

# **3+Open Version 1.1 Maintenance Update Release Notes**

---

**For 3Com User Group Information  
1-800-NET-3Com**

Part No. 4814-03

Published May 1990. Printed in the U.S.A.



# Contents

Before Updating 3+Open LAN Manager to the Maintenance Version 1.1	2
Fixes and New Features	2
Fixes	2
New Features	4
Known Problems and Solutions	5
3+ and 3+Open Passwords	5
OS/2 Workstations Accessing Files on 3+ Servers	6
EtherLink II and External Tranceivers	6
Using Passwords with DOS Basic Workstations and User-Level Security Servers	7
PostScript Despooler and Simultaneous Multiple Despooling	7
Applications and Redirected Drives	7
Start Up of IBM PS/2 Machines	8
Netpopup and VGA Boards	8
Netpopup and Monochrome Displays	8
CD ROM and DOS Enhanced LAN Manager	8
Off-Line Printer Problems	9
Sending Messages to DOS Workstations	9
Using the COPY Command vs. PRINT Command	10
3F DIR /LINK and 3P DIR /LINK	10
Out of Dynamic Memory	10
Compaq 386/16 Mother Board Problem	10
Redirector Out of Resources	11
Installation and Setup Notes	12
Compatibility with Previous Versions of 3+Open, OS/2, and 3+	12
NET 3054 Error Message	13
Network Number for 3+Open LAN Manager Entry System	13

Checking for Overlaid Drive IDs	13
OS/2 DOS Compatibility Mode	14
PC Servers Using OS/2 DOS Compatibility Mode	14
Creating Generic DOS Workstation Diskettes	15
3+Open LAN Manager Server Adaptation Installation	
on a Dedicated Server	16
Global Path Statement in OS/2 1.1	16
Logon Command for 3+ and 3+Open Name Service	17
Setting LOGON for Automatic Links	17
OS/2 Disk Cache and SQL Server	18
Installing 3+ for OS/2 Workstations and 3+Open LAN Manager	18
Compaq DOS 3.31 Disk Format Incompatible with OS/2	18
Upgrading from Entry System to Advanced System Software	19
Building 360 KB DOS Boot Diskettes	19
3+Open Tuning and Configuration	20
Existing Server Configuration Guidelines	20
New Server Configuration Guidelines	20
Server Tuning Guidelines	24
Performance Tuning	25
Adding Users	25
Services Tuning	25
Applications Tuning	26
Tips and Information	26
Server Shutdown Guidelines	26
Task 1: Notify Users of Server Shutdown	26
Task 2: Stop Installed Services	27
Task 3: Stop the Server Service, Redirector and Disk Cache	27
Task 4: Power Down your Server	28
IBM Dual-Async Adapters and EtherLink/MC Adapter	28

IBM Token Ring 16/4 and 16/4/A Addresses	29
Accessing Shared Modems	29
Loading the Enhanced Redirector 3ComEMM into High Memory	29
Understanding the Netlogon Service	30
Running GROWACC on Your Server	33
Running CHKDSK on 3Servers	34
Network Administration Notes	36
Parameters for the NET PRINT Command	36
MAXLOCKS and MAXOPENS Parameters	37
Using 3+Open LAN Manager in a NETMAP Environment	38
Backing Up Account Information	38
Clearing Access Control Records on a Server	39
User Sharenames Ending in \$	39
Logging Server Out of Resources Errors	39
NET ADMIN Error Messages Missing	39
NET ADMIN User Count	40
NET ADMIN Error Count	40
DOS Workstations Auto Reconnection	40
Autodisconnect Parameter Values	40
3+Open Documentation	41
3+Open MS OS/2 LAN Manager Administrator Guide	41
3+Open for 3Servers Installation and Setup Guide	41
3+Open MS-DOS LAN Manager User Reference	42
3+Open Messages Guide	42
General Notes	43
IBM PS/2 Model 80 ESDI Controller Problem	43
MS-DOS Manager and DOS 4.0	43
Printing from the DOS Compatibility Box	43
Autoswitching and/or Monitor-Detecting Video Cards	43
Tested Video Adapters	44
NET /MONO Option	44

Universal Name Convention (UNC) Names Invalid with Printer	44
Diskette Drive Access Problems Under OS/2	45
Expanded Memory Not Supported	45
Application Notes	46
IBM LAN Manager Program	46
IBM PC 3270 Version 1.0	46
IBM 3270 Emulation Version 3.0	47
IBM PC Network Program 1.3	47
Windows/386 and Windows/286	48
Memory Saving Options for DOS Workstations	49
NBP Protocol	50
Dynamic Loading/Unloading of XNS Protocols	50
Downloading Protocols to the Adapter (XNS only)	51
Using the HIMEM Utility	52
Using DOS Maximizer/386 to Load Programs into High Memory	54
Other Notes on DOS Memory Savings	55
Conflicts with Memory Mapped Devices	56
3Com TokenLink Adapter	56
IBM Token Ring Adapter	57
3Com EtherLink Plus Adapter	57
3Com EtherLink II Adapter Configured with Memory Mapping	58
Software Developer Notes	58
NetWkstaSetUid () API Change	58
Named Pipes (Msg/Blocking Type)	58
Named Pipes Message Size	59
Named Pipes with Multiple Threads	59

# 3+Open™ Version 1.1 Maintenance Update Release Notes

This introductory section provides some basic information about these release notes and how to take advantage of the information within them.

These release notes are an integral part of the 3+Open LAN Manager documentation, and supersede all previous release notes for 3+Open LAN Manager. These notes contain valuable product information and should be read by the network administrator prior to product update.

The first section contains information you need before you use the 3+Open Version 1.1 Maintenance Update. 3Com strongly recommends that all servers and workstations on the network be updated with the Maintenance Update as it ensures better reliability, interoperability, and supportability.

The next three sections contain information on fixes, and new features, known problems and solutions, and installation and setup information. You should read these carefully.

The remainder of the release notes contain information about tuning, tips and information, network administration notes, 3+Open documentation, and application and software developer's notes. Use the table of contents to guide you to the section that is of interest to you.

## **Before Updating 3+Open LAN Manager to the Maintenance Version 1.1**

Before you begin the update process, make backup copies of each diskette (using the DISKCOPY utility) and label each diskette. Use the backups for the update process.

## **Fixes and New Features**

Several problems have been fixed in this maintenance update. New features have also been added.

### **Fixes**

Problems that were fixed for the 3+Open Version 1.1 Maintenance Update include:

- A problem existed in 3+Open version 1.1 where the user was unable to access a file even though it did not appear in the Open Files window.
- A condition existed where over time the number of users who could link to the server steadily decreased.
- LAN Manager was reporting an incorrect error code to DOS workstations when some applications (for example, SuperCalc and dBase IV) would attempt to make temporary files.
- Several problems existed with the PostScript despooler such as creating a blank job in addition to a submitted job, and the out-of-paper notifications.
- The maximum number of NetBIOS names supported has been increased from the previously released 1690 to the value of 23000.



- Problems with incompatibility in the use of the cursor key on the 3Com 3Station with Lotus 1-2-3 version 3.0.
- Several fixes have been included for Logon, Logoff:
  - Hyphens can now be used in 3+ usernames.
  - Repeated iterations of Logon, Logoff under NBP could put the server in to a state where it stopped responding to network requests.
- The CLEANACC.EXE file (for removing outdated access-control records) is now included in this release.
- A problem existed that when network servers had heavy loads or were running applications that linked to multiple partitions simultaneously, the server would sometimes not respond to network requests.
- A condition could occur on 3Servers whose hard drives had experienced grown defects where the server would stop responding to network requests.
- The maxnames= parameter in the PROTOCOL.INI file has been raised to the documented limit of 256 from 16 for the XNS protocol.
- The performance of 3+Open Start has been significantly improved.
- Multiple token ring networks with IBM PC3270 Gateways and workstations linked together on different token rings are now supported.

