMM.SYS do.

If you plan to switch back and forth between real mode and standard or enhanced mode Windows 3.00, we recommend using EMM386.SYS. Neither standard nor enhanced mode will run with 386MAX or QEMM. Using one of these memory managers requires you to reboot with a different CONFIG.SYS and AUTOEXEC.BAT to switch between Windows 3.00 operating modes. Using EMM386.SYS allows you to run whichever mode you want.

DPMI AND VCPI

SPECIFICATIONS FOR DIFFERENT PURPOSES

The DOS Protected Mode Interface (DPMI) was developed by a group of industry leaders including Borland, Eclipse, IBM, IGC, Intel, Locus, Lotus, Microsoft, Phar Lap, Quarterdeck, and Rational Systems. Several members of the DPMI committee were also involved in the creation of the Virtual Control Program Interface (VCPI). DPMI is primarily a creation of Microsoft, and VCPI was formulated primarily by Phar Lap Software.

DOS EXTENDED APPLICATIONS

DOS extended applications execute code in the protected mode of the 80286 or 80386 processor. Unlike OS/2 applications, DOS extended applications are launched from standard MS-DOS or PC-DOS. Creating a DOS extended application requires a method to switch the processor to protected mode and to allocate extended memory. Until DPMI, there has been no standard method for DOS extended applications to perform these tasks plus multitask memory with other applications on 80286 processors. Hundreds of existing applications have been created using various types of DOS extenders. OS/2 extender applications that do not already support DPMI will require minor modifications to do so.

COMPARING VCPI TO DPMI

VCPI and DPMI solve two different problems. VCPI provides an interface between applications using DOS extenders on an 80386 machine, and 386 Expanded Memory Managers. For example, the 386 Expanded Memory Managers QEMM, 386MAX, and CEMM support the VCPI specification. VCPI allows applications using DOS extenders to run simultaneously with 386 Expanded Memory Managers on a 386 machine.

However, multitasking operating environments such as Windows 3.00 enhanced mode, OS/2, UNIX 386, and VM386 have memory and protection models that are not compatible with the VCPI interface. DPMI was created so these environments can run extended DOS applications. Additionally, DPMI provides support for 80286-based machines, which VCPI does not. DPMI has the capability of running DOS extended applications on a variety of processors and operating environments.

GLOSSARY

386 Expanded Memory

A device driver loaded that provides expanded Manager (EMM) memory on an 80386-based computer without a physical expanded memory board. 386 Expanded Memory Managers operate via the 386 processor's hardware capabilities.

386MAX.SYS A 386 Expanded Memory Manager from Qualitas Corp.

CEMM.EXE

A 386 Expanded Memory Manager from COMPAQ. CEMM is provided with all COMPAQ 386-based computers. It carries an extension of .EXE rather than .SYS even though it is installed in the CONFIG.SYS file like other 386 Expanded Memory Managers.

Conventional Memory The memory in your machine from 0K to 640K.

DPMI

The DOS Protected Mode Interface (DOS extender industry standard). Applications that use the DPMI specification can run in protected mode and break the 640K barrier under standard or enhanced mode Windows 3.00. The DPMI specification is available from Intel Corporation.

EMM386.SYS The Microsoft 386 Expanded Memory Manager. See the Windows 3.00 user's guide for more information.

EMM Expanded Memory Manager.

EMS

Expanded Memory Standard. There are two Expanded Memory Standards, which are designated LIM 3.2 and LIM 4.0.

Expanded Memory Manager

A device driver that provides an interface to (EMM) expanded memory. An Expanded Memory Manager, or EMM, is either specific to a particular physical expanded memory board, or uses the 386 processor.

Extended Memory Memory in your machine above 1 MB. Extended memory always starts at 1024K.

Large Page Frame

A slang term denoting the presence of bankable expanded memory pages in conventional memory. It is usually used to refer to an amount of bankable pages equal to or greater than 384K (that is, bankable pages ranging from 256K to 640K). Note that the term "large page frame" is a misnomer. The page frame is actually never any larger than four 16K pages and is always located in the 384K reserved I/O address space. Additional bankable pages in conventional memory do not make the page frame larger; they simply provide additional bankable pages.

LIM 3.2

The Lotus/Intel/Microsoft expanded memory standard (EMS) version 3.2. It provides for a maximum of four 16K bankable pages that must be contiguous.

LIM 4.0

The Lotus/Intel/Microsoft expanded memory standard (EMS) version 4.0. It provides for a maximum of 64 16K bankable pages, which do not have to be contiguous.

Page Frame

An area within the 384K reserved I/O address space that is designated the expanded memory page frame. The page frame itself can be a maximum of four 16K pages.

QEMM386 A 386 Expanded Memory Manager by Quarterdeck Corp.

Small Page Frame

A slang term denoting the presence of expanded memory that does not place bankable pages within conventional memory.

VCPI

An 80386 memory management standard created by Phar Lap Software in conjunction with other software developers.

VM

Virtual machine. VM is a protected memory space created through the hardware capability of the 386 processor.

Virtual Memory A term stating the combination of conventional, extended, and hard drive factor memory.

Virtual Hard Drive

Available space on a hard drive partition Memory Factor that Windows can address as physical memory.

VMM Virtual Memory Manager.

XMS

The Microsoft eXtended Memory Specification. The XMS provides a standard way for real mode applications to access extended memory. DOS applications running under Windows 3.00 can use the XMS to access extended memory. The XMS document and sample source code is available from the Microsoft Information Center at (800) 426-9400 [international callers should call (206) 882-8661].

1.4 Further reading



I recommend the Microsoft Resource Kit for Windows 3.0 is invaluable reading. Copies are available in Online Support or directly from Microsoft upon attendance at their seminars.

2. NewWave 3.0 / 3.04

2.0 NewWave and Windows Tips

A couple of tips for NewWave users and Windows developers...

If you want to improve NewWave's performance a lot, I (almost) thoroughly recommend the HYPERDISK disk cache. I say almost because it does slightly increase the risk of data loss if your machine crashes a lot.

It pretty much works the same as Microsoft's SMARTDRIVE, but with the addition of staged writing to disk. What this means is that when an application writes a file, the data is not immediately written to the disk. If the file is subsequently read back in, the data comes straight from the cache. If the file is written to again, the data is again written to the cache, and the original data has never had to be sent to the disk. The data will only be written to hardware if the cache fills up, or after a configurable time period (usually 2 seconds). This is particularly useful for NewWave, since the OMF's data files are continually being written and re-written. The risk is that if some software crashes badly, and you have to re-boot while the cache still has un-written data in it, you may leave the files in an inconsistent state. The cache does have hot-keys, enabling you to disable the staged writing while you run risky applications, and to re-enable it when you feel safe.

The risks are of course relative. Now that Windows has non-preemptive multitasking of virtual DOS machines, you can easily crash the machine while other applications are in the process of writing to disk without the cache. For the performance increases I get, in DOS and in Windows, I feel quite comfortable running this slight risk, and have been running with the cache permanently enabled for several months now. I am of course trying to do regular backups just in case. Several other people in the lab have it, so they might have insights on how safe they feel about it.

HYPERDISK is available in a limited-life "nagware" version (it pauses with a message screen every time you boot up), or can be licensed for about \$70.

My other tip is for Windows developers. I recently pulled off of the cica FTP server a utility which has a device driver for re-directing AUX: output to a second monitor, and also a Windows application which monitors that output and displays AUX: output in a window. If your application writes its debugging information to AUX: you can now have on-screen tracing. I haven't yet tested whether the windowed output works without a second display adaptor, but the readme file give the impression that it will.

Martin Wink, Pinewood Information Systems Division R&D Lab.

2.1 Contributed Bridges



The contributed bridges outlined below are contained on the disks than accompany this guide.

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CompuServe Mail: ID 76711,125

NewWave Hotline: (208) 323-3551 opt 3 (USA)

US Mail:

Hewlett-Packard

3410 Central Expressway

MS/81LD

Santa Clara, CA 95051

Attention: Online Support - Freeware

Contributed Bridges

Title	Type	Date
1) README First	Text Note	08/13/91 11:19 PM
2) EN004 & Greyed Out Icons	Text Note	08/05/91 12:55 PM
AdvLink for Windows	Bridge Builder	10/31/90 03:11 AM
Agenda	Bridge Builder	12/20/90 12:12 PM
Brief	Bridge Builder	06/12/90 11:34 AM
Central Point PCTools 7.0	Bridge Builder	06/12/90 12:50 PM

CompuServe Information Manager	Bridge Builder	04/22/91 11:40 PM
Control Panel	Bridge Builder	07/19/90 01:02 PM
CorelDraw	Bridge Builder	11/19/90 02:58 PM
CrossTalk for Windows	Bridge Builder	10/11/89 08:21 PM
dBASE IV (Object)	Bridge Builder	08/28/90 10:58 AM
dBASE IV (Tool)	Bridge Builder	08/24/90 09:55 AM
Designer	Bridge Builder	02/21/90 09:12 AM
DOS Format	Bridge Builder	11/01/90 07:44 AM
DOS Prompt	Bridge Builder	07/11/90 04:46 PM
DOS Prompt 2	Bridge Builder	07/03/90 01:58 PM
FastBack	Bridge Builder	08/08/90 02:32 PM
File Manager	Bridge Builder	07/11/90 04:08 PM
Forest & Trees	Bridge Builder	07/23/91 06:02 AM
Grammatik/WP 5.1	Bridge Builder	10/19/90 10:02 AM
GraphLink	Bridge Builder	07/22/90 03:50 PM
Harvard Graphics	Bridge Builder	07/28/91 07:54 PM
HP OpenView OVAdmin	Bridge Builder	05/01/91 02:30 AM
HP OpenView OVDRAW	Bridge Builder	05/01/91 02:30 AM
HP OpenView OVRUN	Bridge Builder	05/01/91 02:30 AM
IBM Current	Bridge Builder	04/16/90 03:14 PM
IconMaster	Bridge Builder	07/08/91 06:28 PM
LIST Utility	Bridge Builder	06/03/91 11:53 AM
Lotus 3.1	Bridge Builder	10/18/90 10:37 AM
MicroLink	Bridge Builder	06/01/91 02:47 PM
MS Project	Bridge Builder	09/24/90 10:35 AM
NetWare FILER	Bridge Builder	01/31/91 01:42 PM
NetWare NBACKUP	Bridge Builder	01/31/91 01:42 PM
NetWare SYSCON	Bridge Builder	01/31/91 01:42 PM
NetWare Tools	Bridge Builder	08/29/91 08:14 PM
NetWare VOLINFO	Bridge Builder	01/31/91 01:42 PM
Norton Integrator	Bridge Builder	08/15/90 10:18 AM
Object Vision	Bridge Builder	07/09/91 06:29 AM
PageMaker 4.0	Bridge Builder	07/24/91 05:24 PM
Paradox 3.5	Bridge Builder	04/25/91 09:33 AM
Perf3	Bridge Builder	11/28/90 01:11 AM
PowerPoint	Bridge Builder	07/22/90 03:50 PM
Procomm Plus 2.0	Bridge Builder	07/25/91 06:38 PM
Prodigy	Bridge Builder	07/31/91 08:10 AM
Quattro Pro 3.0	Bridge Builder	07/31/91 10:00 AM
QuickBASIC 4.5	Bridge Builder	12/27/88 04:31 PM
Quicken	Bridge Builder	01/14/91 11:28 PM
Reflection 1 for Windows	Bridge Builder	10/23/90 11:15 AM
Reflection for DOS	Bridge Builder	01/10/91 10:14 AM
Reversi	Bridge Builder	07/11/90 03:08 PM
Scanjet Bridges	Folder	04/17/91 01:50 PM
SoundBlaster FM Cntl Panel	Bridge Builder	07/04/91 11:45 AM
SoundBlaster Player Obj	Bridge Builder	05/04/91 09:33 PM
SoundBlaster Player Tool	Bridge Builder	05/04/91 09:33 PM
SuperBase	Bridge Builder	03/01/90 03:11 AM
SuperCalc 5	Bridge Builder	07/11/91 11:48 AM
Symphony	Bridge Builder	04/11/91 02:06 PM
Taipei	Bridge Builder	09/25/90 04:26 AM
ToolBook	Bridge Builder	09/12/90 11:13 AM
Windows ZIP Program	Bridge Builder	04/27/91 08:20 PM

WingZ	Bridge Builder	11/25/90 10:56 AM
Word for Windows	Bridge Builder	07/19/90 01:02 PM
WP Office Notebook	Bridge Builder	07/08/91 02:34 PM
Xtree Gold	Bridge Builder	02/26/91 04:58 PM

2.2 NewWave Network Support

NewWave 3.0 (A.03.04) was tested (and is supported with) Novell NetWare 286 (v 2.15 and later), and NetWare 386 (3.1 and later).

It is also supported with HP LAN Manager 1.1 and later, although we recommend 1.2 or later clients. Also, we recommend that if you are using a LM/X server, that it be 1.1 or later (1.0 and 1.01 had problems with changing dates of small files, which causes problems with NewWave's configuration checker). We also tested with HP LM OS/2 servers, and MS LM 2.0 servers. We added official support for MS LM with their version 2.1, with NewWave 4.0.

We do not test Portable NetWare servers, either on Unix or MPE/XL platforms. Since Portable servers are required to be fully compatible with NetWare 386 (and must pass Novell's compatibility test suite at Provo), our NetWare 386 testing should be sufficient. If, however, there is a problem, we would request that the user duplicate the problem with a NetWare 386 server. If the problem is unique to the Portable server, we would then work with the Portable NetWare vendor to identify and resolve any issues, but the ownership would be on the server vendor.

NewWave 4.0 supports Novell NetWare 2.15 and later versions; Microsoft LAN Manager 2.1 and later versions, and HP LAN Manager and LM/X 1.1 and later versions. Although support for other networks is not guaranteed, NewWave is designed to work with all networks that view the server as an MS-DOS disk drive, use the MS-NET standard, and offers Windows support.

Dale McAtee, CCD Online Support

2.3 Data Recovery in NewWave

Problem Resolution Tool

Data Recovery in NewWave

By Robert Jones, CCSY

March, 1992

One of the more unpleasant experiences in life is to receive one of the dreaded OMF unrecoverable startup errors when entering NewWave. This is usually NewWave's equivalent of saying "Your OMF tables are corrupt - Have a nice day!" The tables can become corrupt through any number of reasons, but usually the culprit is disk corruption. (I also have my suspicions about write-caching programs, but I won't go into that here!)

Of course, you back up your PC every night, so data recovery is a simple matter of recovering from your most recent backup copy. But in case you DON'T have a recent backup of your system, read on...

To my knowledge, there is no recovery tool that rebuilds a corrupt OMF table. What CAN be recovered are the individual data files that were associated with the objects on the corrupt system. This is accomplished by using the NewWave Recovery Tool. The good news is that your data is recoverable. The bad news is that ALL links/shares are lost (remember, the OMF tables that the links are stored in are NOT recoverable). The step-by-step process would be something like this:

1. You try to run NewWave, and you get an OMF unrecoverable startup error.
2. XCOPY the HPNWDATA and HPNWDOS directories to an alternate location (preferably a server). For example:

```
NET USE E: \\MYSYS\MYSHARE
E:
MKDIR BACKUP
CD BACKUP
MKDIR HPNWDOS
MKDIR HPNWDATA
C:
XCOPY C:\HPNWDATA\*. * E:\BACKUP\HPNWDATA\*. * /s/e
XCOPY C:\HPNWDOS\*. * E:\BACKUP\HPNWDOS\*. * /s/e
```

3. Use KILLDIR or the Windows File Manager to delete the HPNWDATA, HPNWPROG, and HPNWDOS directories from the corrupt system.
4. Run CHKDSK, or the Norton Disk Doctor, to ensure that your disk is free of corruption. If your disks are OK, check to see if your caching program is doing write as well as read caching. If it is, you may want to consider disabling write caching.

5. Reinstall NewWave on the corrupt system, including any applications or bridges.
6. Install the NewWave Recovery Tool into the recovered NewWave environment.

Once the Recovery Tool is installed, you can run it and attach the data that was saved in step #2 to new objects. The Recovery Tool requires you to do the recovery class by class, so, for example, you could recover all Text Notes by clicking on the Text Note icon in the Recovery Tool window, and referencing the path to the backup of the data that was saved in step #2 (E:\BACKUP\HPNWDATA in our example here). The Recovery Tool will then parse through the HPOMFxxx directories looking for all files with the extension SRD, and it will attach these files to new objects. All recovered Text Notes will be placed in a single folder, named "Recovery: Text Note" - other recovered classes will each have their own "Recovery" folder, too.

Keep in mind that ALL links are lost after this operation. For example, a NewWave Write document that had embedded graphics objects within it before the recovery will no longer have any embedded objects - the graphics objects will exist by themselves in a separate "Recovery" folder.

7. Use the DOSFileAttach Tool (or the "Attach DOS File to Object" menu command in NewWave 4.0) to attach the data files from the backup copy of HPNWDOS (E:\BACKUP\HPNWDOS in our example here) to new objects on the recovered desktop.

Note that the Recovery Tool does NOT delete the data files after it has attached them to new objects.

There is another (unsupported) way of attempting to recover data before having to use the method described above. (Note that I have only tested this alternate method on NewWave A.03.xx, NOT NewWave 4). It involves trying to fake the OMF into thinking that there is no corruption in the OMF tables when NewWave is starting up.

When NewWave shuts down cleanly on a system, a file named HPOMF.SDF is created. This file contains a list of any objects/tools that were open when the user last left NewWave. If this file is missing when NewWave starts up, the OMF goes through a verification process. Under some circumstances, you can take a copy of this file from a system that is functioning properly, and put the copy on the corrupt machine. When NewWave starts up, it thinks that the system closed down cleanly, because of the presence of the HPOMF.SDF file. No verification checks are made, so it is possible (in some circumstances) to get into NewWave.

Once back into NewWave, you can then serialize ("Export to Disk") as much of your data as possible, preferably to a server. The advantage to this method is that most links are maintained when an object is serialized. Once you have exported as many objects as possible, you can blow away the existing installation of NewWave, reinstall it from scratch, and then "Import from Disk" the objects that you earlier serialized.

2.4 Tracing Networked NewWave

The NewWave

Technical Reference diskette for A.03.04 only supports tracing for a standalone configuration, but with little effort, you can get tracing to work for a shared-network installation of NewWave.

First, let me explain what is involved for tracing in general. NewWave tracing is accomplished by replacing 4 files in the \HPNWPROG directory with tracing versions. Once NewWave is brought up, the OMF Trace object will be minimized on your NewWave desktop. Open up the object, and choose the menu pulldown to trace to file. It then copies the trace information to the file C:\TRACE.OMF (this is hard coded). You would perform your desired NWMail activity to duplicate the problem, etc. Once your PC has been brought back to DOS (either by rebooting or exiting NewWave), the C:\TRACE.OMF file can be examined to help find the problem.

This is ordinarily done by starting NewWave with the NWTRACE.BAT file (instead of NEWWAVE.BAT). This file swaps 3 of the files with the tracing version, and invokes the 4th file, HPOMFX.EXE, rather than HPOMF.EXE. It will clean up itself after you exit, but this is also done by the NEWWAVE.BAT file. The problem with the network version is, the 4 files that need to be replaced are located in the master shared NewWave directory on the file server. These files are shared by ALL users. The files have the READ-ONLY attribute set, and are located in a READ-ONLY share on the server. The NWTRACE.BAT file can not update these files.

What we suggest is to pick a time when there are NO other users on the server, and temporarily replace the four files with the tracing versions, taking care to change the file attributes properly. You can then run your test simply by running the usual NEWWAVE.BAT file, and tracing to a file. Once the test has been completed, copy the original files back to their original names, properly reset the read-only attributes of the files, and you are done.

If there is no good time to do this, simply install (or properly copy) NewWave into another directory or share on the server, and replace the four files with the tracing versions. Have the user temporarily connect to this version of shared NewWave for the test (you may need to change the entry for NETDIR= in the user's \HPNWDATA\HPOMF.INI file).

The four files to be replaced are located in the server's shared HPNWPROG subdirectory. They are:

```
HPOMF.EXE
NWLOGO.EXE
HPCREATR.NWE
HPOFFICE.NWE
```

The tracing versions are located in the \UPDSYS\HPNWPROG directory on the A.03.04 TRS disk. The files need to be decompressed with the LZWD utility from the \INSTALL directory on the TRS disk (type LZWD by itself for the syntax). Once decompressed, the files need to be copied from their tracing names to these names in the server's shared \HPNWPROG directory.

```
HPOMFX.EXE =====>HPOMF.EXE
NWLOGO.EXE =====>NWLOGO.EXE
HPCRETRC.NWE =====>HPCREATR.NWE
HPOFFTRC.NWE =====>HPOFFICE.NWE
```

To properly change the file attributes, you can use the DOS ATTRIB command, Norton's FA.EXE utility, Novell's equivalent, or NewWave's MARKNET.BAT utility.

Since we are not sure whether you have an A.03.04 TRS disk, we have already decompressed the files, and are attaching them to this HPDesk message in a self-extracting archive file. Binary copy the TRCFILES.EXE file to your PC, and execute it in a clean directory to extract the necessary files.

Good luck,

CCD Online Support

2.5 Example SOF breakdown (WordPerfect)



The details below will have limited general relevance. Unless you are involved with producing a NewWave browser then I suggest you do not bother reading it.

It is a message sent by Ian Short to a colleague who himself had a customer with a need for a WordPerfect SOF browser.

"Below an example breakdown of a serialised encapsulated WordPerfect document. This along with the information I sent you earlier should enable you to construct a message which can be sent transparently from QOffice through Openmail to NW Mail. All the numbers are a straight hex dump of a file, the rest of the information is all added comments.

NB (1) The format that an object which NW Mail receives in order to understand it is the exact same format you get when you select an object on the Desktop and select "Export Object to Disk" from the "Objects" menu. You can therefore get some example files quite easily.

(2) When converting from QOffice to Wordperfect in Openmail you assign a file type number to the Word Perfect file. Now that you are changing this Wordperfect file to a NW Object it has a new filetype number : 1478

(3) I am not very familiar with UNIX programming so check the byte ordering in some of the fields.

SFFILEHEADER

This is the first record in the file, there is only one 1 for each file

```

01 00      Recordid = 1
1A 00      Recordsize = 26 bytes
CE FA 11 D0  Magic Number = 0xD011FACE
01 00      System ID
01 00      Compression
36 91      OMF Version No
01 00      Object Count
01 00      Volume Number
00 00      MORE (True if more files on other volume)
C8 07      Year
02         Month
04         Day
0B         Hour
32         Minute

```

I will check up the relevance of the compression field.

The object count field is always going to be 1, the volume number is always going to be 1, MORE is always going to be false. The OMF version number is the one I have for the pre-release version of NW 4.0 I am running. You will

be best using the version number you have on your system, though it shouldn't really make any difference. You can set the date and time fields if you want, but they won't really be used for anything.

SFOBJHEADER

=====

There is one of these for each object in the SOF (Serialised Object Format) file. In our case there is only going to be one object, therefore there will be one of these headers.

```
02 00      Recordid = 2
16 00      Recordsize = 22 bytes
A2 01 00 00  Offset to first data file (this change each time)
8A 03 00 00  All files length (this will change each time)
00 00      Number of children object has (Always 0 in our case)
0B 00      number of object properties this object has
            (This example has 11, I will check how many we
actually need to set)
1B 00      Size of all property names, including nulls
            (This will change each time)
01 00      File count (for our purposes this will always be 1)
00 00      Flags
```

SFCLASSNAME

=====

```
03 00      Recordid = 3
08 00      Record size = 6 + class name size
02 00      Classname size
57 50      Class name (in this case the two chars WP.
```

Your encapsulation may have a different class name for Word Perfect. That will need to appear here, and will need to be the same on all NW machines, so that it can be identified as a Word Perfect object. If yours is different you will need to change the above two size fields as well.)

PROPENTRY

=====

```
;
```

I don't fully understand this record yet, but I will get more information for you.

NB. Note when a record is an odd number of bytes an extra byte is always added to pad out the record to an even number. Therefore in this case this record is actually 78(hex) bytes long.

In this example we have 11 properties these are listed out twice in this record 5. First giving each properties :

```
ValueLen      ValueDiskLoc      CacheOffset
```

2 bytes 4 bytes 2 bytes

The ValueLen is the length of the actual data held in the properties corresponding Recordid 6 record which is in the next section.

Secondly we have a null terminated string identifying each of the properties.

```

05 00    Recordid = 5
77 00    Record size = 77(hex) bytes

2C 00 80 69 00 00 FF FF
04 00 60 1B 00 00 FF FF
1E 00 00 05 00 00 FF FF
12 00 20 2E 02 00 FF FF
1D 00 20 15 02 00 00 00
01 00 C0 30 02 00 1D 00
04 00 62 00 31 49 00 00
2C 00 62 00 31 49 05 00
01 00 62 00 31 49 42 00
11 00 62 00 31 49 44 00
01 00 62 00 31 49 65 00
65 00    "e"    PROP_CREATOR
62 00    "b"    PROP_CREATED
31 49 00    "1"
31 37 00    "17"    PROP_TASKLIST
31 54 00    "1T"
31 55 00    "1U"
63 00    "c"    PROP_MODIFIED
66 00    "f"    PROP_LASTWRITER
67 00    "g"    PROP_DESKTOPFLAGS
31 00    "1"    PROP_TITLE
31 48 00 00    "1H"    PROP_OBJECTFLAGS

```

For each property listed above we now have a Recordid 6 record containing the data associated with each property. I will fax seperately a description of each property. Some of these may not be needed, some you will not have the information for, but I suggest you try to fill in as many as you can with the information you get from QOffice. For example use the sender as the creator and the last modifier, these can then be read inside NW.

```

06 00    Recordid = 6
30 00    Record size            PROP_CREATOR
20 20 20 20 20 20 20 20 53 48 4F 52
54 2C 49 41 4E 20 20 20 20 20 20 20 20 20 20 20
20 20 20 20 20 20 20 20 20 20 20 20 20 20 20 20

06 00    Recordid = 6
08 00    Record size            PROP_CREATED
29 EE 7B 3A

06 00    Recordid = 6

```

22 00 Record size
 57 4F 52 44
 50 45 52 46 45 43 54 2C 2C 4E 57 50 2C 22 57 6F
 72 64 50 65 72 66 65 63 74 22

06 00 Recordid = 6
 16 00 Record size PROP_TASKLIST
 00 02
 00 00 E8 03 00 C0 FF FF FF FF FF 00 00 00 00

06 00 Recordid = 6
 21 00 Record size
 2A A3 2A 20 54 69 74 6C 65 20 66 6F
 72 20 57 6F 72 64 50 65 72 66 65 63 74 20 2A A3
 2A 00 NB Remember the padding byte

06 00 Recordid = 6
 05 00 Record size
 1D 00

06 00 Recordid = 6
 08 00 Record size PROP_MODIFIED
 93 F0 7B 3A

06 00 Recordid = 6
 30 00 Record size PROP_LASTWRITER
 20 20 20 20-20 20 20 53 48 4F 52
 54 2C 49 41 4E 20 20 20-20 20 20 20 20 20
 20 20 20 20 20 20 20-20 20 20 20 20 20 20

06 00 Recordid = 6
 05 00 Record size PROP_DESKTOPFLAGS
 0C 00

06 00 Recordid = 6
 15 00 Record size PROP_TITLE (This is the abbreviated
 COPY of title used in NW 3.x). The full title is stored in property 1E
 above)

43 6F 70 79 20 6F
 66 3A 20 2A A3 2A 20 54-69 74 6C 00

06 00 Recordid = 6
 05 00 Record size PROP_OBJECTFLAGS
 00 00

SFDATAFILE
 =====

07 00 Recordid = 7
 12 00 Recordsize = 18
 77 03 00 00 Length of data file

51 5E DOS time stamp
44 18 DOS date stamp
2E 4E 57 50 00 Extension ".NWP"
20 File attribute

The rest of the file is all the Word Perfect data file :

FF 57 50 43-50 02 00 00 01 0A 00 01
00 00 00 00 FB FF 05 00-32 00 0A 02 00 00 0F 00
56 00 00 00 42 00 00 00-07 00 11 00 00 00 98 00
00 00 0C 00 5A 00 00 00-A9 00 00 00 03 00 07 01
00 00 03 01 00 00 00 00-FF FF 7A 00 4E 00 78 00
78 00 78 00 0A 00 01 00-00 00 00 55 5E DB 01 78
00 14 1E 0C 17 8C 0A 00-00 00 04 11 40 C9 00 87
CF 01 00 01 00 58 02 40-FF FF FF FF FF FF FF FF
FF FF FF FF FF FF FF-FF FF FF FF FF FF FF FF
FF FF FF FF FF FF FF-FF FF FF FF FF 43 6F 75 72
69 65 72 20 31 30 20 50-69 74 63 68 00 00 00 00
00 00 00 00 00 00 00-00 00 00 00 00 00 00 00
00 00 00 00 00 00 00-00 00 00 00 00 00 00 00
00 00 00 00 00 00 00-00 00 00 00 00 00 00 00
00 00 00 00 00 00 00-00 00 00 00 00 00 00 00
00 00 00 00 00 00 00-00 00 00 00 00 00 00 11
00 00 00 00 00 00 00 D3-11 08 00 55 53 55 4B 08
00 11 D3 D0 0B F7 00 90-33 D8 27 01 00 00 00 00
00 00 00 00 00 00 00-00 00 00 00 00 00 00 00
00 00 00 00 00 00 00-00 00 00 00 00 00 00 00
00 00 00 00 00 00 90 33-D8 27 01 08 53 74 61 6E
64 61 72 64 00 00 00 00-00 00 00 00 00 00 00 00
00 00 00 00 00 00 00-00 00 00 00 00 00 00 00
00 00 00 00 00 00 D0 36-C2 26 01 00 00 00 00 00
00 00 00 00 00 00 00-00 00 00 00 00 00 00 00
00 00 00 00 00 00 00-00 00 00 00 00 00 00 00
00 00 00 00 00 D0 36 C2-26 01 00 53 74 61 6E 64
61 72 64 00 00 00 00 00-00 00 00 00 00 00 00 00
00 00 00 00 00 00 00-00 00 00 00 00 00 00 00
00 00 00 00 00 00 03 08-B0 04 B0 04 B0 04 B0 04
00 00 00 00 00 00 00-00 00 00 00 00 00 00 00
00 00 01 00 00 00 00-00 00 00 00 00 00 00 00
00 00 00 00 00 00 00-00 00 F7 00 0B D0 FB FF
05 00 32 00 00 00 00-09 00 02 00 00 00 3C 02
00 00 06 00 10 00 00-3E 02 00 00 08 00 02 00
00 00 4E 02 00 00 00-00 00 00 00 00 00 00 00
03 08 08 23 7C 00 78 00-00 00 01 00 00 00 00 00
00 00 00 00 D0 0B F7 00-D0 36 C2 26 01 00 00 00
00 00 00 00 00 00 00-00 00 00 00 00 00 00 00
00 00 00 00 00 00 00-00 00 00 00 00 00 00 00
00 00 00 00 00 00 D0-36 C2 26 01 00 53 74 61
6E 64 61 72 64 00 00 00-00 00 00 00 00 00 00 00
00 00 00 00 00 00 00-00 00 00 00 00 00 00 00
00 00 00 00 00 00 D0-36 C2 26 01 00 00 00 00
00 00 00 00 00 00 00-00 00 00 00 00 00 00 00
00 00 00 00 00 00 00-00 00 00 00 00 00 00 00

00 00 00 00 00 00 D0 36-C2 26 01 00 53 74 61 6E
64 61 72 64 00 00 00 00-00 00 00 00 00 00 00
00 00 00 00 00 00 00 00-00 00 00 00 00 00 00
00 00 00 00 00 00 03-08 B0 04 B0 04 B0 04 B0
04 00 01 00 00 00 00 00-00 00 00 00 00 00 00
00 00 00 01 00 00 00 00-00 00 00 00 00 00 00
00 00 00 00 00 00 00 00-00 00 00 F7 00 0E D0 D3
11 08 00 55 4B 55 4B 08-00 11 D3 54 68 69 73 20
69 73 20 74 68 65 20 64-61 74 61 2E 20 20 45 6E
64 20 6F 66 20 44 61 74-61 2E 0A "



2.6 NewWave Containment

PROBLEM RESOLUTION TOOL

NewWave 3.0 - An Example of Containment

By Robert Jones
Cooperative Object Computing Division
2/11/91

The concept of containment with bridged objects/tools in NewWave seems to be hard for many people to easily grasp. I thought that it might be useful to create a simple example that anyone could duplicate on their own system. Linda Swett and Sara Saenz have already told me that they think this example is silly, but Glen Kalina gave me a resounding "It's OK, I guess", so I will forge ahead anyway!

