

3+Open LAN Manager Version 1.1

Release Notes

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Welcome

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

These release notes are an integral part of the 3+Open LAN Manager documentation. If you have not done so already, you should find the 3+Open Documentation Roadmap that came with the product. This foldout card will guide you through the documents required to install and use 3+Open LAN Manager.

Purpose

These release notes contain valuable information about the product and are intended to be read by the system administrator prior to product installation.

The first five sections contain information you need before you can install the system. Read them carefully:

- Welcome
- Changes from Version 1.0
- Hardware Requirements
- Before Installing 3+Open LAN Manager 1.1
- Installation and Setup Notes

The next four sections contain additional information about configuring the system for specific environments. Read them if they are applicable to your configuration:

- Performance Notes
- 3+ Compatibility Notes
- Application Notes
- Memory Savings Options for DOS Netstations

The remainder of the release notes contain information about problems that may be encountered with the system. You should read them carefully before using the system:

- Software Developer Notes
- Network Administration Notes
- General Notes

Changes from Version 1.0

3+Open LAN Manager version 1.1 includes several significant changes from version 1.0. These include:

- Improved DOS netstation memory for application use. Five different memory saving options are available to the user as discussed in these release notes.
- Demand Protocol Architecture (DPA) that allows XNS protocols to be dynamically loaded and unloaded as required by application programs, such as 3+Open Mail.
- New small-size, high-performance protocol: NBP.
- Enhanced DOS Redirector provides full named pipe support for DOS netstations, admin capability, and the ability to view network servers via a menu interface.
- OS/2 1.1 support for servers and netstations.
- IBM Token Ring 16/4 Adapter support.
- Full compatibility with SQL server applications.
- Unified LOGON that provides one step logon to 3+Open and 3+ servers.
- Bug fixes.
- Restructured documentation – easier to read and use.

NOTE: The *3+Open Network System Guide* which you will find referenced in some manuals has been restructured for version 1.1. Information previously in this guide is now included in these release notes, the *3+Open LAN Manager Installation and Setup Guide*, or the *3+Open LAN Manager Technical Reference*, which may be purchased separately.

- Increased server capacity to accommodate more users, files and sessions.

Resource	Maximum
Users	1,000
Open Files	32,000
Connections	2,000
File Locks	8,000
Opens	8,000
Searches	2,048
Sessions	Max Opens
Shares	500

Hardware Requirements

Disk and RAM Requirements

The following table lists the disk and RAM requirements for installing 3+Open LAN Manager Advanced System:

Table 1. Disk and RAM Requirements

Machine	Disk Drive	RAM
3Com 3Server	12 MB	4 – 16 MB**
PC or PS/2 Server	8 MB	4 – 16 MB**
PC or PS/2 Server with PM*	8 MB	5 – 16 MB**
OS/2 Netstation	2 MB	2.5 MB
DOS Netstation	360 KB***	640 KB
386 DOS Netstation with 3Com DOS Maximizer/386	1.2 MB	1+ MB
286 or 386 DOS Netstation with HIMEM	1.2 MB	1+ MB

* PM - Microsoft Presentation Manager included with 3+Open LAN Manager 1.1

** See Standard Server Configurations under "Before Installing 3+Open LAN Manager 1.1" for recommended memory based on the number of users and services installed on the server.

*** Many netstation configurations require 720 KB or even 1.2 MB diskettes, or a hard disk. The section titled "Building 360 KB DOS Boot Diskettes" provides more detail on this.

Supported Adapter/Protocol Combinations

The following table shows the adapter/protocol combinations supported in this version.

