

Additional Notes About Networks

This document contains information about specific networks. If you are looking for additional information about Windows version 3.1 that does not pertain to networks, see "Other Online Documents" at the end of this file for a description of the Windows 3.1 online documents.

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Contents

This document contains the following topics about networks:

1.0 General Notes

2.0 Notes About Specific Networks

2.1 3Com Networks

2.2 Artisoft LANtastic

2.2.1 Artisoft LANtastic 3.x

2.2.2 Artisoft LANtastic 4.x

2.3 Banyan VINES

2.3.1 Banyan VINES 4.0x

2.3.2 Banyan VINES 4.1x

2.4 DEC Pathworks

2.5 IBM OS/2 LAN Server

2.5.1 IBM LAN Server 1.2 and 1.3

2.5.2 IBM LAN Server 2.x

2.6 IBM PC LAN Program

2.7 Invisible Software - NET/30 for Windows

2.8 Microsoft LAN Manager Networks

2.8.1 Using the Ungermann-Bass XNS Transport Stack

2.8.2 Using LAN Manager and Expanded Memory

2.8.3 Using Pop-up Services

2.8.4 LAN Manager Basic

- 2.8.5 LAN Manager 1.x
- 2.8.6 LAN Manager 2.0 Enhanced
- 2.8.7 LAN Manager 2.1 Basic
- 2.8.8 LAN Manager 2.1 Enhanced
- 2.9 Microsoft Network and Compatibles
- 2.10 Novell NetWare
- 2.11 TCS 10Net
- 2.12 Ungermann-Bass Net/One

3.0 Other Online Documents

1.0 General Notes

- There are many settings in the SYSTEM.INI file that affect the way Windows interacts with a network. You can change these settings to correct most problems you might have operating Windows with your network. See the SYSINI.WRI online document for information about changing the following SYSTEM.INI settings:

```
[Boot]
Network.drv=
```

```
[Standard]
Int28Filter=
NetHeapSize=
```

```
[386Enh]
AllVMsExclusive=
EMMExclude=
FileSysChange=
InDOSPolling=
Int28Critical=
NetAsyncFallback=
NetAsyncTimeout=
NetDMASize=
NetHeapSize=
Network=
PSPIncrement=
ReflectDOSInt2A=
TimerCriticalSection=
TokenRingSearch=
UniqueDOSPPSP=
```

- Many networks require the **TimerCriticalSection** entry in the [386Enh] section of the SYSTEM.INI file to be set to a value of 10000 or greater. For

more information, see the SYSINI.WRI file.

- The default value for the **NetHeapSize** entry in the [Standard] section of the SYSTEM.INI file is 8K. Although some applications require this value, in most cases you can decrease the value to 4K in order to increase the amount of memory available to your applications. A few applications require the value to be 4K.
- If for some reason you use Setup to change your network configuration after you have already set up Windows, Setup might not remove all support for your previous network selection. Unnecessary files might be left in your Windows directory, and entries might be left in your WIN.INI or SYSTEM.INI files that could harm your system's performance. If you change your network configuration, check the notes about both your previous and new selections to see if any previous entries are no longer required.
- Some network adapter cards require the **ExcludeHighRegion** (or **EMMExclude**) entry in the [386Enh] section of the SYSTEM.INI file to be set to the memory range used by the card. For more information, see your network-adapter documentation and the SYSINI.WRI file.

These cards may also require an X= option on the EMM386 command line in your CONFIG.SYS file. For more information, see chapter 14, "Optimizing Windows," in the *Microsoft Windows User's Guide*.

- Some network cards and some network transport stacks require special handling. Consult the following sections not only for the manufacturer of your network but also for the manufacturer of your network adapter and your transport stack.
- Many networks have pop-up message facilities that allow you to see messages sent from other servers or workstations. In most cases, these pop-up programs will cause Windows Setup to fail if a message is received while setting up. Many networks provide additional utilities that allow them to work with Windows once Windows is set up, but these are generally not available during Setup. You should make sure any such pop-up service is disabled before setting up Windows. Please consult specific entries regarding your network in the following sections, or consult your network documentation for instructions.
- If you configured your remote-boot workstation to run Windows version 3.0, you may be loading a program called RIPLMEM.EXE or RPLMEM.EXE in your AUTOEXEC.BAT. This program is no longer required for running Windows version 3.1.
- The *Windows Resource Kit for the Microsoft Windows Operating System Version 3.1* contains additional information about setting up and

configuring Windows for use with a network, and information for system administrators. This kit provides complete technical information about Windows version 3.1 for the support professional. It includes a technical reference manual, and a disk containing helpful utilities, system resource viewers, drivers, and accessories.

To order the Windows Resource Kit within the United States, dial:

1-800-642-7676

To order outside of the United States, dial the phone number for your area. You can find this number on the International Subsidiary card.