In practical terms, the containment feature in bridged objects/tools allows us to drop a DOS object on a DOS tool, and have the DOS tool act on the data represented by the object. Several examples come to mind. One common example is the AdvanceLink and AdvanceLink Task bridges which come with NewWave 3.0. If both bridges are installed (assuming that you have AdvanceLink!), AdvanceLink command files can be created with the AdvanceLink Task object, and then executed by dragging and dropping the object on to the AdvanceLink tool. Another popular containment example is the grammar checking product "Grammatik". If bridged as a tool that "supports containment", word processing documents supported by Grammatik can be dragged and dropped on the Grammatik tool, and have their contents grammar checked.

When a DOS object is dropped on a tool that supports containment, the name of the data file(s) associated with the DOS object is passed to the DOS tool, and the application associated with the DOS tool acts on the contents of the file(s). (From a technical point of view, we might say that when an object is dropped on a tool that supports containment, NewWave acts on the class properties of the tool, and on the object properties of the object - sort of a split personality!)

The following example is aimed at someone who would like to create a simple demo of containment, without having to purchase and install any additional software. All you need is "command.com" and Windows "Notepad". (If you are feeling adventurous, you could use "edlin" instead of "Notepad").

We'll be creating two bridges here. When they are installed, you will be able to create a DOS batch file in NewWave, and have it execute by dropping it the tool we'll be bridging. The first of the two bridges encapsulates "command.com" as a tool that supports containment. The second bridge encapsulates Windows "Notepad" which is used as the text editor to allow the user to create the DOS "bat" file as an object. The object can then be dropped on the "command.com" tool to have the batch file executed.

The two bridges would look something like this:

	Command.Com Bridge -----	Notepad Bridge -----
DEFINE APPLICATION		
Application Type:	DOS	Windows
NewWave Type:	Tool	Object
Application Path:	C:\command.com	c:\windows\notepad.exe
Windows Title:	-	Notepad - (Untitled)
		Notepad
DEFINE OBJECT/TOOL		
Template File:	c:\mybat1.bat	c:\mybat2.bat

(Note: In both cases, the template files can be blank. However, they MUST have an extension of BAT. If the template file for the tool is blank, the tool will have no standalone function (aside from supporting containment for the "Notepad" bridge). Therefore, it may be useful to have the template file for the "command.com" tool contain some useful generic command such as "ver", "dir", or "use".)

SET ADDITIONAL INFORMATION

NewWave Class Name:	commandx	batfile
Object/Tool Title:	commandx	batfile
Command Line:	/c [FILEDIR] [FILENAME].	[FILEDIR] [FILENAME]. [PROP PROP_KEYEXT]
	[PROP PROP_KEYEXT]	

(Note: If we double click on the "commandx" tool, the contents of the "mybat1.bat" template file will be passed to "command.com" as a command. If we drop an object created with the "batfile" bridge on the "commandx" tool, then the contents of the object will be passed to "command.com").

SET PIF INFORMATION

Memory Required:	64-128kb	-
Memory Desired:	-1	-

OPTIONAL ADVANCED FUNCTIONS

Alternate Class Name:	-		commandx
Container Class Name:	-		commandx
Supports Containment?	Yes		-

When the two bridges are installed, users will be able to create objects with the "batfile" bridge, that contain DOS commands. By dropping the object on "commandx" tool (or on the Agent), the commands will be passed to "command.com", and executed as a DOS batch file. Note also that we have included "commandx" as the "Alternate Class Name" in the "batfile" bridge. This means that we can invoke our "commandx" tool by shift/double-clicking on an object created with the "batfile" bridge. The contents of the object will be passed to "command.com".

OK, so we haven't revealed the secrets of the universe here, but at least its an easy to implement demo for containment in bridged applications!

2.7 NewWave 3.04 Support Package

**SUPPORT PACKAGE
for
HP NEWWAVE 3.04**

April 26, 1991

This support package contains information to update the support organizations with the latest release of HP NewWave. It outlines the differences between versions 3.0, 3.03, and 3.04 of NewWave.

For starters, there is a write-up describing "what's new" since NewWave 3.0.

The second part of the support package is a list of problems that have been fixed since version 3.0 of this product.

The third part of the support package is a list of various tips and solutions for situations that users may still encounter within the NewWave environment. Refer to the Text Note object called "NW Information & Precautions" located in the "What's New?" folder for more tips and solutions.

The last part includes a list of new error messages since NewWave 3.0.

Refer to the NETWORKS.DOC file on Disk 1 of the End User Kit and the README file on the Support Disk of the Technical Reference Set for new and important information. There are also other existing document files on the disk sets that have been updated for this release of NewWave.

WHAT'S NEW.....**NEWWAVE INSTALLATION OPTIONS**

HP NewWave 3.04 adds several new features for supporting networks. This version of NewWave permits installation of NewWave from a LAN server to a PC, and allows network users to use a shared copy of NewWave on the network. In all other aspects, HP NewWave 3.04 is identical to HP NewWave 3.0.

INSTALLING NEWWAVE FROM A FLEXIBLE DISC TO A PC

NewWave continues to be available on 5.25" and 3.5" flexible disks. The procedure for installation from flexible disks to a standalone PC has not changed.

INSTALLING NEWWAVE FROM A LAN SERVER TO A PC

Installation from a LAN server is a new feature of HP NewWave 3.04.

Initially, NewWave is installed to the LAN server from flexible disks, typically by the network/system administrator. Installation to the LAN server only needs to be done once. Essentially, all of the NewWave files are copied to the server by executing the INSTALL /N command from Disk 1. This gives the user or network/system administrator the ability to install NewWave from the server to any PC on the network.

Users can install this version of HP NewWave on any network that is compatible with Microsoft Windows 3.0 or later. (NOTE: Any server that supports DOS and Windows as a client will work with NewWave, e.g. DOS based, UNIX based, or other servers.)

The benefits of installing NewWave from a LAN server are:

- installation time is substantially reduced,
- installation can be unattended once a few introductory questions have been answered, and
- updating users to the latest version of NewWave is dramatically simplified by reducing flexible disk operations.

NOTE: Each NewWave installation on a single computer still requires its own copy of HP NewWave 3.0 (or a NewWave User License).

USING A SHARED COPY OF NEWWAVE ON THE NETWORK

A new installation option allows multiple users to use a shared copy of HP NewWave installed on a network server.

When a user installs HP NewWave 3.04 from the network, the installation routine asks whether NewWave is going to be shared among other users of that server. If a shared copy of NewWave is to be used on the network, the installation routine only copies the user specific files to the user's PC and leaves the executable files on the server where they will be shared. During the installation process, users are also given the option of placing their data directories on their PCs or in a private volume on the server (controlling placement of the data directory has been available in previous versions of NewWave).

This release does not provide support for users sharing a copy of NewWave-Aware applications (only NewWave itself). The next release of HP NewWave will support the sharing of NewWave-Aware applications. Bridged applications that already have network installation capability will work with HP NewWave 3.04. Applications shipping with NewWave (such as NewWave Write) will install as a shared copy, consistent with the installation options requested for NewWave.

HP NewWave 3.04 now supports diskless Personal Computers.

The main benefits of sharing a copy of NewWave on the network are:

- disk space savings on each PC,
- the ability to store objects on the network server,
- a simpler method to upgrade your users to future versions of NewWave, and
- for diskless PCs, hardware cost savings and security benefits.

NOTE: Each computer that uses a shared copy of HP NewWave from a network server must own a copy of HP NewWave (or a NewWave User License).

Here are some slides that illustrate the new features for supporting networks.

HP NewWave 3.04 Supports LAN Servers

Features:

- NewWave can be installed from a LAN server
- Network users can execute NewWave from a shared copy
- Data directories can be on a PC or on a private volume on a server
- NewWave can be supported on diskless PCs

Benefits:

- Saves hard disk space on user PCs
- Makes installation easier and faster: No disk-swapping!
- Can save money via use of diskless PCs

Note: regardless of configuration, NewWave always executes locally and accesses files locally or remotely.

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HP NewWave 3.04 – Installation Options

- Install NewWave from flexible disks to a stand-alone PC

- Install NewWave from a LAN server:
 - initially installed on the server
 - then downloaded to a PC

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3/5/91 INSTALL



HP NewWave 3.04 – Configuration Options

- NewWave application files stored:
 - locally on the PC
 - or
 - remotely on a server
(network users to share a single copy)

- NewWave objects (data files) stored:
 - locally
 - or
 - remotely on a private server volume

Note: Regardless of configuration, NewWave always executes locally and accesses files stored locally or remotely

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2.8 NewWave on MS-DOS 5.0 and DR-DOS

NewWave on MS-DOS 5.0

HP NewWave 3.0 is fully compatible with MS-DOS 5.0. When an occasional installation problem is reported, the cause has always been isolated to improper configuration of the PC's CONFIG.SYS and AUTOEXEC.BAT files. The problems can be resolved by "cleaning up" the configuration files.

The following information has been compiled by the HP NewWave Hotline support staff to assist you in configuring your PC for best performance and minimal problems when using NewWave with MS-DOS 5.0.

It is important to stress that the majority of the information in this article relates to proper configuration for using Windows 3.0 with MS-DOS 5.0. Sections on networks and memory management are also included. Occasional references will be made to NewWave specific issues. The document which covers the setup mentioned above exists in serialised form on the support disk that accompanies this document.

NewWave on DR-DOS (Digital Research DOS)

As at 22nd August 1991:

Hello Simon,

We do not support DR DOS officially and neither does Microsoft. We have had numerous calls here concerning DR DOS. So far, none of our users have been able to run NewWave with DR DOS. They will either get an installation error (usually happening around disk #2) or if they are lucky enough to get NW installed they will get a runtime error (unrecoverable startup errors). Currently our lab is trying to figure out what's causing the incompatibility. We would like to be able to run on DR DOS but for obvious reasons it is officially unsupported.

May Lee,
CCD Online Support

2.9 Further reading



The NewWave Support Guide (pn: D1730-90006)

3. NEWWAVE 4.0

3.0 NewWave 4.0 Announcement

HP ANNOUNCES, SHIPS HP NEWWAVE 4.0

PALO ALTO, Calif., March 23, 1992 -- Hewlett-Packard Company today announced and began shipping HP NewWave 4.0 Desktop Manager software for Microsoft(R) Windows. A major upgrade from Version 3.0, HP NewWave 4.0 offers significant improvements in all areas of desktop management including the desktop organizer, workgroup library and work-automation support through its exclusive agent macro facility and OLE 1.0 support.

Designed to enhance the productivity of Microsoft Windows consumers, HP NewWave 4.0 lets users organize their work easily and logically, as they might with actual documents, folders and file cabinets. Users can share information with other network users and automate repetitive tasks without extensive knowledge of Windows, MS-DOS(R) or the underlying construction of their applications and systems.

"HP NewWave consistently has been viewed as a leading-edge application for users who want large productivity gains but who also want to shield themselves from the complexity of their computer systems," said Harry W. (Webb) McKinney, general manager of HP's Cooperative Object Computing Division. "As the premier desktop manager for Windows, HP NewWave 4.0 extends its powerful architecture far beyond that of any other Windows-enhancement or utility software."

Desktop Improvements

Among the improvements to HP NewWave's desktop organizer are drag-and-drop printing, 32-character titles for all data files, drag-and-drop file attachment of Windows documents to the NewWave desktop, as well as previously introduced features such as icons, folders and file drawers. Now all DOS and Windows applications are interoperable with the NewWave desktop manager. The enhanced software-installation process makes DOS and Windows applications available as icons on the desktop automatically.

"HP NewWave 4.0 is a complete solution for desktop management for Windows that lets users focus on their work, not their computers,"

said McKinney.

Other enhancements to the desktop include a new control panel that lets users customize the appearance of the desktop and an object finder that allows users to locate and open objects housed in folders without actually opening the folders. The object creator has been improved as well as printer control and wastebasket features.

Agent Enhancements

The HP NewWave Agent is a work-automation or macro facility that controls all scheduling, recording and playback of tasks or macros. The agent now offers better control of DOS and Windows applications as well as more flexibility and power as a general-purpose macro facility.

Agent tasks now can call directly any Dynamic Link Library (DLL). A DLL is a group of Windows programming functions that can be loaded into memory when needed and shared by multiple applications, such as the Paradox_Engine from Borland International. By calling the Paradox engine from an agent task, the task could perform a database query directly on the data without opening a database front end.

The agent-task language has full support for dynamic data exchange (DDE). Because DDE control is more precise than keystrokes or menu selections, the agent can get data directly from a Windows application and send it to another without going through the clipboard. DDE support also lets the task writer create macros in an application's native macro language. Applications like MS Word for Windows or development tools like Microsoft's Visual Basic that support DDE can establish a link with the agent.

Agent tasks now can be triggered by events such as opening a file on a network or receiving electronic mail. Event triggers are managed by a new event-trigger menu window. Concurrent tasks as well as chained tasks (where one task can call another) now are available.

A NewWave interface object has been added that lets users create dialog boxes for agent tasks visually. Using the interface object, task writers can create a rich user interface to acquire and display information.

An agent window also has been added as the primary interface through which tasks are displayed, made to pause or canceled. Task folders have been added that allow users to display agent tasks by pulling down the task menu and choosing a task folder.

The agent-task language is an English-like procedural language that mimics the user's physical actions. In most cases, users merely act

out their tasks and the Agent language is generated automatically. If necessary, agent-language statements can be edited to add conditional logic or user interaction or to display messages or error trapping. Task-language reference now is available on-line.

Workgroup Library

Object storage provides a workgroup library for users connected on a network. Object storage is network independent and lets users store any object on any server than can present itself to a personal computer (PC) as a logical drive. Objects can be read, removed, copied or, with a special "check-out" option, updated.

OLE Support

A significant change to HP NewWave is its support for applications that support Microsoft's object linking and embedding (OLE). HP NewWave 4.0 now supports the OLE 1.0 applications program interface (API). Previously, developers have had to write additional code in order for Windows applications to take advantage of HP NewWave. This new support is the result of an agreement between HP and Microsoft announced last September. It ensures a single development path for Windows and HP NewWave and makes standard Windows OLE applications able to use many HP NewWave features without requiring additional effort on the part of applications developers.

Specifications and System Requirements

HP NewWave 4.0 runs on any MS-DOS-compatible computer with an Intel* 80X86 microprocessor with 640 Kbytes of base memory and 2 Mbytes of extended memory running MS-DOS 3.2 or better and Microsoft Windows 3.0 or better with 10 Mbytes of available hard-disk space.

U.S. List Prices and Availability

HP NewWave Desktop Manager is \$195 and is available worldwide through PC software dealers. Registered users of the English-language version of HP NewWave 3.0 may upgrade directly from HP for \$49 by calling toll-free, (800) 525-9283 in the United States and Canada. Users who need other-language versions of the product may contact HP directly.

3.1 NewWave 4.0 support matrix

NewWave requires certain versions of MS-Windows to be installed before it will function correctly; these are detailed below:-

NewWave 3.0 = Win 3.0
NewWave 3.03 = Win 3.0
NewWave 3.04 = Win 3.0 and Win 3.0a
NewWave 4.0 = Win 3.1, Win 3.0a, Win 3.0

3.2 What's new in Version 4.0?

Automated installing (bridging) and attaching

With Version 4.0, it is easier to move your work from DOS and Windows onto your NewWave Desktop. You can auto-install applications and auto-attach data files during NewWave installation, or later with menu commands.

If you have Windows 3.1 or later, you can install an application just by dragging its file icon from the Windows File Manager onto the NewWave Desktop. Once an application is installed into NewWave, you can drag its data files from the File Manager into NewWave.

To auto-install Windows and DOS applications, go to the Settings menu and choose Find Applications to Install. To auto-attach the data files of any application installed into NewWave, go to the Settings menu and choose Find DOS Files to Attach.

To install an application yourself, go to the Settings menu and choose Install Application. To attach a specific file, go to the Objects menu and choose Attach DOS Files to Object.

For more information, choose Working with NewWave from Help, then click on the topic, Moving Work In and Out of NewWave.

New Desktop Organizer Features

***Drag-drop printing:**

You can print almost any document by just dropping its icon onto the NewWave printer icon.

***Online Help:**

Online Help is greatly expanded, including Agent Help and error messages.

***Finder:**

Find and open objects quickly. Search by title, keyword, or object type. You can use the Finder in Agent tasks too.

***NewWave Control panel:**

Customize your Desktop colors and icon placement using the NewWave Control Panel in the Settings menu.

***Titles:**

Objects and tools moved from DOS can now have editable titles up to 32 characters long.

***Minimize:**

You can minimize more objects, such as folders and the File Drawer.

***Create A New:**

The window has a new look and the process is streamlined. You can create several objects before closing the window.

***New commands:**

Use Screen/Menu Help to get information about the following new commands:

Action menu

Empty WasteBasket

Edit menu

Find Object

Objects menu

Detach DOS File from Object

Attach DOS File to Object

Convert to Compatible Object

Settings menu

NW Control Panel

Find Applications to Install

Install Application

Find DOS Files to Attach

Application Attributes

Workgroup Libraries Features

Object Storage is a workgroup library for networked users.

Users can drag objects from their PCs and drop them into the Object Storage network location. Other users can remove the object or copy it. When a user checks an object out to modify it, a record is kept in "Attributes."

New Work Automation Features*** DDE support:**

NewWave Agent tasks and the Agent Window have full support for Dynamic Data Exchange. Agents can directly exchange data with, and send commands directly to, applications that use DDE.

*** DLL support:**

You can call Dynamic Linked Libraries directly from Agent tasks.

*** Menu record/playback:**

You can record and playback tasks from object menus.

*** New Agent window:**

Open the Agent tool on your desktop. You manage and monitor tasks in the window that opens.

* Task Containers and Task Categories:

Organize menu tasks for a particular object, or for a whole class of objects.

* Event-triggered tasks:

Program an Agent task to start whenever a certain event happens. You can monitor network shared files, for example.

* Task Interface Object:

You have a visual way to create dialog box interfaces for Agent tasks.

* Online Help:

Specific reference and general topics for Agent programming are now available online.

* Arrays and Pointers:

You can use these data structures in Agent Tasks.

* Concurrent Tasks:

Mark a task "concurrent" so it can run while another task is running. This means one task can launch or call another (nested) task.

* Task Nesting:

Any Agent Task can call another task. It can pass parameters to the second task as variables.

* Direct access:

Tasks can access objects in folders without having to open the folder first.

3.3 Updating from a previous version of NewWave

Consistent object names across NewWave versions

If NewWave 3.0 users share objects with NewWave 4.0 users, they may have inconsistent names for objects. This can cause problems when they share objects, or when both access the same Object Storage location.

The rules are different for titling objects created from DOS data files belonging to applications that are not NewWave-aware. When NewWave 3.0 gets such a file it makes an object with a prefix DOS: and a maximum of 8 additional characters. NewWave 4.0 does not add the prefix, and allows a maximum of 32 characters.

To make sharing files easier, you can modify the 4.0 version. Exit NewWave and Windows. In the WIN.INI file, add a [NewWave Office] section if you don't already have one. To turn off the 4.0 title rule for DOS (encapsulated) objects, you want the following:

```
[NewWave Office]
NormalTitleForEncap=NO
```

To turn the 4.0 naming convention back on, either delete this line, or change the value to YES.

Changes to WIN.INI take effect only after you restart Windows and NewWave. This procedure does not rename any existing objects; it only changes the naming of subsequent ones.

3.4 NewWave 4.0 Patches



The patches outlined below are available on the disks provided with this guide.

Greetings,

Some of you may have seen this message before... Enclosed with this desk message are four patches for NewWave 4.0. It is being resent, since one of the patches, NW4IN1.ZIP, was found to be bad, and has been recalled. The patch had a defect which prevented it from working on a Windows 3.0 system (it worked fine on Windows 3.1 systems). NW4IN2.ZIP fixes this problem, and has been tested with both versions of Windows.

We are also adding a text file, which documents NewWave installation errors (INxxx).

The first patch, NW4EN1.ZIP, fixes a problem where minimized full screen DOS apps can get lost when minimizing NewWave 4.0, when running Windows in 386Enh mode.

The second patch, NW4KB1.ZIP, fixes a problem with EN045 errors when doing drag/drop printing on encapsulated Windows applications. This problem will ONLY be seen if you are using a keyboard setting OTHER than USA, FRENCH, or GERMAN.

The third patch, NW4TSK.ZIP, contains an UNSUPPORTED utility, that allows both NewWave 4 and Windows 3.1 applications to show up in task manager when you press (CNTRL+ESC). This is accomplished by specifying the enclosed task manager replacement in the Win3.1 SYSTEM.INI file. This utility has been tested at CCD, and appears to work with no problems, but if you experience any problems with it, we would like to know about it. Remember that it is unsupported.

The fourth patch, NW4IN2.ZIP, contains a modified NewWave installer that fixes two install problems with Novell NetWare networks. The first is a problem with hangs that occurs when you try to do a network administrator install (INSTALL /A) from a (hard) diskless PC. The second fixes an IN007 error that occurs when doing a user install from the server. This only occurs when you have NetWare MAP ROOT search drives for your shared Windows directories. This does not occur when the Windows drives are in your DOS path. Currently, the fixed installer is only available for English NewWave. Again, this patch replaces NW4IN1.ZIP, which has been recalled due to a defect which prevented it from working with Windows 3.0.

There are README files with instructions, etc, in each archive file. You need PKUNZIP to extract the files. If you do not have PKZIP, it is obtainable from FreeBB at Corporate.

Again please let us know if you have any problems with any of the

patches enclosed. If you had forwarded on the earlier message, please forward this message on to the same individuals.

Good Luck,

CCD Online Support

HPDESK: Ccd ONLINE /HPD600

3.5 NewWave 4.0 Transition disks (NW3 apps -> NW4)

This software is provided by CCD to enable NewWave 4.0 users to re-install some of their NewWave 3.0 applications that they had come to rely on. There is no guarantee that these will remain available from CCD.

The NewWave 4.0 Transition disk is now available on FreeBB. This disk can be used to install NewWave Write, NewWave Dictionary, Lotus 123, HP Charting, and HP Drawing Gallery Browsers on a new NewWave 4.0 system. The components are NewWave 3.0 (A.03.04) versions with no enhancements. The files are named as follows:

NWTRANUS.EXE - US English NW Transition Disk
NWTRANUK.EXE - UK English NW Transition Disk
NWTRANFR.EXE - French NW Transition Disk
NWTRANGR.EXE - German NW Transition Disk

Contact Freebb SUPPORT at Corporate if you need information on how to access FreeBB.

Good luck,

CCD Online Support

HPDESK: Ccd ONLINE /HPD600



The UK & US versions of the software are supplied on the disks provided with this guide.

3.6 Further reading



I recommend the NewWaveMail Support Guide, (if one has been produced), the NewWaveMail 4.0 SE3018 course, (if it's been finished)!

4. NewWaveMail 3.0 & 4.0

4.0 Version Matrices

This area is already well served by comprehensive documentation; for this reason I shall only reference the source of this information.

4.0.1 Product History



See the Technical Guide page ix for a product history.

4.0.2 1.0, 3.0 & 4.0 Feature list



See the IMS page 1-2 for feature list of 1.0 and 3.0. For 4.0 see either section 4.4.1.3 of this document or the Technical Guide page viii..

4.0.3 NewWaveMail supported configurations



See the Technical Guide page x or section 4.4.1.5 of this document.



4.0.4 DOS 5.0 Support for Pinewood products

DOS 5.0 Support for Pinewood products (4/11/91)

THIS IS A SECOND UPDATE ARTICLE ON DOS 5.0 Support for Pinewood products.

It now includes results of NewWave Mail testing on this operating system and completes Pinewoods testing of DOS 5.0. New information in this article...

The testing of NewWave Mail on DOS 5.0 is now complete and the product gets a clean bill of health. The main configurations tested are Lan Manager connectivity to HP Desk and EDCL connectivity to OpenMail. In each case the full set of NewWave Mail regression tests have been run without revealing any problems attributable to DOS 5.0.

Complete support positioning statements...

<u>Product</u>	<u>Current Position on support</u>
1. AdvanceLink/DOS	Version B.02.00 does not fully support DOS 5.0 (see note 1). Version B.02.20, expected to be available early in 1992, will fully support DOS 5.0.
2. AdvanceLink/NewWave	Version A.03.02 has been tested and supports DOS 5.0
3. NewWaveMail	Version A.03.00 has been tested and supports DOS 5.0
4. AdvanceMail	Version A.04.01 has been tested with the following verified: HP Desk NetIPC, HP OpenMail: Sockets, EDCL, FTP
5. HP Word/PC	No plans to support DOS 4.0 and above.
6. HP OfficeFax	Current version is supported (follow special installation instructions given in note 2).