Table 2. DLC/NetBEUI Protocols

Adapter	OS/2 Server	OS/2 Netstation	DOS Netstation
3Com 3Station			
3Com 3Server	√		
EtherLink (3C501)		√	√
EtherLink Plus (3C505)		√	√
EtherLink Plus with LPO			
EtherLink II (3C503)	√	√	√
EtherLink/MC (3C523)	√	√	√
TokenLink (3C603)	√	√	√
TokenLink Plus (3C605)	√	√	√
TokenLink Plus with LPO			
IBM Token Ring I, II, /A	√	√	√
IBM Token Ring 16/4, 16/4/A	√	√	√

Table 3. XNS Protocols

Adapter	OS/2 Server	OS/2 Netstation	DOS Netstation
3Com 3Station			√
3Com 3Server	√		
EtherLink (3C501)		√	√
EtherLink Plus (3C505)		√	√
EtherLink Plus with LPO			√
EtherLink II (3C503)	√	√	√
EtherLink/MC (3C523)	√	√	√
TokenLink (3C603)	√	√	√
TokenLink Plus (3C605)	√	√	√
TokenLink Plus with LPO			√
IBM Token Ring 1, 2, /A	√	√	√
IBM Token Ring 16/4, 16/4/A	√	√	√

Table 4. NBP Protocols

Adapter	OS/2 Server	OS/2 Netstation	DOS Netstation
3Com 3Station			√*
3Com 3Server	√		
EtherLink (3C501)		√	√
EtherLink Plus (3C505)		√	√
EtherLink Plus with LPO			
EtherLink II (3C503)	√	√	√
EtherLink/MC (3C523)	√	√	√
TokenLink (3C603)	√	√	√
TokenLink Plus (3C605)	√	√	√
TokenLink Plus with LPO			
IBM Token Ring 1, 2, /A	√	√	√
IBM Token Ring 16/4, 16/4/A	√	√	√

* Requires that XNS be loaded as the secondary protocol.

Supported Server and Netstation Platforms

3+Open LAN Manager version 1.1 supports the 3Com 3Servers (3S/400 and 3S/500) dedicated server platforms, and the 3Com 3Station netstation platform. In addition, common PC and IBM PS/2 server and netstation platforms are supported. For more information about 3Com 3Servers, refer to the *3+Open for 3Servers Installation and Setup Guide* and the *3+Open for 3Servers Release Notes* which are included with the 3Server version of 3+Open LAN Manager version 1.1. For more information about supported PC and PS/2 server and netstation platforms, refer to the *3+Open LAN Manager Installation and Setup Guide*, which is included with the Entry and Advanced versions of 3+Open LAN Manager version 1.1.

Com Port Sharenames

3+Open LAN Manager allows you to create, modify, and delete sharenames for com ports 1 through 9. If you want to use com ports A through C, you may only create or delete their sharenames. When you want to modify the sharenames for com ports A through C, you must first delete the com port sharename, then create it again with the new parameters. Be sure to save this configuration or the changes will not stay in effect.

Configuring an EtherLink/MC Adapter

The default value of the Interrupt Request parameter (IRQ) is set to 7 on the EtherLink/MC for some revisions of the IBM PS/2 machines. The correct value is 3, and you can set it using the *IBM Personal System/2 Model X Reference Diskette*. If the value is not set correctly, the software will report error NET2186 during system initialization.

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.

Before Installing 3+Open LAN Manager 1.1

Before you begin the installation process, make backup copies of each diskette (using the DISKCOPY utility) and label each diskette. Use the backups for the installation process. Write-protect all of the backup 3+Open installation disks *except OS/2 Installation* (this disk writes back to itself during the installation process).

Standard Server Configurations

A local area network can be tuned to its particular environment to achieve maximum performance. Tune 3+Open LAN Manager by using an editor (such as "E") to modify values in the LANMAN.INI file of *each* server and/or netstation on the local area network. (The LANMAN.INI file is a collection of LAN Manager parameters. Refer to the *3+Open LAN Manager Technical Reference*, sold separately, for more details on the LANMAN.INI file and its parameters.)

The server configuration is influenced by the following factors:

- Number of users
- Number and type of services
- Type of network activity

The server's workload increases as users are added to it and as more services are run on it. It is very difficult to predict exactly how your users and your particular work environment loads the server over time. Five standard configurations have been set up to provide good performance over a wide range of server use. As you monitor the server load and find that further tuning is necessary, use the *3+Open LAN Manager Technical Reference* to selectively tune individual server parameters to maximize overall server throughput.