## New Features

The following new features have been included in this update:

- Support for HP StarLan 10 boards is now included.
- All drives that are cached are physical. Caching only operates on physical drives, even if those drives have been partitioned into one or more logical drives. The write cache can now support up to the first eight physical drives instead of the former limit of two.
- The following new XNS NetBIOS parameters can be used to improve performance and reliability for low speed communication links:

*/B* specifies the heartbeat interval in seconds.

Range: 15 to 2000

Default 15

*/F* specifies the number of retransmissions in multiples of eight. One unit for this parameter means eight retransmissions.

Range: 1 (eight retransmissions) to 32 (256 retransmissions)

Default 1

*/U* prevents phone hangups (enables modem timeout) on 3+Remote PC NetBIOS.

- EtherLink Plus and TokenLink Plus adapters are supported in PC servers.
- The PSH.SYS component of the Link Plus Optimizer now accepts a fourth parameter. For example, PSH.SYS XXX XXX XX2 where 2 means programmed I/O. This is to prevent DMA conflicts with Windows/386 when using LPO adapters.

## Known Problems and Solutions

The 3+Open Version 1.1 Maintenance Update provides many enhancements over previous releases, but it also has a few potential problems, which can be avoided.

### 3+ and 3+Open Passwords

A problem exists where 3+ and 3+Open passwords can be different lengths. Logon now truncates 3+Open passwords that are greater than 12 characters to 12 characters for the 3+ password. If you make all 3+Open passwords 12 characters or less (the 3+ limit), or make the first twelve characters of the 3+ and 3+Open passwords identical, you will only have to enter one password to log on to 3+ and 3+Open servers.

## **OS/2 Workstations Accessing Files on 3+ Servers**

You may encounter the error message:

```
NET3196: A write operation to <variable>
failed. Data may have been lost.
```

when attempting to save or change files on 3+ servers from OS/2 workstations. Possible solutions include:

- Try to save or change the file again.
- Clear the archive bit on the problem files. Refer to your OS/2 documentation for complete information on the ATTRIB command.

## **EtherLink II and External Transceivers**

To use an external transceiver with an EtherLink II board, you must use an editor to edit the PROTOCOL.INI file. Note the respective locations for the PROTOCOL.INI file:

### **OS/2 Server**

```
C:\3OPENSERVER\LANMANDRIVERS
```

### **DOS Workstation**

```
C:\3OPENDOSWKSTA\LANMANDRIVERS
```

### **OS/2 Workstation**

```
C:\3OPENOS2WKSTA\LANMAN\DRIVERS
```

Under the [EtherLinkII] section, a new statement should be added, as in the following example:

```
[ETHERLINKII]
  transceiver = external
```

## **Using Passwords with DOS Basic Workstations and User-Level Security Servers**

If the session between a DOS Basic workstation and a user-level security server is disconnected, and if passwords were used, they are not retained. The session to the server cannot be reestablished automatically. You can prevent this problem by including the account password at the end of every NET USE command.

## **PostScript Despooler and Simultaneous Multiple Despooling**

The PostScript despooler despools serially when supporting multiple printers. If one printer goes off-line due to any printer error, all other printers on the server being controlled by the PostScript despooler will stop printing. It is recommended that there not be multiple printers off the PostScript despooler. If this problem occurs, the network administrator should restart the printer, delete any jobs left in the queue and notify users about the deleted jobs.

## **Applications and Redirected Drives**

Some applications (for example FoxBase, DisplayWrite IV, and others) can experience problems when the application program resides on a redirected drive other than the drive containing the data. The application program can, however, be run from either the local workstation drive or on the same redirected drive that contains the data.

## **Start Up of IBM PS/2 Machines**

Some IBM PS/2 machines can experience problems during startup. If you experience problems with your IBM PS/2 machine, powering-off and then powering-on your machine again will typically result in a successful startup.

## **Netpopup and VGA Boards**

Using Netpopup with a VGA board and certain applications can cause the screen area occupied by the Netpopup message to blank the application's display. If you experience this problem, disable the Netpopup feature.

## **Netpopup and Monochrome Displays**

Netpopup is not designed for monochrome displays. The signals that are sent to the monitor can damage the monochrome display. If you have a monochrome display adapter, 3Com recommends that you disable the Messenger service at your workstation.

## **CD ROM and DOS Enhanced LAN Manager**

Loading a profile breaks all existing redirections, including CD redirections. 3Com recommends that you not use profiles on the machine that contains the CD ROM. Use a logon script in place of a profile.

## Off-Line Printer Problems

Certain printers, when paper jams or they are otherwise forced off-line, do not completely come back up when attached to a 3+Open server via a parallel port. The HP LaserJet family exhibits this behavior. To resolve this, edit the SETMODE.COM file (located in the root of the server's C: drive) and add a new line which reads:

```
C:\OS2\MODE LPTx: ,,P
```

where *x* is replaced with the correct parallel port designator. You are setting an infinite timeout for this port.

## Sending Messages to DOS Workstations

DOS workstations do not have a messages log like OS/2 workstations and servers. Therefore, when a message is received, they can only display it. They do not listen for new messages while the first is present on the screen (one minute, or until you press escape).

If you attempt to send two messages to the same DOS Enhanced workstation in quick succession, you will find that the second attempt generates errors at the sender's workstation informing you that the Network Name of the intended recipient cannot be found. The error messages are:

```
NET3722: An error occurred while sending a  
message to {name}
```

```
NET2273: The message alias cannot be found  
on the local-area network.
```

```
NET2136: A general network error has  
occurred.
```

## **Using the COPY Command vs. PRINT Command**

Use the COPY command instead of the PRINT command from an OS/2 workstation that is redirecting output from a 3+ server directory to a 3+Open server's printer.

## **3F DIR /LINK and 3P DIR /LINK**

The 3F and 3P programs included with 3+Share versions 1.3.1 and earlier will report an internal error in a directory listing if a link to a 3+Open server has been made with the NET USE command. Updated versions of these programs have been included with this release, and are located in the \APPS\DOSAPPS directory on the server. The 3F2 and 3P2 programs included with 3+ for OS/2 workstations do not have this problem.

## **Out of Dynamic Memory**

If you see the error message from your 3Server:

```
Out of Dynamic Memory
```

when you are running Netsetup in 640K mode under a 3C connection, you must change the base memory size to 768K (or higher depending on the device) if you have memory mapped devices. If you do not have memory mapped devices, set the base memory size to 896K.

## **Compaq 386/16 Mother Board Problem**

The OS/2 1.1 included with 3+Open LAN Manager will not install on Compaq 386/16 as a server with a mother board Rev C or A/C. Compaq OS/2 1.1 can be used instead.



## Redirector Out of Resources

If you increase the number of screen groups on your OS/2 workstation, you may see error log entries with the following messages:

```
NET3191: The redirector is out of a
resource: SMBs.
```

```
NET3191: The redirector is out of a
resource: NCBq entries
```

If this occurs, it is recommended that you modify the following parameters to the following settings:

```
[Server]
  numreqbuf=30
```

```
[Workstation]
  maxcmds=24
```

You must also modify the corresponding commands parameter in the PROTOCOL.INI file.

These parameter changes are approximate. As a rule of thumb the more screen groups you have, the higher these settings should be.

## Installation and Setup Notes

This section offers information on installing and setting up your network.