Notes:

Note 1 The two Known problems with AdvanceLink B.02.00 and DOS 5 are: (I have removed these - see full article in PWD ANSWERBACK).

Note 2: HP OfficeFax installation instructions under DOS 5.0: (I have removed these - see full article in PWD ANSWERBACK).

Vijay Jogia. PWD-Product and Service Marketing.

4.0.5 Networking Support



See the July '91 issue of Customer Support news for the latest published details on what networking products are supported with NewWaveMail. Add to this Lan WorkPlace support using Novell sockets to NS3000 (running on an HP3000), completes the picture.

Alternatively see page 2-4/5 which includes this networking support detail and additional information on Serial connections support.

4.1 NewWaveMail Patches

4.1.1 DC0020

```

PWD PATCH ID.....: DC0020
DATE.....: 18th July 1991
PRODUCT .....: NewWave Mail
VERSION .....: A.03.00
PROBLEM TEXT.....:
                   : When using the initial. surname /org_unit
                   : format: e.g A. Rudge /BTC1EC, with auto. name
                   : checking ON the message "Node is not
                   : registered" is displayed. (This node is quite
                   : valid and is configured in the openmail server
                   : directory). With auto. name checking OFF. If
                   : "Check Distribution List" is used after enter-
                   : ing names in the same format as above the
                   : names are accepted.

SR .....: 1650/165704
PICS ID .....: E1539595
RESPONSE CENTRE .....: UK
TRACKER CALL ID.....: 15506, EPIC: C467
ENGINEERS: RESPONSE .....: Julie Gregson
          SUPPORT .....: Simon Boothroyd
          LAB .....: Ian Bennett
CUSTOMERS & ISSUE DATES.: British Telecom
COLD OR PROGRAM PATCH...: PROGRAM
PATCH LOCATION(S).....: LASERROM server \online\patch\dc0020
PATCH VERSION STAMPS ...: A.03.01 (Distribution List Component only)
PERM FIX IN VERSION.....: Next version (A.04.00 or equivalent)
FILES INFO .....:
                   : FIX FILE          FILESIZE  DATE
                   : -----
                   : 7\hpnwprog\hpdlom.nwe 189296   19th July 1991
                   : This patch will also fix the following problem
                   : which was discovered during problem
                   : reproduction:
                   : With auto. name checking on, entering the name
                   : Z SMITH (which is a unique initial for the name
                   : Smith), results in the message, "name not
                   : unique,
                   : do you wish to see alternatives" answer YES
                   : results in "DL161 - Name is no longer
                   : ambiguous" - The HELP screen says the name
                   : entry in the directory must have been changed
                   : since the name check was request. This is not
                   : true.
                   : To install the patch simply copy the file
                   : HPDL0M.NWE to the relevant HPNWPROG
                   : directory, overwriting the old HPDL0M.NWE
                   : file. This should be done from DOS when NewWave is NOT running.

```


4.1.2 DC0026

```
PWD PATCH ID.....: DC0026
DATE.....: 23-OCT-91
PRODUCT .....: HPNewWave Mail
VERSION .....: A.03.00
PROBLEM TEXT.....:
```

When printing an Incoming/Outgoing Message which is in Detailed View to a postscript printer, (inc. LaserJet w/ postscript cartridge), each part of the message is printed on a separate page.

```
SR# .....: 1600/114512, 5003/021089
PICS ID .....: not known
EPIC# .....: 1209, (NARC)
RESPONSE CENTRE .....: MVRC
TRACKER# .....: 16290
ENGINEERS: RC .....: ROB BIAGINI, (CEC: BOB BRADLEY)
          PWD ONLINE: SIMON BOOTHROYD
          LAB .....: RICHARD HANCOCK
CUSTOMER/ISSUE DATES : HITACHI
PATCH LOCATION(S)....:
PERM FIX IN VERSION...: NEWWAVE MAIL IV
```

FILES INFO

TARGET FILE	DISC SERVER #	CONNECT METHOD	FILE SIZE	CREATION DATE	PATCH VERSION
HPNWMPROG\HPNWMCNT.NWE	N/A	OPENMAIL	N/A 295904	24/10/91	X.03.21
HPNWMPROG\HPNWMCNT.NWE	N/A	DESK	N/A 293328	23/10/91	X.03.21

The Patch is located on a floppy disk in PWD PRODUCTS 3 diskbox. The floppy is labelled 'NWMail Patch DC0026 PostScript Printing problem: SRs:- 1600/114512, 5003/021089'.

```
:
TO INSTALL .....: RENAME CURRENT 'HPNWMCNT.NWE' FILE AND REPLACE
                  : WITH THIS FIX FILE. CHECK INSTALLATION BY
                  : SELECTING 'ABOUT..' OPTION UNDER ACTION MENU IN
                  : EITHER IN TRAY, OUT TRAY OR MESSAGES TO SHOW
                  : VERSION NUMBER AS BEING X.03.21.
```

```
:
CHECKLIST .....: Patch Id in Tracker Call           : __YES
                  : SR # in Tracker Call                   : __YES
                  : Patch Id in SR                       : __YES
                  : Tracker Id in SR                     : __YES
                  : Is this a patch to a prev.patch       : __NO
                  : SCO completed (ADVLINK family only) : __N/A
```

4.1.3 NWM0001

```
*****
**** This patch header is for HP Internal Use Only ****
*****
```

```
PWD PATCH ID.....: nwm0001
DATE.....: 17.01.92
PRODUCT .....: NEWWAVEMAIL
VERSION .....: A.03.00
PROBLEM TEXT.....:
```

Using a SOCKETS connection only, if an attempt is made to connect to the mail server while another previously established sockets connection (eg. an ftp or telnet connection) is in use, the attempt to connect to the mail server will not succeed.

The mail truck displayed in the minimized Transfer Summary will be displayed in its "italicised" speeding form, indicating that the connection is being established, but in fact the connection will never be established, the transport looping during this time.

```
SR# .....: 1653/008805
PICS ID .....: {PICS id from the Response Centre}
EPIC# .....: {EPIC # if site escalated}
RESPONSE CENTRE .....: DANISH
TRACKER# .....: 16267
ENGINEERS: RC .....: OLE JOERGSHOLM
                PWD ONLINE: SIMON BOOTHROYD
                LAB .....: RICHARD HANCOCK
CUSTOMER/ISSUE DATES : OTICON
PERM FIX IN VERSION..: NEWWAVEMAIL IV
PATCH LOCATION.....: ZAPHOD: /support/guest/pc/newwavemail/nwm0001
FILES INFO .....
```

```
/support/guest/pc/newwavemail/nwm0001/openmail/hpsoc ll
total 1
-rw-r--r--  1 support  guest      8288 Jan 17 16:58 dllsock.dll
```

```
/support/guest/pc/newwavemail/nwm0001/hpdesk/hpsoc ll
total 1
-rw-r--r--  1 support  guest      8288 Jan 17 16:56 dllsock.dll
```

```
:
TO INSTALL .....: 1. DISCONNECT NEWWAVEMAIL TRANSPORT FROM SERVER.
:
: 2. RENAME THE EXISTING DLLSOCK.DLL, WHICH IS
:   LOCATED IN THE HPNWPROG\HPNWMTC\ DIRECTORY,
:   TO ANOTHER FILE AND COPY THE APPROPRIATE
:   PATCHED DLLSOCK.DLL TO THIS FILE.
:
: 3. EXECUTE THE SOCKETS.BAT BATCH FILE TO
```

- : INSTALL THE NEW FILE.
- :
- : 4. CHECK THE VERSION OF THE SOCKETS LIBRARY
- : INSTALLED BY CHECKING THE 'ABOUT' MENU
- : IN EITHER OF THE NEWWAVEMAIL TRAYS. IT
- : SHOULD NOW READ A.03.02.

- CHECKLIST: Patch Id in Tracker Call : Y
- : SR # in Tracker Call : Y
- : Patch Id in SR : Y
- : Tracker Id in SR : Y
- : Is this a patch to a prev.patch : No
- : SCD completed (ADVLINK family only) : N/A
- :

&dBResponse Centre Engineer : Please enter this patch ID in your TRAKII call.

4.1.4 NWM0002

```
*****
**** This patch header is for HP Internal Use Only ****
*****
```

```
PWD PATCH ID.....: nwm0002
DATE.....: 28.01.92
PRODUCT .....: NEWWAVEMAIL
VERSION .....: A.03.00
PROBLEM TEXT.....:
```

When NewWaveMail is being run from a NETWORKED NewWave installation on a Novell Netware server, then when a distribution list merge takes place the PC hangs intermittently or displays a DL164 error message.

NOTES:

- 1]. The Novell Server is NOT the MAIL server; it is just where NewWave is installed.
- 2]. The root cause of this problem is NOT NewWaveMail but either Novell Netware or Windows, (or the way that they work together). It can be reproduced with many Windows and NewWave applications, such as NewWaveWrite. In particular applications that keep a file open until the application closes-down and furthermore the problem only happens when there are multiple instances of the same application open at the same time.

```
SR# .....: 1650-1774615
PICS ID .....: N/A
EPIC# .....: 1037
RESPONSE CENTRE .....: SWISS
TRACKER# .....: 16758
ENGINEERS: RC .....: CHRISTOPH STREIT
                PWD ONLINE: SIMON BOOTHROYD
                LAB .....: RICHARD HANCOCK
CUSTOMER/ISSUE DATES : TELEKURS
PERM FIX IN VERSION..: NEWWAVEMAIL IV
PATCH LOCATION.....: ZAPHOD: /support/guest/pc/newwavemail/nwm0002
FILES INFO .....:
:
TO INSTALL .....: 1.DISCONNECT NEWWAVEMAIL TRANSPORT FROM MAIL
:                SERVER.
:
:                2.RENAME \HPNWPROG\HPDLOM.NWE TO ANOTHER FILENAME.
:
:                3.REPLACE THE PATCH FILE CHOSEN, (ENGLISH-e32 OR
:                GERMAN-g32), TO:
:
:                \HPNWPROG\HPDLOM.NWE
```

```

:
: 4.CHECK THE VERSION OF THE DISTRIBUTION LIST
:   INSTALLED BY CHECKING THE 'ABOUT' MENU
:   IN ANY DISTRIBUTION LIST ON THE PC.
:   IT SHOULD NOW READ X.03.34 FOR THE PRE-RELEASE
:   AND A.03.02 FOR THE FINAL PATCH VERSION. THE
:   LANGUAGE WILL ALSO REFLECT WHETHER THE ENGLISH
:   OR GERMAN PATCH IS INSTALLED.
:
: The patch is now installed..

```

PATCH INFORMATION

```

/support/guest/pc/newwavemail/nwm0002

```

```

-rw-r--r--  1 support  guest    185616 Feb 12 11:45 hpdlom.nwe.e32
-rw-r--r--  1 support  guest    186624 Feb 12 11:51 hpdlom.nwe.g32
-rw-r--r--  1 support  guest    185664 Feb 12 11:37 hpdlom.nwe.x34
-rw-r--r--  1 support  guest      3123 Feb 11 14:55 nwm0002.hdr

```

```

:
CHECKLIST .....: Patch Id in Tracker Call      : __Y
: SR # in Tracker Call                : __Y
: Patch Id in SR                      : __
: Tracker Id in SR                   : __
: Is this a patch to a prev.patch     : __no
: SCO completed (ADVLINK family only) : __N/A
:

```

Response Centre Engineer please enter this patch ID in your TRAKII Call.

4.2 Known Problems

4.2.1 Installing NewWaveMail 3.0 onto NewWave 4.0



See sections 4.4.1.1 and 4.4.1.3 for details of known installation problems with both NewWaveMail 3.0 and 4.0 regarding the changes made for NewWave 3.1/4.0.

4.2.2 Selecting fonts for printing

There has been some significant confusion regarding the printing of NewWaveMail messages, especially with regard to the type and size of fonts available for use.

The NewWaveMail Technical Guide documents that, though there are WIN.INI settings which may be set by the user, there is no guarantee that NewWaveMail will act by these settings if it determines that data-loss, (from the end of the lines), would result.



Do not be confused by the problem with postscript printing, (see section 4.1.2), which is unrelated to the general printing confusions.



It is recommended that the technical guide be referenced for further clarification on this general issue.

Note the message below regarding the plans for NewWaveMail 4.0 in this area:

Hello Raymond,

Below I have documented page 3-11 of the current NewWave Mail Manual. This shows the WIN.INI entries that can be used to customise the way your messages are printed. There are no planned changes to these in the next release. (NewWaveMail 4.0).

[HPCCBROWPRINT]

PrintMargin=n where n is the number of columns from edge of printing area to left margin.
PrintIndent=n where n in the number of columns to indent main text from left margin.
PrintPitch=n where n is the number of characters across each inch of paper.
PrintRows=n where n is the number of rows on the page
PrintFont=fontname the name of an available font.

I hope this helps you.

Regards, Russell Julian, PWD Support.

4.2.3 Service Requests

If you need to get a comprehensive listing of the service requests and/or enhancement requests then you should use the following:-

The selection criteria used with SR or SRDISC is:

For KPs

```
PROD-NO=D2103B,D2109B
UPDATE=03
FIX=00
FAC-CLASS=KP
STATUS <> SO,CL
```

```
SEVERITY
PRIORITY
```

For ERs

```
PROD-NO=D2103B,D2109B
UPDATE=03
FIX=00
FAC-CLASS=ER
STATUS <> SO,CL
```

STATUS

The following few pages contain a snapshot of the service requests in against the NewWaveMail product on the 22nd of May 1992.

This report is sorted on the following keys:

```
SEVERITY      PRIORITY
```

Selection Criteria for this report are:

```
PROD-NO      EQ D2103B
PROD-NO      EQ D2109B
UPDATE       EQ 03
FIX          EQ 00
FAC-CLASS    EQ KP
STATUS       NE SO
STATUS       NE CL
```


SR # 1650165704 NEWWAVEMAIL-OPENMAIL D2109B 03.00 Sev: C Pri: 1

Classification: Known problem Status: Awaiting release
Number of Duplicates: 0

Problems introduced in Auto Name Checking between pre-release & A.03.00

SR # D600101535 NEWWAVEMAIL-HPDESK D2103B 03.00 Sev: L Pri: 5

Classification: Known problem Status: Open known problem
Number of Duplicates: 0

Can't transfer mail and incorrect error message..

SR # 5003016071 NEWWAVEMAIL-HPDESK D2103B 03.00 Sev: M Pri: 2

Classification: Known problem Status: Open known problem
Number of Duplicates: 0

When printing to a DeskJet the output prints in a very tiny font.

X PRINTING

SR # 5000672832 NEWWAVEMAIL-HPDESK D2103B 03.00 Sev: M Pri: 3

Classification: Known problem Status: Open known problem
Number of Duplicates: 0

NWMail unable to handle distribution lists containing names with digits.

SR # 1600117747 NEWWAVEMAIL-HPDESK D2103B 03.00 Sev: M Pri: 3

Classification: Known problem Status: Open known problem
Number of Duplicates: 0

Message with no sender/subject appears; connection to server terminates

SR # 5003022780 NEWWAVEMAIL-HPDESK D2103B 03.00 Sev: M Pri: 4

Classification: Known problem Status: Open known problem
Number of Duplicates: 0

Enhancement: Unable to install networked NWMAIL via Software Vendor.

X INSTALL

SR # 5000654244 NEWWAVEMAIL-HPDESK D2103B 03.00 Sev: M Pri: 4

Classification: Known problem Status: Open known problem
Number of Duplicates: 0

Request the error message CC362 be given before a reply is composed.

X ERROR

SR # 1653002055 NEWWAVEMAIL-OPENMAIL D2109B 03.00 Sev: M Pri: 4

Classification: Known problem Status: Open known problem
Number of Duplicates: 0

Incorrect msg (65535 msgs awaiting transfer) displayed in Xfer summary.

SR # 1600114512 NEWWAVEMAIL-HPDESK D2103B 03.00 Sev: M Pri: 5

Classification: Known problem Status: Open known problem
Number of Duplicates: 1

Messages in Detailed View don't print properly on Postscript printers

SR # 1600117630 NEWWAVEMAIL-HPDESK D2103B 03.00 Sev: M Pri: 5

Classification: Known problem Status: Open known problem
Number of Duplicates: 0

Junk characters seen at the beginning of Text Notes in incoming messages

SR # 1653008805 NEWWAVEMAIL-HPDESK D2103B 03.00 Sev: S Pri: 3

Classification: Known problem Status: Awaiting release
Number of Duplicates: 0

Cannot connect to server if other applications are also using sockets

SR # 5003035337 NEWWAVEMAIL-OPENMAIL D2109B 03.00 Sev: S Pri: 3

Classification: Known problem Status: Open known problem
Number of Duplicates: 0

NWMail aborts after receiving msg from UNIX via OM -with an invalid Add.

X ABORT

SR # 5000667378 NEWWAVEMAIL-OPENMAIL D2109B 03.00 Sev: S Pri: 4

Classification: Known problem Status: Open known problem

Number of Duplicates: 0

Request to be able to scroll across long addresses in Alternative Window

X USERINTERFACE

4.3 Installation



See sections 4.4.1.1 and 4.4.1.3 for details of known installation problems with both NewWaveMail 3.0 and 4.0 regarding the changes made for NewWave 3.1/4.0.



The Technical Guide contains a section on installation (chapter 3), together with details of problems which may be encountered, (Appendix B, page 10).



The NewWaveMail IMS, chapter 6, details the installation of NewWaveMail 3.0 only. Significant changes are currently, (May '92), being made to cope with the problems outlined in sections 4.4.1.1/3 of this document.

4.4 Documentation

4.4.1 PWD Answerback NewWaveMail articles

During the last year several useful articles have been written; they are reproduced here to save your time in locating them. The titles are listed below:-

- 4.4.1.1 Installing NewWave Mail 3.0 onto NewWave 3.1 (incl. pre-releases)
- 4.4.1.2 NewWave Mail and locating HP Sockets errors
- 4.4.1.3 NewWave Mail installation problem and NewWave Mail futures
- 4.4.1.4 NewWave Mail w/ networked HPNWDATA directory on Netware Server
- 4.4.1.5 NewWave Mail, NewWave and MS-Windows version compatibilities
- 4.4.1.6 NewWave Mail objects and NewWave Agent tasks

4.4.1.1 Installing NewWaveMail 3.0 onto NewWave 3.1 (inc. pre-releases)

AUTHOR: Simon Boothroyd / HP1600

ENTITY: PWD Online Support

This article describes a problem experienced when installing NewWavemail 3.0 onto NewWave 3.1, (also known as Breaker 3), how this has been resolved for the future and how you can workaround it now.

The Problem

In NewWave 3.0 compressed applications, such as NewWaveMail 3.0, may be installed using NewWave supplied utilities.

As of NewWave 3.1 these utilities will not be available and NewWaveMail 3.0 will therefore not automatically install onto NewWave 3.1. The decompression utilities are also not available for current and future pre-releases of NewWave 3.1, though for the 'early' pre-releases they still exist.

The Future

NewWaveMail 4.0, (a release for HPDeskManager only), will correct this problem by automatically decompressing itself as part of the installation process.

In The Meantime

For those who need to install NewWaveMail 3.0 onto NewWave 3.1 and it's relevant pre-releases you will have to manually decompress your copy of NewWaveMail 3.0.

Firstly you should request the archived files from PWD HOTLINE/HP1600 by sending a message with a subject of NWMINS; the file will be returned automatically. De-archive this on your PC with LHARC, or another de-archiving tool for .LZH files, to explode it into it's component batch files and executable file.

Use XCOPY to copy the desired version of NewWaveMail 3.0, (ie. NewWaveMail for a HPDeskManager or OpenMail server), from the installation disk to the root directory of a local/networked hard disk.

For example, to XCOPY from an installation disk in drive A: to the root directory of drive D: you should run XCOPY thus :-

```
xcopy a:\d:\ /s /e /v
```

These options will ensure that the file and subdirectory structure is copied correctly and that it is verified as having done so.

Now use the batch files and executable file to decompress it and finally install from the decompressed directories.

Using the above example XCOPY example you should run NWMUNCMP thus:-

```
nwmuncmp d:
```

NOTES

. The .LZH file NWMINS.LZH will explode on de-archiving to three files:

```
NWMINS.LZH ---> nwmuncmp.bat, uncomp.bat, lzwd.exe
```

. The nwmuncmp.bat file calls uncomp.bat which in turn calls lzwd.exe. Therefore all three files should be placed in a directory which is included in your PATH command in AUTOEXEC.BAT.

. Once you have decompressed NewWaveMail 3.0 it will no longer fit onto a single 1.2MB disk.

. If you intend to install NewWaveMail 3.0 on several PCs running NewWave 3.1 it is recommended that XCOPY be used to copy the decompressed NewWaveMail 3.0 to a network file server.

. Contact PWD SUPPORT/HP1600 if you experience any difficulties with this.

21st November 1991

4.4.1.2 NewWave Mail installation problem and NewWave Mail futures

PWD ANSWERBACK NEWSLETTER #161

HP INTERNAL USE ONLY.

TITLE : NewWave Mail installation problem and NewWave Mail futures

AUTHOR: Vijay Jogia / HP1600 +44-344-763631

ENTITY: PWD Product and Service Marketing

Contents of this article:

- 1.0 Beware: NewWave Mail 3.0 under a "brand new" NewWave 4.0 installation
- 2.0 NewWave Mail for HP-DeskManager version 4.0 - planned release
- 3.0 NewWave Mail for OpenMail version version 4.0 - planned release
- 4.0 Future Plans for NewWave Mail for OpenMail

1.0 Beware: NewWave Mail 3.0 under a "brand new" NewWave 4.0 installation

This article is to inform you that the current version of NewWave Mail 3.0, will not run under a "brand new" NewWave 4.0 installation.

Problem statement

Currently NewWave Mail 3.0 converts small received text files into Text Notes and converts large (>16K bytes) received text files into NewWave Write documents.

Since NewWave 4.0 will not include NewWave Write, in order to support NewWave 4.0, NewWave Mail 3.0 must be able to convert large received text files into some other compatible object type.

Planned Solution

The new release of NewWave Mail for HP DeskManager 4.0 will resolve the above NewWaveWrite unbundling issue. It is expected to be released for manufacturing from PWD on 30th April, 92. First customer shipments would then commence from middle of June, 92.

PWD will also roll out a new release of NewWave Mail for HP OpenMail at the same time, so that it will also work with NewWave 4.0.

Customers upgrading from NewWave 3.0 to NewWave 4.0

Customers wishing to upgrade from NewWave 3.0 to NewWave 4.0 will be able to use NewWave Mail 3.0, providing NewWave Mail 3.0 was installed under NewWave 3.0.

Current stocks of NewWave Mail

Current stocks of NewWave Mail for HP Desk (product number D2103B) and for HP OpenMail

(product number D2109B) are expected to be replaced by D2103C and D2109C respectively by June 92.

2.0 NewWave Mail for HP DeskManager version 4.0 - planned release

The next release of NewWave Mail for HP DeskManager presently, scheduled for first customer shipment in June'92, will support NewWave 4.0 and will have the following new features and functions:

1. Server and Workstation Access Functions

- Shared Workstation

Users will be able to share workstations, each with their own NewWave environment.

- Guest User

A user who is not specifically registered to be a user of a shared PC, may be able to access as a "guest" any NewWave desktop on shared PC.

- Traveling User

A user will have the ability to access his/her mail server from more than one PC in the network.

2. Server Filing Cabinet

This feature will provide the user with access to their HPDesk filing cabinet located on the HP3000 server, and enable them to set up shared workgroup folders.

3. Password Changes

NWMail will enable the password on the HP3000 mail server to be changed from the user details screen.

4. Acknowledgements

The user will be able to set acknowledgement levels on a message and track its status.

5. Signon Recovery

A new facility will be added to NWMail such that should the PC abort during a mail server connection the subsequent signon will ensure that the orphan mail server session is aborted automatically. This will ensure that NWMail is able to connect to the server without the need for the HP3000 administrator to manually track down and abort the rogue session which has been left in limbo.

6. Miscellaneous User Interface Changes

1. Intraday Ordering - A new menu item will be added to the intraday - View

This allows the list of messages in the intraday to be ordered by date, priority, etc.

2. Message Part Creator Name Display - If a message contains parts which have been forwarded on by the sender of the received message, those parts can have the creator name displayed along with the subject of the message part.

3. Part Number Display Optional - A WIN.INI setting will allow the display and printing of messages to appear more memo-like by switching off the part number display.

4. Configurable Message Object Size - A WIN.INI setting will allow the size of a new message object window to be configured to suit the screen size or desire of the user.

3.0 NewWave Mail for OpenMail version A.04.00 - planned release

PWD will roll out a version of NewWave Mail for OpenMail version A.04.00 that will run under NewWave 4.0. This will happen at the same time as the release of NewWave Mail for HP DeskManager version 4.0. Note that this release of NewWave Mail for OpenMail will not have any

of the NewWave Mail for DeskManager version 4.0 features mentioned in (2.0) above.

4.0 NewWave Mail for OpenMail - future plans

The future plan is to upgrade the NewWave Mail for OpenMail version to support the "new" NewWave Mail for HP DeskManager 4.0 feature set in all areas where OpenMail supports the functionality. This will include for example ACKS, Sort of intray and Shared Workstation. It will not include Server File Cabinet as this is not supported by OpenMail.

We have no plans to implement Agent Task Language in either version of the product, Keystroke record/playback will, however, be available in both versions.

The current schedule for this release is by end of calendar year 92.

9/03/92

4.4.1.3 NewWave Mail and locating HP Sockets errors

AUTHOR: Simon Boothroyd / HP1600

ENTITY: PWD Online Support



See section 4.6.1 in this document for this article.

4.4.1.4 NewWaveMail w/ networked HPNWDATA directory on Netware Server (DL164/HANGS)

AUTHOR: Simon Boothroyd / HP1600

ENTITY: PWD Online Support

Contents

1. Introduction
2. The Problem
3. The Problem Cause
4. The NewWaveMail workaround
5. The Cause in more detail
6. An Example
7. A very temporary workaround

Introduction

If you want an overview of the problem and its resolution, as regards NewWaveMail, then it is only necessary to read the sections 1→4 of this article.

Alternatively, if you wish to understand the background of the problem, and how it might affect other Windows/NewWave applications, then read the other sections as well.

The Problem

Under certain conditions, when a distribution list merge takes place in NewWaveMail, then INTERMITTENTLY the client PC can hang or display a DL164 error message.

The conditions under which these problems may occur are when the NewWave HPNWDATA directory is located on a networked drive and ONLY when this drive is on a Novell Netware Server.

Whether the client PC hangs or a DL164 error occurs has been shown to be related to the version of the Netware Shell, NETX.COM, being used. A later NETX.COM results in the DL164 and an associated NewWaveMail DL dump file being produced. Clearly it is preferable to have the DL error rather than a hung PC.

NOTE:

Please note that the Netware Server is NOT the MAIL Server; NewWaveMail does NOT connect to a Netware E-Mail Server.

The NewWaveMail workaround

It has been possible to modify NewWaveMail to workaround this problem by ensuring that each instance of the program checks whether the files that it opened previously are still open; if they have been closed erroneously then it re-opens them.

The patch reference id for the fix is 'nwm00002' and is a new NewWaveMail Distribution List component. This patch is currently only available for the OpenMail server version. An HPDesk version may be produced if there is sufficient need. Contact PWD SUPPORT/HP1600 if you need to request the patch.

The Problem Cause

When an application terminates Netware closes any open networked files associated with the task number allocated to that application. If Netware runs-out of task numbers then it will allocate the same task number to concurrently running applications and if one of these applications terminates, then any open files associated with any of the applications with the same task number, are closed.

The root cause of this problem is NOT NewWaveMail but is either Novell Netware or Windows, (or the way that they work together), and can be reproduced with other Windows and NewWave applications, such as NewWaveWrite.

In particular, applications that keep a file open until the application closes-down are prone to this problem.

The Cause in more detail

The problem is related to the Netware 'numtasks' task number tuning option.

There are a limited, configurable, number of Novell 'tasks' available, (numtasks), on any Novell server; numtasks=25, for example.

A new task number is assigned for any new applications that are run. The 'numtask' values are not being re-used and eventually the maximum value of 'numtasks' is reached.

Netware then gives any new applications the same task number as the previous one. Because Netware seems to never re-use the numtask number of the FIRST instance of any particular application, eventually the number of free task numbers runs-out.

When the numtask maximum is reached, (in fact it seems as if it uses numtasks+1 as it's maximum value), if there are 2 instances of the same application open, (each with a file open), then on the closure of one of these instances and the closure of it's open file, Netware also closes the file for the other application instance.

When the 2nd instance of the application wants to close it's own file it finds that it has already been closed and an error results.

The NewWaveMail DL then either produces a DL164 error or the PC will hang, depending on the version of NETX.COM Netware Shell.