- If you are running a shared copy of Windows from a network drive, make sure both your personal Windows directory and the shared network directory are included on the PATH command line in your AUTOEXEC.BAT file.
- If you receive sharing violations while running a shared copy of Windows, make sure that all of the files in the shared network directory are marked as read-only.
- If you have problems running a shared copy of Windows, remove the MS-DOS SHARE command from your system. With some networks, the MS-DOS SHARE utility must not be loaded on a workstation to run a shared copy of Windows.
- If you have problems and your network software is loaded high (in the upper memory area between 640K and 1 MB), try loading the network in conventional memory.
- Windows Print Manager spools print jobs to the location specified by the MS-DOS environment variable TEMP. If TEMP is not set, Print Manager will use the root of drive C. For diskless workstations, set the TEMP variable either to a RAM disk or to the location of a network directory (you must have full access to this directory). The TEMP variable may be set by placing a SET TEMP= statement in the AUTOEXEC.BAT file or network login script. For example, to spool to the network directory X:\USERNAME\WINUSER\TEMP, you would use the statement **SET TEMP=x:\username\winuser\temp**. Each user must have a personal TEMP directory.
- On some diskless workstations, you will not be able to start Windows in standard mode unless you have a TEMP environment variable set or you have added a **swapidisk** entry in the [NonWindowsApp] section of the SYSTEM.INI file. For more information about the **swapidisk** entry, see the SYSINI.WRI file.

- If you are running a peer-to-peer network, you may not be able to format a floppy disk by using File Manager. You can use the **format** command at the MS-DOS prompt instead.
- Some networks ship with their own copies of files that are included with Windows version 3.1. Usually Windows includes a newer version, and upgrades the one provided with the network when you run Setup. However, if you install the network after installing Windows 3.1, some network installation programs will overwrite the newer file provided with Windows with their own, older version. This older version may lack features provided in the newer version, or it may not function properly with Windows 3.1. You should back up your network and Windows files before upgrading your network software. If problems occur, you may need to restore the previous version of some files.

2.0 Notes About Specific Networks

This section contains information about specific networks. The networks are listed in alphabetical order by vendor. If your network is not listed here, it may be based on or equivalent to one of the networks listed here. For example, many networks are based on Microsoft LAN Manager.

2.1 3Com Networks

Windows Setup recognizes the following 3Com networks:

- The 3Com 3+Share network is based on the Microsoft Network product and will be handled as such by Windows. See the "Microsoft Network and Compatibles" section later in this document.
- The 3Com 3+Open LAN Manager network is based on Microsoft LAN Manager and will be handled as such by Windows. See the "Microsoft LAN Manager Networks" section later in this document.

When you install for 3Com 3+Share or 3Com 3+Open LAN Manager, Setup adds the following entries to the [386Enh] section of your SYSTEM.INI file:

```
TimerCriticalSection=10000  
UniqueDOSPSP=TRUE  
PSPIncrement=5
```

See SYSINI.WRI for more information on these entries.

In addition:

- Some copies of 3Com 3+Open LAN Manager version 1.1 require a maintenance upgrade to work with Windows. If you encounter problems,

contact your network customer-support organization.

- When you install Windows, Setup modifies your AUTOEXEC.BAT file to make sure the Windows directory appears in your path ahead of any conflicting directories. However, the 3+Share network might change this path when you log in. If so, your system administrator must modify the network log-in procedure so that the path is set correctly to run Windows.
- On a 3Com 3+Open network, the user's name displayed by Windows Print Manager might not match the user's actual log-in name.
- Some 3Com 3Station diskless workstations come with an All ChargeCard. Make sure your machine is not configured to load the network into the upper memory area between 640K and 1 megabyte, as this will not work reliably with Windows version 3.1 in standard mode. You will not be able to set up Windows if your system is configured in this way.
- If you use the 3C505 Network Adapter Card, you must disable the Link Plus Optimizer to run Windows in 386 enhanced mode. You can disable it by removing the following lines from your CONFIG.SYS file:

```
device=psh.sys <arguments>  
device=pth.sys
```

In addition, remove the following line from your AUTOEXEC.BAT (or any other batch file you use to start your network):

```
ldr
```

- Windows does not support the 3Com network aliasing scheme (three-part names).

2.2 Artisoft LANtastic

LANtastic versions below 3.0 are not compatible with Microsoft Windows.

For information about LANtastic versions 3.x or 4.x, see the specific sections that follow. The following notes apply to both versions.