### **Compatibility with Previous Versions of 3+Open, OS/2, and 3+**

3+Open LAN Manager supports various versions of OS/2 1.0 and 1.1 on both servers and workstations. On servers 3Com recommends that you use the Server-Adapted MS OS/2 software included with 3+Open LAN Manager, because it is optimized for use as a network server and includes performance enhancements not present in other vendors' versions of OS/2 1.0 and 1.1. While 3+Open LAN Manager can be run using OS/2 1.1 from other vendors, unpredictable results can occur when the server has a heavy load because these versions of OS/2 are not adapted for the server environment.

3+Open network software and 3+ versions above 1.2.1 can be mixed in the same network. In a mixed network running XNS protocols, a single workstation can access all servers. If the NBP/XNS protocol is used, the workstation can access 3+Open 1.1 servers running NBP for File and Print services, and other servers running 3+Mail and Name or 3+Open Mail and Name. Using DLC, all 3+Open servers and workstations can interoperate, but they cannot connect to 3+ servers.

## **NET 3054 Error Message**

If you are upgrading from an earlier version of 3+Open you may receive this message during startup:

```
NET 3054: A request for memory resources
could not be satisfied.
```

This usually occurs with an existing system tight on space in the bootable drive. You need at least 1.5 MB of free space on the C drive for the file, SWAPPER.DAT.

## **Network Number for 3+Open LAN Manager Entry System**

If you want to run the Locator on the 3+Open LAN Manager Entry System, enter 0 (zero) for the network number (or use the existing 3+ network number) when you are prompted by the Netsetup program.

## **Checking for Overlaid Drive IDs**

After completing the installation of 3+Open on an OS/2 server, OS/2 workstation, or DOS workstation, check to be sure that no NET USE command in the STARTUP.CMD ( for OS/2) or AUTOEXEC.BAT (for DOS) file overlays a disk partition on your hard disk.

For example if you had an E partition on your hard drive, the command:

```
net use e: \\server\os2apps
```

would attempt to overlay it. To avoid this situation, edit the appropriate file to change the E in the NET USE command to another letter (such as G).

## **OS/2 DOS Compatibility Mode**

Some versions of OS/2 1.1 from other vendors have stability problems while running in the DOS compatibility mode. This may occur while running some applications.

## **PC Servers Using OS/2 DOS Compatibility Mode**

For performance reasons, 3Com does not recommend the use of the compatibility mode. The Netsetup program sets up servers to operate in OS/2 protected mode only. Compatibility mode (also known as the DOS environment and the 3.X box) is used to run DOS applications under OS/2. 3Com does not recommend this configuration on a PC being used as a server.

To turn the compatibility mode on, use a text editor to change the CONFIG.SYS file with the following procedure:

- 1. Find the entry "protectonly=yes" and change it to "protectonly=no".**
- 2. Find the entry "rmsize=siz" and set it to the number of KB desired for allocation to the DOS box (640K maximum).**
- 3. Stop the cache.**

For concurrent servers, turn off write caching:

```
c:\os2\cache /lazy:*:off
```

**To stop the cache, type:**

```
c:\os2\cache /stop
```

For remote administration of **dedicated** servers, you must perform a NET ADMIN on the cache commands. For example, enter all on one line:

```
net admin \\servername /c c:\os2\cache  
/lazy:*:off
```

```
net admin \\servername /c c:\os2\cache  
/stop
```

- 4. Restart the server hardware by pressing [Ctrl]+[Alt]+[Del], or by turning the server off and then on again.**

The server restarts with the compatibility mode turned on.

## **Creating Generic DOS Workstation Diskettes**

The Netsetup program can create DOS workstation startup diskettes which you can customize for individual network users. In many network environments it may be useful to generate generic workstation startup diskettes. These diskettes can be used in any workstation on the network because the user is prompted for required information. To create a generic DOS workstation startup diskette, use this procedure:

- 1. Follow the instructions in the *3+Open LAN Manager Installation and Setup Guide* to create a DOS workstation diskette.**
- 2. Edit the AUTOEXEC.BAT file to remove the DOS environment variables `home_server=` and `home_server_security=`.**

### **3+Open LAN Manager Server Adaptation Installation on a Dedicated Server**

When you install Server-Adapted MS OS/2, select the Program Selector as the server shell. Do not select the Minimum Shell.

Netsetup assumes that dedicated servers have been configured for the program selector. If you have configured for the Minimum Shell or Presentation Manager, you need to manually change the program selector by modifying the protshell= line in CONFIG.SYS (or CONFIG.OS2 if the server is set-up for dual booting). The new protshell= statement should read, all on one line:

```
protshell=c:\os2\shell1.exe c:\os2\cmd.exe  
/k os2init.cmd
```

#### **Global Path Statement in OS/2 1.1**

To set a global path statement with OS/2 version 1.1 for all screen groups, modify the CONFIG.SYS (or CONFIG.OS2) file. The path= statement ensures that all network commands are available to all screen groups.

## **Logon Command for 3+ and 3+Open Name Service**

From the command prompt, you can type:

```
logon /help
```

or

```
logon2 /help
```

to view a list of options available for this command. The Unified Logon Command included with 3+Open version 1.1 provides one-step logon/logoff to both 3+Open servers and 3+ and 3+Open Name service. If you are using the XNS protocol as the primary transport protocol and you do not have a Name service on the network, use the /3OPEN option, which logs on only to the 3+Open server. Otherwise, logon will take longer because the software must wait and retry to verify that no Name service is active on the network.

## **Setting LOGON for Automatic Links**

LOGON.EXE does not automatically create links to the home server. If you want these links to be established automatically upon logon, type NET SAVE after establishing the links. Now each time LOGON.EXE is run, the network links will automatically be established. This only works for OS/2 and DOS Enhanced workstations. Do not attempt this from 3+Open servers.

## **OS/2 Disk Cache and SQL Server**

The SQL server has its own internal disk cache. 3Com recommends that you not use the OS/2 cache if you are using the SQL server for internal cache.

## **Installing 3+ for OS/2 Workstations and 3+Open LAN Manager**

If you are installing both 3+ for OS/2 workstations and 3+Open LAN Manager, be sure to install 3+Open LAN Manager first. Then when you install 3+ for OS/2 workstations, select the Abbreviated Installation.

## **Compaq DOS 3.31 Disk Format Incompatible with OS/2**

The hard disk format created with Compaq DOS 3.31 is not compatible with OS/2 if partitions greater than 32 MB are created on the hard disk. If you have a disk formatted this way and you are installing OS/2:

- 1. Save the data on the disk (by copying to alternative media, such as diskette).**
- 2. Remove all hard disk partitions using the Compaq DOS 3.31 FDISK program.**
- 3. Boot under OS/2 (*OS/2 Installation diskette* in drive A).**
- 4. Create new hard disk partitions using the OS/2 FDISK program.**
- 5. Reformat using the OS/2 FORMAT program.**



## **Upgrading from Entry System to Advanced System Software**

If you are upgrading your server from 3+Open LAN Manager Entry System to 3+Open LAN Manager Advanced System (or changing from Advanced to Entry System), choose Upgrade 3+Open LAN Manager from the Netsetup main menu. After upgrading, the software tries to reestablish account and share information, which in many cases already exists. This will result in error messages upon the first server boot after the upgrade, but not thereafter.

## **Building 360 KB DOS Boot Diskettes**

Not all DOS LAN Manager Basic configurations fit on a 360K diskette. If you encounter the error message:

Insufficient Disk Space

while creating a DOS Basic netstation diskette on a 360K diskette, this means that your Protocol/DOS combination does not fit.

DOS LAN Manager Enhanced requires a high density diskette drive or hard disk.

## **3+Open Tuning and Configuration**

### **Existing Server Configuration Guidelines**

When you install the Maintenance Update software, your current parameter settings for CONFIG.SYS, LANMAN.INI and PROTOCOL.INI will not be changed. If your server is currently performing reliably and meets your performance needs, you should not have to modify any parameters because of this new software.