AN EXAMPLE

Where...numtasks = 4... and the problem is that the numtask for the 1st instance of any application is NEVER re-used.

Numtask# for 1st instance	Numtask# for 2nd instance	Result/Comment
1	2	Successful action - 1 not re-used
2	3	Successful action - 2 not re-used
3	4	Successful action - 3 not re-used
4	5	Successful action - 4 not re-used
5	5	Unsuccessful action - see NOTE:

NOTE

When numtask = 5 is reached then Netware assigns the 1st instance of numtask# to the 2nd instance also. This is okay when they do NOT have files which continually remain open.

But, if they DO remain open continually then when one of the instances closes, it will close the file of the other instance.

This is okay until the open instance wants to close the file itself; it has already been closed and it therefore produces an error or has to cope with this unexpected situation.

A very temporary workaround

If 'numtasks' is increased to it's maximum of 128 from it's default then it is possible to increase the number of DL merges, (or similar), before the problem occurs - BUT THE PROBLEM WILL STILL EVENTUALLY OCCUR.

This workaround may be useful if the users typically exit Windows throughout the day because the 'numtasks' value being incremented is then reset to zero and starts to rise again only when Windows is re-entered.



4.4.1.5 NewWave Mail, NewWave and MS-Windows version compatibilities

AUTHOR: Vijay Jogia / HP1600
 ENTITY: PWD Product and Service Marketing

The following matrix gives version compatibilities between NewWave, NewWave Mail and MS Windows products.

NewWave, NewWave Mail and MS Windows compatibility matrix:

[NewWave End]	[NewWave Mail]	[NewWave Mail]	[NewWave Mail]	[MS]
[User Release]	[A.01.00]	[A.03.00]	[A.03.10 &]	[Windows]
[]	[]	[]	[A.04.00]	[]
[1.0]	[YES]	[NO]	[NO]	[2.11]
[1.1]	[YES]	[NO]	[NO]	[2.11]
[3.0]	[NO]	[YES]	[YES]	[3.00a]
[4.0]	[NO]	[NO*]	[YES]	[3.00a & 3.1]

* NewWave Mail 3.0 under a "brand new installation" of NewWave 4.0 is not supported as a result of the following problem:

Problem statement

Currently NewWave Mail 3.0 converts small received text files into Text Notes and converts large (>16K bytes) received text files into NewWave Write documents.

Since NewWave 4.0 does not include NewWave Write, in order to support NewWave 4.0, NewWave Mail 3.0 must be able to convert large received text files into some other compatible object type.

Planned Solution

The new release of NewWave Mail for HP DeskManager (version A.04.00) and NewWave Mail for HP OpenMail (version A.03.10) will resolve the above NewWave Write unbundling issue. These products are expected to be released for manufacturing from PWD on 30th May, 92.

First customer shipments are expected to commence from middle of July, 92.

Customers upgrading from NewWave 3.0 to NewWave 4.0

Customers wishing to upgrade from NewWave 3.0 to NewWave 4.0 will be able to use NewWave

Mail 3.0, providing NewWave Mail 3.0 was installed under NewWave 3.0.

Shipment Hold on NewWave Mail A.03.00

As a result of the above problem, NewWave Mail version 3.0 is currently under shipment hold. The hold on shipment will be lifted as soon as we start to ship NewWave A.04.00 and A.03.01 in July.

The new product numbers will be:

D2103D (NewWave Mail for HP DeskManager, Version A.04.00)

D2109C (NewWave Mail for HP OpenMail, version A.03.10)

4.4.1.6 NewWave Mail objects and NewWave Agent tasks

AUTHOR: Howard Price
ENTITY: PWD Online Support

We have had several calls requesting information about how NWAgent menu tasks attached to NewWave Mail objects can be transferred around an HPDesk or OpenMail network.

The underlying mail transport does not effect this behaviour.

The NewWave properties of an object may or may not be transferred with the object depending upon the object type and the way in which it is sent.

An example of this is the disappearance of Agent menu tasks. These are stored as a property of the object to which they are attached. If the object loses its NewWave properties, these Agent menu tasks will be lost also. The following describes how this can happen and what to do if you need to ensure that objects and their NewWave properties are transferred together.

If an Agent menu task is attached to any of the following:

- File container
- Text note
- Outgoing message

When that object is mailed to another NewWave Mail user, the task may not be mailed with it.

This is actually expected behaviour for the product. The reasoning is...

File container:

When a file container is sent to the host, if it contains data, this data is EXPORTED to the host's filing system by the NewWave Mail host program. This data file is then IMPORTED into the host E-Mail system (HPDesk or OpenMail). From this point, the data travels through the host E-Mail system as a new data item. When the message arrives at its destination, the data is EXPORTED back out to the host's filing system and then downloaded to the PC. After this process has been completed, all the NewWave attributes that the file container had originally, have been lost.

If the file container is empty when it is sent, then all the NewWave attributes (including Agent menu tasks) will be retained. This is because when the NewWave Mail host program comes to EXPORT the data to the host's filing system, it will not create a zero length file. To overcome this, it serializes the file container object to become a .SER file. This then travels through the E-Mail network as before to be DESERIALIZED at its destination. This retains the NewWave attributes because the .SER file has all the information needed by NewWave to recreate the object exactly as it was on the sender's PC.

Text note:

The case for a text note is almost exactly the same as that for a file container. The difference is that empty text notes are not serialized as .SER files. They are EXPORTED as zero length text files. This means that they will also lose their NewWave properties.

Outgoing message:

These objects are only used for transferring the data to the host. They do not travel through the host E-Mail transport. When the data reaches its destination, the data is downloaded to the recipients PC as an Incoming message. As this is a different object type, it could not contain the properties of the old Outgoing message. That is a side consideration because the NewWave property information of the Outgoing message is never passed into the hosts E-Mail server.

How to mail objects, retaining their NewWave properties

Objects that need to be mailed and retain their NewWave properties should be placed inside a NewWave folder before mailing. This ensures that they will be recreated on the recipients PC in the same format that they left the sender. Users should be aware however that doing this has a possible drawback. If a non-NewWave user receives a message that contains objects inside a folder he will have to convert that folder within his E-Mail environment before the contents will be accessible to him. In HPDesk this can be done by copying the folder (NewWave package) to the Work Area and issuing the convert command. At this stage, all the NewWave properties will be stripped and the items in the folder will appear as HPDesk items. Users who use AdvanceMail can set conversion options to do this for them at transfer time.

4.4.2 Manuals and other documentation available

NewWaveMail Technical Guide	(obtain from PWD Online)
NewWaveMail IMS	(obtain from PWD Online)
Product Support Plan	(obtain from PWD HOTLINE)
NewWaveMail 4.0 Functional Specification	☒
Data sheet	(section 4.4.3)
Errors.txt	☒
Online Help	

Advancemail Host IMS	(obtain from PWD Online)
----------------------	--------------------------

Writing and editing basic serial connection files

NewWave OMF error code document / Support guide

NewWave internals SE3018 course notes (especially NW diagnostic section)

4.5 (All known) WIN.INI / HPMAIL.INI options available with NewWaveMail

In NewWaveMail 1.0 and 3.0 configuration customisation options were generally placed in WIN.INI. As of NewWaveMail 4.0 the NWMAIL.INI file is used.

The Technical Guide has a fairly comprehensive list of these options and where they are fully covered I shall only highlight the existence of the section and options within it.



See chapter 7 of the Technical Guide for detail on most of the sections except where noted otherwise.

The values of the variables set in the sections below are examples only. There are other values possible which are documented in the appropriate place, (as noted below), with explanations as to the specific value and resultant function.

[HPDLISTB]

Namelimit=n

Limits the number of names displayed in a distribution list.

[HPDLIST]

AutoNameCheck=n

InformIfDLCheckOk=1

This is the HPDesk distribution list section to enable, (as the default), auto-name checking of the names as entered into the DL by the user.

DEBUG=n

MODE=n

STACKUSED=n

The DEBUG, MODE and STACKUSED lines should only be used with the tracing version of the DL.



See page 2-26 of the IMS for further details on these 3 options.

[HPDLOM]

AutoNameCheck=n

InformIfDLCheckOk=1

TraceFile=local_filename

This is the OpenMail distribution list section to enable, (as the default), auto-name checking of the names as entered into the DL by the user.

Using the special tracing distribution list created as a one-off by the NWMail Lab, (version stamped X.03.31), it is possible to trace those parts of the DL that open and close files when merging DLs.



See section 4.1.4 for details of this problem and the final fix. This version is included on the support disk for this guide in the directory NWMDLTRC.

DEBUG=n
MODE=n
STACKUSED=n

The DEBUG, MODE and STACKUSED lines should only be used with the tracing version of the DL.



See page 2-26 of the IMS for further details on these 3 options.

[HPNWMTC]

local_trace=n local_filename
host_trace=n host_filename

Transport control tracing is enabled with this section. LOCAL_TRACE sets tracing on the local modules of the Transport component and HOST_TRACE advises the AdvanceMail HOST that tracing needs to be set.



See page 2-52 NWMail IMS for further details of local tracing and the NWMail Technical Guide appendix B for local and host tracing. To learn how to read host tracing refer to appendix C of the Advancemail Host IMS.

modules = 1800

For local tracing it is possible to set tracing ON for just a single or multiple code modules. This produces more specific and readable traces. The example above is tracing module number 1800 which contains the routines for encrypting & decrypting the mail user password and updating the property it is stored in. It is possible to trace more than one module simultaneously.



Refer to page 3-100 of the March '92 NWMail IMS for TC module information.

PollingInterval=n
TrackingInterval=n
DelayLaunch=n
DisplayQueryEnd=0

[HPNWMCNT]

debug=2
tracefile=local_filename

This traces all instances of the container code including the INTRAY, OUT TRAY, INCOMING MESSAGE and OUTGOING MESSAGE. The file container is not traced. The debug values 1 & 3 may also be used.



See Appendix C of the NWMail IMS and page 2-35, (for an Incoming message), of the IMS.

modules 7200 (reply)

This is similar to the Transport module trace setting except the line **MUST** be terminated by a non-numeric item; in this case (reply), which is the name of the module being traced.



See page 2-36 of the IMS for the Incoming Message module numbers and for the Outgoing message modules read the paragraph entitled Functions on page 2-38.

DiagnosticLog=local_filename

This entry produces a diagnostic dump to trap errors with the configuration part of the container code - CC500-CC525.



See page 2-31/2 of the NWMail IMS.

DisplayReadOnly=0

ContinuousMode=0

MixedNetwork=1

Height=n

Width=n

PartNumbers=0

[HPCCBROWPRINT]

PrintMargin=n where n is the number of columns from edge of printing area to left margin.

PrintIndent=n where n is the number of columns to indent main text from left margin.

PrintPitch=n where n is the number of characters across each inch of paper.

PrintRows=n where n is the number of rows on the page

PrintFont=fontname the name of an available font.



See page 3-16/17 of the IMS or the Technical Guide.

[HPCCBROW]

hpdlistb=HPDLIST

textbrow=HPNOTES

4.6 NewWaveMail & Networking (inc. EDCL)

4.6.1 NewWaveMail and locating HP Sockets errors

It is not always easy to determine what errors mean in NewWaveMail. This article is designed to resolve this with regard to Transport Control over a Sockets connection.

Finding HP Sockets errors as reported by NewWave Mail

When NewWaveMail is configured to use an HP Sockets network connection and a Transport Control error TC002-->TC007 is displayed, then an HP Sockets network error is being reported.

The HP Sockets error is reported in hexadecimal as the secondary error code. For example:

TC007-74

...where TC007 means that 'A serious network error has occurred' and where 74 is the sockets error number.

This secondary error must then be converted to DECIMAL before you are able to refer to the sockets errors information. A list of simple descriptions of HP Sockets errors is supplied with the HP Sockets Software Development Kit. This is the sock_err.h header file shown below:

```
/*
**  SOCK_ERR.H
**
**  Copyright (c) Hewlett Packard Company,1989. All rights reserved.
**  No part of this program may be copied or used without the prior
**  written consent of Hewlett Packard Company.
*/

#define ENOTSOCK                100 /* Socket operation on non-socket */
#define FIRST_SOCKET_ERR      ENOTSOCK

#define EDESTADDRREQ           101 /* Destination address required */
#define EMSGSIZE               102 /* Message too long */
#define EPROTOTYPE            103 /* Protocol wrong type for socket */
#define ENOPROTOOPT           104 /* Protocol not available */
#define EPROTONOSUPPORT        105 /* Protocol not supported */
#define ESOCKTNOSUPPORT        106 /* Socket type not supported */
#define EOPNOTSUPP            107 /* Operation not supported on socket */
#define EPFNOSUPPORT           108 /* Protocol family not supported */
#define EAFNOSUPPORT           109 /* Address family not supported by protocol family */
#define EADDRINUSE            110 /* Address already in use */
#define EADDRNOTAVAIL         111 /* Can't assign requested address */
#define ENETDOWN              112 /* Network is down */
#define ENETUNREACH           113 /* Network is unreachable */
```

```
#define ENETRESET          114 /* Network dropped connection or reset */
#define ECONNABORTED      115 /* Software caused connection abort */
#define ECONNRESET        116 /* Connection reset by peer */
#define ENOBUFS           117 /* No buffer space available */
#define EISCONN           118 /* Socket is already connected */
#define ENOTCONN          119 /* Socket is not connected */
#define ESHUTDOWN         120 /* Can't send after socket shutdown */
#define ETIMEDOUT         121 /* Connection timed out */
#define ECONNREFUSED      122 /* Connection refused */
#define EHOSTDOWN         123 /* Networking subsystem not started */
#define EHOSTUNREACH      124 /* No route to host */
#define EWOULDBLOCK       125 /* Operation would block */
#define EINPROGRESS       126 /* Operation now in progress */
#define EALREADY          127 /* Operation already in progress */
#define EBADVERSION       128 /* Library/driver version mismatch */
#define EINVALSOCK       129 /* Invalid argument */

#define ETOOMANYSOCK      130 /* Too many open sockets */
#define EFAULTSOCK       131 /* Bad address in sockets call */

#define LAST_SOCK_ERR    EFAULTSOCK

#define MAX_SOCK_ERR_LEN 100 /* maximum length of error text */
```

From this it is possible to determine that the error number 116 is 'Connection reset by peer', ie. the Host has reset the connection.

In order to get more detail on any error refer to the NAME of the error next to the error number, (ie. ECONNRESET), and refer to the description of alphabetically ordered error names obtainable from an HP-UX machine. Then read the description of the error.

Unix Error Numbers

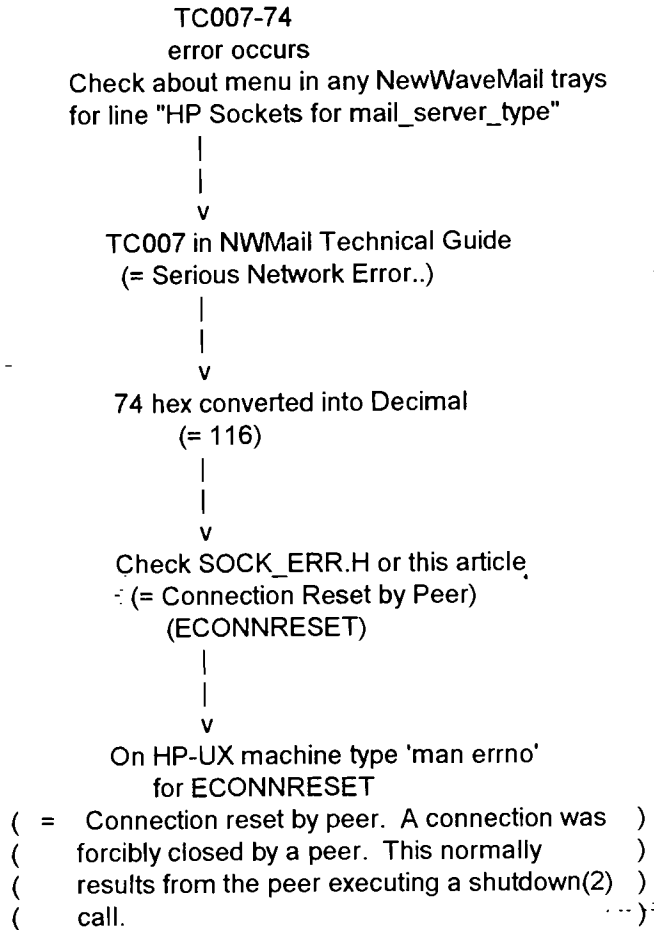
Using the command 'man errno' will display a list of symbolic error names which you would then cross reference with the error name you obtained from the file above.

NOTE

Although HP Sockets uses the same symbolic error names as those found under HP-UX, the error numbers they are associated with are NOT the same as under HP-UX. You cannot therefore get the sockets error number and go straight to the error number as defined in the HP-UX manual.

Here is a summary of how you should obtain the correct error description:

SUMMARY of steps



ie. The Host reset the connection

Using these steps will not always give you the direct solution to the problem but it will certainly point you in the right direction, such as whether it is a NewWaveMail, PC Networking, Host Networking or Host E-mail server problem.

4.6.2 NewWaveMail and NetIPC errors

It is not always easy to determine what Transport errors mean in NewWaveMail. The following is designed to help resolve this with regard to a NetIPC connection.

NewWaveMail and NetIPC Support

NewWaveMail 3, (A.03.00), is supported connecting via NetIPC to HPDeskManager and HPOpenMail (HP-UX) using the following products:-

- HP NS 2.1 & HP ARPA 2.1
- HP NS 2.1 for NetWare & HP ARPA 2.1 for NetWare

See the June 1991 issue of Customer Support News for a matrix of the networking connections support at that time. This does not show the support above for the NS/ARPA 2.1 for NetWare products, but it is expected that an updated matrix will be published shortly.

Finding NetIPC errors as reported by NewWave Mail

When NewWaveMail is configured to use a NetIPC network connection to connect to the Mail Server and a Transport Control error in the range TC002-->TC007 is displayed, then a NetIPC network error is being reported.

The NetIPC error is reported in hexadecimal as the secondary error code. For example:-
TC006-41

...where TC006 means IN NEWWAVEMAIL TERMS that 'The network connection was terminated by the server' and where 41 is the NetIPC error number in HEX.

This secondary error must then be converted to DECIMAL before you are able to refer to the NetIPC errors and messages documentation for further information. 41 Hex is 65 Decimal.

NetIPC Errors

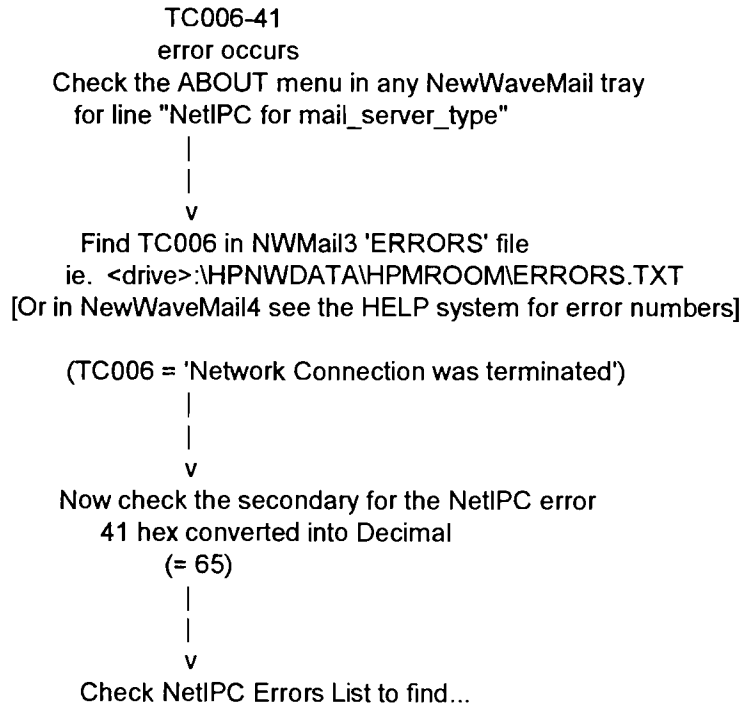
NetIPC errors are integers which are returned in the result parameter of NetIPC intrinsic calls when the intrinsic execution fails. A result of 0 indicates that the intrinsic succeeded. If the call fails then the calling application, in this case NewWaveMail, will return an error to the user for information or action.

NetIPC error numbers and messages may be viewed in many manual sets, for example:-

- The NetIPC 3000/XL Programmer's Reference Manual, 'NetIPC errors'
- NS 3000/XL Error Messages Reference Manual in Chapter 5, 'NetIPC (SOCKERRS) Error Messages'.

Here is an example of how you can obtain the correct error description:-

SUMMARY of steps



65 MESSAGE CONNECTION ABORTED BY LOCAL PROTOCOL MODULE.
 CAUSE Local protocol module encountered some error which
 caused it to abort the connection.
 ACTION Call IPCSHUTDOWN to clean up your end of the connection.

In this case OpenMail was shutdown for backup

Using these steps will not always directly give you the solution to the problem but it may well point you in the right direction, for example in determining whether it is a NewWaveMail, PC Networking, Host Networking or Host E-mail server 'problem'.

I would appreciate any feedback on this article and I can then endeavour to incorporate it into future articles.

This article, a complete list of the NetIPC errors obtained from Laserrom and the previous article entitled "NWMail & locating Sockets is to be found in the PWD HOTLINE/HP1600. Simply send a message with a subject of NWMNERR to receive the articles and error files.

The complete list of the NetIPC errors is also contained in Appendix B.1 of this document.

4.6.3 EDCL errors



See Appendix D.1 for an article detailing possible problems and solutions regarding EDCL connections with the PWD PCMail clients.

4.7 Directory structure & files

4.7.1 Understanding NewWaveMail files



Appendix C, (Appendix B in NewWaveMail 4.0 document), of the NewWaveMail 3.0 Technical Guide contains a description of the Directory Structure together with explanations of most of the NewWaveMail files.

CONTROL.ADF is one file which is not covered in the Technical Guide. It contains the mail SERVER name as defined in the 'SETTINGS', 'SERVER' screen. (The user name is stored as a Transport Control property called HPcUserName which may be viewed and modified if necessary with the NewWave Diagnostic tool: see section 2.9 for an example).



See the IMS page 3-101 for detail on the Transport data files.

4.7.2 Disk Space Usage - NewWaveMail 3.0

NewWaveMail / OpenMail Disk Space Usage

Below are the results of checking my installation of NewWaveMail/OpenMail to determine how much disk space is used. Here are the 4 lists I generated together with the 'final score'.

Files in HPNWPROG use: 551,089+22,884+609,522=573,973 Bytes	(1184 Kb)
Files in HPNWDATA use: 162,575 Bytes	(163 Kb)
A Total of	1.347 Mbytes

C:\HPNWPROG

hpdlom.nwe	185,616	02/12/92	11:25a
hpdlom.hlp	77,212	04/25/91	08:58a
hpdlom.trm	15,680	04/25/91	08:57a
hpdlist.nwe	168,608	04/25/91	08:58a
hpdlist.hlp	78,373	04/25/91	08:58a
hpdlist.trm	15,680	04/25/91	08:58a

C:\HPNWPROG\HPCCBROW

hpdlistb.dll	3,584	04/25/91	08:57a
hpdlob.dll	6,336	04/25/91	08:57a

9 files occupying 551,089 bytes.

C:\HPNWPROG

hpnwmail.hlp	143,090	04/25/91	08:58a
hpnwmtc.nwe	169,312	04/25/91	08:57a
hpnwmtcl.exe	1,216	04/25/91	08:57a
hpnwmcnt.nwe	295,904	10/24/91	10:06a

5 files occupying 609,522 bytes.

C:\HPNWPROG\HPNWMTC

hpnwmtcn.dll	7,056	04/25/91	08:58a
dllipc.dll	7,056	04/25/91	08:58a
networks.txt	154	04/25/91	08:58a
netipc.bat	164	12/16/91	10:25a
sockets.bat	166	12/20/91	04:19p
dllsock.dll	8,288	01/13/92	01:33p

6 files occupying 22,884 bytes.

C:\HPNWDATA\HPMROOM

hptcfile.que	103	02/25/92	10:35a
hptcfile.tag	400	02/24/92	07:41p
convert.adf	46	02/25/92	05:27p
pcdetdef.adf	7,320	02/25/92	05:28p
hptcfile.war	0	02/25/92	05:27p
hptcfile.smr	44	02/25/92	05:29p
recvspec.adf	195	09/12/91	04:16p
hptcfile.err	960	02/25/92	05:26p
currcon.on	6,253	02/25/92	05:24p
currcon.off	209	02/25/92	05:24p
control.adf	142	02/25/92	05:27p

C:\HPNWDATA\HPMROOM\METHODS

admuser.cfg	642	04/25/91	08:58a
bsc.msg	5,302	04/25/91	08:58a
bscv.exe	50,986	04/25/91	08:58a
csp.exe	46,149	04/25/91	08:58a
cspmsgs.hpd	8,577	04/25/91	08:58a
direct.off	101	04/25/91	08:58a
direct.on	3,292	04/25/91	08:58a
direct.scr	2,031	04/25/91	08:58a
direct25.off	364	04/25/91	08:58a
direct25.on	4,496	04/25/91	08:59a
direct25.scr	2,019	04/25/91	08:59a
ecu.bat	1,439	04/25/91	08:59a
modem.off	1,057	04/25/91	08:59a
modem.on	5,439	04/25/91	08:59a
modem.scr	2,164	04/25/91	08:59a
motorola.off	94	04/25/91	08:59a
motorola.on	4,166	04/25/91	08:59a
motorola.scr	1,983	04/25/91	08:59a
yes.exe	6,178	04/25/91	08:59a
direct.dat	283	02/25/92	05:23p
connect.ctl	141	02/25/92	05:23p

34 files occupying 162,575 bytes.

4.8 Troubleshooting tools

4.8.1 Tracing Local & Host components

HPNewWaveMail 3.0 Tracing + Advmail Host tracing for Desk and OpenMail

This contains selected parts of app. C of the NewWave Technical Guide (3.0) as well as additional information specifically regarding the tracing of the Host component on an OpenMail server to obtain an additional level of detail.

PROCEDURE

This provides tracing for the intray, outtray and all message objects. To start the tracing place the following lines in your WIN.INI file. The FILE CONTAINER contains no tracing facilities.

```
[HPNWMCNT]
debug=n
tracefile=s
```

where n is either 1 or 2, (though level 2 does contain a defect causing the whole screen to scroll when tracing is enabled).

If n=1 the trace lists procedure names at entry only. If n=2 the trace lists procedure names and adds trace messages within procedures.

s is the name of the file where the trace is written.

LOCAL TRACING FOR THE TRANSPORT MECHANISM

This provides tracing on the workstation. To start local tracing for transport place the following lines in WIN.INI.

```
[HPNWMTC]
local_trace = n s
```

where n is one of the following:

- 1 procedural level
- 2 switch level
- 4 datacomm
- 8 task-state tracing

s is the path and filename on the workstation where the trace information is appended.

MAIL SERVER TRACING - HPDESKMANAGER HOST

This enables tracing of the Advancemail HOST when NWMail is connected to the Desk server. To start tracing set the following in WIN.INI:

```
[HPNWMTC]
host_trace = n s
```

where n is one of the following:

- 1 IPC level tracing
- 2 datacomm tracing
- 4 slave level
- 8 intrinsic level

If you require more than one these then sum their values for n.

S specifies a file on the 3000 where the trace is written. If a serial connection is being used the file will be created in the current group/account. If a network connection then in the ADVMAIL group of the HPOFFICE account. The filename is a max of 7 chars as one of the following letters will be appended to the name of the file - thus representing the tracing level:

```
N IPC
C DATACOMM
S SLAVE LEVEL
I INTRINSIC LEVEL
```

If the s parm is not specified the filename will be

```
<ADVM><Level Letter><LDev>
```

The <LDev> is the HP3000 logical device number or the port of the current session.

OPENMAIL MAIL SERVER TRACING

This enables tracing of the Advancemail Host when NewWave Mail is connected to the Openmail server. To start tracing place the following lines in the WIN.INI file:

```
[HPNWMTC]
host_trace = n s
```

Where n is either 2 or 1900. 1900 gives greater levels of detail in the output which should be read with the OpenMail command:-

```
omshowlog -l 19 -F mm:hh
```

..where mm:hh is the time to start looking at the log, (minute:hour).

Where s specifies an OpenMail file where the trace output is written, where the filename is a maximum of 7 chars.

A 'C' will be appended to the s parameter and a file of this name will be created in the /tmp directory on the mail server. If the s parm is omitted the 1st 7 chars of the user's login will be used.