- The **EMMExclude** setting, added to the SYSTEM.INI file during Setup, is required for the default configuration of the Artisoft LANtastic Enhanced 2mbps network adapter. If you have changed the memory address setting on your adapter, modify this entry in SYSTEM.INI to reflect the appropriate address range. If you are not using this network adapter, you can remove this entry.
- Some commands require the **NetHeapSize** entry in the SYSTEM.INI file

to be set higher than the default value; for example, **xcopy** requires **NetHeapSize=128**. Increasing the NetHeapSize value leaves less memory available for non-Windows applications, so only increase this value if necessary. For more information about the **NetHeapSize** entry, see the SYSINI.WRI file.

- You cannot create a permanent swapfile while running Windows on a LANtastic server. To create a permanent swapfile, restart your computer without loading the server software, and create the swapfile in Windows. If a dialog box appears asking you to restart Windows, you must restart Windows in 386 enhanced mode before you start the server software.
- If you are running a LANtastic server, you cannot use Windows File Manager to format a floppy disk. You can use the **format** command at the MS-DOS prompt instead.

2.2.1 Artisoft LANtastic 3.x

When you set up Windows for use with LANtastic 3.x, the following entries are added to the [386Enh] section of SYSTEM.INI:

```
EMMExclude=D800-DFFF  
INDOSPolling=TRUE  
NetHeapSize=76  
NetAsynchFallback=TRUE  
NetAsynchTimeout=50
```

In addition:

To print from any mode of Windows across LANtastic 3.x, it is necessary to do one of the following:

- Turn off the Fast Printing Direct To Port option in Control Panel. To do this, choose the Printers option in Control Panel, and then choose the Connect button. In the Connect dialog box, clear the Fast Printing Direct To Port check box.

When you turn off this option, it affects all of your ports.

If you want to turn this option off for one port only, follow these steps:

1. If you are printing using LPT3, add the following entry to the [ports] section of the WIN.INI file:

```
LPT3.DOS=
```

If you are using LPT1 or LPT2, you can use the LPT1.DOS or LPT2.DOS

entries already in your WIN.INI file.

2. Quit Windows, and then redirect the LPTx.DOS port (where x is the port you are using) by using the LANtastic **net use** command.
 3. Restart Windows.
 4. Using Control Panel, change your printer port to LPTx.DOS.
- If you are running LANtastic version 3.x, you cannot run Windows in 386 enhanced mode on a non-dedicated server.
 - If you have a network connection on LPT1, it will not be displayed in Print Manager or Control Panel.

2.2.2 Artisoft LANtastic 4.x

When you set up Windows for use with LANtastic 4.x, the following entries are added to the [386Enh] section of SYSTEM.INI:

```
EMMExclude=D800-DFFF  
NetAsynchFallback=TRUE  
NetAsynchTimeout=50  
NetHeapSize=64  
PerVMFiles=0
```

In addition:

- If you set up Windows for use with LANtastic 4.x, you must have the LANTASTI.386 file somewhere on your path. This file should be located in your LANtastic directory. If LANTASTI.386 is not in your path, Windows Setup adds ***dosnet** to the [386Enh] section of the SYSTEM.INI. To use Windows with LANtastic 4.x, remove this entry and add the entries shown above, and make sure LANTASTI.386 is somewhere on your path.

2.3 Banyan VINES

Setup will correctly handle the following Banyan VINES versions:

- Banyan VINES 4.0 is compatible with Microsoft Network and will be handled as such by Windows.
- Banyan VINES 4.1 and later come with additional Windows components, which are installed when you set up Windows for use with Banyan VINES 4.1.

See the following sections for information about running these versions of VINES with Windows.

Note: You should start VINES and log in before starting Windows. Banyan does not support logging in while Windows is running. If you start Windows when the network is not loaded or you are not logged in, you will receive one or more error messages indicating that you will not be able to use VINES functions from within Windows.

2.3.1 Banyan VINES 4.0x

When you set up Windows for use with Banyan VINES 4.0x, the following entries are added to the [386Enh] section of your SYSTEM.INI file:

```
TimerCriticalSection=5000
UniqueDOSPPSP=TRUE
PSPIncrement=5
```

See SYSINI.WRI for more information on these settings.

- To use Windows printing functions with VINES 4.0, you must have VINES 4.00(5) or later and must have the NetBIOS support loaded. If you cannot print to a network printer, ask your network administrator to verify that you are loading NetBIOS and that you are running the proper version of VINES.
- If you are running VINES 4.0 with Windows running in 386 enhanced mode and want to run non-Windows applications that use NetBIOS, you must install VINES 4.00(5) or later. In addition, you will need to start NetBIOS before starting Windows.

If you start VINES NetBIOS support before starting Windows in standard mode, you may not be able to start any non-Windows applications. If you have this problem, load NetBIOS from within Windows, or contact your Banyan dealer for more information.