However, you may want to refer to the tuning sections that follow if:

- You are also adding services such as 3+Open Mail, 3+Open Name, or 3+Open Internet on the server.
- You are increasing the number of users on the server.
- You want to tune the server for improved performance.

### **New Server Configuration Guidelines**

Read this section carefully if you are installing the Maintenance Update as part of your initial server installation.

The default parameter settings for CONFIG.SYS, LANMAN.INI, and PROTOCOL.INI that are configured when you install 3+Open on your server or workstations typically provide good reliability and performance for File and Print services for 20-50 user sessions.

If you are installing other services such as 3+Open Mail, 3+Open Name, or 3+Open Internet on your server, follow these installation steps to set the basic parameters for your network. If you also plan on having more than 20 user sessions on the server, or desire to tune the server for optimum performance, refer to the following section on tuning.



***NOTE:** The parameter settings listed here supersede any others.*

Some of the parameters may already be set as described. The parameters are listed here for clarity because they are also described in other documents.

Items shown in [...] are key words to help locate the listed parameters.

For peak performance, modify the parameters as shown in the following list :

- The C:\CONFIG.SYS File

```
hreads=128
memman=SWAP,MOVE
diskcache=2048
```

- The C:\AUTOEXEC.BAT File

No changes necessary.

- The C:\STARTUP.CMD File

No changes necessary.

- The C:\OPEN\STARTUP.COMD File

This file contains the start commands for all the services. The entries for these services must be in the order shown. After all the services are loaded, make sure the entries in this file are in the proper order:

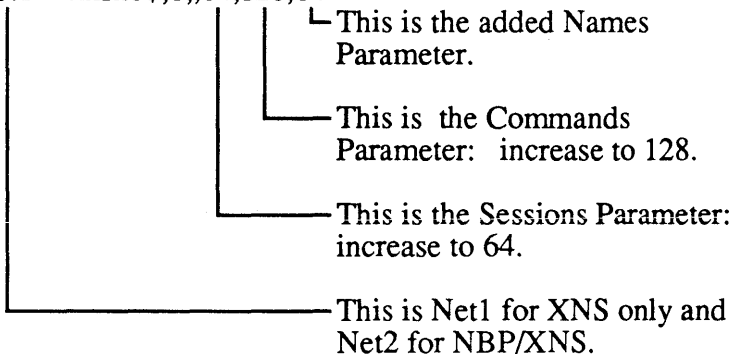
```
net start 3name
net start tapeservice
net start 3Start
net start 3Internet
net start 3mail
net start 3Vision
```

To place the start commands in the correct sequence, install the services in the following order:

```
3+Open Internet
3+Open Name
3+Open Mail
3+Open LAN Vision
```

- The C:\OPEN\SERVER\LANMAN\LANMAN.INI File

```
net1 = xnsnb$,0,,64,128,64
```



[workstation]  
maxcmds = 48  
maxpipes = 10  
maxthreads = 32  
numworkbuf = 8  
wrkservices = locator,messenger

[messenger]  
logfile = messages.log  
sizmessbuf = 4096

[locator]  
numnodes = 100  
numnames = 500

[Server]  
maxusers = 50  
security = user  
maxconnections = 128  
maxlocks = 150  
maxopens = 150  
maxsearches = 50  
maxsessopens = 50  
maxsessreqs = 50  
numbigbuf = 6  
numfiletasks = 6  
numreqbuf = 64  
sizreqbuf = 4096  
srvservices = spooler,alerter

[alerter]  
sizalertbuf = 3072

[netrun]  
maxruns = 3

[3Start]

maxvol = 8

maxusers = 25

- Example for the file:  
C:\3OPEN\SERVER\LANMAN\DRIVERS\PROTOCOL.IN  
I

[3SERVER]

rcvbufs = 42

maxtransmits = 40

[XNS\_NETBIOS]

maxsess = 64

maxncb = 128

maxdgbuf = 14

maxsnbuf = 24

maxrcvbuf = 32

maxcache = 2

## Server Tuning Guidelines

There are four primary reasons why you might want to change parameter settings after initial installation and configuration. These are:

- To improve performance.
- To support more users.
- To support services such as 3+Open Mail and Name.
- To support certain applications.

## **Performance Tuning**

Server performance is primarily improved by increasing the amount of cache available on the server. Most server configurations have less than 2 MB of cache. Increasing cache to 4 MB will often more than double performance, particularly for disk-intensive operations. Also make sure the memman parameters, swap and move, are set on. memman (memory management) and diskcache are set in the CONFIG.SYS file.

## **Adding Users**

As you add users to the system and as the number and mix of applications change, several LANMAN.INI parameters should be adjusted to provide adequate resources for the users.

Increase the value of the maxusers= parameter as the number of users increases above 50. Other parameters which may require increases are: maxopens=, maxlocks=, and numworkbufs= (which can be increased up to 8). Maxopens= and maxlocks= are dependent on the number and type of applications running on the network. Refer to the application's documentation and your own experience to best tune the system for your specific needs.

## **Services Tuning**

When you set the parameters discussed in the previous sections you can also increase the value of numreqbuf= parameter in the LANMAN.INI file to 96, and the value of the numbigbuf= parameter to 12. Increase maxcmds= to 60 and maxthreads= to 40 for improved performance.

## Applications Tuning

Certain applications, such as Paradox, require that you change the `optimizations=` parameter in the workstation LANMAN.INI file from 3 to 1. This is also true of certain hardware, such as the 3Station/2X.

## Tips and Information

Listed here are some helpful tips and information for working with 3+Open.

### Server Shutdown Guidelines

When shutting down your network server, it is important that you follow a standard set of procedures. While each server and network configuration is unique, the following set of guidelines will help you develop your own customized procedures for shutting down a server on the network.

These tasks should be performed in the order given. Each associated task is accompanied by a procedural example.



***NOTE:** Make sure your path statement is set to include the \NETPROG subdirectory, allowing you to have access to the the NET command. Otherwise precede each command with the path:*

`\3OPEN\SERVER\LANMAN\NETPROG\NET ...`

#### Task 1: Notify Users of Server Shutdown

You may want to notify users of the impending shutdown. For example:

```
NET SEND * "Server Shutdown in One Minute!  
Please log out now."
```



## **Task 2: Stop Installed Services**

You need to stop each of the 3+Open services installed on your server. Each service may take up to five minutes to complete their shutdown process. To verify that each service has been successfully shut down, check the audit log for that server. This may be verified from the full screen NET ADMIN interface (by clicking on Status/Audit). Then check to see if the services have posted a message stating that the service has been successfully stopped. For example:

```
net stop 3mail
```

Verify that the service has stopped by examining the Audit Log

```
net stop 3name
```

Verify that the service has stopped by examining the Audit Log

## **Task 3: Stop the Server Service, Redirector and Disk Cache**

You must clear and stop the cache program before shutting down your sever. With write caching enabled, data in the cache is lost if you turn your computer off without clearing the cache. You can stop the server services, and the redirector and turn off write caching, if it is enabled, by performing these steps as a batch file or by typing them from the command line:



*NOTE: You can set the `OUTFILE=` parameter to `CON:` for PC servers and `LCD$` for 3Servers. The following example batch file uses `LCD$` for the outfile parameter.*

```
@REM SHUTDOWN.CMD
@ECHO OFF
SET LOCAL
SET OUTFILE=%OUTFILE%
ECHO ~ Stopping Server!>%OUTFILE%
NET STOP SERVER /Y
ECHO ~ Stopping Workstation!>%OUTFILE%
NET STOP RDR /Y
ECHO ~ Stopping LAZY!>%OUTFILE%
C:\OS2\CACHE /LAZY:*: OFF
ECHO ~ Stopping CACHE!>%OUTFILE%
C:\OS2\CACHE /STOP
Echo ~ Server Shutdown!!!>%OUTFILE%
END LOCAL
```



*NOTE: For a 3Server you must use the `AT` command to run this batch file. For example, to shut down the Marketing server at 1:38 pm, use the command, all on one line:*

```
NET ADMIN \MKTServer /c AT 13:38
C:\shutdown.cmd
```

#### **Task 4: Power Down your Server**

Once the message “Server Shutdown!!!” appears (on the LCD for 3Servers, or on the console for PC servers) you can power down your server.