TRACING FOR THE TRANSPORT MECHANISM

When an X appears in the transport truck icon an error file is produced called:

<drive:>\HPNWDATA\HPMROOM\HPTCFILE.ERR

It is an ascii file containing a dump of the error structure and task queue.

DISTRIBUTION LIST TRACING

There are two files generated by the Distribution List component under error conditions; a log file and a dump file. The names of these files depend on your mail server.

All the Distribution List error files are created in the directory:

<drive:>\HPNWDATA\HPMROOM

If the Distribution List component can not create the files in this directory, it will create them in the root directory (C:\).

LOG FILES

A log file is produced when an internal error occurs. The file consists of:-

- * The module where the error occurred.
- * The line number in the module where the error occurred.
- * The resulting error number, in HEX, at the point of error detection.
- * The version number of the distribution list component.

The name of the log file will be:

HPDLIST.LOG for the HP DeskManager version

HPDLOM.LOG for the OpenMail version

DUMP FILES

Under very serious error conditions a dump file is produced. The dump file contains the complete internal state of the Distribution List component when the condition became apparent. The dump will contain the internal structures and data items. The dump files are:

HPDLIST.DMP for the HP DeskManager version

HPDLOM.DMP for the OpenMail version

There is also a special version of the Distribution List available which allows full tracing at the procedure level. This is only distributed from Hewlett-Packard support personnel. The executable file for this special version is substantially larger than the normal file and will degrade performance.

4.8.2 The Transport Control error file (TCFILE.ERR)

Whenever the Transport (TRUCK) breaks and a **X** is shown through the Transport mail-truck then an error file is created. It aims to provide a permanent record of the various errors which were reported when the transport went down.

NOTE

It is important to remember that this file will be over-written the next time that a problem happens with the Transport and the connection is broken. Therefore take a copy of this as soon as possible after the problem has occurred.

The file is called:-

<drive:>\HPNWDATA\HPMROOM\HPTCFILE.ERR

The various errors reported in this file are explained in great detail in the NewWaveMail IMS document. Page 2-7 in the draft edition and 2-42 in the edition for NewWaveMail 3.0.

Below is an example with an explanation of the important aspects as far as a Support engineer is concerned:-

SCHEDULER TASK ERROR CALLED

ERROR STRUCTURE

① nErrorID = 107 (0x6b) <--- EDCL error has occurred (from 3.0 IMS page 2-43)
 nPrimary = 10 (0xa) <---- max. # of retries exceeded (from EDCL manual appendix A.)
 nSecondary = 0 (0x0) <--- Not always generated as in this case; would be EDCL secondary
 nStringID = 15 (0xf) <--- EDCL host abort (from 3.0 IMS page 2-43)
 nTaskID = 2301 (0x8fd) SEE ERRORS.TXT / 4.8.3.2 OF THIS GUIDE
 nTaskLibID = 2302 (0x8fe)
 nLibraryID = 1918 (0x77e)
 SCHEDULER STACK (Current Time = 657224186)
 0 - Task 7100 State 1 Parm 0 Launch -1
 1 - Task 6000 State 1 Parm 0 Launch 0
 2 - Task 5000 State 1 Parm 0 Launch 0
 3 - Task a000 State 1 Parm 0 Launch 0
 4 - Task 0 State 1 Parm 0 Launch 0
 5 - Task 0 State 1 Parm 0 Launch 0
 6 - Task 0 State 1 Parm 0 Launch 0
 7 - Task 0 State 1 Parm 0 Launch 0
 8 - Task 0 State 1 Parm 0 Launch 0
 9 - Task 0 State 1 Parm 0 Launch 0
 10 - Task 0 State 1 Parm 0 Launch 0
 11 - Task 0 State 1 Parm 0 Launch 0
 12 - Task 0 State 1 Parm 0 Launch 0
 13 - Task 0 State 1 Parm 0 Launch 0
 14 - Task 0 State 1 Parm 0 Launch 0
 15 - Task 0 State 1 Parm 0 Launch 0

The other parts of the file will sometimes be of use to the Lab engineer.

4.8.3 The NewWaveMail ERRORS file (ERRORS.TXT)

NewWaveMail 3.0 was shipped with an ascii file containing a list of the errors which could be encountered by the various components of NewWaveMail. It is to be found, after installation, in the following place:-

<drive:>\HPNWDATA\HPMROOM\ERRORS.TXT

..and on the installation disk:-

<drive:>\DOC\ERRORS.TXT

Though this document does not contain all NewWaveMail errors it has been of great use.

For NewWaveMail 4.0 this file will not be shipped on the installation disks but the information will be available directly from the HELP system. Hard copies may be obtained in this way.

An excerpt from the ERRORS.TXT file

This file contains a complete listing of the NewWave Mail error messages. Sometimes you may get a message with a second message. You may need to go to another source for more details. These are noted by an *.

This is an ASCII file which NewWave Mail installs in \HPNWDATA\HPMROOM\ERRORS.TXT. It is also located on the NewWave Mail installation disk. You can print this file from DOS.

CC001 Unable to open data file.

Cause: NewWave can't find the information it uses to keep track of the location of the objects you are working with. The next time you start NewWave, the objects will probably appear in a different position.

Remedy: To correct this problem, try the following:

- * Close any open objects.
- * Exit NewWave.
- * Start NewWave again.

Transport Container error messages

TC002-<nnn> The network has not been loaded.

Cause: You have not loaded your network software.

Remedy: Exit NewWave and use the appropriate command to check to see if the network is loaded. See your network manual for the specific command for your system. Load the network and start NewWave. Try the task again.

Because of it's usefulness I have decided to include this file with this Support Guide. Appendix C.1 contains this. Next are a few errors which I have found to have been missed-out from this file, together with their meanings.

4.8.3.2 TC errors not documented in ERRORS.TXT

- TC015 EDCL host abort. The host has timed-out while trying to connect. If the connection is X.25 then check that termtyp = 24.
- TC034 Unexpected error on Mailserver. Check Advmail Host error messages. Get TCFILE.ERR and check the secondary which is the actual Advmail Host error message.

4.8.3.3 TC secondary errors & suggested courses of action

- TC005 Check that PCMAILON has been performed on the HP3000 or that the PCMAIL service is up on the HP9000.
- TC005-075 The Advmail Monitor process (on HP3000) is defaulted to the D queue. It may help to increase this to the C queue. Cannot place in B queue as the Supervisor cannot start a process in a queue higher than it's own, (C). HPDesk only for above. Consider ~~increasing~~ *reducing* the NICE level on the HP9000.
- TC005-07A Check location and content of the Services file, (see NETFILES parm in the PROTOCOL.INI file), and ensure that NETFILES points to the file and that the file contents correlate to those documented in the NewWaveMail Technical Guide, chapter entitled "Setting-up Network Connections".
- TC007-076 This occurred when trying to use a NetIPC connection to the mail server when the number of NetIPC sessions configured on the PC, (if LanManager then via netsetup from DOS), was set to 0. Increasing to 1 resolved this problem.
- TC013-32 Set a QS20 to 8 Mhertz and this (apparently) occurs. Set the PC back to 20 Mhertz to resolve the problem.
- TC016-04 The host program (PCServer) has aborted. Check that HEX mode is switched-on in the command file. Check whether a terminal emulator works okay to the server machine. The customer re-installed NW, Windows & NWMail and the problem was resolved.
- TC021-00 00 = out of disk space? This is a DOS error code.
- TC036 1]. If serial connection then Desk UI/(Advmail/TI?) not enabled. 2]. The user does not have PC user access. 3]. HPDesk/OpenMail is down.

4.8.4 NewWave Diagnostic Utility

This tool can be used by the NewWaveMail support engineer to investigate the NewWaveMail objects that make-up the messages, (to find their DOS filenames for example), to set NewWave tracing and to modify 'internal' data that NewWaveMail sets and uses, for example an object's properties.



It has been necessary to place this section in Appendix F; please therefore refer there to read more about this utility.



Additionally you can get more complete information on how to use this tool in the notes for the SE3018 NewWave internals course. The binder may be found in the Online Support library.



4.9 Agent Tasks

4.9.2 EDCL

AGENT INTEGRATION

Keystroke Record and Playback offers limited Agent integration. NewWave Mail can process DO_KEYSTROKE commands. It cannot process mouse movements or the task description language.

There is a problem with DO_KEYSTROKE which sometimes manifests itself during the operation of NewWave Mail. The problem is that all keystrokes are put in a buffer, so any application that asks, will get keystrokes from the buffer, even if the keystrokes are not meant for it. So, if while recording a task in one application, another application is started, (for example in NewWave Mail, when Open Connection is selected, the Transport application is started), the input focus (ie Window accepting keystrokes) will wander. Then when the task is run later, some keystrokes meant for the first application may be consumed by the second application because the focus has changed, and the task will not work.

Occasionally the PC will hang. To work around this problem, it is necessary to edit any task in which a change of focus occurs, to force the focus back to the correct application (see example below). This is a general problem with key-stroke recording withing NewWave and can happen to applications other than NewWave Mail.

Within NewWave Mail, there are certain actions that definitely cause a change of focus - Disconnect, batch mail transfers, etc., so if recording a task with one of these functions in it, it will have to be edited in order to work correctly. In the left hand column is an example of how a script may look after it is recorded. The purpose of the script is to Open the Inray, view the last summary log, connect to the server, and then close the Inray. The right hand column shows how the FOCUS command is used to bring the focus of the script back to the Inray after the summary log dialog has been shown, and again after the Transport application has been started.

TASK	TASK
FOCUS OFFICE "NewWave Office"	FOCUS OFFICE "NewWave Office"
SELECT IN_TRAY "In Tray"	SELECT IN_TRAY "In Tray"
OPEN	OPEN
FOCUS IN_TRAY "In_Tray"	FOCUS IN_TRAY "In_Tray"
DO_KEYSTROKES "~av(ENTER)~as~ac"	DO_KEYSTROKES "~av(ENTER)~"
END	FOCUS IN_TRAY "In_Tray"
ENDTASK	DO_KEYSTROKES "~as"
	FOCUS IN_TRAY "In_Tray"
	DO_KEYSTROKES "~ac"
	END
	ENDTASK

EDCL CONNECTION FILES:

NewWave Mail A.01.00 shipped with many sample EDCL connection files. NewWave Mail A.03.00 will ship with four connection files which can be used to make the following connection types:

Hardwired direct connection

HP2334/5 PAD
Hayes Smartmodem 2400 + Quad or 100% compatible
Motorola Dataswitch

These are the only connection types that will be supported. Anyone using an old connection file or one they have written themselves may find that it does not work with NewWave Mail A.03.00, and will need modifications to account for timing. The Motorola dataswitch connection file contains detailed comments about how to adapt EDCL connection files to work with other dataswitches.

4.10 Futures

4.10.1 NewWaveMail futures



See section 4.4.1.3 for summary details of the NewWaveMail 4.0 release which is solely for HPDeskManager and which also includes the current the plan for the next release for OpenMail.



A copy of the NewWaveMail Functional Specification version 1.8 is available in serialised NewWaveWrite format on the support disks for this guide.

4.10.2 NewWaveMail enhancement requests

The following few pages contain a snapshot of the enhancement requests in against NewWaveMail as at 22nd May 1992. See section 4.2.3 for details on how to obtain an uptodate listing should you need one.

SR REPORT FOR: MGR.STARS,PUB AS OF 05/22/92 09:55 PAGE 1
This report is sorted on the following keys: STATUS

Selection Criteria for this report are:

PROD-NO EQ D2103B
PROD-NO EQ D2109B
UPDATE EQ 03
FIX EQ 00
FAC-CLASS EQ ER
STATUS NE SO
STATUS NE CL

SR # D600114710 NEWWAVEMAIL-HPDESK D2103B 03.00 Sev: M Pri: 4

Classification: Enhancement (Maybe) Status: Being considered
Number of Duplicates: 0

Request message <16K also be converted into NWwrite instead of TextNote.

X MAILROOM

SR # D600085332 NEWWAVEMAIL-HPDESK D2103B 03.00 Sev: M Pri: 1

Classification: Enhancement (Maybe) Status: Being considered
Number of Duplicates: 0

When reading a mail msg - give the user option to read just the msg.

SR # D600103903 NEWWAVEMAIL-HPDESK D2103B 03.00 Sev: S Pri: 4

Classification: Enhancement (Maybe) Status: Being considered
Number of Duplicates: 0

No subject or date of message..

SR # 5000646190 NEWWAVEMAIL-HPDESK D2103B 03.00 Sev: M Pri: 4

Classification: Enhancement (Maybe) Status: Being considered
Number of Duplicates: 0

ER to allow upgrade from Advmail DB to a NW DB.

SR # D600098145 NEWWAVEMAIL-HPDESK D2103B 03.00 Sev: L Pri: 2

Classification: Enhancement (Maybe) Status: Being considered
Number of Duplicates: 0

Could not delete a message..

SR # 5000641993 NEWWAVEMAIL-HPDESK D2103B 03.00 Sev: M Pri: 4

Classification: Enhancement (Maybe) Status: Being considered
Number of Duplicates: 0

ER to allow Dist List to be saved & read in an ASCII format from DOS.

SR # 1600091124 NEWWAVEMAIL-HPDESK D2103B 03.00 Sev: L Pri: 5

Classification: Enhancement (Maybe) Status: Being considered
Number of Duplicates: 0

No Desk password with Host Details password permits log on

SR # 5000638684 NEWWAVEMAIL-HPDESK D2103B 03.00 Sev: L Pri: 4

Classification: Enhancement (Maybe) Status: Being considered
Number of Duplicates: 0

ER to allow selection of Alphabetic sorting in distribution lists

SR # 5000638692 NEWWAVEMAIL-HPDESK D2103B 03.00 Sev: L Pri: 4

Classification: Enhancement (Maybe) Status: Being considered
Number of Duplicates: 0

ER to Allow users of multiple NWmails to send messages in single trans

SR # 5000639294 NEWWAVEMAIL-HPDESK D2103B 03.00 Sev: L Pri: 4

Classification: Enhancement (Yes) Status: Planned enhancement
Number of Duplicates: 0

ER to allow time and date tracking of Acks.

SR # 5000652875 NEWWAVEMAIL-HPDESK D2103B 03.00 Sev: M Pri: 3

Classification: Enhancement (Yes) Status: Planned enhancement
Number of Duplicates: 0

Req. ability to install NWM twice on a PC for 2 different users.

X INSTALL

SR # 5003033365 NEWWAVEMAIL-HPDESK D2103B 03.00 Sev: M Pri: 3

Classification: Enhancement (Yes) Status: Planned enhancement
Number of Duplicates: 0

In/Out Tray should display who is currently signed-on to the mail server

X SIGNON

APPENDICES A-E

Appendix A Example configuration files

A.1 CONFIG.SYS

```
DEVICE = KEYBUF.SYS
DEVICE=C:\DOS\SETVER.EXE
DEVICE=C:\WINDOWS\HIMEM.SYS
DEVICE=C:\WINDOWS\EMM386.EXE 256 RAM frame=e000 i=b000-b7ff
DOS=HIGH,UMB
FILES=50
BUFFERS=20
STACKS=9,256
LASTDRIVE=P
SHELL=COMMAND.COM /E:1024 /P
COUNTRY=044,,C:\DOS\COUNTRY.SYS
```

```
DEVICEHIGH=C:\DRIVERS\HPDISC.SYS
DEVICEHIGH SIZE=39E0 C:\WINDOWS\MOUSEHP.SYS /Y
DEVICE=C:\DOS\DISPLAY.SYS CON=(EGA,437,1)
```

```
DEVICE=GDCA.COM
DEVICE=C:\3OPEN\DOSWKSTAILANMAN\DRIVERS\PROTMAN.DOS /I:C:\3OPEN\DOSWKSTAILANMAN\DRIVERS
DEVICE=C:\3OPEN\DOSWKSTAILANMAN\DRIVERS\NEMM.DOS
DEVICE=C:\3OPEN\DOSWKSTAILANMAN\DRIVERS\TCDPRV.DOS /I:C:\3OPEN\DOSWKSTAILANMAN\DRIVERS
DEVICE=C:\3OPEN\DOSWKSTAILANMAN\DRIVERS\elnk.dos
```

A.2 AUTOEXEC.BAT

```
C:\WINDOWS\SMARTDRV.EXE
echo off
PROMPT $P$G
SET
PATH=C:\3OPEN\DOSWKSTA\LANMAN\NETPROG;C:\DOS;C:\DRIVERS;C:\WINDOWS;C:\;C:\TOOLS;C:\NETWORK;
C:\HPNWPROG\HPNWMTC;
REM **LMx** top HP Networking Products - Do not Remove *****
echo off
CALL C:\3OPEN\NET_STRT
REM **LMx** bot HP Networking Products - Do not Remove *****

c:\tools\yes2 -t 5 Do you wish to load LanManager1.2? (5 Secs) (YES)?
if errorlevel=2 goto noloadlan
c:\

net use lpt2: \\happy\printer charlie
net use lpt3: \\picard\jumbo3
rem net use l:\happy\public
rem net use m:\waserrom\online support

:noloadlan
KEYB UK,,C:\DOS\KEYBOARD.SYS
MODE CON CODEPAGE PREPARE=((437) C:\DOS\EGA.CPI)
MODE CON CODEPAGE SELECT=437
rem MODE LPT1:,,P
set temp=c:\DOS
set tmp=c:\tmp

REM NOW TO SUBST OUT ALL OF THE FLOPPIES ON THE HP-IB DRIVES
SUBST O: C:\UNLOAD

c:\tools\yes2 -t 5 Do you want to enter Windows 3.1 (5 Secs) (YES)?
rem if errorlevel=2 goto nowindows
c:\
win

:nowindows
c:\tools\yes2 -t 5 Do you wish to start a Hard Disk backup (5 SECS) (YES)?
if errorlevel=2 goto nobackup

CD \EZTAPE
EZTAPE
CD \

:nobackup
cd \

:end
EXIT
```

A.3 HPOMF.INI

This file points to the location of the various directories that NewWave stores data, NewWave application programs and DOS application related data.

It also shows the keyboard language expected by NewWave and version of NewWave. (C.01.00 = Newwave 4.0).

```
SYSDIR=C:\HPNWDATA
APPLICSDIR=C:\HPNWPROG
DOSAPPSDIR=C:\HPNWDOS
;WINDOWS=C:\WINDOWS
;KEYBOARD=British
;ICONS=CONVERTED
;NWVERSION=C.01.00
;ENCAPFLAGSZ=CONVERTED
```

A.4 NEWWAVE.BAT (NEWWAVE 3)

As of NewWave 4.0 NewWave is started from within Windows. This BATCH file is therefore only relevant for NewWave 3.

```
echo off
echo Starting NewWave A.03.04
if not exist c:\trace.omf goto startwin
if exist c:\trace.bak del c:\trace.bak>nul
copy c:\trace.omf c:\trace.bak
del c:\trace.omf
:startwin
C:
cd C:\HPNWDATA
hpcftest.exe hpomf.ini %1 %2
if errorlevel 4 goto cdout
if errorlevel 3 goto enh
if errorlevel 2 goto std
if errorlevel 1 goto real
C:
cd C:\HPNWPROG
newwave3 C:\WINDOWS\win.com hpomf -c:C:\HPNWDATA\HPOMF.INI -x
if errorlevel 1 echo Cannot find Windows latest version at C:\WINDOWS (IN020)
goto done
:real
C:
cd C:\HPNWPROG
newwave3 C:\WINDOWS\win.com /r hpomf -c:C:\HPNWDATA\HPOMF.INI -x
if errorlevel 1 echo Cannot find Windows latest version at C:\WINDOWS (IN020)
goto done
:std
C:
cd C:\HPNWPROG
C:\WINDOWS\win /2 hpomf -c:C:\HPNWDATA\HPOMF.INI -x
goto done
:enh
C:
cd C:\HPNWPROG
C:\WINDOWS\win /3 hpomf -c:C:\HPNWDATA\HPOMF.INI -x
:done
C:
cd \
if not exist C:\HPNWDATA\cleanup.bat goto cdout
%comspec% /c C:\HPNWDATA\cleanup.bat C:\HPNWDATA C:\HPNWPROG
del C:\HPNWDATA\cleanup.bat
:cdout
```

A.5 SYSTEM.INI (Windows 3.0 upgraded to 3.1)

```
[boot]
shell=progman.exe
mouse.drv=hpmouse.drv
network.drv=msnet.drv
language.dll=langeng.dll
sound.drv=mmsound.drv
comm.drv=comm.drv
system.drv=hpsystem.drv
386grabber=vga.3gr
oemfonts.fon=vgoem.fon
286grabber=vga.color.2gr
fixedfon.fon=vgafix.fon
fonts.fon=vgasys.fon
display.drv=vga.drv
keyboard.drv=kbdhp.drv
drivers=mmsystem.dll
[keyboard]
keyboard.dll=kbduk.dll
oemansi.bin=
subtype=
type=4
[boot.description]
mouse.drv=HP Mouse (HP-HIL)
network.drv=3Com 3+Open (versions 1.X)
language.dll=English (International)
system.drv=Hewlett-Packard: all machines
codepage=437
woafont.fon=English (437)
aspect=100,96,96
display.drv=VGA

keyboard.typ=Enhanced 101 or 102 key US and Non US keyboards
[386Enh]
mouse=*vmd
PSPIncrement=5
UniqueDOSPSP=TRUE
TimerCriticalSection=10000
network=*vnetbios,*dosnet,lanman10.386
woafont=dosapp.fon
display=*vddvga
EGA80WOA.FON=EGA80WOA.FON
EGA40WOA.FON=EGA40WOA.FON
CGA80WOA.FON=CGA80WOA.FON
CGA40WOA.FON=CGA40WOA.FON
device=vtdapi.386
32BitDiskAccess=on
device=*int13
device=*wdctrl
device=*pagefile
device=*blockdev
```



```
device=C:\3OPEN\DOSWKSTALANMAN\DRIVERS\VTICL.386 ;WINFIX (HP NS Services)
device=C:\3OPEN\DOSWKSTALANMAN\DRIVERS\VBAPI.386 ;WINFIX (HP ARPA Services)
device=C:\3OPEN\DOSWKSTALANMAN\DRIVERS\VSOCKETS.386 ;WINFIX (HP ARPA Services)
ebios=hpebios.386, *ebios
keyboard=*vkd
DEVICE=VNWD.386
DEVICE=*VPICD
DEVICE=*VTD
DEVICE=*REBOOT
DEVICE=*VDMAD
DEVICE=*VSD
DEVICE=*V86MMGR
DEVICE=*PAGESWAP
DEVICE=*DOSMGR
DEVICE=*VMPOLL
DEVICE=*WSHELL
DEVICE=*VFD
DEVICE=*PARITY
DEVICE=*BIOSXLAT -
DEVICE=*VCD
DEVICE=*VMCPD
DEVICE=*COMBUFF
DEVICE=*CDPSCI
DEVICE=OFFSHARE.386
LOCAL=CON
FILESYSCHANGE=OFF
MinTimeslice=20
WinTimeslice=100,50
WinExclusive=0
Com1AutoAssign=2
PermSwapDOSDrive=C
PermSwapSizeK=6698
```

[STANDARD]

```
[NONWINDOWSAPP]
localtsrs=dosedit.ced
CommandEnvSize=1024
hpnwoldap=yes
globalheapsize=8
```

```
[mci]
CDAudio=mcicda.drv
Sequencer=mciseq.drv
WaveAudio=mcwave.drv
```

```
[drivers]
midmapper=midimap.drv
timer=timer.drv
wave=speaker.drv
```

```
[speaker.drv]
CPU Speed=22
Volume=100
```

Version=770
Enhanced=1
Max seconds=3
Leave interrupts enabled=0

A.6 WIN.INI (Windows 3.0 upgraded to 3.1)

```
[windows]
spooler=yes
load=
run=
Beep=yes
NullPort=None
BorderWidth=3
KeyboardSpeed=31
CursorBlinkRate=530
DoubleClickSpeed=452
Programs=com exe bat pif
Documents=
DeviceNotSelectedTimeout=15
TransmissionRetryTimeout=45
swapdisk=
NetWarn=1
device=HP LaserJet Series II,HP PCL,LPT2:
```

```
[Desktop]
Pattern=
TileWallpaper=0
GridGranularity=0
wallpaper=(None)
```

```
[Extensions]
cal=calendar.exe ^.cal
crd=cardfile.exe ^.crd
```

```
:
```

```
THIS FILE IS 7 PAGES LONG. THEREFORE SOME NON-NEWWAVEMAIL RELATED LINES HAVE BEEN REMOVED TO AID CLARITY
```

```
:
```

```
[HPDLIST]
AutoNameCheck=1
```

```
[HPDLOM]
AutoNameCheck=1
REM TraceFile=c:\tmp\hpdlom.trc
```

```
[HPNWMTTC]
rem local_trace=15 c:\simon.bt
rem host_trace=2 simon
```

```
[HPNWCNT]
rem debug=2
rem tracefile=c:\nwcnt.trc
```

Appendix B: Network products error listings

B.1 NetIPC Errors

The error numbers and messages below have been taken, (via Laserrom), from the NetIPC 3000/XL Programmer's Reference Manual, in the section 'NetIPC errors. They are also available from the NS 3000/XL Error Messages Reference Manual in Chapter 5, 'NetIPC (SOCKERRS) Error Messages'.

This section includes NetIPC error messages (SOCKERRS).

SOCKERRS

NetIPC errors are (32-bit) integers that are returned in the result parameter of NetIPC intrinsics when the intrinsic execution fails. (A result of 0 indicates that the intrinsic succeeded.) In addition, both NetIPC errors and Transport Protocol errors are returned in the IPCCHECK intrinsic: NetIPC errors in the ipcerr parameter and Transport Protocol errors in the pmerr parameter. Transport Protocol errors are documented in the **NS3000/XL Error Message Reference Manual**.

0	MESSAGE	SUCCESSFUL COMPLETION.
	CAUSE	No error was detected.
	ACTION	None.
1	MESSAGE	INSUFFICIENT STACK SPACE.
	CAUSE	Area between S and Z registers is not sufficient for execution of the intrinsic.
	ACTION	:PREP your program file with a greater MAXDATA value.
3	MESSAGE	PARAMETER BOUNDS VIOLATION.
	CAUSE	A specified parameter is out of bounds.
	ACTION	Check all parameters to make certain they are between the user's DL and S registers. If an array is specified, make certain all of it is within bounds.
4	MESSAGE	TRANSPORT HAS NOT BEEN INITIALIZED.
	CAUSE	A : NETCONTROL was not issued to bring up the network transport.
	ACTION	Notify your operator.
5	MESSAGE	INVALID SOCKET TYPE.
	CAUSE	Specified socket type parameter is of an unknown value.
	ACTION	Check and modify your socket type parameter.
6	MESSAGE	INVALID PROTOCOL.
	CAUSE	Specified protocol parameter is of an unknown value.
	ACTION	Check and modify protocol parameter.
7	MESSAGE	ERROR DETECTED IN flags PARAMETER.
	CAUSE	An unsupported bit in the flags parameter was set, or a

		nonprivileged user set a privileged bit.
	ACTION	Verify that the proper bits are specified in the flags parameter. Bit numbering is from left to right (0..31).

8	MESSAGE	INVALID OPTION IN THE opt RECORD.
	CAUSE	An unsupported option was specified in the opt record, or a nonprivileged user attempted to specify a privileged option.
	ACTION	Check the options added to the opt record and remove or modify the option. Verify that the opt record was initialized correctly using INITOPT.

9	MESSAGE	PROTOCOL IS NOT ACTIVE.
	CAUSE	A NETCONTROL has not been issued to activate the requested protocol module.
	ACTION	Notify your operator.

10	MESSAGE	PROTOCOL DOES NOT SUPPORT THE SPECIFIED SOCKET TYPE.
	CAUSE	The type of socket you are trying to create is not supported by the protocol to be used.
	ACTION	Use a different socket type or protocol.

12	MESSAGE	ERROR DETECTED WITH MAXIMUM MESSAGES QUEUED OPTION.
	CAUSE	Invalid option length specified or value of option is not positive.
	ACTION	Correct option specification.

13	MESSAGE	UNABLE TO ALLOCATE AN ADDRESS.
	CAUSE	No addresses were available for dynamic allocation.
	ACTION	If unsuccessful the second time, see "Submitting an SR" at the end of this appendix.

14	MESSAGE	ADDRESS OPTION ERROR.
	CAUSE	The address option in the opt record has an error in it (e.g., invalid length).
	ACTION	Check the values being placed in the opt record.

15	MESSAGE	ATTEMPT TO EXCEED LIMIT OF SOCKETS PER PROCESS.
	CAUSE	User has already reached the limit of 64 sockets per process.
	ACTION	Shut down any sockets which are not being used or have been aborted.

16	MESSAGE	OUT OF PATH DESCRIPTORS OR PATH DESCRIPTOR EXTENSIONS.
	CAUSE	Transport's Path Cache or Path Descriptor table is full.
	ACTION	Contact your operator to see if the table can be expanded.