- Versions below site-specific patch 0H will not support Windows running in 386 enhanced mode.
- If you are running VINES version 4.0x and you have a problem with print jobs that time-out intermittently, you can either update to VINES 4.1x, or use the VINES SETPRINT utility to remove the timeout on your printer port by specifying the following:

SETPRINT *lptn servicename* /D:INFINITE

Lptn is the printer port and *servicename* is the name of the network print queue.

2.3.2 Banyan VINES 4.1x

When you set up Windows for use with Banyan VINES 4.1, the following entries are added to the [386Enh] section of your SYSTEM.INI file:

```
Network=*dosnet, *vnetbios, vvinesd.386  
TimerCriticalSection=5000  
UniqueDOSPPSP=TRUE  
PSPIncrement=5
```

See SYSINI.WRI for more information on these settings.

In addition:

- If you are running VINES 4.10 or 4.11 (below 4.11(5)) and you have problems printing, you may need to upgrade your VINES.DRV. This driver is available from Banyan.
- If you are running Banyan VINES 4.10 or 4.11, you do not need to load NetBIOS unless you are running NetBIOS-specific applications. (It is not required for printing, as it is with VINES 4.0x.)

If you are running version 4.10 and you want to run NetBIOS-specific applications with Windows running in 386 enhanced mode, you must start NetBIOS before starting Windows. However, you can only run a single NetBIOS application at a time.

If you are running version 4.11, you can load NetBIOS either before starting Windows or after starting Windows in 386 enhanced mode.

If you want to run NetBIOS with Windows running in standard mode, you must load NetBIOS from within Windows. If you load NetBIOS before starting Windows, you will not be able to start any non-Windows applications.

For more information on running memory-resident applications after starting Windows, see Chapter 7, "Non-Windows Applications," in the *Microsoft Windows User's Guide*.

2.4 DEC Pathworks

Windows version 3.1 supports DEC Pathworks versions 4.0 and above.

When you set up Windows for use with a DEC Pathworks network, the following entries are added to the [386Enh] section of your SYSTEM.INI file:

Network=*dosnet, decnet.386, decnb.386
TimerCriticalSection=10000

For more information about these settings, see the SYSINI.WRI file.

In addition:

- DEC Pathworks supports additional API that are not supported by the files installed by Windows 3.1.
- If you have problems starting Windows, or copying or opening files, you may need to increase the value of the **FILES=** command in your CONFIG.SYS file. Try setting the value to 30.
- If you have problems running NetBIOS applications, try replacing the **decnb.386** entry with ***vnetbios** in the **network=** line in the [386Enh] section of the SYSTEM.INI file.

2.5 IBM OS/2 LAN Server

IBM OS/2 LAN Server, which is also known as IBM DOS LAN Requester, is based on Microsoft LAN Manager. Windows supports LAN Server versions 1.2 and higher.

- LAN Server versions 1.2 and 1.3 are equivalent to Microsoft Network and are handled as such by Windows.
- LAN Server version 1.3 CSD 5015 or higher is equivalent to Microsoft LAN Manager version 2.0 and is handled as such by Windows.
- LAN Server version 2.0 comes with its own Windows components which are automatically used by Windows Setup.

In addition:

- If the network Browse functions in Windows File Manager and Control Panel do not show all the available servers, you may need to increase the LAN Server **/NVS** option. You can do this by adding the following line to the DOSLAN.INI file in your LAN Server directory:

/NVS:1

Set the value to a number at least as large as the number of servers in your domain.

- If you want to receive pop-up messages while working in Windows, make sure the following lines are included in the DOSLAN.INI file in your LAN Server directory:

/NMS:2
/RCV
/POP

The value of **/NMS** may be set higher but must be a minimum of 2.

You must also make sure the entry **load=WinPopup** is included in the [windows] section of your WIN.INI file.

2.5.1 IBM LAN Server 1.2 and 1.3

- Running Windows with LAN Server 1.3 with CSD 5015 or later requires the files LANMAN.DRV, LANMAN.HLP, WINPOPUP.EXE, WINPOPUP.HLP, NETAPI.DLL, and PMSPL.DLL. These files should be located in your LAN Server directory. If your version of LAN Server does not provide these files, Windows Setup will copy them to your Windows SYSTEM directory.
- LAN Server versions below 2.0 do not allow you to use the IBM OS/2 LAN Server aliasing scheme from inside Windows applications.
- LAN Server versions below 2.0 do not allow you to log on through Windows Control Panel. Doing so may cause your machine to lock up. Always log on at an MS-DOS prompt, either before starting Windows or while Windows is running.
- Windows includes updated versions of the NETAPI.DLL and PMSPL.DLL files shipped with LAN Server. These files are installed during Setup for versions 1.3 with CSD 5015 or higher.