### **IBM Dual-Async Adapters and EtherLink/MC Adapter**

You may need to change the interrupt used by the EtherLink/MC to allow you to print on any port on an

IBM Dual-Async adapter. Change the EtherLink/MC setting from Interrupt 3 to Interrupt 7 or 9.

## **IBM Token Ring 16/4 and 16/4/A Addresses**

The IBM Token Ring 16/4 and 16/4/A adapters contain an address which is not printed on the adapter. If you are installing one of these adapters on a 3Server you will need to determine the address. To do this, install the adapter and boot the server choosing TOKEN BOOT. The adapter's address is displayed on the 3Server's LCD.

## **Accessing Shared Modems**

Shared modems can only be used from OS/2 workstations. DOS workstations cannot access shared modems.

## **Loading the Enhanced Redirector 3ComEMM into High Memory**

Loading the Enhanced redirector into high memory means adding these parameters from the command line. DOS only supports a maximum of 127 characters on the command line. You must use the abbreviations for the following parameters to avoid exceeding this maximum character limit. These are:

Computername = N  
HIMEM = HIMEM (For high memory)  
Langroup = LG  
Lanroot = I  
Logonserver = LS  
Sizworkbuf = Z  
Numworkbuf = B

Numviewservers = VIEW  
Pr1Buffsize = P1  
Optimizations = O

A sample single line entry for 3Comload  
prog=NETWKSTA.EXE /parms might be:

```
3Comload prog=NETWKSTA.EXE /n:name  
/HIMEM:YES /lg:langroup /i:path  
/ls:servername /z:4096 /b:4 /view:15  
/p1:2048 /o:1
```

Some relevant values when loading the Enhanced  
redirector into high memory are:

HIMEM=YES  
Sizworkbuf=1024  
numworkbuf=3  
numviewservers=5  
optimizations=1

## Understanding the Netlogon Service

The Netlogon service is a logon validation (not logon security) service.

Most problems with the Netlogon service are due to changes made to the structure of the user directory file system. Specifically, the most common factors involved in the success or failure of the Netlogon service are:

1. The userpath= entry in the LANMAN.INI file.
2. The corresponding USERDIRS sharename path entry.
3. The individual user directory locations.
4. The placement of script files as defined in the userpath= entry.

By default the user directory file structure is as follows:

```
USERPATH=C:\3OPEN\USERS
```

USERDIRS sharename path points to:

```
C:\3OPEN\USERS
```

The individual user directories are located under:

```
C:\3OPEN\USERS
```

The script files are located under:

```
C:\3OPEN\USERS\SCRIPTS
```

If the system is kept in this default configuration, the Netlogon service can be configured as shown in the *3+Open MS OS/2 LAN Manager Administrator Guide*.

If, however, any *one* of these values changes, then *all other* values must be changed as well so that the relationship of these values is preserved:

The userpath= entry and USERDIRS sharename point to the same path, and all individual user directories and script files are located under that path. This structure *must* remain constant. If an individual's user directory is not located under this path, then the default script files provided (NETLOGON.BAT and NETLOGON.CMD) will exit early without executing any NET USE commands. This can easily be mistaken for a failure of the Netlogon service. If the script files are not located under the USERDIRS sharename the Netlogon service will experience a true failure.

3Com provides two default script files: NETLOGON.BAT and NETLOGON.COMD are located by the Netlogon service based on the userpath= entry in the LANMAN.INI file. When a user account is added via NET ADMIN, the script file specified must assume a path prefix of whatever is specified in the userpath= entry in the LANMAN.INI file. Any subdirectories between the userpath= entry and the script files themselves must be specified in the user account screen. For instance, if the userpath= entry is C:\3OPENUSERS and the script files are located in the C:\3OPENUSERS\SCRIPTS subdirectory, the script file entry in NET ADMIN would be \SCRIPT\NETLOGON.BAT.

A sample server configuration for placing individual user directories on the D: partition (in a subdirectory called USERS) follows:

```
USERPATH = D:\USERS  
USERDIRS point to D:\USERS
```

Script files are located in D:\USERS\SCRIPTS

All user directories are located under the D:\USERS subdirectory.

If the Netlogon service is being used to provide logon validation for DOS Enhanced workstations, the `lastdrive=` statement in the workstation `CONFIG.SYS` file must read `lastdrive=z`. The Netlogon service automatically creates a `USERS` sharename pointing to the userpath, which it will link to the logical `Z:` drive on each DOS Enhanced workstation that attempts to log on. If the `Z:` drive is not available, the message :

```
Unable to set redirector name
```

appears and the user will be unable to log on to the network. Because the Netlogon service creates this link, no `NET USE` commands may be executed to the logical drive `Z:` from within script files on a DOS Enhanced workstation.

## Running GROWACC on Your Server

You may want to run the `GROW.ACC` program on your dedicated server. Here is a suggested set of procedures that can be run as a batch file using the `AT` command from the `NET ADMIN` prompt. 3Com recommends you create the following batch file and name it `CHNGACC.CMD`:

```
net send * "Server will shut down in one
minute."
net stop \\servername /y
growacc %1
net start server
net load srvshare.pro
net send * "Server is back up!"
```

Then type the `AT` command, specifying the name of the batch file and the new size of the account file:

```
AT time c:\chngacc.cmd size
```

## Running CHKDSK on 3Servers

You should run CHKDSK on your 3Server periodically to assure file system integrity. If the server's partitions are all less than or equal to 32 MB in size, you can use the DOS CHKDSK found on the *Server Utility* diskette.

For DOS CHKDSK:

- Establish a Console (3C) connection to the server where you intend to run CHKDSK. Use the version of CHKDSK found on the *Server Utility* diskette.
- Run CHKDSK on all the partitions of the server.

If the server has *any* partitions that are larger than 32 MB, you *must* use the OS/2 CHKDSK program for these partitions. You must also stop the server service first.



**NOTE:** *You cannot run the OS/2 CHKDSK on the boot partition, (typically drive C). To perform CHKDSK on drive C of OS/2 servers, use the DOS CHKDSK procedure documented earlier in this section.*

You can use the following batch file for partitions other than the boot partition:



**NOTE:** *Copy both of these files to the root of your server's C: partition and use the AT scheduler to execute the batch file.*



The sample files are CHECKDSK.CMD and YES.FIL.  
The contents for CHECKDSK.CMD are:

```
: {CHECKDSK.CMD}
:
: runs CHKDSK on the drive specified
:
: syntax: CHECKDSK drive id
:
net send * "Server going down for two
minutes! Logout now!"
net stop server /y
:note- the following two lines should be
:one line in your file.
c:\os2\chkdsk %1 /f <c:\yes.fil>
C:\checkdsk.out
net start server
net load srvshare.pro
net send "Server is back up now!"
```

The contents for YES.FIL are:

Y<cr>

Here is an example of how to verify drive D: on  
\\MKTServer:

```
net admin \\MKTServer /c AT 15:08
C:\CHECKDSK.CMD D:
```

You can verify the results on this command after the  
server is back up by typing the contents of  
CHECKDSK.OUT.

# Network Administration Notes

This section will help the network administrator when administering a 3+Open network.