While each server and network configuration is unique, the following five examples provide a good starting point for your initial installation. 3Com suggests that you initially use these standard configurations because they provide parameter settings that ensure the best use of the high-performance features of 3+Open LAN Manager and require minimum memory size. Choose the configuration that most closely approximates the number of users and services you will be running on the server. If none matches exactly, choose a configuration that is higher (in number of users and services) than your specific combination.

Perform the following steps to change your server's default configuration:

1. **Install 3+Open LAN Manager software.**
2. **Choose a server configuration that most closely fits your needs.**
3. **Modify the server parameters based on the chosen configuration.**
4. **Restart the server to put your configuration changes into effect.**

NOTE: These values have been tested for dedicated servers running XNS only. It is assumed that the server does not support DOS compatibility box, and is not running Presentation Manager. If you are running Presentation Manager the server must have an additional 1 MB of memory.

Configuration 1

This configuration requires a minimum of 4 MB of memory. The basic installation configuration includes the following: 3+Open LAN Manager and 3+Open Start on a 3Server or PC server.

Configuration 2

This configuration requires a minimum of 6 MB of memory. The basic installation configuration includes the following: 3+Open LAN Manager, 3+Open Start, and 3+Open Backup on a 3Server or PC server.

Configuration 3

This configuration requires a minimum of 8 MB of memory. The basic installation configuration includes the following: 3+Open LAN Manager, 3+Open Start, and 3+Open Backup, 3+Open Name, 3+Open Mail, and 3+Open Internet on a 3Server or PC server. With all services loaded on the server, swapping must be turned off on the server. You must install services in the following order: 3+Open Internet, 3+Open Mail, and 3+Open Name.

Configuration 4

This configuration requires a minimum of 6 MB of memory. The basic installation configuration includes the following: 3+Open LAN Manager and SQL (Structured Query Language) on a 3Server or PC server.

Configuration 5

This configuration requires a minimum of 10 MB of memory. The basic installation configuration includes the following: 3+Open LAN Manager, 3+Open Start, and 3+Open Backup, 3+Open Name, 3+Open Mail, 3+Open Internet, and SQL (Structured Query Language) on a 3Server or PC server. With all services loaded on the server, swapping must be turned off on the server. You must install services in the following order: 3+Open Internet, 3+Open Mail, 3+Open Name, and SQL.

Standard Server Configuration Tables

Tables 5 and 6 show the memory required and the specific parameter settings for each of these configurations based on the range of users who are concurrently using the server. Refer to the table that most closely matches your system configuration.

The maxthreads, numworkbuf, maxlocks, maxopens, numbigbuf, numfiletasks, numreqbuf, sizereqbuf, maxcmds, maxsearches, maxsessopens, maxsessreqs, and maxusers parameters are found in the LANMAN.INI file. The threads and diskcache parameters are found in the CONFIG.SYS file.

Some of the LANMAN.INI parameter changes to be specified here will require corresponding changes to the PROTOCOL.INI parameters of the protocol driver in use. Specifically, maxcmds= and maxusers= set resource limits for the number of commands and sessions the OS/2 redirector will support. Maxcmds= should be set less than or equal to the number of commands, and maxusers= should be set less than or equal to the number of sessions supported by the NetBIOS protocol driver. The numbers for the NetBIOS protocol driver are set through entries in the PROTOCOL.INI file, and are specific to the protocol being used. The information below summarizes the parameters for the 3Com-supplied protocols:

	Sessions	Commands
NBP:	sessions=	commands=
XNS:	maxsess=	maxncb=
NetBEUI:	sessions=	commands=

The NetBIOS parameters for commands and sessions may be set higher than the redirector values for maxcmds= and maxusers= if additional NetBIOS applications will be run.

A reasonable rule of thumb is to set the protocol's commands parameter to twice the maxcmds= value, and the protocol's session parameter to 64 for less than 21 users and 128 for more than 21 users, except with XNS, where the maximum is 72.