18	MESSAGE	FORMAT OF THE opt RECORD IS INCORRECT.
	CAUSE	NetIPC was unable to parse the specified opt record.
	ACTION	Check your INITOPT and ADDOPT calls.

19	MESSAGE	ERROR DETECTED WITH MAXIMUM MESSAGE SIZE OPTION.
	CAUSE	Maximum message size option in the opt record had an error associated with it (e.g., too many bytes specified, invalid message size value).

	ACTION	Check the values being placed in the opt record.

20	MESSAGE	ERROR WITH DATA OFFSET OPTION.
	CAUSE	Data offset option in the opt record had an error associated with it (e.g., too many bytes specified).
	ACTION	Check the values being placed in the opt record.

21	MESSAGE	DUPLICATE opt RECORD OPTION SPECIFIED.
	CAUSE	The same opt record option was specified twice.
	ACTION	Remove the redundant call.

24	MESSAGE	ERROR DETECTED IN MAXIMUM CONNECTION REQUESTS QUEUED OPTION.
	CAUSE	Maximum connection requests queued option in the opt record had an error associated with it (e.g., too many bytes specified, bad value).
	ACTION	Check the values being placed in the opt record.

25	MESSAGE	SOCKETS NOT INITIALIZED; NO GLOBAL DATA SEGMENT.
	CAUSE	Error occurred attempting to initialize NetIPC, or Network Management is still initializing.
	ACTION	See "Submitting an SR" at the end of this appendix.

26	MESSAGE	UNABLE TO ALLOCATE A DATA SEGMENT.
	CAUSE	The attempt to create a data segment failed because the DST table was full or there was not enough virtual memory.
	ACTION	Contact your operator to see if these tables can be expanded.

27	MESSAGE	REQUIRED PARAMETER NOT SPECIFIED.
	CAUSE	A required parameter was not supplied in an option variable intrinsic call.
	ACTION	Check your calling sequence.

28	MESSAGE	INVALID NAME LENGTH.
	CAUSE	Specified name length was too large or negative.
	ACTION	Check your name length parameter. Shorten the name if necessary.

29	MESSAGE	INVALID DESCRIPTOR.
	CAUSE	Specified descriptor is not a valid socket, connection, or destination descriptor.
	ACTION	Check the value being specified.

30	MESSAGE	UNABLE TO NAME CONNECTION SOCKETS.
	CAUSE	The socket descriptor given in the IPCNAME call was for a VC socket; VC sockets may not be named.
	ACTION	Check if the correct descriptor was specified.

31	MESSAGE	DUPLICATE NAME.
	CAUSE	Specified name was previously given.
	ACTION	Use a different name.

32	MESSAGE	NOT CALLABLE IN SPLIT STACK.
	CAUSE	The particular NetIPC intrinsic cannot be called from split

		stack.
	ACTION	Recode to call the intrinsic from the stack. Vectored data may be required.

33	MESSAGE	INVALID NAME.
	CAUSE	Name is too long or has a negative length.
	ACTION	Check the name's length. Shorten the name if necessary.

34	MESSAGE	CRITICAL ERROR PREVIOUSLY REPORTED; MUST SHUTDOWN SOCKET.
	CAUSE	NetIPC previously detected and reported an irrecoverable error; most likely it was initiated by the protocol module.
	ACTION	The socket can no longer be used. Call IPCSHUTDOWN to clean up.

35	MESSAGE	ATTEMPT TO EXCEED LIMIT OF NAMES PER SOCKET.
	CAUSE	A socket can have only four names; the caller attempted to give it a fifth.
	ACTION	Use no more than four names.

36	MESSAGE	TABLE OF NAMES IS FULL.
	CAUSE	Socket registry or give table is full.
	ACTION	Shut down unused sockets, call IPCNAMERASE on any sockets that no longer need to be looked up, or get given sockets. See "Submitting an SR" at the end of this appendix.

37	MESSAGE	NAME NOT FOUND.
	CAUSE	Name was not previously specified in an IPCNAME or IPCGIVE call; IPCNAMERASE or IPCGET was previously issued with the name; or socket no longer exists.
	ACTION	Check names specified, make sure names were properly agreed on, determine if a timing problem exists.

38	MESSAGE	USER DOES NOT OWN THE SOCKET.
	CAUSE	Attempted to erase a name of a socket you do not own.
	ACTION	Have the owner of the socket call IPCNAMERASE.

39	MESSAGE	INVALID NODE NAME SYNTAX.
	CAUSE	Syntax of the node name is invalid.
	ACTION	Check the node name being supplied.

40	MESSAGE	UNKNOWN NODE.
	CAUSE	Unable to resolve the specified node name as an NS node name.
	ACTION	Check the node name to see if it is correct. The node name may be valid but the specified node's transport may not be active.

41	MESSAGE	ATTEMPT TO EXCEED PROCESS LIMIT OF DESTINATION DESCRIPTORS.
	CAUSE	User has already reached the limit of 261 destination descriptors per process.
	ACTION	Call IPCSHUTDOWN on any unneeded destination descriptors.

43	MESSAGE	UNABLE TO CONTACT THE REMOTE REGISTRY SERVER.
	CAUSE	Send to remote socket registry process failed. This is often caused by the fact that the PXP protocol module is not active

		on the local node.
	ACTION	Contact your operator. If unable to resolve the problem, see "Submitting an SR" at the end of this appendix.

44	MESSAGE	NO RESPONSE FROM REMOTE REGISTRY SERVER.
	CAUSE	No reply was received from the remote registry process. This is often due to the remote node not having initialized its transport.
	ACTION	Contact your operator. If unable to resolve the problem, see "Submitting an SR" at the end of this appendix.

46	MESSAGE	UNABLE TO INTERPRET RECEIVED PATH REPORT.
	CAUSE	Unable to interpret the information returned by the remote socket registry process regarding the looked-up socket.
	ACTION	See "Submitting an SR" at the end of this appendix.

47	MESSAGE	INVALID MESSAGE RECEIVED FROM REMOTE SERVER.
	CAUSE	The message received from the remote registry process does not appear to be a valid socket registry message.
	ACTION	See "Submitting an SR" at the end of this appendix.

50	MESSAGE	INVALID DATA LENGTH.
	CAUSE	Specified data length parameter is too long or negative.
	ACTION	Check and modify the value.

51	MESSAGE	INVALID DESTINATION DESCRIPTOR.
	CAUSE	Supplied destination descriptor value is not that of a valid destination descriptor.
	ACTION	Verify that you are passing an active destination descriptor.

52	MESSAGE	SOURCE AND DESTINATION SOCKET PROTOCOL MISMATCH.
	CAUSE	The source socket is not of the same protocol as the socket described by the destination descriptor.
	ACTION	Validate that you are using the correct destination descriptor. Make certain both processes have agreed on the same protocol. Determine the correct socket was looked up.

53	MESSAGE	SOURCE AND DESTINATION SOCKET TYPE MISMATCH.
	CAUSE	The source socket cannot be used for communication with the socket described by the destination descriptor.
	ACTION	Validate that you are using the correct destination descriptor. Make certain both processes have agreed on the same method of communication. Determine the correct socket was looked up.

54	MESSAGE	INVALID CALL SOCKET DESCRIPTOR.
	CAUSE	Specified descriptor is not for a call socket.
	ACTION	Validate the value being passed.

55	MESSAGE	EXCEEDED PROTOCOL MODULE'S SOCKET LIMIT.
	CAUSE	Protocol module being used cannot create any more sockets.
	ACTION	Contact your operator; the limit may be configurable.

57	MESSAGE	ATTEMPT TO EXCEED LIMIT OF NOWAIT SENDS OUTSTANDING.

	CAUSE	User tried to send data too many times in nowait mode without calling IOWAIT.
	ACTION	Call IOWAIT to complete a send. The limit is 7.

58	MESSAGE	ATTEMPT TO EXCEED LIMIT OF NOWAIT RECEIVES OUTSTANDING.
	CAUSE	User tried to issue too many consecutive nowait receives without calling IOWAIT.
	ACTION	Call IOWAIT to complete a receive. The limit is 1.

59	MESSAGE	SOCKET TIMEOUT.
	CAUSE	The socket timer popped before data was received.
	ACTION	If this is not desired, call IPCCONTROL to increase or disable the timeout.

60	MESSAGE	UNABLE TO ALLOCATE AN AFT.
	CAUSE	User has no space for allocating an Active File Table entry.
	ACTION	Close unnecessary files or sockets.

62	MESSAGE	CONNECTION REQUEST PENDING; CALL IPCRECV TO COMPLETE.
	CAUSE	User called IPCCONNECT without a subsequent IPCRECV before issuing the current request.
	ACTION	Call IPCRECV.

63	MESSAGE	WAITING CONFIRMATION; CALL IPCCONTROL TO ACCEPT/REJECT.
	CAUSE	IPCRECV called with deferred connection option. IPCCONTROL has not been called to accept/reject.
	ACTION	Use the call IPCCONTROL with the accept/reject option.

64	MESSAGE	REMOTE ABORTED THE CONNECTION.
	CAUSE	Remote protocol module aborted the connection. This will occur when a peer has called IPCSHUTDOWN on the connection.
	ACTION	Call IPCSHUTDOWN to clean up your end of the connection.

65	MESSAGE	CONNECTION ABORTED BY LOCAL PROTOCOL MODULE.
	CAUSE	Local protocol module encountered some error which caused it to abort the connection.
	ACTION	Call IPCSHUTDOWN to clean up your end of the connection. See "Submitting an SR" at the end of this appendix.

66	MESSAGE	INVALID CONNECTION DESCRIPTOR.
	CAUSE	Supplied value is not that of a valid VC socket (connection) descriptor.
	ACTION	Check the value being given.

67	MESSAGE	CONNECTION FAILURE DETECTED.
	CAUSE	An event occurred which caused the local protocol module to determine that the connection is no longer up (e.g., retransmitted data was never acknowledged).
	ACTION	Call IPCSHUTDOWN to clean up your end of the connection.

68	MESSAGE	RECEIVED A GRACEFUL RELEASE OF THE CONNECTION.
	CAUSE	Informational message.
	ACTION	Do not attempt to receive any more data.

69	MESSAGE	MUTUALLY EXCLUSIVE flags OPTIONS SPECIFIED.
	CAUSE	Bits in the flags parameter were set which indicate requests for mutually exclusive options.
	ACTION	Check and clear the appropriate bits.

71	MESSAGE	I/O OUTSTANDING.
	CAUSE	Attempted an operation with nowait I/O outstanding.
	ACTION	Call IOWAIT to complete the I/O or IPCCONTROL to abort any receives.

74	MESSAGE	INVALID IPCCONTROL REQUEST CODE.
	CAUSE	Request code is unknown or a nonprivileged user requested a privileged option.
	ACTION	Validate the value being passed.

75	MESSAGE	UNABLE TO CREATE A PORT FOR LOW LEVEL I/O.
	CAUSE	Unable to create an entity used for communication between NetIPC and the protocol module.
	ACTION	See "Submitting an SR" at the end of this appendix.

76	MESSAGE	INVALID TIMEOUT VALUE.
	CAUSE	Value specified for the timeout is negative.
	ACTION	Modify the value.

77	MESSAGE	INVALID WAIT/NOWAIT MODE.
	CAUSE	Mode of socket cannot be used.
	ACTION	Use IPCCONTROL to specify correct mode.

78	MESSAGE	TRACING NOT ENABLED.
	CAUSE	Attempted to turn off trace when tracing was not on.
	ACTION	Remove the call.

79	MESSAGE	INVALID TRACE FILE NAME.
	CAUSE	Requested trace file name is not valid.
	ACTION	Validate and modify the trace file name.

80	MESSAGE	ERROR IN TRACE DATA LENGTH OPTION.
	CAUSE	An error was detected in the option specifying the maximum amount of data to be traced (e.g., negative value, too large, too many bytes used to specify the value).
	ACTION	Modify the values being used.

81	MESSAGE	ERROR IN NUMBER OF TRACE FILE RECORDS OPTION.
	CAUSE	An error was detected in the option specifying the maximum amount of records to be in the trace file (e.g., negative or too large a value, too many bytes used to specify the value).
	ACTION	Modify the values being used.

82	MESSAGE	TRACING ALREADY ENABLED.
	CAUSE	Attempted to turn on tracing when tracing already enabled.

	ACTION	Remove the call or turn off trace before the call.

83	MESSAGE	ATTEMPT TO TURN ON TRACE FAILED.
	CAUSE	The Node Management Subsystem (NMS) was unable to enable tracing.
	ACTION	Call IPCCHECK; the protocol module error returned will be the Node Management error number. Refer to the Node Management Errors (NMERR) in the NS3000/XL Error Messages Reference Manual to determine the appropriate action for the specified NMERR.

84	MESSAGE	PROCESS HAS NO LOCAL SOCKET DATA STRUCTURES.
	CAUSE	IPCCKECK was called, but the user had no sockets or destination descriptors, and therefore no data structure for retaining error codes.
	ACTION	None, but no NetIPC or protocol module errors are available.

85	MESSAGE	INVALID SOCKET ERROR NUMBER.
	CAUSE	IPCERRMSG was called with an invalid NetIPC error code.
	ACTION	Check the value being passed.

86	MESSAGE	UNABLE TO OPEN ERROR CATALOG SOCKCAT.NET.SYS.
	CAUSE	The error message catalog does not exist, it is opened exclusively, or the caller does not have access rights to the file.
	ACTION	Notify your operator.

87	MESSAGE	GENMESSAGE FAILURE; NOT A MESSAGE CATALOG.
	CAUSE	MAKECAT was not successfully run on the message catalog.
	ACTION	Notify your operator.

88	MESSAGE	INVALID REQUEST SOCKET DESCRIPTOR
	CAUSE	Internal error
	ACTION	See "Submitting an SR" at the end of this appendix.

89	MESSAGE	INVALID REPLY SOCKET DESCRIPTOR
	CAUSE	Internal error.
	ACTION	See "Submitting an SR" at the end of this appendix.

91	MESSAGE	WOULD EXCEED LIMIT OF REPLIES EXPECTED
	CAUSE	Internal error.
	ACTION	See "Submitting an SR" at the end of this appendix.

92	MESSAGE	MUST REPLY TO BEFORE RECEIVING ANOTHER REQUEST.
	CAUSE	Internal error.
	ACTION	See "Submitting an SR" at the end of this appendix.

93	MESSAGE	INVALID SEQUENCE NUMBER
	CAUSE	Internal error.
	ACTION	See "Submitting an SR" at the end of this appendix.

94	MESSAGE	NO OUTSTANDING REQUESTS.

	CAUSE	Internal error.
	ACTION	See "Submitting an SR" at the end of this appendix.
95	MESSAGE	RECEIVED AN UNSOLICITED REPLY.
	CAUSE	Internal error.
	ACTION	See "Submitting an SR" at the end of this appendix.
96	MESSAGE	INTERNAL BUFFER MANAGER ERROR.
	CAUSE	Attempted use of the buffer manager by NetIPC or the protocol module resulted in an error.
	ACTION	See "Submitting an SR" at the end of this appendix.
98	MESSAGE	INVALID DATA SEGMENT INDEX IN VECTORED DATA.
	CAUSE	Data segment index value in the vectored data array is not valid.
	ACTION	Check the value being supplied.
99	MESSAGE	INVALID BYTE COUNT IN VECTORED DATA.
	CAUSE	The count of data in the vectored data array is invalid.
	ACTION	Check the values being given.
100	MESSAGE	TOO MANY VECTORED DATA DESCRIPTORS.
	CAUSE	More than two data locations were specified in the vectored data array.
	ACTION	Limit the number to two per operation. Use multiple sends or receives if necessary.
101	MESSAGE	INVALID VECTORED DATA TYPE.
	CAUSE	Type of vectored data is unknown (must be a 0, 1, or 2) or the data type is for a data segment (1 or 2) and the user is not privileged.
	ACTION	Check the value being used.
102	MESSAGE	UNABLE TO GRACEFULLY RELEASE THE CONNECTION
	CAUSE	Protocol module does not support graceful release, process tried to release connection that was not in the correct state, or output pending.
	ACTION	Check command sequence.
103	MESSAGE	USER DATA NOT SUPPORTED DURING CONNECTION ESTABLISHMENT.
	CAUSE	User data option is not supported for IPCRECV or IPCCONNECT.
	ACTION	Do not use user data option.
104	MESSAGE	CAN'T NAME A REQUEST SOCKET
	CAUSE	Internal error.
	ACTION	See "Submitting an SR" at the end of this appendix.
105	MESSAGE	NO REPLY RECEIVED.
	CAUSE	Internal error.
	ACTION	See "Submitting an SR" at the end of this appendix.
106	MESSAGE	ADDRESS CURRENTLY IN USE BY ANOTHER SOCKET.
	CAUSE	Address being specified for use is already being used.

	ACTION	If you are a privileged user trying to specify a well known address, try again later. If you are nonprivileged, then see "Submitting an SR".

107	MESSAGE	TRANSPORT IS GOING DOWN.
	CAUSE	The transport is being shut down.
	ACTION	Call IPCSHUTDOWN on all sockets and destination descriptors.

108	MESSAGE	USER HAS RELEASED CONNECTION; UNABLE TO SEND DATA.
	CAUSE	Process tried to send after initiating a graceful release.
	ACTION	Check command sequence.

109	MESSAGE	PEER HAD RELEASED THE CONNECTION; UNABLE TO RECEIVE DATA.
	CAUSE	Process tried to receive after remote initiated graceful release.
	ACTION	Check command sequence.

110	MESSAGE	UNANTICIPATED ERROR.
	CAUSE	NetIPC received a protocol module error which it was unable to map.
	ACTION	Call IPCCHECK to get the protocol module error. Call IPCSHUTDOWN to clean up. See "Submitting an SR" at the end of this appendix.

111	MESSAGE	INTERNAL SOFTWARE ERROR DETECTED.
	CAUSE	An internal error was detected.
	ACTION	See "Submitting an SR" at the end of this appendix.

112	MESSAGE	NOT PERMITTED WITH SOFTWARE INTERRUPTS ENABLED.
	CAUSE	A request was made which cannot be performed with software interrupts enabled.
	ACTION	Disable software interrupts or remove the request.

113	MESSAGE	INVALID SOFTWARE INTERRUPT PROCEDURE LABEL.
	CAUSE	Procedure label passed when enabling software interrupts is invalid.
	ACTION	Check the PLABEL you are passing.

114	MESSAGE	CREATION OF SOCKET REGISTRY PROCESS FAILED.
	CAUSE	Socket registry program missing.
	ACTION	Contact your HP representative for assistance.

116	MESSAGE	DESTINATION UNREACHABLE.
	CAUSE	The transport was unable to route the packet to the destination.
	ACTION	Notify your operator.

117	MESSAGE	ATTEMPT TO ESTABLISH CONNECTION FAILED.
	CAUSE	Protocol module was unable to set up the requested connection. This may be caused by the remote protocol module not being active.
	ACTION	Notify your operator.

118	MESSAGE	INCOMPATIBLE VERSION.

	CAUSE	NetIPC software was incompatible with the software being executed by the remote registry process.
	ACTION	Notify your operator.

119	MESSAGE	ERROR IN BURST SIZE OPTION.
	CAUSE	An unsupported option was specified in the opt record, or a nonprivileged user attempted to specify a privileged option.
	ACTION	Check your opt record and remove or modify the option.

120	MESSAGE	ERROR IN WINDOW UPDATE THRESHOLD OPTION.
	CAUSE	An unsupported option was specified in the opt record, or a nonprivileged user attempted to specify a privileged option.
	ACTION	Check your opt record and remove or modify the option.

124	MESSAGE	ENTRY NUMBER NOT VALID FOR SPECIFIED OPT RECORD.
	CAUSE	User error. Entry number of option is either negative or higher than specified in INITOPT value.
	ACTION	Correct and reissue command.

125	MESSAGE	INVALID OPTION DATA LENGTH.
	CAUSE	User error. Data length for option is either negative or higher than specified in INITOPT value.
	ACTION	Correct and reissue command.

126	MESSAGE	INVALID NUMBER OF EVENTUAL OPT RECORD ENTRIES.
	CAUSE	Number of option entries is either too high or negative. Either an internal restriction or a user mistake.
	ACTION	Remove the cause by making the number positive or smaller in value.

127	MESSAGE	UNABLE TO READ ENTRY FROM OPT RECORD.
	CAUSE	The option record indicates that the entry is not valid or the buffer supplied by the user was too small to hold all of the data.
	ACTION	Check entry number, make sure the option record has not been written over and check output buffer length.

131	MESSAGE	PROTOCOL MODULE DOES NOT HAVE SUFFICIENT RESOURCES.
	CAUSE	Protocol module is temporarily out of buffers or internal data descriptors.
	ACTION	Retry later when the system load is lighter.

141	MESSAGE	X.25 NETWORK NAME INCORRECTLY SPECIFIED
	CAUSE	Invalid X.25 network name specified or not configured.
	ACTION	Correct the network name or notify the operator.

142	MESSAGE	INVALID CALL USER DATA OPT RECORD ENTRY.
	CAUSE	The length of the call user data is invalid for the transport protocol type.
	ACTION	Check the length of the call user data option in the opt array. The call user data opt record must be greater than 1 for IPCCONNECT and 4 for IPCRECVN. The maximum length is protocol specific.

143	MESSAGE	INVALID FACILITIES SET OPT RECORD ENTRY
	CAUSE	The facility set passed as a parameter has not been found in the internal facility set table.
	ACTION	Use one of the facility sets defined in the configuration or add a new one.

144	MESSAGE	INVALID CALLING NODE OPT ENTRY.
	CAUSE	The user may request the address of the calling node. Address of 8 bytes will be returned.
	ACTION	The length of the option entry must be exactly 8 bytes.

146	MESSAGE	RESET EVENT OCCURRED ON X.25 CONNECTION
	CAUSE	An unsolicited reset packet was received.
	ACTION	Use IPCCONTROL (request 12) to examine the cause/diagnostic field. The connection is still up and operational but some data may have been lost.

151	MESSAGE	COULD NOT OBTAIN A SEMAPHORE.
	CAUSE	The attempt to obtain a semaphore before sending a message to the protocol module failed.
	ACTION	See "Submitting an SR" at the end of this appendix.

153	MESSAGE	SOCKET IS ALREADY IN USE.
	CAUSE	A single socket per network interface can be created with the catch-all capability.
	ACTION	Wait for catch-all socket to be released.

155	MESSAGE	INVALID X.25 FLAGS OPT RECORD ENTRY.
	CAUSE	Invalid flag bits set in protocol specific flags option, or invalid length specified for option.
	ACTION	Check bits set and length specified. Bit numbering is from left to right (0..31).

156	MESSAGE	INTERRUPT EVENT OCCURRED ON X.25 CONNECTION
	CAUSE	An unsolicited interrupt packet was received.
	ACTION	Use IPCCONTROL (request 12) to get interrupt data. The connection is still up and operational.

158	MESSAGE	CONNECTION REQUEST REJECTED BY REMOTE.
	CAUSE	The remote node received the connection request and rejected it.
	ACTION	The call may be retried later. Otherwise, the reason for the reject must be known.

160	MESSAGE	INCOMPATIBLE WITH PROTOCOL STATE.
	CAUSE	The user requested an operation which is not supported by the protocol module.
	ACTION	Verify the sequence of intrinsic calls.

163	MESSAGE	PERMANENT VIRTUAL CIRCUIT ALREADY ESTABLISHED.
	CAUSE	A connection request was issued on a PVC which is in use by another process.
	ACTION	Select a different PVC or retry later.

164	MESSAGE	ADDRESS VALUE IS OUT OF RANGE.
	CAUSE	Address specified in opt parameter is out of range.
	ACTION	Specify an address in the range 30767 to 32767.

165	MESSAGE	INVALID ADDRESS LENGTH.
	CAUSE	An invalid address length was specified in the opt parameter.
	ACTION	The address length is 2 bytes (for non-privileged users).

166	MESSAGE	CONNECTION NOT IN VIRTUAL CIRCUIT WAIT CONFIRM STATE.
	CAUSE	Attempt was made to accept or reject a connection that is open or in the process of closing.
	ACTION	Use flags parameter in IPCREVCN to defer acceptance or rejection of the connection request.

167	MESSAGE	TIMEOUT NOT ALLOWED ON SHARED CONNECTION.
	CAUSE	Attempt to set a send time out on a shared connection.
	ACTION	Use IPCCONTROL to disallow sharing of the connection or do not attempt to set send time out on this connection.

171	MESSAGE	INVALID FACILITY FIELD.
	CAUSE	For IPCCONNECT, IPCREVCN, or IPCRECV, the opt parameter "facility field length" is wrong.
	ACTION	Check the facility field length. The length may be 1 to 109 bytes inclusive.

172	MESSAGE	CONNECTION MUST BE REJECTED.
	CAUSE	An IPCCONTROL request 9, accept the connection, cannot be performed because fast select restricted has been configured.
	ACTION	Use IPCCONTROL request 15 to reject the connection.

173	MESSAGE	MORE DATA IS AVAILABLE.
	CAUSE	Warning message. READOPT request was for less data than available.
	ACTION	Specify a greater length in READOPT.

B.2 Sockets Errors

A list of simple descriptions of HP Sockets errors is supplied with the HP Sockets Software Development Kit. This is the sock_err.h header file shown below:

```

/*
**  SOCK_ERR.H
**
**  Copyright (c) Hewlett Packard Company, 1989. All rights reserved.
**  No part of this program may be copied or used without the prior
**  written consent of Hewlett Packard Company.
*/

#define ENOTSOCK          100 /* Socket operation on non-socket */
#define FIRST_SOCK_ERR  ENOTSOCK

#define EDESTADDRREQ     101 /* Destination address required */
#define EMSGSIZE         102 /* Message too long */
#define EPROTOTYPE       103 /* Protocol wrong type for socket */
#define ENOPROTOOPT      104 /* Protocol not available */
#define EPROTONOSUPPORT  105 /* Protocol not supported */
#define ESOCKTNOSUPPORT  106 /* Socket type not supported */
#define EOPNOTSUPP       107 /* Operation not supported on socket */
#define EPFNOSUPPORT     108 /* Protocol family not supported */
#define EAFNOSUPPORT     109 /* Address family not supported by protocol family */
#define EADDRINUSE       110 /* Address already in use */
#define EADDRNOTAVAIL    111 /* Can't assign requested address */
#define ENETDOWN         112 /* Network is down */
#define ENETUNREACH      113 /* Network is unreachable */
#define ENETRESET        114 /* Network dropped connection or reset */
#define ECONNABORTED     115 /* Software caused connection abort */
#define ECONNRESET       116 /* Connection reset by peer */
#define ENOBUFS          117 /* No buffer space available */
#define EISCONN          118 /* Socket is already connected */
#define ENOTCONN         119 /* Socket is not connected */
#define ESHUTDOWN        120 /* Can't send after socket shutdown */
#define ETIMEDOUT        121 /* Connection timed out */
#define ECONNREFUSED     122 /* Connection refused */
#define EHOSTDOWN        123 /* Networking subsystem not started */
#define EHOSTUNREACH     124 /* No route to host */
#define EWOULDBLOCK      125 /* Operation would block */
#define EINPROGRESS      126 /* Operation now in progress */
#define EALREADY         127 /* Operation already in progress */
#define EBADVERSION      128 /* Library/driver version mismatch */
#define EINVALSOCK      129 /* Invalid argument */

#define ETOOMANYSOCK     130 /* Too many open sockets */
#define EFAULTSOCK      131 /* Bad address in sockets call */

#define LAST_SOCK_ERR  EFAULTSOCK
#define MAX_SOCK_ERR_LEN  100 /* maximum length of error text */

```

Appendix B.3 EDCL errors



See Appendix A of the Using Basic Serial Connection Files manual, pn:5958-9687 which was previously shipped with all copies of NewWaveMail and Advancemail for a list of EDCL errors.



This list is not 100% complete. Section 4.6.3.1 details the missing error numbers and their meanings.

'Undocumented' EDCL errors

NEW BASIC SERIAL ERROR CODES

Appendix A of the Using Basic Serial Connection Files manual contains a list of basic serial error messages that Information Access PC or NewWave Access could generate. Since the manual was last updated in 1989, a number of new error messages have been generated. Please keep this new list with your Using Basic Serial Connection Files manual for future reference.

DCL51 ERROR - No receive packet available.

DCL52 ERROR - Another packet is already waiting to be sent.

Cause : These error are generated by the BSCTSR code if the main basic serial library tries to send or receive a packet improperly.

Action : Retry your PC application. If the error occurs again, contact your HP representative.

DCL53 WARNING - A host session is already established.