## Parameters for the NET PRINT Command

The two possible parameters for the NET PRINT command are TYPE and EJECT.

TYPE allows the user to define a value when setting up a print queue. For example, the user might have need to have a value for invoices, bills, and so forth. If this parameter is set, it will check the print job when it comes through for the right "type" and will reject the print job if it is not set to the correct type.

To set this parameter and values from the command line, type:

```
net admin \\servername /c net print  
queuename /parms:type=invoices, bills
```

where the type is specified by the user.

EJECT limits the ejecting of a blank page. The possible values of EJECT are:

**yes** - always form feed after end of file.

**no** - never form feed after end of file.

**auto** - form feed only if print job was successful and a formfeed was not issued by the program.

The default value is yes. If this is changed to no, and if a program does not issue a page eject at the end of a print job, you will get several print jobs merged into one page. If you specify the wrong print type, the print job will remain in the queue until the print type is changed for the queue. The value of auto would be the best in this case. To set this parameter and value(s) from the command line:

```
net admin \\servername /c net print  
queuename /parms:eject=X
```

where X is replaced with the value of yes, no or auto.

This command can be entered from the LAN Manager user interface by the following procedures:

1. Select Print Queues from the View menu.
2. Select the server and zoom.
3. Select the queue and zoom.
4. Enter EJECT=X in the parameter section of the print queue.

## **MAXLOCKS and MAXOPENS Parameters**

The range for the maxlocks= parameter is 1 to 2000. The range for the maxopens= parameter is 1 to 3000.

## Using 3+Open LAN Manager in a NETMAP Environment

If the 3+Open LAN Manager OS/2 server is installed in a network with NETMAP Network Management protocols and the 3Com Network Control System (NCS), then the NETMAP.OS2 driver included with 3+Open should be installed on the OS/2 server. To do this, add the following entry to the CONFIG.SYS file *after* the other network driver entries:

```
device=\3open\server\lanman\drivers\netmap  
.os2 /N:servername
```

where *servername* is the name you wish to have registered with NCS (normally this would be the servername given when installing 3+Open LAN Manager).

## Backing Up Account Information

The NET.ACC and NET.AUD files are always open when the server is running. To allow these files to be saved during a server or file backup, a new command called BACKACC must be run prior to the backup. BACKACC makes copies of these files as listed below. These copies can then be backed up with the rest of the system.

- NET.ACC is copied to  
LANMAN\ACCOUNTS\NETACC.BKP.
- NET.AUD is copied to  
LANMAN\LOGS\NETAUD.BKP.

## **Clearing Access Control Records on a Server**

Deleting a file or directory from the server may not automatically delete associated access-control records. Run the Cleanacc utility to remove outdated access-control records after deleting a lot of files or at regular intervals.

Cleanacc syntax is:

```
Cleanacc pathname
```

where *pathname* is an absolute pathname relative to the root, such as C:\, specifying which part of the directory structure to clean up.

## **User Sharenames Ending in \$**

Net Profile or NetProfileSave() will not save user sharenames that end with \$. Therefore, you should not create sharenames ending with \$.

## **Logging Server Out of Resources Errors**

When the server runs out of a resource (for example numbigbuf=) it will log the error only once. If stopping and restarting the server this does not reset error logging, you must stop and restart the workstation service to reset the logging.

## **NET ADMIN Error Messages Missing**

If you use the NET ADMIN command prior to starting the workstation, the help ([F1]) key will fail with a "cannot find help file" message. Do a NET START

WORKSTATION before entering NET ADMIN to get the help commands to work.

## **NET ADMIN User Count**

The NET ADMIN program does not include network administrators in its user count.

## **NET ADMIN Error Count**

When a log file is reset, the error count is not reset to 0. As a result, the error count may not agree with the number of entries in the log file.

## **DOS Workstations Auto Reconnection**

If the administrator deletes a session or removes a sharename and then restores the sharename, DOS workstations may be unable to reconnect automatically. If this occurs, the user will have to do a NET USE to restore the link.

## **Autodisconnect Parameter Values**

The Autodisconnect timeout parameter shown in the "Configurations" box of the full screen network administrator program incorrectly states the time in seconds. Actually, specified times will be interpreted as minutes by LAN Manager.

## **3+Open Documentation**

The following corrections have been made to the 3+Open documentation.

### **3+Open MS OS/2 LAN Manager Administrator Guide**

Page A-4, GROWACC Utility

The maximum number of accounts the access control database can handle is 772 instead of 1048. If you attempt to exceed this number you will receive the error message:

```
NET3851: The new number of users argument  
is too big.
```

### **3+Open for 3Servers Installation and Setup Guide**

Page 4-11

The 3OPEN.SEP file is located in the  
3OPEN\SERVER\LANMAN\SERVICES directory.

## 3+Open MS-DOS LAN Manager User Reference

Page 2-45. The NET ACCESS Command

Only users who are assigned the permission P can change the permissions on a shared resource using the NET ACCESS command. Otherwise, administrative privilege on your server account must be obtained before permissions for resources shared from that server can be changed. For example, you NET USE your local drive T: to the server's DOSAPPS sharename. You have admin privileges at that server. If you type:

```
net access t:
```

you see a display similar to the following:

Resource	Permissions	Permissions
T:	Guest:RX *ADMINS:RWCXDAP	*USERS:RWCX

## 3+Open Messages Guide

Page 2-27, NET2228: There are too many names in the access control file

The action on this message should refer the user to the *3+Open MS OS/2 LAN Manager Administrator Guide*.



## **General Notes**

### **IBM PS/2 Model 80 ESDI Controller Problem**

Some older versions of the IBM PS/2 Model 80 computers with ESDI disk controllers have a data corruption problem which occurs under heavy load. The problem is fixed by updating the firmware on the board. If you are having problems with a PS/2 which has an ESDI controller, contact your dealer or IBM support (1-800-IBM-PROD) for a firmware upgrade.

### **MS-DOS Manager and DOS 4.0**

The MS-DOS Manager included with version 1.1 supports only DOS 3.x. MS-DOS 4.0 includes the MS-DOS Manager functionality.

### **Printing from the DOS Compatibility Box**

When you print a file from the DOS compatibility box, two copies of the banner page are printed. The first includes a banner page followed by a blank page. After this another banner page is printed followed by the document.

### **Autoswitching and/or Monitor-Detecting Video Cards**

If an autoswitching and/or monitor-detecting video card (for example, Paradise EGA) is installed, set the card to not autoswitch or monitor-detect. Rather, match the card to the attached monitor, selecting the highest possible resolution mode. For example, EGA mode 640x350.

## Tested Video Adapters

The following video adapters were tested with 3+Open version 1.1:

- Compaq 386/20e Built-in VGA
- Compaq Monochrome
- Compaq VGA
- Compustar Monochrome
- Hercules Monochrome
- IBM Monochrome
- IBM PS/2 built-in VGA
- Paradise Autoswitch EGA2
- Paradise EGA/CGA
- Video-7 Vega VGA
- Wyse VGA

## NET /MONO Option

The NET command now has a /mono option that can improve the appearance of the LAN Manager on some monochrome monitors. Type `net /mono` for this option.

## Universal Name Convention (UNC) Names Invalid with Printer

Using UNC names for redirected printers is not supported in this version for DOS workstations. Use the NET USE command and the device name, all on one line:

```
net use lpt1: \\servername\printername  
copy filename.txt lpt1:
```

instead of

```
copy filename.txt \\servername\printername
```

## **Diskette Drive Access Problems Under OS/2**

Some diskette drives have hardware problems under OS/2, especially when network adapters are used with burst mode DMA. If you are having problems with the diskette drive on an OS/2 server or workstation, check the DMA mode of the network adapter and make sure it is not using burst mode. Refer to the adapter guide for information on changing parameters of the network adapter.