Additionally, the number of commands and sessions supported by the NetBIOS driver must be communicated to the redirector by setting two positional parameters on the net1= line in the networks section of LANMAN.INI. The syntax of this line is:

```
net1 = drivervname$, lana, , sessions, commands, names
```

Table 5. Server Parameter Settings for 5 to 21 Users

Requirements	Config 1	Config 2	Config 3	Config 4	Config 5
Memory	6	6	8*	8	10*
maxthreads	D	D	32	D	32
numworkbuf	D	D	15	15	15
maxlocks	300	300	300	300	300
maxopens	300	300	300	300	300
maxpipes	D	D	D	20	20
numbigbuf	20	20	20	20	20
numfiletasks	D	D	D	D	D
numreqbuf	64	64	64	64	64
maxcmds **	D	D	48	48	48
maxsearches	150	150	150	150	150
maxsessopens	150	150	150	150	150
maxsessreqs	150	150	150	150	150
maxusers**	D	D	D	D	D
diskcache	1MB	1MB	1MB	1MB	1MB

* Requires that swapping be turned off on the server.

** Increasing this parameter requires a corresponding increase in a NetBIOS protocol parameter. Refer to the previous discussion for complete information.

D = The default value for this parameter.

Table 6. Server Parameter Settings for 21 to 50 Users

Requirements	Config 1	Config 2	Config 3	Config 4	Config 5
Memory	10	10	12*	10	12*
maxthreads	20	20	32	20	32
numworkbuf	15	15	15	15	15
maxlocks	1000	1000	1000	1000	1000
maxopens	2000	2000	2000	2000	2000
maxpipes	D	D	D	50	50
numbigbuf	40	40	40	40	40
numfiletasks	8	8	8	8	8
numreqbuf	96	96	120	96	120
maxcmds **	D	D	64	64	64
maxsearches	300	300	300	300	300
maxsessopens	200	200	200	200	200
maxsessreqs	200	200	200	200	200
maxusers**	100	100	100	100	100
diskcache	2MB	2MB	2MB	2MB	2MB

* Requires that swapping be turned off on the server.

** Increasing this parameter requires a corresponding increase in a NetBIOS protocol parameter. Refer to the previous discussion for complete information.

D = The default value for this parameter.

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 netstations. On servers 3Com recommends that you use the Microsoft OS/2 1.1 Server Adaptation included with 3+Open LAN Manager, because it is optimized for use as a network server and includes performance enhancements not present in other vendor's 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 since these versions of OS/2 are not adapted for the server environment.

3+Open versions 1.0 and 1.1 and 3+ versions above 1.2.1 can typically be mixed in the same network. In a mixed network running XNS protocols a single netstation can access all servers. If NBP/XNS protocol is used, then the netstation can access 1.1 servers running NBP for File/Print, and other servers running 3+ Mail and Name or 3+Open Mail and Name. Using DLC, all 3+Open servers and netstations can interoperate, but they cannot connect to 3+ servers.

All software on a particular server or netstation must be at the same version level to ensure proper functionality. Since the 3+Open LAN Manager 1.1 DOS netstation requires 2-5 KB less memory than did the comparable 1.0 configuration, 3Com recommends that the netstations be updated to 1.1.

Table 7. Interoperability between Server and Netstation Versions of 3+Open and 3+

	3+Open 1.0 Server	3+Open 1.1 Server	3+ Server > 1.2.1
3+Open 1.0 Netstation	√	√*	√
3+Open 1.1 Netstation	√	√	√
3+ Netstation	No	No*	√
3+ Open DOS LAN Manager	√	√*	No
Combination of 3+ Netstation and 3+Open DOS LAN Manager	√	√*	√

* 3+Open 1.0 DOS netstations and 3+ netstations will not be able to access new services, such as SQL database, available on the server which require the 3+Open 1.1 Enhanced Redirector in the netstation.

Differences Between PC or IBM PS/2 and 3Server Installation

The software provided for PC or PS/2 platforms is distributed on diskettes and is installed as described in the *3+Open Documentation Set* (OS/2 for server) and *3+Open LAN Manager Installation and Setup Guide* (LAN Manager for server and netstations).

The software provided for 3Com 3Server platforms is distributed on tape and is installed as described in the *3+Open for 3Servers Installation and Setup Guide* (OS/2 for server and LAN Manager for server and netstations).