Cause : This error is generated if a host session has already been established and another connection attempt is made. This error should be ignored by basic serial applications.

Action : Retry your PC application. If the error occurs again, contact your HP representative.

DCL54 ERROR - The Basic Serial TSR is not loaded.

Cause : This error will be generated if the BSCTSR code is not preloaded.

Action : Load BSCTSRV.EXE before running the application.

DCL55 ERROR - Host process has aborted.

Cause : If the server process that is used by the basic serial application aborts or terminates prematurely, this error will occur.

Action : Retry your PC application. If the error occurs

again, contact your HP representative.

DCL56 ERROR - CommOpen failed.

Cause - Under Windows 3.0 in Standard (286) mode, the Basic Serial software uses the MS Windows COMM driver via the OpenComm call. This error indicates that MS Windows returned an error when the COM port was opened. This could result from trying a COM port that is not configured on your machine.

Action - Configure a correct communication port in your application. If the problem still persists, contact your HP representative.

DCL57 ERROR - Invalid version of BSCTSRV.EXE or WBSC.DLL.

Cause : This error indicates that you have an early, unsupported version of PC application software.

Action : Obtain a released copy of your application. If you are running a correct, released copy of your application-then contact your HP representative.

DCL58 ERROR - Connection is locked by another application.

Cause : A connection to a port is locked by another application.

Action : Retry your PC application. If the error occurs again, contact your HP representative.

DCL59 ERROR - Not enough memory to load WBSC.DLL

Cause : Your application attempted to load WBSC.DLL to run under Windows 3.0 and it could not allocate enough memory to do so.

Action : Free up more memory on your PC and try again.

- Guy Randazzo
Project Manager
Information Access

Appendix C.1 NewWave OMF errors



This document may be found on the disks that accompany this guide. The file is a self extracting archive. Simply type:-

```
<drive:>\omferr
```

to extract the text file that contains the OMF errors.

Appendix C.2 NewWaveMail 3.0 ERRORS.TXT

This is an ASCII file which NewWave Mail 3.0, (not 4.0), installs as \HPNWDATA\HPMROOMERRORS.TXT. It is also located on the NewWave Mail installation disk as \DOC\ERRORS.TXT.



Please see the disks that accompany this guide for the file ERRORS.TXT for NewWaveMail 3.0.



Appendix D.1

Advancemail & NWMail Serial connections

Author:- Ed Tollinton, PWD Online Support

This article is about EDCL (Extended Data Comm Library) connections with AdvanceMail and NewWaveMail. It includes:

- 1) Some possible problems with NWMail EDCL connections.
- 2) Performance increases by moving to &NETMODE
- 3) Connection tips over X.25, public PAD's and Modems.
- 4) Some specific DTC problems.
- 5) Information about the new connections methods shipped with Advmail and NWMail.

If you have any questions on these subjects or any feed back at all please contact PWD Support.

Potential EDCL Problems.

NWMail A.03.00 includes a new version of EDCL (A.05.00) which has been rewritten to take account of the timing delays brought about by using another layer of code (Windows 3 I/O Interrupt Handling Routines) below that of the product. This means that connection files written for Advmail or for NWMail A.01.00 may run into difficulties with timings. This will typically be in the &WTIMEOUT values set and any &PAUSE delays used. In testing it has been found that increasing these values by about 25 to 40 % solves most of these problems, (more often 25% than any greater values). These timing problems may also be seen in encapsulated versions of Advancemail.

Performance Tips.

Increasing performance of EDCL connections is possible for users of &HEX mode by moving to &NETMODE. &NETMODE will do this by reducing the number of bytes transfered by up to half depending on the number of &NETCHARS defined. This is because HEX mode will split each character into two bytes both of which fall into the normal ASCII character range.&NETMODE will only double the work on characters that you specify (non of the normal ASCII characters and only some of control characters coded by &HEX mode). Following is a list of NETCHARS that includes all those likely characters to cause problems on sensitive PAD's and modems:

```
&NETMODE ON
&netchars
&netchars "#14#16#18#19#1B#1D#5C#7F#85#86#0B#01"
&netchars "#00#03#04#05#06#07#08#09#0A#0D#0E#0F#10#11#12#13"
&netchlen 7
```

This subset has been derived by experience and is not conclusive for all systems. It should be noted that by setting &NETCHARS blank at the second line the normal default of 20 NETCHARS known as the Advlink NETCHARS are truncated to only 4 which are:

```
&netchars "#0D#5C#7F#FF"
```

(NOTE all NETCHARS are shown here in HEX)

X.25 Tips.

If making a connection to the Host is a problem then flow control can often be at fault. It is often a good idea to look at the path the commands are taking to the host and try to set flow control accordingly. If you are using a modem, it will often strip out DC1 and DC3 characters (Xon/Xoff). This is also true for some PAD's. In this case &TRIGGER OFF (&HP300 OFF) should be used and the &TERMINATOR should be redefined or turned off to stop the PC expecting characters it will never received. This also has implications for the &HANDSHAKE setting.

If flow control problems are being encountered then &QUICKSEND should be used to send text to the host rather than &SEND. This does not use any flow control, although you must ensure to add "^M" (CR) at the end of each line.

Another connection problem is with synchronising PAD's. This problem is seen prior to sending the PCSERVER run string from the PC and the connection file seems to hang having finished, (issued &Exit 0). This can be rectified by issueing the following commands just before &EXIT 0:

```
&PAUSE 2
&QUICKSEND "^M"
&PAUSE 2
&QUICKSEND "^M"
&PAUSE 2
&QUICKSEND "^M"
&PAUSE 2
```

This should go some way towards getting all the various parts of the connection co ordinated and ready for PCSERVER to start sending packets.

DTC Problems.

As DTC's become more popular as a way of getting serial connections to 9000's as well as to 3000 XL machines we have seen an increased number of problems when trying to connect and send files using EDCI.

There is at least one known Telnet/HP9000 problem in HP-UX 7.0 which occurs with serial connections to DTCs which then use the Telnet protocol over a LAN to connect to the HP9000. Telnet was not designed to work in a 'burst mode' environment where there are periods of data saturation followed by no data at all. It was designed around users typing at a keyboard and hence sometimes the problems are not noticed at low baud rates, for example 1200baud. However, in a

data rich environment the telnet protocol appears to read up to 26 bytes (presumably its default data block handling size) and then seems to choke on its own data.

The following extract depicts a typical scenario of the Telnet 26-byte bug manifesting itself during a NewWave Mail transfer to the host.....

The HP9000 login shell has 'telnetd' for its parent; pcserver is running in Net 7 mode and issues a read request for a Carriage-Return (CR) terminated string. The read should receive the whole of the 38-byte incoming packet but only gets 26 bytes before eventually timing out ie. no successful read during the time allocated. After the read function times out, pcserver issues a Line-Feed (LF) - DC1 packet back to the PC to indicate its willingness to receive data. This action has the effect of causing the telnetd driver to free up the missing 12 bytes. Unfortunately the host datacomm server never recovers. The PC continues re-sending the same 38-byte packet over and over, whilst the pcserver sees a sequence similar to the following:-

- 26 byte packet which is missing the last 12 bytes;
- 50 byte packet consisting of the last 12 bytes from the previous packet plus the entire next 38 byte packet;
- 26 byte packet which is missing the last 12 bytes;
- 50 byte packet consisting of the last 12 bytes from the previous packet plus the entire next 38 byte packet and so on....

The pcserver is not smart enough to recognise the embedded valid 38 byte packet in the seemingly corrupt 50 byte one. Pcserver is designed to keep on retrying until it receives a valid packet or the threshold of the maximum number of retries is met - whichever is sooner. The puzzling aspect of this bug is that it is not apparent from looking at the trace from a protocol analyser (HP495*) that incomplete packets are being received because the problems only occur at the host end of the datacomm link.

This problem has been fixed in a HP UX kernel patch called:

"hptt0.o"

and is available from FC-site SE support machine hpfscse (15.2.72.8) as a "shar"-ed file called "p239" which explodes into:

```
readme.p239
install.p239
hptt0.o
```

(N.B. You must be a SuperUser as system re-generation is needed)

To check to see if this patch is installed type:

```
what /hp-ux
```

and look for the line:

```
$HEADER:hptt0.c,v 1.96.15.23 89/10/04 17:42:20 jmc Exp $
```

The important bits are the strings "hptt0" and "jmc".

Another problem that is with control characters used by Telnet on these DTC's. This is not a specific 9000 problem although seems to be being seen more on 9000's than 3000's. Characters such as Ctrl-K = "VT" = #0B are used by Telnet to allow users to talk directly to the DTC and thus change route to another machine on the LAN through the DTC while keeping logged onto the original machine. This problem is only seen on the more intelligent (and more useful so more popular) DTC's that are controlled by dedicated PC's sitting on the LAN. Another control character used by SYTEK Broad Band LAN machines and possibly others is Ctrl-A = "SOH" = #01 which should also be included in &NETCHAR strings.

The control character problems can be seen on a line analyser as suddenly all the information from the PC is echoed back to it by the DTC, the Host is lost completely and the DTC complains of illegal commands.

Shipped Connection Methods.

In the four supported connections shipped with AdvanceMail and NWMail there is a new option to turn logging on. This is commented out but can be activated by removing the !. This will produce a log file called <connection name>.log. For Advancemail this will be put in the VADMAIL\ADVMDDBMSG directory and for NWMail it will be placed in the HPNWPROG directory. This file contains comments on the connection as it progresses up until the point of handing over to PCSERVER. It is in person readable form and is particularly useful for NWMail where there is no easy way to see at what point the connection is falling over.

Creating this file does however increase overhead and a small degradation in performance can be seen. For this reason logging is normally left commented out.

The four connection methods shipped with Advancemail A.04.01 and NWMail A.03.00 are now supported on the hardware specified in the data sheet and are listed below:

- Direct X.25 HP2334/5 Connection to HP3000/HP9000
- Direct Hayes Modem connection to HP3000/HP9000
- Motorola Data Switch connection to HP3000/HP9000
- Direct Connection to HP3000/HP9000

They have been re written for the new releases of Advancemail and NWMail to include better comments and to lend themselves more easily to being templates for modification. As a result the unsupported templates have been removed from the discs as they are felt too specific to be generally helpful and no longer reflect the timing changes introduced for NWMail or Advancemail when running under windows. If any help is needed for unsupported connection methods and configurations then PWD offer a consultancy service to help out with connection problems.

end.

Appendix E. NewWave 3.0 and NewWaveMail 3.0 datasheets

HP NewWave 3.0 for Windows

Data Sheet

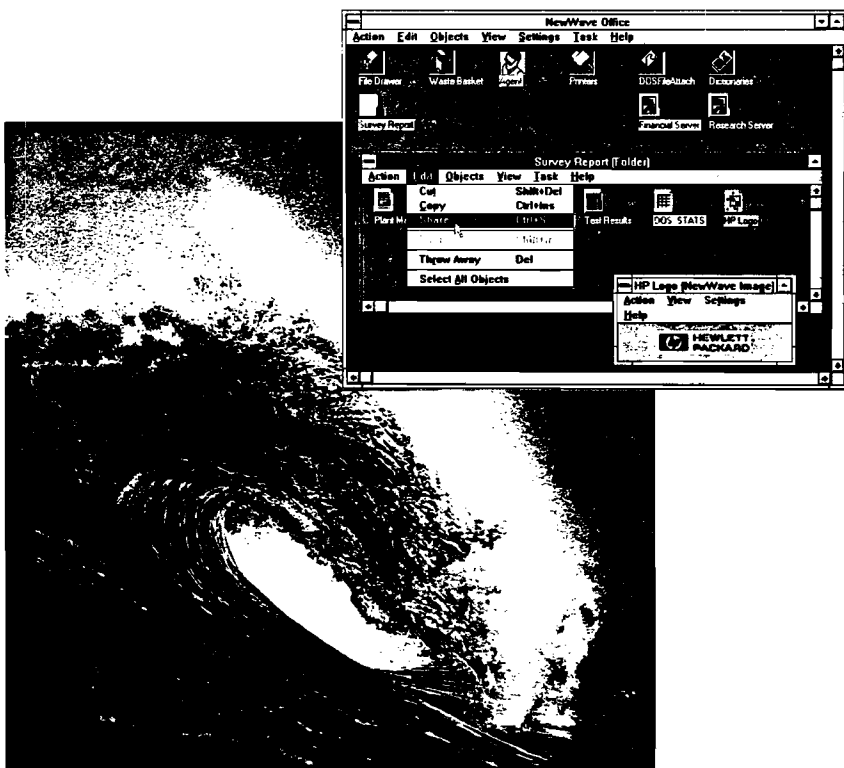
What is HP NewWave?

HP NewWave is a graphical software environment which integrates your PC applications and automates your work. HP NewWave builds on industry-

standard MS-DOS and Microsoft Windows 3.0 (all modes).

HP NewWave's open architecture makes it possible to combine off-the-shelf applications to build fully integrated networked solutions.

Figure 1. The HP NewWave user interface.



Easy to use environment for integrating applications and automating tasks

Benefits of HP NewWave

Easy to learn and easy to use
A consistent and predictable 3-D graphical user interface, computer-based training, and on-line help make HP NewWave truly easy to learn and use.

Integration

With its object management technology, HP NewWave allows users to link and combine information such as text, numerical data, and graphics from multiple applications.

Task automation

With the HP NewWave Agent, HP NewWave can automatically record your work across applications and perform tasks at any time and date. The NewWave Agent can even prompt you for information along the way.

Group Productivity

HP NewWave includes Object Storage which lets you easily share information across a network.

HP NewWave features

Instant integration

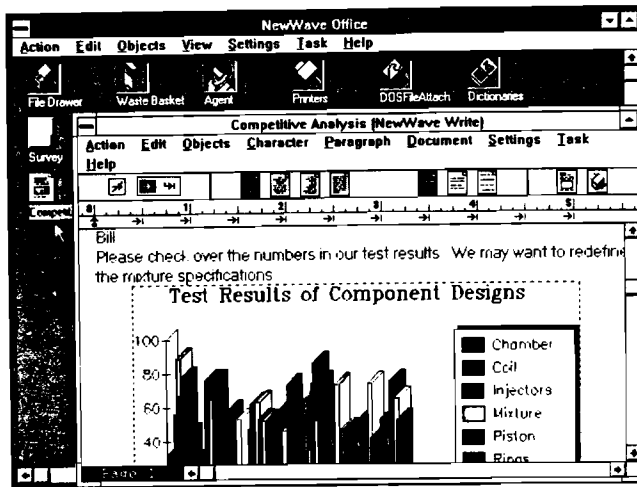
HP NewWave allows you to instantly integrate information from different NewWave applications in a single step. For example, to include a graph in a document you simply pick up the graph's icon and drop it into the open document using a mouse.

Changing or updating information is just as easy. With HP NewWave, changing a graph within a document is as simple as pointing to the graph with a mouse. HP NewWave automatically loads the information for you to update. When you are finished making changes, NewWave brings you right back to your document.

HP NewWave's *object* approach allows you to integrate any data type, including text, graphics, spreadsheets, voice, video, etc., to create compound documents and multimedia presentations.

HP NewWave also allows you to *hotlink* information throughout your PC. For example, the chart you included in your document can also be linked to several other documents so that changes in one are automatically updated in all the others.

Figure 2. HP NewWave makes it easy to create and revise compound documents.



HP NewWave Agent

The HP NewWave Agent allows you to automate the work you do across all your software applications. The NewWave Agent can record your work as you perform it. You can then schedule playback at any time and date you specify. In addition, Agent tasks can be edited to include new steps, change information, and even interact with you to prompt for information.

For example, an Agent task could ask you for the name of a database you need, start a database application, download information from a remote source into a spreadsheet, generate a graph of the data, combine the graph with a document, ask you for a distribution list, and mail the document to several coworkers.

Figure 3. The HP NewWave Agent calendar lets you schedule Agent tasks to be performed on any day and time.

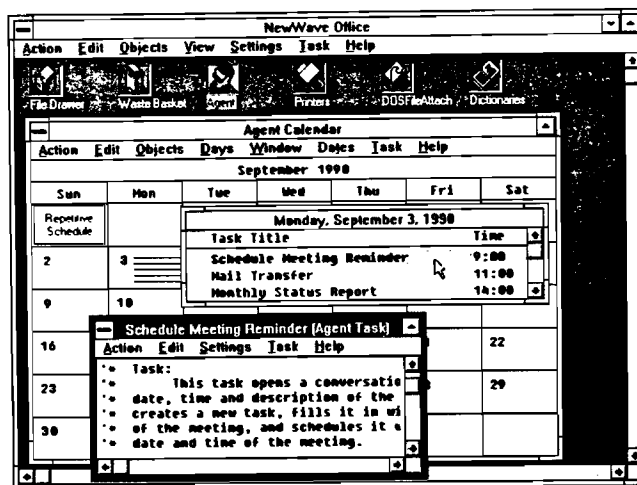
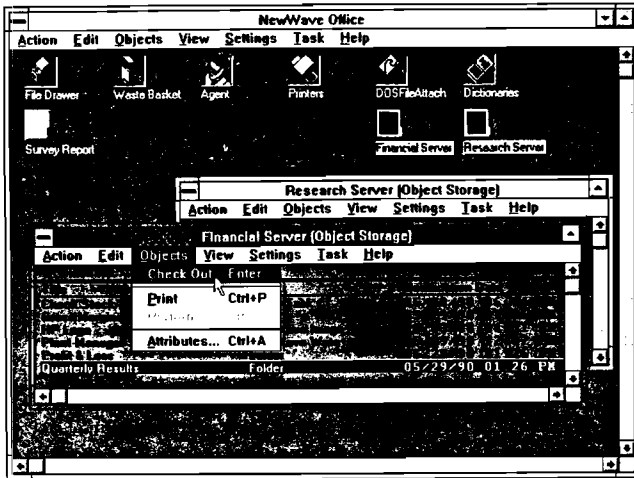


Figure 4. HP NewWave Object Storage allows you to easily share information across networks.



Network object sharing

When you need to share information across a network, HP NewWave makes it easy. HP NewWave includes Object Storage which provides iconic access to network disks across a LAN. Giving another user access to a file is as easy as moving the icon to the Object Storage folder with a mouse. Like a library, Object Storage allows you to "check-out" and track files in use by other NewWave users. HP NewWave supports Novell, HP OfficeShare, and HP LAN Manager for storing and printing objects. Though HP doesn't guarantee NewWave support for other networks, NewWave was designed to work with networks which view a server as an MS-DOS disk drive or use the MS-NET standard.

Object Storage also works with floppy disks, so you can carry your work with you or save important or confidential data on removable disks.

Bridges

HP NewWave protects your investments in DOS and Windows software. You can continue to use your favorite software *without* any modifications. Bridges give you the ability to use an icon for every file you have automatically. Now, all your files can be moved, mailed, opened, copied and deleted—all by using a mouse. You can also move information between applications easily.

A Bridge Disk containing bridges for twenty of the top DOS and Windows applications is provided, as well as a Bridge Builder tool for making your own bridges for your favorite applications.

Help

A complete, on-line help facility is available for all aspects of HP NewWave and NewWave applications. In addition to the indexed list of help topics, a context-sensitive, point-to-the-screen help mode is available at any time. The help messages are linked together so users can jump to related topics instantly. You can also move the Help window while viewing your work.

Computer-based training

HP NewWave includes a complete set of interactive tutorial lessons to help you get started quickly and easily. The lessons can be run at any time and include helpful animation and examples. The first lesson is a complete guided-tour of HP NewWave.

For more information on HP NewWave or the dealer nearest you, call (800) 752-0900. Or contact one of the HP regional offices below:

United States:

Hewlett-Packard Company
4 Choke Cherry Road
Rockville, MD 20850
(301) 670-4300

Hewlett-Packard Company
5201 Tollview Drive
Rolling Meadows, IL 60008
(708) 255-9800

Hewlett-Packard Company
5161 Lankershim Blvd.
No. Hollywood, CA 91601
(818) 505-5600

Hewlett-Packard Company
2015 South Park Place
Atlanta, GA 30339
(404) 955-1500

Canada:

Hewlett-Packard Ltd.
6877 Goreway Drive
Mississauga, Ontario L4V 1M8
(416) 678-9430

Japan:

Yokogawa-Hewlett-Packard Ltd.
15-7, Nishi Shirjuku 4 Chome
Shinjuku-ku
Tokyo 160, Japan
(03) 5371 1351

Latin America:

Hewlett-Packard
Latin American Region Headquarters
Monte Pelvoux No. 111
Lomas de Chapultepec
11000 Mexico, D.F. Mexico
(525) 202-0155

Australia/New Zealand:

Hewlett-Packard Australia Ltd.
31-41 Joseph Street
Blackburn, Victoria 3130
Melbourne, Australia
(03) 895 2895

Far East:

Hewlett-Packard Asia Ltd.
22/F Bond Centre, West Tower
89 Queensway
Central, Hong Kong
8487777

In Europe, please call your local HP sales office or representative:

Austria, East Central Europe, USSR and Yugoslavia:
(0222) 2500 0

Belgium and Luxembourg:
Customer Information Center
(02) 761 34 00

Denmark: (42) 81 66 40 **Ireland:** (01) 88 33 99

Finland: (0) 88 721 **Italy:** (02) 92 19 91

France: (1) 69 82 60 60 **Netherlands:** (020) 547 6666

Germany: (06172) 16 0 **Norway:** (02) 24 60 90

Greece: (01) 68 28 811 **Spain:** 900 123 123

Iceland: (91) 67 10 00 **Sweden:** (08) 750 20 00

Switzerland:
(057) 31 21 11 (Head Office)
(022) 780 41 11 (Suisse Romande)
(046) 05 15 05 (Customer Information Center)

South Africa:
HiPerformance Systems
(011) 802 5111

Turkey:
175 29 70

UK:
(0344) 369 369

Middle East and Africa:
Geneva, Switzerland
41/22 780 7111

European Headquarters:
Hewlett-Packard S.A.
150, Route du Nant d'Avril
1217 Meyrin 2
Geneva, Switzerland
41/22 780 8111

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5952-1565

Applications make it happen

The HP NewWave environment is a powerful foundation for improved productivity, but application software is the key to bringing the HP NewWave system together.

Just as Microsoft Windows requires applications to be useful, HP NewWave works together with application software. Rather than taking a proprietary approach, HP has responded to your needs by preserving the value of the vast library of MS-DOS and Microsoft Windows applications with software bridges.

While Bridges protect your current investment, the full power of HP NewWave is realized with applications written to take advantage of the environment. Today, over 150 software companies are registered HP NewWave developers. Applications in every category are available and being written for HP NewWave, from high-end word processors to electronic mail, to full-motion video applications.

HP NewWave also includes HP NewWave Write; a mid-level word processor fully integrated with the NewWave environment. NewWave Write includes features like page preview, spell checking, autopagination, autosave, and ASCII, DCA, and Executive Memomaker conversion.



Figure 5. Nearly all of the thousands of MS-DOS and Windows applications work with HP NewWave. In addition, over one hundred and fifty companies (some examples are pictured) are registered developers of NewWave applications which are written to take full advantage of HP NewWave.

Technical Reference Set

The HP NewWave Technical Reference Set is designed for support personnel and users creating complex Agent tasks which may require a more in-depth understanding of the easy to use Agent programming language. The set contains a Support Guide, which addresses customization, maintenance and error messages, a diagnostics/utilities disk and Agent Reference Manuals.

Minimum system requirements

PC: HP, IBM, or Compaq 80286- or 80386-based PC or 100% compatible
 Memory: 80286 standard, 80386 enhanced mode: 640 Kb base, 2 Mb extended memory
 80286, 80386 real mode: 640 Kb base (256 Kb base + 384 Kb backfill), 3 Mb expanded memory (EMS 4.0)
 Floppy Disk: 1.2 Mb 5 1/4-inch disk drive, or 720 Kb 3 1/2-inch disk drive
 Hard Disk: 40 Mb hard disk recommended
 Display: Microsoft Windows-supported display (EGA or VGA monitor and card)
 System: MS-DOS 3.2 or higher, MS Windows 3.0
 Input: Microsoft Windows-supported mouse, keyboard
 Output: Optional: Microsoft Windows-supported printers, plotters, etc.

Ordering information

Product	Product Number
HP NewWave 3.0 - 3 1/2 inch, Opt. AAB - 5 1/4 inch, Opt. AAB	D1704B opt. ABA (U.S. English)
HP NewWave 3.0 single user license	D1706B opt. ABA (U.S. English)
HP NewWave Technical Reference Set 3.0	D1730B opt. ABA (U.S. English)
HP NewWave Software Developer Kit	D1714B
HP NewWave Developer Assist. Service	D1728A
HP NewWave Developer Premier Assist Service	D1729A

HP NewWave Office – Information Distribution Services for the PC



Technical Data

PC Information Distribution Services

HP NewWave Office software offers organizations unparalleled flexibility in distributing information. One of the key benefits of HP NewWave Office is its power to integrate PCs into the corporate information distribution network. There are two key elements which make that integration possible – HP NewWave Mail and HP AdvanceMail. These two software products allow dedicated PC users to communicate transparently with any other user either on the internal or external mail network.

Choice of PC Client

HP NewWave Office gives you a choice of the type of client you use to integrate your PC users. You have the option of using the easy to use, graphical interface of HP NewWave or the MS[®]-DOS interface. Whichever PC mailing client you choose, users get the same high level of integration to any of the HP NewWave Office servers.

Choice of Server

HP NewWave Office is available for three types of server – an HP 3000 with MPE OR MPE/XL, an HP 9000

PC integration with HP NewWave Mail and HP AdvanceMail

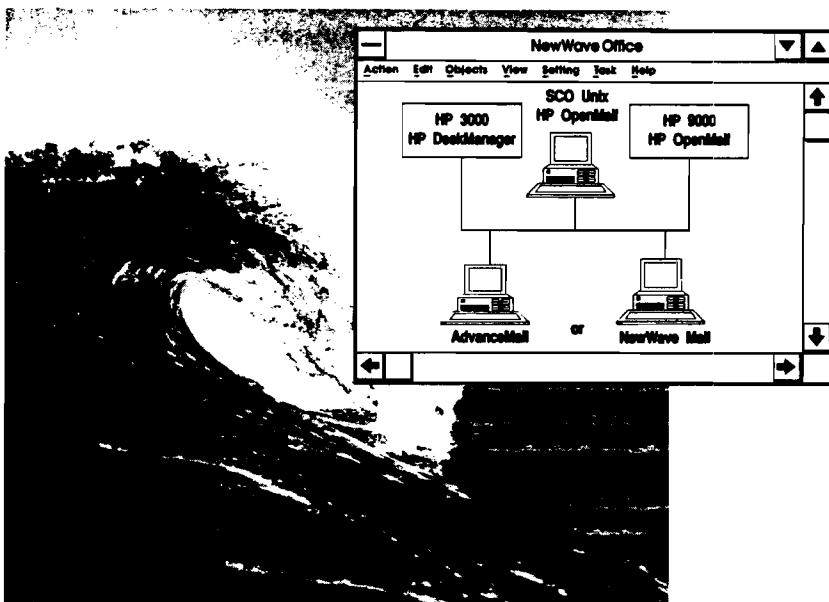
with HP-UX or a 386 or 486 PC server with SCO Unix. AdvanceMail and NewWave Mail will connect to each of these servers and provide PC users with connections to HP's mail servers HP OpenMail and HP DeskManager, or to non-HP servers such as IBM's PROFS and DISOSS. X.400, fax and telex networks are also supported.

HP NewWave Mail

NewWave Mail (version A.03.00) combines the intuitive, easy to use NewWave environment with powerful corporate communications capabilities. NewWave Mail provides NewWave users with a fully integrated, transparent electronic mailing solution for communicating with others on the corporate network.

HP AdvanceMail

AdvanceMail (version A.04.01) is the MS-DOS information distribution service of NewWave Office for HP-UX, MPE, MPE/XL and SCO Unix. AdvanceMail is appropriate for environments which do not require the full power of NewWave. For example, the sales representative using a portable PC with a standard memory and hardware configuration, AdvanceMail offers a simple, cost-effective solution.



HP NewWave Mail

Benefits of HP NewWave Mail

NewWave Mail ensures transparent integration of the NewWave workstation with the corporate electronic mail network by connecting either to an HP 3000, an HP 9000 or a 386/486 PC server. Using these powerful servers, NewWave Mail users can mail any NewWave object, for example a simple text note or a complex compound document to any other user on the mail network.

The close integration of PC and server provides NewWave users the best of both worlds. They can use the power and ease of NewWave's advanced graphical interface on the PC combined with communication and distribution capacity of HP's mail servers.

Getting the benefits of HP NewWave

NewWave is designed to increase user productivity in the office through a combination of functionality and ease of use. NewWave Mail looks and acts the same as other NewWave applications, so users will quickly reap NewWave's productivity benefits when communicating with others.