## **Expanded Memory Not Supported**

The OS/2 supplied with this version of 3+Open does not recognize expanded memory. If your system has expanded memory and it can be changed (via jumpers on the board or software setup) to extended memory, 3Com recommends that you change it to extended memory. If you cannot change it to extended memory, and want to use expanded memory, then use the vendor's OS/2 (for example, IBM) which may support expanded memory.

## Application Notes

Some of the following notes suggest changes to the PROTOCOL.INI file. The path to this file, located on the DOS boot disk, is shown here as two lines:

```
\3OPEN\DOSWKSTA\LANMAN\DRIVERS  
\PROTOCOL.INI
```

### IBM LAN Manager Program

To use the 3Com DOS workstation DLC protocol with the IBM LAN Manager Program, set the saps= parameter in the DLC section of the PROTOCOL.INI file to 254:

```
[DLC]  
  saps = 254
```

### IBM PC 3270 Version 1.0

To use the DOS DLC protocol with this IBM 3270 Program, set the interrupt level used on the IBM Token Ring adapter to 2 or 7.

You also need to set the following parameter in the PROTOCOL.INI file:

```
[DLC]  
  stations = 32
```

This application program works on both the TIC and SDLC interface.



***NOTE:** The NetBIOS driver cannot be loaded on the 3270 Gateway. You can use both NetBIOS and DLC on the workstation. This application does not support the TokenLink Plus adapter.*

## **IBM 3270 Emulation Version 3.0**

The IBM 3270 Emulation Program version 3.0 with DLC token ring host connection through a 3174 controller does work. You need to edit the following line in the PROTOCOL.INI file:

```
[DLC]
  stations = 16
```

This is not supported with DFT connectivity.

## **IBM PC Network Program 1.3**

IBM's PC Network Program 1.3 and the 3Com DOS DLC can run on a 640K machine with either Base or Extended services. DLC should be configured as follows:

```
[DLC]
  stations = 32
  saps = 32
```

The NET START command in the AUTOEXEC.BAT file of the PC Network Program version 1.3 should contain the following parameters:

```
/CAC:0 /RQB:512 /REQ:2 /PC1:128
/PC2:128 /PC3:128 /USN:1
```

If a server with Extended services is to provide Remote IPL support, then it should be a dedicated server. This is necessary because of memory limitations.

## **Windows/386 and Windows/286**

If you experience incompatibilities when running Windows/386 on a DOS workstation, several configuration considerations should be noted.

(1) Windows/386 is fully supported with NBP, NBP/XNS, and DLC protocols running in the PC.

(2) When running 3+Open Mail in a DPA configuration (NBP primary/XNS secondary protocol), the following rules must be followed:

- Logon/Logout and Link/Unlink before entering Windows or from an exclusive window only.
- Mail must be run in an exclusive window.
- Mail Minder should not be used.
- Hot Key cannot be used from the Mail program.
- Do not exit Mail by typing [Ctrl]+D if you are also running TSR programs, as the secondary protocol (XNS) will not be properly unloaded at termination of the mail program.

(3) Windows/386 is not supported with XNS protocol running in the PC. It is fully supported except when the XNS protocol is run in the LPO mode on an intelligent adapter.

(4) To use the Messenger and Netpopup utilities with Windows and the Enhanced Redirector, install the MS-DOS LAN Manager Enhanced workstation and choose the Messenger option using the Netsetup program. Then modify the WIN.INI file to include the following statement all on one line:

```
load=X:\3open\doswksta\lanman\services  
\winpopup.exe
```

where X: is the drive that contains your MS-DOS LAN Manager software.



**NOTE:** *The Messenger and Netpopup services are not supported by MS-DOS LAN Manager Basic.*

## Memory Saving Options for DOS Workstations

3+Open LAN Manager version 1.1 provides multiple options for increasing application memory on DOS workstations.

Five methods for saving DOS memory are described in more detail below:

- (1) Running NBP protocol on the workstation.
- (2) Dynamic loading/unloading of XNS protocols.
- (3) Downloading the protocol stack onto the adapter (for XNS only).
- (4) Using the HIMEM utility to load the Basic Redirector part of the Enhanced Redirector in high memory.
- (5) Using DOS Maximizer/386 to load 3Com drivers and terminate-and-stay-resident (TSR) programs in high memory.

## **NBP Protocol**

The NBP protocol is a very small and fast protocol suite which, when used on a 640K DOS workstation, provides an additional 70 to 75K for application memory as compared to XNS or DLC protocols. NBP, however, does not support internetworking like XNS or source-routing like DLC. For workstations where the File/Print/administration access is to servers on the same network, NBP is the best protocol choice. A typically configured 640K workstation using NBP and DOS 3.3 will have 517 to 530K of memory available for applications.

## **Dynamic Loading/Unloading of XNS Protocols**

3+Open version 1.1 also supports Demand Protocol Architecture (DPA), which allows NBP as the primary and XNS as the secondary protocol on a DOS workstation. The secondary (XNS) protocol is loaded and unloaded as required to run 3+Open Mail. The primary protocol, NBP, is used for all LAN Manager operations, such as File, Print, and administration services.

To install this configuration, run the Netsetup program to create the DOS boot diskette and select NBP and XNS Protocols from the Protocol menu.



## Downloading Protocols to the Adapter (XNS only)

Intelligent adapters from 3Com, the EtherLink Plus (3C505-B) or TokenLink Plus (3C605-B), can run in the Link Plus Optimizer (LPO) mode to save approximately 60 KB of memory for use by applications. In this mode, the XNS protocol is downloaded to the adapter.

To install the LPO configuration, run the Netsetup program to create a DOS boot disk and select XNS Protocol (with LPO) from the protocol menu.



*NOTE: In a fast DOS workstation, such as a Compaq 386/25, using the LPO option will cause some reduction in workstation performance, because the processor on the adapter is slower than the computer's processor.*



*NOTE: The LPO option is not supported with DPA, so choosing this option means that XNS is the primary and only protocol for the workstation. DOS Maximizer/386, however, may also be used with LPO. While the protocols are downloaded to the adapter, the redirector may be loaded into high memory, thereby maximizing the available application memory. This requires that the adapter be switched from DMA to some other transfer method, such as programmed I/O.*

## **Using the HIMEM Utility**

The HIMEM utility option works on both 80286 and 80386 machines. On a PC with an 80386 processor, 3Com's DOS Maximizer/386, described in the next section, will provide more memory savings.

On a DOS 80286 or 80386 processor with at least 64 KB of extended memory available beginning at 1 MB, it is possible to load part of the Enhanced Redirector or Basic Redirector so that it occupies the first 64 KB of extended memory. Approximately 36 KB of the Enhanced Redirector will be loaded into extended memory, representing about a 36 KB savings for application use. Almost all of the Basic Redirector, approximately 32 KB, will be loaded into extended memory.

The redirectors are loaded into extended memory using HIMEM.SYS, a driver which conforms to the High Memory Area (HMA). If you are using Windows/286 or Windows/386, 3Com recommends, that for maximum memory, Windows, rather than the redirector, be configured to use high memory. Because of memory conflicts, this utility may not work with VDISK and other memory saving utilities.

If your network adapter uses DMA, and the HMA is used by the redirector, the network will not work properly. There are several options available:

- Do not install HIMEM in the CONFIG.SYS file, so that the redirectors will not be loaded into extended memory.
- Switch from using DMA to some other transfer method, such as programmed I/O, if supported by the adapter. For example, set dmachannel=0 (in the PROTOCOL.INI file) for the TokenLink adapter or change the memory address jumper on the EtherLink II away from the DISABLE position. Consult the guide included with your adapter for information on how to do this.
- Disable the use of HMA for the Enhanced Redirector by setting himem=no in the LANMAN.INI file. This will allow HIMEM to still be used by other programs such as Windows.
- Disable the use of HMA by the Basic Redirector by specifying /himem:no (the default is yes) on the appropriate redir line in the LANMAN.INI file.