2.5.2 IBM LAN Server 2.x

- Running Windows with LAN Server version 2.x requires the files LANSRV.DRV, LANSRV.HLP, WINDLR.DLL, NETAPI.DLL, PMSPL.DLL, WINPOPUP.EXE, and WINPOPUP.HLP be located on your path. These files should be located in your LAN Server directory.

2.6 IBM PC LAN Program

The IBM PC LAN Program is based on the Microsoft Network product and will be handled as such by Windows.

When setting up Windows for use with IBM PC LAN Program, the following entry is added to the [386Enh] section of the SYSTEM.INI file:

INDOSpolling=TRUE

See the online document, SYSINI.WRI, for more information on this setting.

In addition:

- When you connect to a network share by using File Manager, that redirection will not be detected by non-Windows applications.
- The IBM PCLP Extended Services refers to network drives and printers by two different names. Usually, when connecting to a network, you select connections from a list containing descriptive names, but internally connections are made using hidden names such as \\SERVER\IBMXS001.

With PCLP Extended Services, you must type the same name as the hidden names in Control Panel or File Manager to make new network connections. Consult your network administrator to learn the proper names to use.

- Some versions of PCLP lock up your system if you receive a broadcast message while running Windows. You can disable these messages with the **net pause messenger** command. Or you can start up your network with **net start rdr** instead of **net start rcv** or **net start msg** commands.
- When you connect to a network printer by using Control Panel, the connection will not be detected by non-Windows applications. It will, however, still be usable by Windows and Windows applications.

2.7 Invisible Software - NET/30 For Windows

To use NET/30 For Windows, choose the Custom Setup option when you run Setup. For your network configuration, choose Other Network (Requires disk from OEM). You are prompted for a path to the directory containing your NET/30 files. Your SYSTEM.INI and WIN.INI files will automatically be updated.

If you are setting up Windows on a nondedicated file server and you are sharing a serial printer, you must add a line to the SYSTEM.INI file. If you are sharing COM1, add the following line in the [386Enh] section:

COM1AutoAssign=0

If you are sharing COM2, add the following line to the [386Enh] section:

COM2AutoAssign=0

2.8 Microsoft LAN Manager Networks

Many networks, such as IBM LAN Server, Digital Pathworks, and 3Com

3+Open are based on Microsoft LAN Manager. Consult your network documentation, network distributor, or system administrator to learn whether your network belongs in this category, and if so, on which version of LAN Manager it is based.

The following notes include general information about using LAN Manager networks and information about specific versions of LAN Manager.

2.8.1 Using the Ungermann-Bass XNS Transport Stack

If you are using the Ungermann-Bass XNS transport stack and running Windows in 386 enhanced mode, you must make sure the transport stack is not using expanded memory. If your system is configured to provide expanded memory with a memory manager such as EMM386, you can disable that product's expanded-memory option. Or, if you want to continue using expanded memory, you can disable its use by the Ungermann-Bass transport stack as follows:

1. Open your PROTOCOL.INI file by using a text editor such as Windows Notepad. PROTOCOL.INI is located in your LAN Manager directory.
2. Find the section [XNS_XIF].

If you're using Notepad, you can find this section by choosing Find from the Search menu, typing [XNS_XIF], and then choosing the OK button.

3. Add a line **NOEMM**, or, if the line already exists, make sure that it is not commented out with a semicolon (;) at the beginning of the line.
4. Save your PROTOCOL.INI file.
5. Restart your workstation.

2.8.2 Using LAN Manager and Expanded Memory

If you are running Windows in 386 enhanced mode, it is recommended that you not use expanded memory with LAN Manager. If you do, you may find that your system slows down considerably or it may lock up occasionally. If this is a problem, turn off the use of expanded memory by modifying your LANMAN.INI and PROTOCOL.INI files. The exact procedure will vary depending on what components you are running. See your LAN Manager documentation for further details.

1. Open your LANMAN.INI file by using a text editor such as Notepad. LANMAN.INI is located in your LAN Manager directory.
2. Find or add the section [workstation].

If you're using Notepad, you can find this section by choosing Find from the Search menu, typing [workstation], and then choosing the OK button.

3. Find or add the **lim=** line in this section, and then add the following line:

lim=no

4. Save your LANMAN.INI file.
5. Restart your workstation.

Or you can stop your workstation and restart it again using the **net stop workstation** and **net start workstation** commands.

In addition, you may want to configure other network components (such as protocol stacks) to avoid using expanded memory. Consult your network documentation for the specific component for instructions on how to do this.

2.8.3 Using Pop-up Services

LAN Manager Enhanced includes pop-up services you can use to see incoming broadcast messages. These pop-up services can disrupt the Windows screen display, so you must either disable them or run the LAN Manager WinPopup utility so they can coexist with Windows.