Task Automation

The NewWave Agent can record and perform tasks for you at any time. You can use the Agent to automate your mailing tasks – for example to send and receive messages at a specified time of the day, or to automatically send a document to a pre-defined distribution list. (Keystroke record and playback only).

HP NewWave and Current Wave Coexist

For customers who already have HP DeskManager or AdvanceMail,

adding NewWave to your network is simple. NewWave Mail, DeskManager, OpenMail and AdvanceMail users can all exchange information and built-in browsers and converters allow them to read, print and even edit documents received on a terminal or on a PC. You can add NewWave and NewWave Mail to your system without sacrificing your existing investment in terminals and PCs.

Quick and Easy connections

NewWave Mail connects users to the server quickly and easily either over a network or via a serial connection. LAN connections are very simple and where serial connections exist, either direct connections, via a Hayes modem or X.25, NewWave Mail's built-in data communications software can handle complex logon procedures.

HP NewWave Mail Features

NewWave Mail has the full set of mailing functions you expect from a leading supplier of information distribution software. These features include automatic background message transfer, full distribution list checking, new mail notification and multi-level filtering of messages.

Sending messages

Creating and sending messages is simple. Just dropping an object on the Out Tray creates a message. NewWave Mail prompts you for the names and then can check them immediately. You can set urgent priority or make the message private. You can choose to send messages immediately or later. Mail is always transferred in the background so you can continue with other tasks in your NewWave Office window.

Receiving Messages

Messages arrive automatically in

the In Tray as a background task. From the In Tray, you can read, print, edit, file, reply to or forward messages. New mail notification informs you of new messages arriving. Objects are automatically converted to the format of choice. Filters route messages to the server printer or the NewWave Mail In Tray.

Filing

Messages and objects can be filed in folders in the NewWave filing cabinet or shared by other users on the network using Object Storage.

Agent Tasks

Task automation is provided in NewWave Mail with the support of keystroke record and playback. Actions performed using the mouse cannot be recorded in NewWave Mail.

Online Help

Context sensitive help.
Help index.

Customer Support

Customers may purchase the following support for NewWave Mail:

HP Commercial PC ResponseLine
H2015A+H00
HP ResponseLine for Commercial
Systems H2001A+H00 option #0F8
or #0LG
HP ResponseLine for HP 9000
Systems H2011A+H00 option #0F8
PC Software Material Update
HP 2016A+S00

Product Requirements

PC

HP Vectra, IBM PC AT, AT/2 or 100% compatible

Memory

80286 standard mode, 80386
enhanced mode
640Kb base and 2Mb extended
40Mb hard disk recommended

(See NewWave 3.0 datasheet for full details p/n 5952-1565)

Software

MS-DOS 3.2, 3.3 or 4.0
MS Windows 3.0a
NewWave 3.0

Connection Method

Serial – RS 232 serial port
LAN – HP ARPA Services 2.1
HP Network Services 2.1

HP 3000

Series 37-70, 9xx

Software

MPE V/EV Delta 4 or later
MPE XL version 1.2 or later
HP DeskManager B.03.B0 or B.03.R0

Connection method

Serial – MPE V ATP ports
MPE XL DTC ports
LAN – NS/3000

HP 9000

Series 3xx, 4xx, 6xx, 7xx or 8xx

Software

HP-UX 7.0 or later
OpenMail version A.00.01 or later

Connection method

Serial RS 232 serial port
LAN NS/9000
HP ARPA/Berkeley Services

386/486 PC Server

Software

SCO Unix System V/386 version 3.2.1 or 3.2.2
OpenMail for SCO Unix System V/386

Connection method

Serial – not available
ARPA/ HP LAN Manager/X 1.1
Berkeley 386/486
Sockets –

Data communications

RS 232 hardwired serial link
HP 2334/5 X.25 PAD connection
Motorola Dataswitch connection
Hayes Smartmodem 2400+Quad or 100% compatible
Other private and public X.25 connections are not supported.

Ordering Information

HP NewWave Mail for HP D2103B DeskManager
Single User License for D2113B D2103B
HP NewWave Mail for D2109B OpenMail
Single User License for D2119B D2109B

Upgrades

Full Product upgrade D2103-60006 from D2103A
Single User License D2433B upgrade (to D2103B only)

Exchange media kit for D2103-60008 D2103B
Exchange media kit for D2109-60001 D2109B

NewWave Mail version A.03.00 does not support OfficeShare connections.

HP AdvanceMail

Benefits of HP AdvanceMail

Freedom from the host computer

AdvanceMail lets you create messages, read incoming messages and print them without being connected to the server. This means that wherever connections are costly or time-consuming you can be independent of the server for everything except sending or receiving mail. AdvanceMail can help by providing transfers at preset times so you use mail when it is convenient and cheapest.

Quick and Easy connections

AdvanceMail is ideal for PC users wherever they are and however they connect. You simply choose between LAN or RS 232, modem or X.25 and AdvanceMail does the rest.

Protect and Enhance your PC investment

You have made significant investment in your PC hardware and software. AdvanceMail helps to protect and enhance that investment. It protects it by supporting many available PC applications. It enhances your investment by letting you integrate your applications into AdvanceMail so you can use your own PC word processor to create your mail messages.

Information on demand

The success of any business depends on the right information

getting to the right people at the right time. Important reports can be sent without user intervention. This means vital information gets to its destination quicker.

Your own electronic secretary

Sorting and filing mail is time-consuming. You (or your secretary) must dispose of junk mail, prioritize urgent messages and file others away. AdvanceMail's filtering facility can automate this process and save you, and your secretary, valuable time.

Commitment to standards

AdvanceMail is another example of Hewlett-Packard's commitment to standards in communications. AdvanceMail supports RS 232 and X.25 communications. It also supports ThinLAN, StarLAN and StarLAN 10 local area networks which are all based on OSI standards. X.400 messaging is fully supported.

HP AdvanceMail Features

Sending Messages

Create messages in the Out Tray
Use prepared distribution lists
Nicknames
Integrate word processors
Include PC files in messages
Private & Urgent
Acknowledgements
X.400 addressing

Receiving messages

Receive mail in the In Tray
Forward or reply
Browse WP documents
Automatic file conversions
Filters delete messages or deliver to In Tray, printer, filing cabinet or MS-DOS

Mail transfer

Transfer messages interactively
Batch transfer at specified times

Filing

File messages in filing cabinet
Retrieve deleted messages from
Waste Basket

Connections

Built-in serial connections
Multiple choice of connections
Foreign connections to X.400 and
Unix mail, telex and fax, IBM's
PROFS and DISOSS.

Other Features

Support for HP Mouse, Microsoft or
Microsoft compatible two-button
mouse.
SENDSPEC/RECVSPEC automate
transmission of files from
applications.

Customer Support

Customers may purchase the
following contractual support for
AdvanceMail.

HP Commercial PC ResponseLine
H2015A+H00
HP ResponseLine for Commercial
Systems H2001A+H00 option #0F8
or #0LG
HP ResponseLine for HP 9000
Systems H2011A+H00 option #0F8
Software Material Update
H2106A+S00

Customer Education

AdvanceMail user training H2127B
Customers can attend this one day
basic training course.

AdvanceMail trainer's pack H2126B
Customers can purchase this pack
for use by their own training staff.

Contact your HP Education Center
or Sales Representative for details.

Product Requirements

PC

HP Vectra, IBM PC XT, AT, AT/2 or
100% compatible

Memory

640Kb recommended

Free PC memory required

HP 3000	Serial 410Kb LAN 380Kb
HP 9000	Serial 450Kb LAN 410-435Kb
SCO Unix	LAN 410-435Kb

Software

MS-DOS 3.1, 3.2, 3.3 or 4.01
Optional: MS Windows 2.11 or 3.0

Connection method

Serial - OfficeShare -	RS 232 serial port ThinLAN or StarLAN interface card OfficeShare B.00.00 (does not support Windows 3.0) ARPA Services 2.0 or FTP PC/TCP Network software version 2.04 or Excelan LAN WorkPlace version 3.3
Arpa/Berkeley Sockets	HP LAN Manager for DOS (included with server software)
Named Pipes	HP Network Services 2.1
Net IPC	

HP 3000

Series 37-70, 8xx

Software

MPE V/EV Delta 2 or later
MPE XL version 1.0 or later
HP DeskManager B.02.01 or later

Connection method

Serial	MPE V ATP ports MPE XL DTC ports
LAN	LAN IEEE 802.3 OfficeShare LAN/ 3000

HP 9000

Series 3xx, 4xx, 6xx, 7xx, or 8xx

Software

HP-UX 7.0 or later
OpenMail version A.00.00 or later
OpenMail version A.00.01 required for LAN
Manager connections

Connection method

Serial	RS 232 serial port ARPA Services/ 9000 or HP LAN Manager/X for HP 9000 version 1.0 or later or NS Services/9000
LAN	

386/486 PC Server

Software

SCO Unix System V/386 version 3.2.1 or 3.2.2
OpenMail for SCO Unix System V/386

Connection method

Serial	not available
Arpa/ Berkeley Sockets	HP LAN Manager/X 1.1 386/486
Named Pipes	HP LAN Manager/X for 386/486

Data communications

RS 232 hardwired serial connection
HP 2334/5 X.25 PAD connection
Motorola Dataswitch connection
Hayes Smartmodem 2400+Quad or 100%
compatible
Other private and public X.25 connections
are not supported.

Ordering Information

AdvanceMail	D2101B
5.25" option	AAA
3.5" option	AA8
Single User License	D2111B
16-User License for OpenMail for SCO Unix	B1613A

Upgrades

3.5" disks	D2101-60007
5.25" disks	D2101-60008
Single User License Upgrade	D2341B
Media Exchange kit for D2101B	D2101-60006

Customers may upgrade from any previous
version of AdvanceMail by returning master
disks to the Software Distribution Centre.

UNIX® is a registered trademark of
UNIX System Laboratories Inc. in the
US and other countries.

PROFS and DISOSS are products of
International Business Machines Inc.

MS-DOS® is a US registered trademark
and Microsoft and Microsoft Windows
are trademarks of Microsoft
Corporation.

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Appendix F: The NewWave diagnostic

The NewWave diagnostic tool is supplied with the NewWave Support Kit, not with the standard NewWave end-user installation. It is represented iconically by a spanner as shown below:

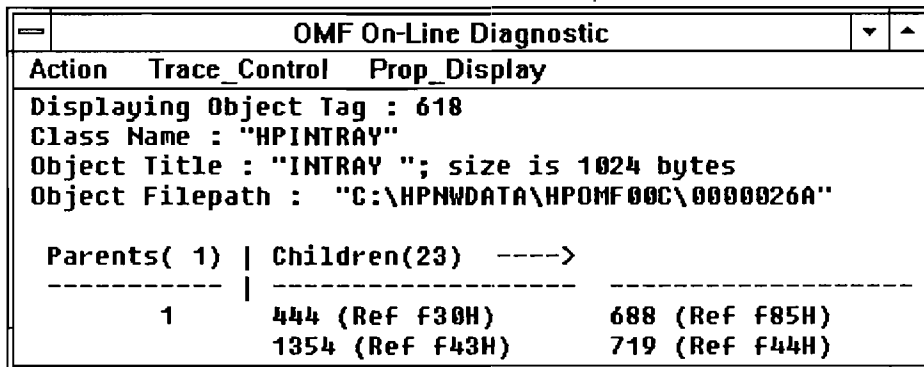


The tool has 3 main functions for the NewWaveMail Support engineer.

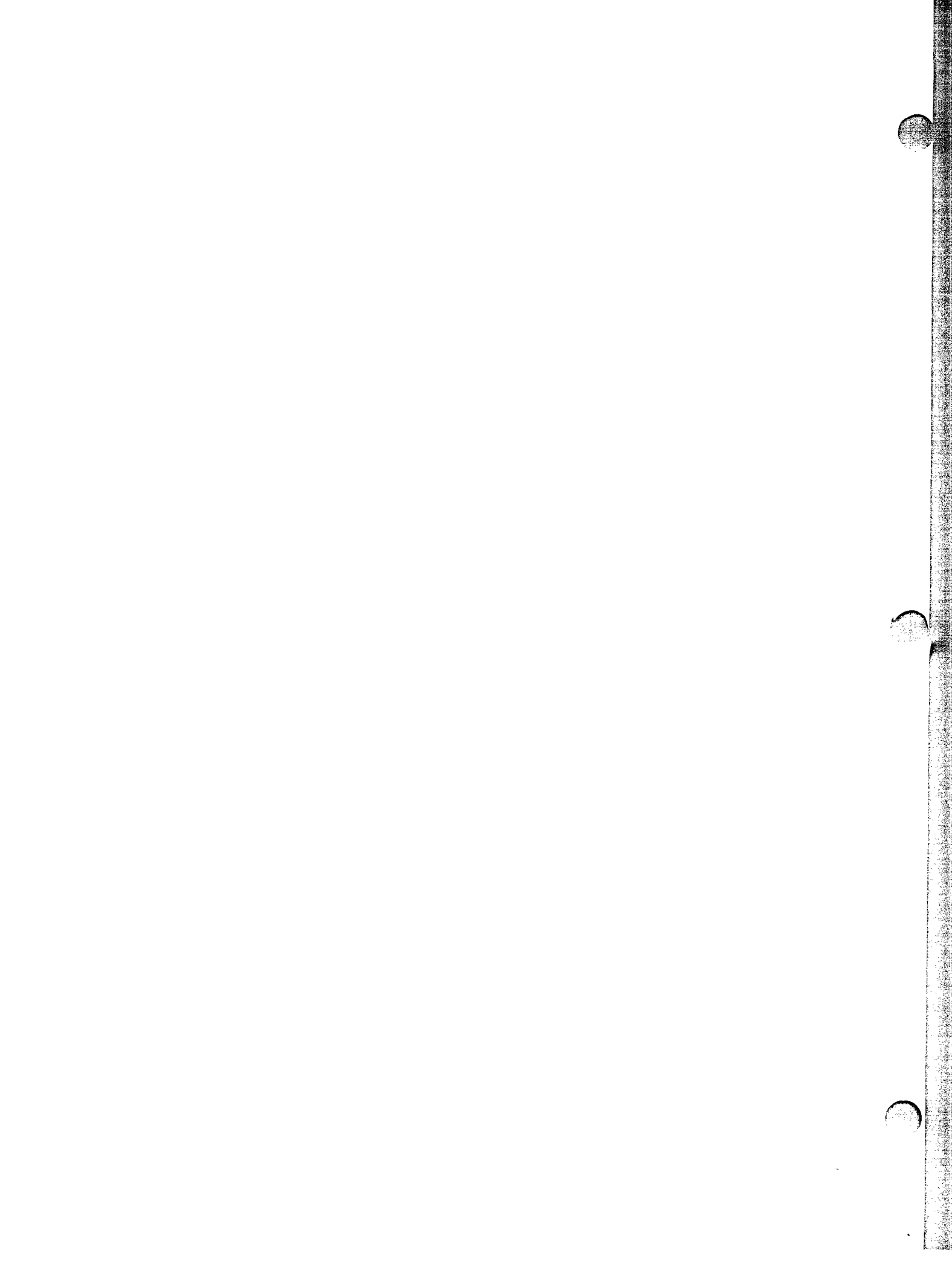
- * Object/DOS file location (OMF interrogation)
- * NewWaveMail object property interrogation & modification
- * NewWave Tracing

To use the tool double-click on it in the normal way to open it's main window. To view objects and tools just drag and drop them onto this window and there details will be displayed. For example, below is shown the main window after the NewWaveMail intray has been dropped onto it.

The NewWaveMail INTRAY tool



Interesting information is the actual DOS filename in the OMF file system....\0000026A. The unique object identifier # is also shown: 618. The tree structure of the object's contents is show by the display of the reference numbers of the children. To look at these just double-click on the number to go down. To look at this object's parent just double-click on 1, (in this case).



An Incoming Message

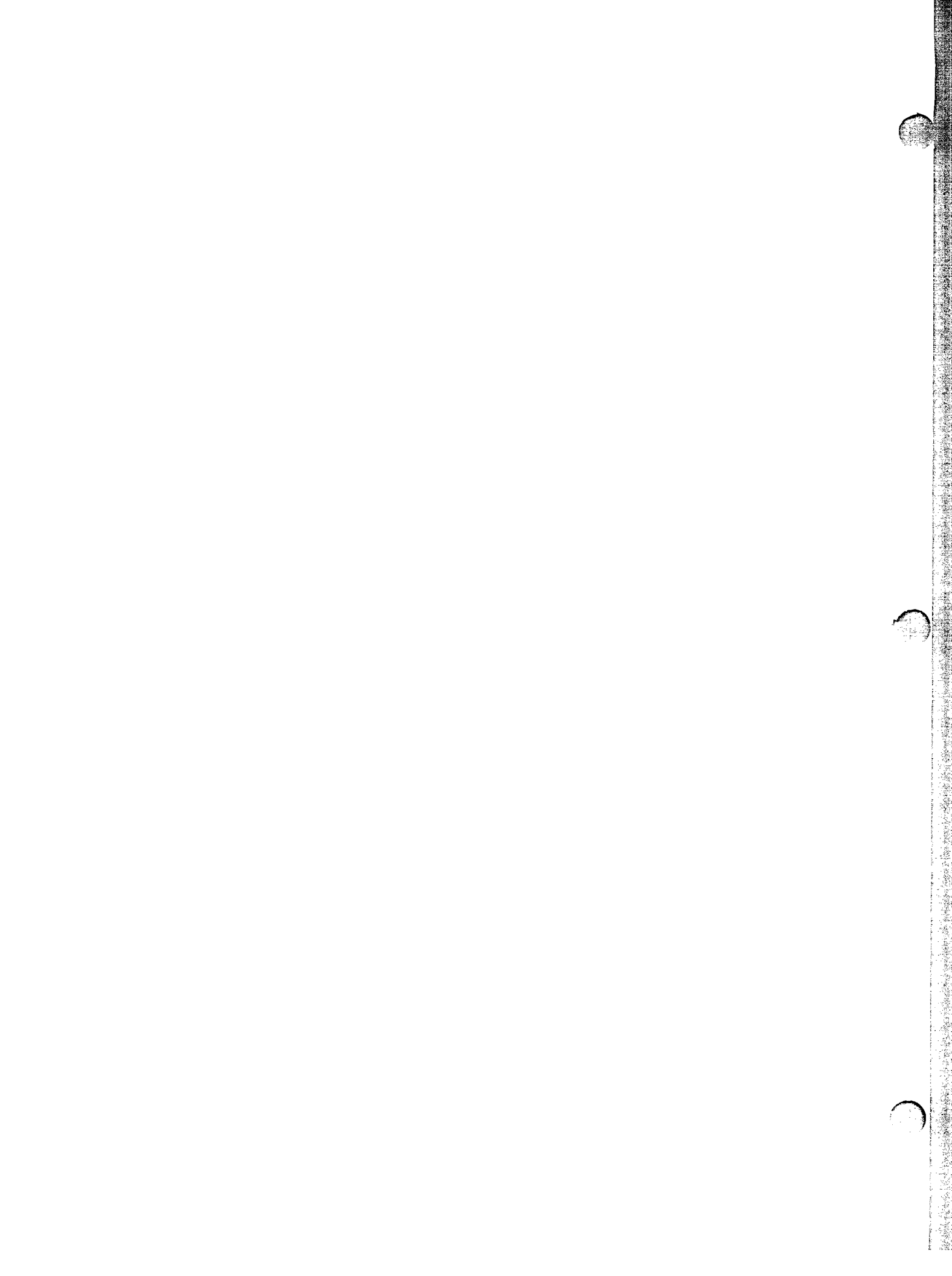
An incoming message is displayed next. This message was in the intray but is not shown above because the list (of 23 children) was unfortunately too large for the bitmap displayer with my limited amount of memory! This object's parent is the object with a tag of 618, the intray, as can be seen from the previous display.

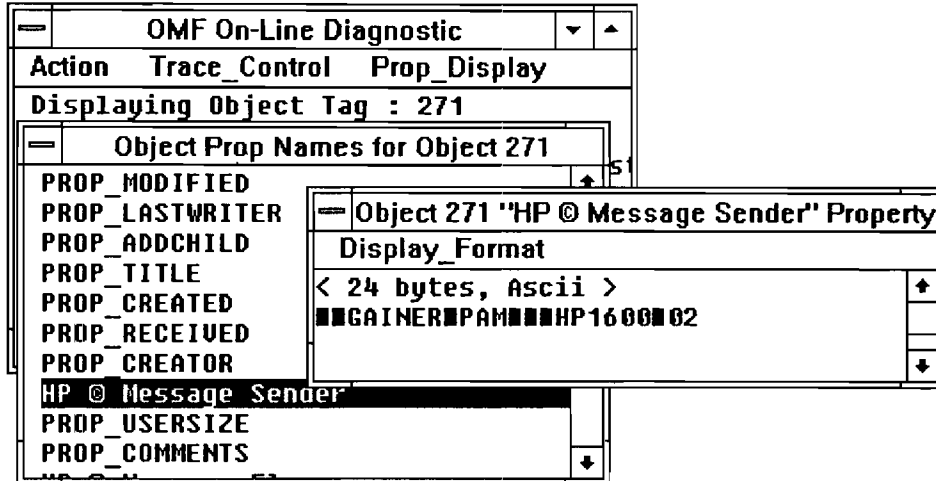
OMF On-Line Diagnostic		
Action	Trace_Control	Prop_Display
Displaying Object Tag : 271		
Class Name : "HPENV Incoming"		
Object Title : "Database repair - test report"; size is 99420 bytes		
Object Filepath : "C:\HPNWDATA\HPOMF005\0000010F"		
Parents(1) Children(0)		
----- -----		
618		

Looking at Object and Class Properties

Another use for the diagnostic tool is for investigation, (and modification if necessary), of object and class properties. The next display shows that the object with a tag of 271, (the previous incoming message), has a message sender of PAM GAINER who's email address is HP1600/02. NewWaveMail stores some information in object properties and other in DOS data files. For example CONTROL.ADF is a NewWaveMail data file. Most of the information below could be stored in data files but perhaps for reasons of improved speed of data access object properties are often used.

It is possible to modify this data if necessary, though great care should be taken when doing this if you are not completely sure what you are doing.

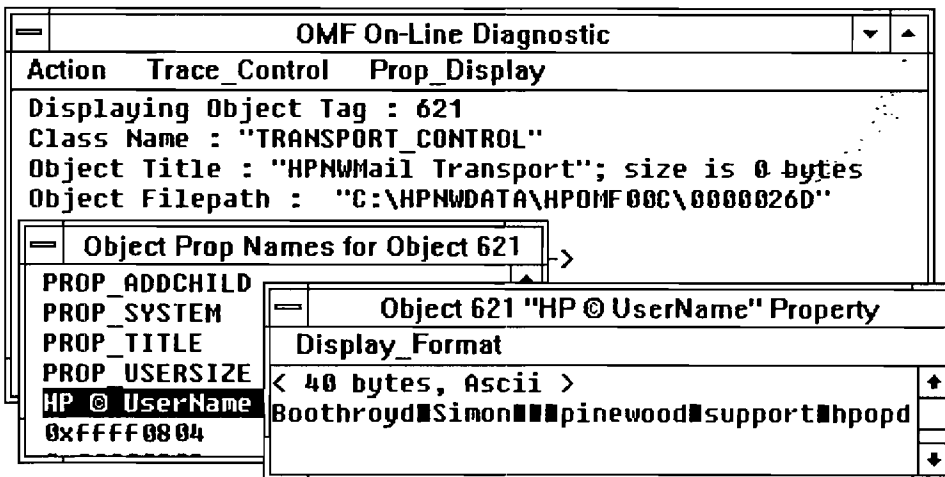




Below is another example of an object property and how to access it.

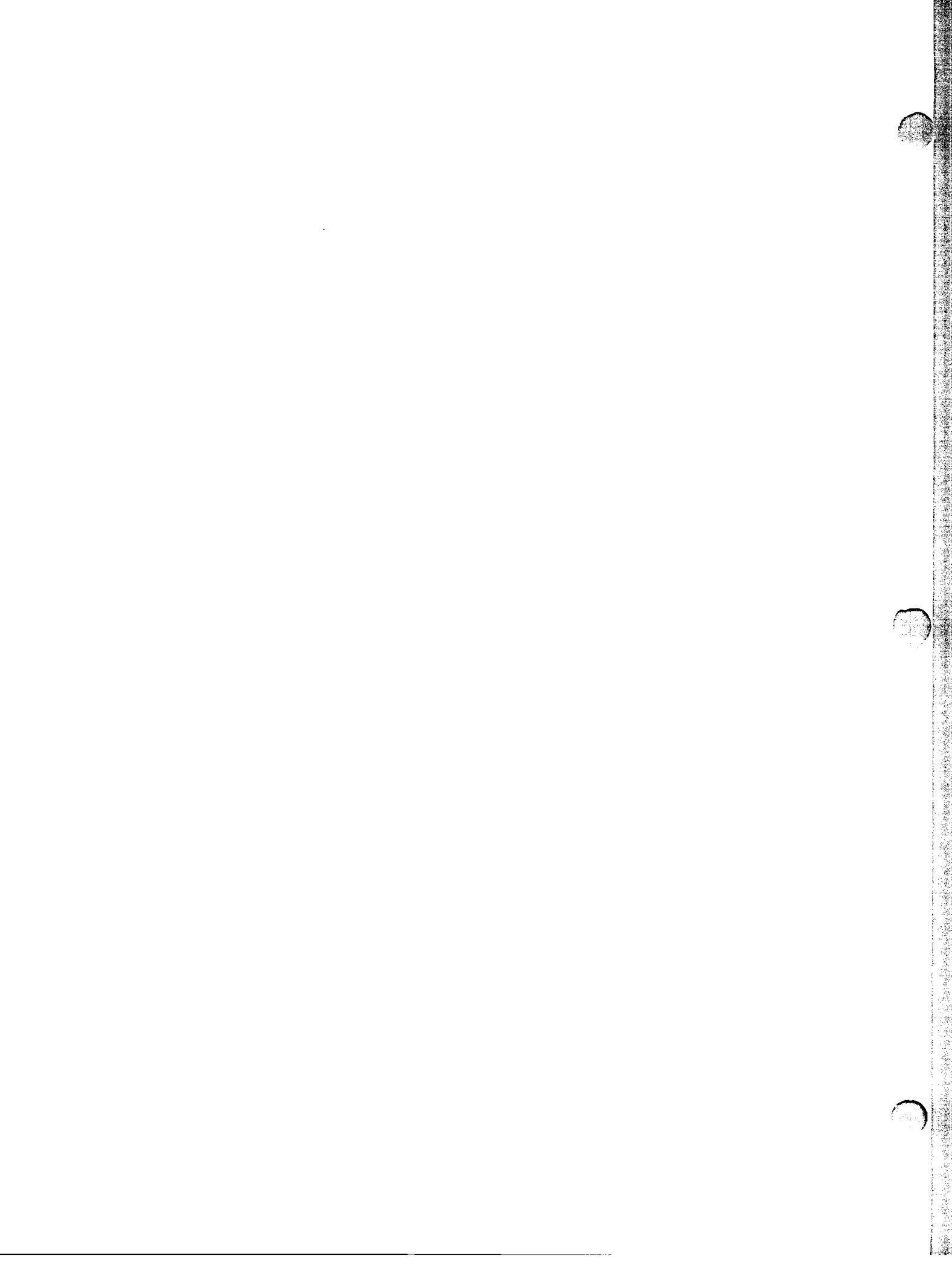
The user name is not held in a file; instead is held as a property. You can check this by using the diagnostic utility. Run it and from the list of the objects under the NewWave Office select 8a300102H, which is the Transport Control. Then select the Prop_Display menu and the Show Object Props option. The properties will then be listed for the transport control; select the

HP c UserName property and display it as an Ascii String. This shows the user name with the field separators displayed as blocks. It is possible to successfully change the name and then save it thus changing the name of the person.



NewWave Tracing

The 3rd use for the diagnostic is for tracing NewWave. This may be necessary if either the PWD or CCD Labs wish to check trace output in order to diagnose customer problems. The Trace_Control



menu allows tracing to be sent either a file, a window or both. You can trace just errors or all OMF calls made. It is also possible to trace FAST, (ie. the file is nont closed after each write and this saves time), or SURE FIRE which is slower but you are guaranteed to get a trace in the event of a PC crash or a hang needing a PC re-boot.

Below is a trace being written to a window. You can identify object numbers, and the start & end of OMF procedure calls. This trace is showing all calls rather than just errors.

There are generally a large number of errors displayed in most NewWave trace files, and though CCD have assured me that they are not all real errors, it does make it difficult to determine just where the real ones are! I suggest that these files are really only for PWD and CCD Lab use.