For installation instructions, refer to the *DOS Workstation (Enhanced)* diskette which contains a file called README.HIM located in the \3OPENHIMEM subdirectory. This subdirectory also exists on an installed server.



**NOTE:** *HIMEM and DOS Maximizer/386 cannot be used on the same workstation, because DOS/Maximizer incorporates HIMEM.*

## Using DOS Maximizer/386 to Load Programs into High Memory

On an 80386 PC with extended memory, many 3Com drivers and TSRs can be loaded into high memory. Using DOS Maximizer/386, 3+Open network drivers, protocols, and TSRs can be mapped into the memory between 640K and 1 MB, thereby freeing substantial memory below 640K for applications. Using the DOS Maximizer frees approximately 60 to 100 KB of memory, depending on the configuration.

Programs that use high memory themselves, such as Windows, are not compatible with the DOS Maximizer/386. This includes programs such as MS Windows version 2.1 and MS Windows/386 version 1.0. Because of memory conflicts, this utility also may not work with VDISK and other memory saving utilities.

If your network adapter uses DMA and the redirector uses XMS, the network will not work properly. There are several options available:

- Do not install 3COMEMM.SYS in the CONFIG.SYS file, so that extended memory cannot be used.
- Switch from using DMA to some other transfer method, such as programmed I/O, if supported by the adapter. For example, setting dmachannel=0 for the TokenLink adapter in PROTOCOL.INI or changing the memory address jumper on the EtherLink II away from the DISABLE position. Consult the guide included with your adapter for information on how to do this.

- Disable the use of HMA for the Enhanced Redirector by setting `himem=no` in the LANMAN.INI file. This will allow HIMEM to still be used by other programs such as Windows.
- Disable the use of HMA by the Basic Redirector by specifying `/himem:no` (the default is yes on the appropriate `redir` line in the LANMAN.INI file).

For installation instructions, refer to the *DOS Workstation (Basic)* diskette which contains a file called README.EMM located in the `\3OPEN\DOSDRV\3COMEMM` subdirectory. This subdirectory also exists on an installed server. README.EMM references other readme files that describe five hardware/software configurations representing typical DOS Maximizer/386 configurations. Other configurations are possible; please refer to the installation instructions and the notes below for details.

## Other Notes on DOS Memory Savings

Some of the notes suggest changes to the CONFIG.SYS or PROTOCOL.INI files. These files are created by the Netsetup program on the DOS workstation boot disk as follows:

```
\CONFIG.SYS
```

The following should be read as one line:

```
\3OPEN\DOSWKSTA\LANMAN\DRIVERS  
\PROTOCOL.INI
```

## **Conflicts with Memory Mapped Devices**

The 3Com DOS Maximizer/386 software does not know the location of the memory mapped I/O address space used by many add-on devices, including 3Com network adapters. 3Com recommends that you not attempt to install this software without referring to the README.EMM. You must specify the location used by your hardware, for example, C000 to C800, to the 3Com memory saving software by editing the CONFIG.SYS file.

The 3Com DOS Maximizer is designed to avoid conflicts with memory mapped devices by setting various parameters. The parameters for each adapter are listed in the sections that follow. Take care that you are following the correct procedure listed for both your adapter and the protocol running on your workstation.

The sections below identify which files must be modified.

### **3Com TokenLink Adapter**

If this adapter is used in a 16-bit slot, the driver must be loaded so it uses DMACHANNEL 0. To do this, add or change the dmachannel= entry in the TokenLink section of the PROTOCOL.INI file:

```
[TokenLink]
  drivename=TLNK$
  dmachannel=0
```

No change is required if a TokenLink adapter is installed in an 8-bit slot.

## IBM Token Ring Adapter

If any IBM Token Ring adapter is used, then the CONFIG.SYS entry(s): 3COMEMM.SYS RAM= (and ROM= also for PS/2 machines) must be changed or added according to the following table, assuming that the jumper settings on the adapter are at their default settings:

Adapter	CONFIG.SYS Entry
IBM Token Ring Adapter	ram=CE000-D00
IBM Token Ring II Adapter	ram=D000-D40
IBM Token Ring Adapter/A	ram=D800-DC00 rom=CC00-CE00

For example, with an IBM Token Ring II adapter, the CONFIG.SYS entry would be, all on one line:

```
DEVICE=\3OPEN\DOSWKSTA\LANMAN\DRIVERS  
\3comemm.sys ram=cE00-D000
```

With an IBM Token Ring adapter, the CONFIG.SYS entry would be, all on one line:

```
DEVICE=\3OPEN\DOSWKSTA\LANMAN\DRIVERS  
\3comemm.sys ram=d800-dc00
```

## 3Com EtherLink Plus Adapter

The combination of 3COMEMM.SYS, Basic Redirector, and host-based protocols is not supported in this version. However, this should not pose a memory problem because 3COMEMM is supported with an adapter-based protocol which leaves most of the workstation memory available.

## **3Com EtherLink II Adapter Configured with Memory Mapping**

Some combinations of video display adapters and the EtherLink II adapter can produce address conflicts. The messages:

Locator not responding (XNS)

Network name not found (DLC)

that appear after logging on indicate that this is the problem. To fix this problem, change the memory address jumper on the EtherLink II to the DISABLE position. Note that other circumstances may also produce the same messages.

## **Software Developer Notes**

### **NetWkstaSetUid () API Change**

The NetWkstaSetUid() API was changed to not allow a servename parameter. The value must be NULL.

### **Named Pipes (Msg/Blocking Type)**

The maximum number of bytes written from a DOS workstation to a server using named pipes (Msg/blocking type) is 4308 bytes, even though the pipe was made with a larger input buffer, for example, 6000 bytes. The server-to-workstation write does not have this limitation.



## **Named Pipes Message Size**

If the workstation side reads less than the message size, the `ERROR_MORE_DATA` is not reported back to the workstation. This means that the named pipe application does not know when it received the complete message.

## **Named Pipes with Multiple Threads**

If a process does a `DosBufReset` in one thread and a `DosAsyncRead` in another thread on named pipes, it could get blocked in the file system forever. The process must ensure that the `DosBufReset` is serialized across the threads if the `DosBufReset` is being issued on a named pipe.

## Trademarks

3Com, 3+, 3Server, 3Station, 3+Share, EtherLink, EtherLinkII, EtherLink Plus, TokenLink and TokenLink Plus are registered trademarks of 3Com Corporation.

3+Open and LinkPlus Optimizer are trademarks of 3Com Corporation.

IBM, OS/2, PS/2, and DisplayWrite are trademarks of International Business Machines Incorporated. Microsoft, MS, MS-DOS are trademarks of Microsoft Corporation. Compaq is a trademark of Compaq Computer Corporation. SuperCalc is a trademark of Sorcim Corporation. dBaseIV is a trademark of Ashton-Tate Corporation. Paradox is a trademark of Ansa Software. Lotus and 1-2-3 are trademarks of Lotus Development Corporation. Hercules is a trademark of Hercules Inc. Paradise is a trademark of Borland International Software, Inc. Wyse is a trademark of Wyse Inc. Compustar is a trademark of Compustar Inc. HP and LaserJet are trademarks of Hewlett-Packard Company. PostScript is a trademark of Adobe Systems Incorporated. FoxBase is a trademark of Fox Software, Incorporated. Video 7 is a trademark of Video 7, Incorporated.

© 3Com Corporation, 1990. All rights reserved.