The WinPopup utility should be located in your LAN Manager NETPROG directory, included in your path. To automatically start the utility when you start Windows, include the following entry in the [windows] section of your WIN.INI:

load=winpopup.exe

If you set up Windows for use with LAN Manager version 2.0 or 2.1 Enhanced, Windows Setup adds this line to your WIN.INI file. If you are running LAN Manager 1.x Enhanced, you must insert this line yourself. See WININI.WRI for information on modifying your WIN.INI file. If you are using LAN Manager 1.x, you also need to obtain an updated version of NETPOPUP.EXE from your network dealer.

Note: Windows version 3.1 includes an updated version of the WinPopup utility. This utility may not be compatible with all networks that are based on Microsoft LAN Manager. If you are running AT&T/NCR StarGroup LAN Manager version 2.0 Release 3.5, you should use the WNETMSG utility provided instead of WinPopup.

Alternatively, if you want to disable the pop-up services, use the following procedure:

1. Find your LAN Manager root directory.
2. Use Notepad to open the LANMAN.INI file, and locate the line that begins with **wrkservices=**.
3. Remove the **netpopup** or **minipop** entry from this line.

If you remove the **netpopup** and **minipop** entries but leave the **messenger** entry, messages will still be received but will be recorded in the MESSAGES.LOG file in your LAN Manager directory rather than being displayed on the screen. If you do not want to log your messages, you can also remove the **messenger** entry from this same line.

4. Save the file.
5. Quit Windows, and then restart your workstation.

2.8.4 LAN Manager Basic

When you set up Windows for use with LAN Manager Basic (all versions), the following entry is added to the [386Enh] section of your SYSTEM.INI file:

```
network=*dosnet, *vnetbios, lanman10.386
```

See the SYSINI.WRI file for more information on this entry.

Network software based on LAN Manager Basic, or on LAN Manager Enhanced without full API support, must not be loaded in the high memory area (the first 64K of extended memory).

You need to modify the LANMAN.INI file in your network directory to prevent the network from loading in the HMA. Find all lines that begin with **redir** and add the following command-line option to each:

```
/HIMEM:NO
```

2.8.5 LAN Manager 1.x

Some early copies of LAN Manager 1.x require a maintenance upgrade to run with Windows. If you experience problems, contact your network vendor for an upgrade.

2.8.6 LAN Manager 2.0 Enhanced

When you set up Windows for use with LAN Manager 2.0 Enhanced, the following entry is added to the [386Enh] section of your SYSTEM.INI file:

network=*vnetbios, *dosnet

See the SYSINI.WRI file for more information on this entry.

For Windows to support LAN Manager 2.0 Enhanced, you must have the files NETAPI.DLL, PMSPL.DLL, LANMAN.DRV, LANMAN.HLP, WINPOPUP.EXE, and WINPOPUP.HLP. These files are located in your LAN Manager NETPROG directory, which should be in your path. Windows also includes updated versions of these files, which will be automatically installed on some older versions of LAN Manager.

2.8.7 LAN Manager 2.1 Basic

If you upgrade from an earlier version of LAN Manager Basic to version 2.1 Basic using the Over-the-Network Upgrade process, your SYSTEM.INI and WIN.INI files may be left with incorrect information. This will only happen if your upgrade procedure has been configured to update Windows installations.

This problem will cause you to receive a warning that "WinPopup" cannot be found, and all network functions in Windows File Manager, Print Manager, and Control Panel will be unavailable.

To correct this problem, follow these steps:

1. Open your WIN.INI file by using a text editor such as Notepad. WIN.INI is located in your Windows directory.
2. Find or add the **load=** line in the file.

If you're using Notepad, you can find this section by choosing Find from the Search menu, typing **load=**, and then choosing the OK button.

3. Remove the word **WinPopup** or **WinPopup.exe** from this line.
4. Save your WIN.INI file.
5. Quit Windows.
6. Change to the Windows directory.
7. Start Windows Setup by typing **setup** at the MS-DOS prompt.
8. Choose the Network entry to display a list of network options.
9. Choose the option Microsoft LAN Manager (version 2.1 Basic).

10. Choose to accept the configuration shown.

11. Restart Windows.

2.8.8 LAN Manager 2.1 Enhanced

When you set up Windows for use with LAN Manager 2.1 Enhanced, the following entry is added to the [boot] section of your SYSTEM.INI file:

```
Network.drv=lanman21.drv
```

See the SYSINI.WRI file for more information on this entry.

For Windows to support LAN Manager 2.1 Enhanced, you must have the files NETAPI.DLL, PMSPL.DLL, LANMAN21.DRV, LM21_W31.HLP, WINPOPUP.EXE, and WINPOPUP.HLP. These files are usually located in your LAN Manager NETPROG directory, which is on your path. If Windows cannot find any of these files, you may receive warning messages when starting Windows, or be unable to use Windows network functions.