Installing 3+Open LAN Manager on a 3Server without a Tape Drive

When you want to install 3+Open LAN Manager on a 3Server that does not have a tape drive, you will have to install it over the network. This will work only when the source server is running the XNS protocol.

Compaq DOS 3.31 Disk Format Incompatible with OS/2

The hard disk format created with the Compaq DOS 3.31 is not compatible with OS/2 if partitions greater than 32 MB are configured 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.
3. Boot under OS/2 (OS/2 Installation diskette in drive A).
4. Create new hard disk partitions using the OS/2 FDISK.
5. Reformat using the OS/2 FORMAT.

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 re-establish 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

Some DOS netstation installations will not fit on a 360 KB diskette.

With the exception of LPO and dual protocols, all combinations of protocols and adapters will fit on a 360 KB diskette if the DOS version is 3.1 with a "basic" configuration. The smallest configuration for an "enhanced" DOS client is more than 720 KB. Therefore, there is no reasonable way to run such a configuration on a netstation restricted to 360 KB diskettes. The alternatives are either to start the netstation using 3+Open Start, or to upgrade the diskette drives to higher capacity.

Table 8. Protocol and Adapter Combinations for a 360 KB Boot Diskette

Protocol	DOS	Adapter	Monitor
XNS	3.1, 3.2, 3.3, 3.3.1	Any supported adapter	Color
NBP	3.1, 3.2, 3.3, 3.3.1, 4.0	Any supported adapter	Color
DLC	3.1	Any supported adapter	Color

If the target station has a hard disk you can:

- Create a boot disk with DOS 3.1 to get the station booted initially and then run Netsetup across the network as described in the *3+Open LAN Manager Installation and Setup Guide* to configure the netstation for booting from the hard disk
- Build the configuration on another netstation and then use the DOS BACKUP command to copy AUTOEXEC.BAT, CONFIG.SYS, and the contents of \3OPEN and its subdirectories onto diskettes and restore them onto the target netstation's hard disk.

Installation and Setup Notes

Network Number for 3+Open LAN Manager Entry System

If you want to run the Locator on the 3+Open LAN Manager Entry System, type 0 (zero) for the 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 netstation, or DOS netstation, check to be sure that no NET USE commands 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).

PC Servers Using OS/2 DOS 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.

To turn the compatibility mode on, use a text editor and 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 (640 KB maximum).
3. Stop the cache.
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 Netstation Diskettes

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

1. Follow the instructions in the *3+Open LAN Manager Installation and Setup Guide* to create a DOS netstation 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

When you install the Server Adaptation, select the Program Selector as the server shell. Do not select Presentation Manager or the Minimum Shell.

If you mistakenly select one of these, manually change to the Program Selector by modifying the protshell= line in CONFIG.SYS (or CONFIG.OS2 if the server is set-up for dual booting). For example, change from either :

pmshell

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

or minshell

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

to shell

```
protshell=c:\os2\shell 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 file. This ensures that all network commands are available.

Unified Logon Command

The new 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 Unified Logon is used without a Name service on the network, use the "Open" option, which logs on only to the 3+Open server. Otherwise, logon will take longer because the software must wait and re-try 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 be automatically established.

Performance Notes

OS/2 Disk Caching

The OS/2 supplied with this release includes disk caching as an option. The installation of OS/2 turns caching on as the default. You can tune the caching to suit your network requirements. Refer to the *3+Open LAN Manager Installation and Setup Guide* for detailed information on caching. OS/2 LAN Manager requires that at least 4.5 MB be available to the system, so do not set the cache size to be larger than total memory minus 4.5 MB. To change the size of the server cache, which is typically done when you add or delete memory or are tuning the server, modify the `diskcache=` parameter in the `CONFIG.SYS` file.

Stopping Disk Caching

To stop disk caching when `/lazy` is on, first stop `/lazy`, then stop the disk caching. A sample command is:

```
cache /lazy:x:off  
cache /stop
```

where `x` is a drive ID. You can also use `*` to indicate all drives.

OS/2 Disk Cache and SQL Server

The SQL server has its own internal disk cache. For best performance reduce the OS/2 cache which to provide more memory for the SQL server internal cache.

3+ Compatibility Notes

3+ and 3+Open Advanced System networks can coexist. Refer to *Managing Combined Networks: 3+Open and 3+* for detailed information on this subject.

Using MS-DOS Manager to Access 3+ Servers

The 3+Open MS-DOS Manager requires that links to 3+ servers be to sharenames which conform to the 3+Open NetBIOS naming conventions. This means that sharenames must have the following format:

```
\\finance_server\apps
```

Links to 3+ sharenames which are invalid NetBIOS names will not be recognized by the MS-DOS Manager, and no files will be accessible from the MS-DOS Manager program. Examples of valid 3+ sharenames which are not valid 3+Open NetBIOS names are:

```
\\3Server\mkt\apps  
\\Pubs Lab Server:SPD:3Com\
```

3F and 3P LINK /DIR

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 netstations do not have this problem.

Installing 3+ for OS/2 Netstations and 3+Open LAN Manager

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

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:

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

IBM LAN Manager Program

To use the 3Com DOS netstation 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 3270 Emulation Program

To use the DOS DLC with the IBM 3270 Emulation Program, set the interrupt level used on any 3Com EtherLink and TokenLink adapters to 2.

The IBM 3270 Emulation Program V3.0 with DLC Token Ring host connection through a 3174 controller does not function properly in this release.

IBM 3270 Workstation Program

To use the IBM 3270 Workstation Program, replace the 3+Open LAN Manager DLC protocols with the IBM LAN Support Program drivers that are included with IBM LAN Server to achieve full functionality.

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.

dBASE IV Version 1.0 and SuperCalc

dBASE IV must be run from a local drive or a 3+Share drive. It will not load properly from a 3+Open shared drive. SuperCalc may be run from a 3+Open drive, but the .CAL files must be on a local drive or a 3+Share drive.

This will be corrected in future releases of dBase IV and SuperCalc. Contact 3Com Customer Support, or Ashton-Tate, or Computer Associates for specific information on these new releases.

Windows/386 and Windows/286

When running Windows/386 on a DOS netstation, several configuration considerations should be noted:

- (1) Windows/386 is not supported with XNS protocol running in the PC. It is fully supported with XNS protocol when XNS is run in the LPO mode on an intelligent adapter.
- (2) Windows/386 is fully supported with NBP, NBP/XNS and DLC protocols running in the PC.
- (3) 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.
- (4) To use the Messenger and Netpopup utilities with windows and the Enhanced Redirector install the MS-DOS LAN Manager (Enhanced) netstation and choose the Messenger option using the Netsetup program. Then modify the WIN.INI file to include the following statement:

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

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

(NOTE: Messenger and Netpopup are not supported by MS-DOS LAN Manager Basic.)

Tested Applications

3+Open LAN Manager version 1.1 is compatible with DOS, OS/2 and OS/2 server applications, such as SQL server. A sampling of leading applications tested with 3+Open LAN Manager version 1.1 for compatibility includes:

- dBASE III Plus
- Lotus 123 version 3.0
- Microsoft Word version 5.0
- Rbase 5000
- Saros File Manager
- SQL server
- SuperProject Expert
- Word Perfect Office

Directory Names Displayed by DOS Manager

Directory names that begin with a number or include brackets ([]) do not display properly.

Comparing Files with the DOS COMP Command

The DOS COMP command will fail when you compare two executable files (i.e. with .exe, .com, .bat, and .cmd filename extensions) located on a netstation drive linked to a sharename with r/w/c permissions.

Memory Saving Options for DOS Netstations

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

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

- (1) Running NBP protocol on the netstation.
- (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 Redirect or 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 640 KB DOS netstation, provides an additional 70 to 75 KB for application memory as compared to XNS or DLC protocols. NBP, however, does not support internetworking like XNS or source-routing like DLC. For netstations where the file/print/administration access is to servers on the same network, NBP is the best protocol choice. A typically configured 640 KB netstation using NBP and DOS 3.3 will have 517 to 530 KB of memory available for applications.

Dynamic Loading/Unloading of XNS Protocols

Version 1.1 also supports Demand Protocol Architecture (DPA), which allows NBP as the primary and XNS as the secondary protocol on a DOS netstation in this version. 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 netstation, such as a Compaq 386/25, using the LPO option will cause some reduction in netstation 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 netstation. 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 a 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 the equivalent memory 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 eXtended Memory Area (XMA). If you are using Windows/286 or Windows/386, 3Com recommends, that for maximum memory, Windows is configured to use high memory rather than the redirector. Because of memory conflicts, this utility may not work with VDISK and other memory saving utilities.

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

- Do not install HIMEM in CONFIG.SYS, 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 for the TokenLink adapter or change the memory address jumper on the EtherLink II to the DISABLE position. Consult the guide included with your adapter for information on how to do this.
- Disable the use of XMA 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 XMA 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 Netstation (Enhanced)* diskette which contains a file called README.HIM located in the \3OPEN\HIMEM subdirectory. This subdirectory also exists on an installed server.

NOTE: HIMEM and DOS Maximizer/386 cannot be used on the same netstation, because they conflict with each other.

Using DOS Maximizer/386 to Load Programs into High Memory

On a 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 640 KB and 1 MB, thereby freeing substantial memory below 640 KB for applications. Using the DOS Maximizer frees approximately 60 to 100 KB of memory, depending on the configuration.

The DOS Maximizer/386 program is not compatible with other programs that use high memory themselves. 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 use XMA, the network will not work properly. There are several options available:

- Do not install 3COMEMM.SYS in CONFIG.SYS, 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 to the DISABLE position. Consult the guide included with your adapter for information on how to do this.
- Disable the use of XMA 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 XMA 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 Netstation (Basic)* diskette which contains a file called README.EMM located in the \3OPENDOSDRV\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 netstation boot disk as follows:

```
\CONFIG.SYS
\3OPENDOSWKSTA\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. You must specify the location used by your hardware, e.g., C000 to C600, to the 3Com memory saving software by editing the CONFIG.SYS file.

After installation, enter the proper start and end of the memory I/O addressing space of the adapter in question using the RAM keyword (e.g., RAM=C000-C600). In the case of multiple adapters use more than one RAM keyword. Enter the address parameter values in paragraphs.

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 netstation.

The sections below identify which CONFIG.SYS lines 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]
  drivername=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 3COMEMM.SYS RAM= and ROM= (PS/2 only) you must change or add entries in the CONFIG.SYS file 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--D000
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:

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

With an IBM Token Ring adapter, the CONFIG.SYS entry would be:

```
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 netstation 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)" and "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 servername parameter. The value must be NULL.

Named Pipes (Msg/Blocking Type)

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

Named Pipes Message Size

If the netstation side reads less than the message size, the ERROR_MORE_DATA is not reported back to the client. 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.

Network Administration Notes

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 in this version should be installed on the OS/2 server. To do this, add the following entry to 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 server name 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 LANMANACCOUNTS\NETACC.BKP
- NET.AUD is copied to LANMANLOGS\NETAUD.BKP

Clearing Access Control Records on a Server

Deleting a file or directory from the server does 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 (i.e. numbigbuff) it will log the error only once. If you stop and restart the server this does not get reset. You must stop and restart the netstation to reset the logging.

NET ADMIN Error Messages Missing

If you use the NET ADMIN command prior to starting the netstation, 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 administrators in its user count.

NET ADMIN Error Count

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

DOS Netstations Auto Reconnection

If the administrator deletes a session or removes a sharename, and then restores the sharename, DOS netstations 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.

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.

Compaq 386/16 Mother Board Problem

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

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.

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.

Printing from the DOS Compatibility Box

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

Autoswitching and/or Monitor-Detecting Video Cards

If an autoswitching and/or monitor-detecting video card (e.g. 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 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

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 netstations. Use the NET USE command and the device name:

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

instead of

```
copy file.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 netstation, 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 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 (e.g. IBM) which may support expanded memory.

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