2.9 Microsoft Network and Compatibles

If a network is present and detected, but cannot be identified during Setup, the Microsoft Network is the default network that may be set up. The following notes apply to the general category of networks that support the MS-DOS network interface and NetBIOS protocols.

When you set up Windows for use with Microsoft Network, the following entries are added to the [386Enh] section of the SYSTEM.INI file:

```
TimerCriticalSection=10000  
UniqueDOSPSP=TRUE  
PSPIncrement=5
```

For some networks, you may be able to remove one or more of these entries to improve performance. For more information about these entries, see the SYSINI.WRI file.

In addition:

- If the path to your network software is not included in the path in your AUTOEXEC.BAT file, Setup does not detect a network and proposes "No Network Installed" for your system configuration. Use Custom Setup to specify that the Microsoft Network is installed.
- Due to the way some networks handle print queues, Print Manager cannot distinguish multiple print queues on the same server. The lists of print jobs

in these queues might be displayed improperly. In addition, Print Manager might not be able to display the job title when displaying queue information.

- The Microsoft network driver does not support any vendor's name-aliasing scheme.

2.10 Novell NetWare

Windows version 3.1 includes updated versions of several Novell NetWare files that are required to run with Windows 3.1. If you are running Novell NetWare, Windows Setup will copy the following files to the SYSTEM subdirectory of your Windows directory (or the shared network directory if you set up a shared copy of Windows by using **setup /n**).

NETX.COM (version 3.26)
IPX.OBJ (version 3.10)
TBMI2.COM (version 2.1)
IPXODI.COM (version 1.20)
LSL.COM (version 1.21)

Before running Windows you may need to do the following:

- Replace your current NetWare shell with the NETX.COM provided (if your current NetWare shell is older than the version provided). Windows 3.1 requires that the NetWare shell components on your workstation (such as NET5.COM) be version 3.01 or higher. You can use these shell components even if your servers are running older versions of NetWare (as early as NetWare 2.10).

Your current shell may have one of the following names:

NET3.COM	XMSNET3.EXE	EMSNET3.EXE
NET4.COM	XMSNET4.EXE	EMSNET4.EXE
NET5.COM	XMSNET5.EXE	EMSNET5.EXE
NETX.COM	XMSNETX.EXE	EMSNETX.EXE

NETX.COM will run on MS-DOS versions 3.1 or higher. The EMS and XMS versions of the shell are available from your Novell dealer and the Microsoft Windows Driver Library (WDL). For information about ordering the WDL, see *Getting Started with Microsoft Windows*.

Note: The EMS NetWare shells (EMSNETX.EXE, etc.) are not supported when Windows is running in 386 enhanced mode.

- If you are running Novell IPXODI.COM and LSL.COM, you need to upgrade these to versions 1.20 or higher. Use the files provided with Windows and copy them from the SYSTEM subdirectory of your Windows

directory (or your shared network directory) to the directory where your existing versions are located.

- To run Windows in standard mode, load the TBMI2.COM memory-resident utility when running Windows. Novell recommends that you create a batch file that will load this utility, start Windows, and then unload the utility when you quit Windows. The batch file could be named RUNWIN.BAT and look like this:

```
TBMI2
WIN
TBMI2 /U
```

TBMI2 enables you to safely run applications that use the NetWare IPX and SPX functions in standard mode Windows or the MS-DOS 5.0 task switcher.

- If you are running Novell IPX.COM, you need to have your system administrator build you a new version using the IPX.OBJ provided with Windows.

In addition:

- If you enable 32-bit disk access and you are running the XMS shell rather than one of the standard NetWare shells (NETX.COM, etc.), you can further improve performance by setting the **OverlappedIO** entry in the [386Enh] section of your SYSTEM.INI file to **on**.
- Do not try to log in, log out, attach, or detach a Novell server from MS-DOS Prompt within Windows. You should log in before starting Windows, and attach or detach servers by using File Manager or the Printers option in Control Panel.
- If you experience problems starting applications while running Windows or Windows applications from a file server, make sure you are not running the MS-DOS SHARE utility. Current versions of the NetWare shell are not fully compatible with SHARE.
- If you have a Western Digital Ethercard Plus and have problems accessing drives by using the MAP ROOT command, contact Western Digital for an updated driver.
- By default, NetWare gives you access to only 40 files at a time. When you are running applications with Windows, you can exceed this limit rather quickly. If so, you might see unexpected error messages. To increase the file access limit, add the following line to your SHELL.CFG file:

file handles = 60

You should also add the following to your CONFIG.SYS file:

files = 60

- If you get unusable output when printing to a NetWare server (such as incorrect fonts, garbled text, invalid page breaks, or blank lines), you may need to edit your print-job configuration. Try using the NetWare PRINTCON utility to set the Auto Endcap and Enable Timeout options to No.
- When running Windows in 386 enhanced mode, swapping to a drive on a NetWare 286 server might make starting Windows take up to a minute. See Chapter 14, "Optimizing Windows," in the *Microsoft Windows User's Guide* for information about controlling the location of your swap file.
- A NetWare file server does not include the directory entries dot (.) and double dot (..) as MS-DOS does. However, the NetWare shell (version 3.01 or higher) can emulate these entries when applications attempt to list the files in a directory. If you have problems listing files or deleting directories, turning on the Show Dots feature will help. Add the following line to your SHELL.CFG file:

show dots = on

Turning on Show Dots will cause problems with earlier versions of some 286-based NetWare utilities, such as BINDFIX.EXE and MAKEUSER.EXE. Make sure you upgrade these utilities if you upgrade your NetWare shell. For more information, contact your Novell dealer.

- Redirected drives can look different in Windows than they did without Windows. For example, a device mapped as FileServerName/Volume:Directory will appear in Windows as FileServerName/Volume:\, showing the root of the file server's shared volume, rather than the subdirectory you expected. You can correct this with the MAP ROOT entry explained in the following information.
- In some cases, Windows applications may change the default directory on a drive. This might cause problems if, for example, your path includes the current directory on a network drive (that is, your path includes a drive letter without a specific directory, such as z: instead of z:\system).

You can prevent this problem by using MAP.EXE and LOGIN.EXE versions 3.0 and later to set up fake roots, or by choosing the MAP ROOT function when mapping a connection in File Manager. This feature simulates the MS-DOS **subst** command, which sets the root of a given drive to a directory designated by the user instead of to the true root of the volume.

For example, suppose you normally mapped drive F to the HOME\TERRI directory on the SERVER\SYS volume, and then included F: in your path. You would do this by including the following command in your AUTOEXEC.BAT file or by typing the command before starting Windows:

map f:=count\sys:home\terri

The default directory on drive F would then be HOME\TERRI. To prevent Windows from changing this, you would replace the command above with the one shown below:

map root f:=count\sys:home\terri

This command would make the directory HOME\TERRI appear to be the root drive F.

- If you are running Windows in 386 enhanced mode, you can adjust the way Windows handles your network drive mappings by using the Network option in Control Panel.

Normally, when you quit Windows, all of your drive mappings are restored to the way they were before you started Windows, and all changes you made inside Windows are lost. If you clear the Restore Drives option, the mappings you made inside Windows will remain when you quit Windows.

Typically, each instance of MS-DOS Prompt you start from Windows has its own set of drive mappings. Changes you make in one instance do not affect another. If you set the NWShareHandles option, drive mappings will instead be global, and changes made in one instance of MS-DOS Prompt will affect all other applications. If you are running a NetWare 286 server, setting NWShareHandles increases the number of workstations that can be connected to the server before the server runs out of available connections.

See the Help available in the Network dialog box in Control Panel for more information on these options.

- When setting up Windows for use with Novell NetWare, the following entry is added to the [windows] section of your WIN.INI file:

```
load=nwpopup.exe
```

This automatically starts the NetWare pop-up utility, which displays your incoming broadcast messages.

- If you are running Novell NetBIOS, you may need to specify **TimerCriticalSection=10000** in the [386Enh] section of the SYSTEM.INI file.

- If you have applications or files that use extended characters (ASCII characters above 128) and you have problems viewing or using them, try adding the following line to your SHELL.CFG file:

special uppercase = on

- When connecting or disconnecting network resources from File Manager, Print Manager, or Control Panel, pay attention to the state of the Permanent check box. If this option is checked when you make a connection, the connection is automatically made each time you restart Windows. To stop reconnecting, disconnect with the Permanent option checked. If the option is not checked when you disconnect, the connection is removed for the current Windows session, but is reconnected when you restart Windows.

2.11 TCS 10Net

Tiara Computer Systems 10Net (formerly known as DCA 10Net) versions 4.1 and above are compatible with Windows version 3.1. Windows Setup treats these as Microsoft Network compatible.

When setting up Windows for use with TCS 10Net, the following entry is added to the [386Enh] section of your SYSTEM.INI file:

```
TimerCriticalSection=10000
```

The TimerCriticalSection value may be set lower on some versions of 10Net. For more information about this entry, see the SYSINI.WRI file.

To set up Windows for use with TCS 10Net version 4.1x with the DCA 1Mb card, run Custom Setup and choose the TCS 10Net (versions 4.1X with DCA 1M card) network option. Windows Setup adds the following entries to the [386Enh] section of your SYSTEM.INI file:

```
INDOSPolling=TRUE  
PSPIncrement=5  
TimerCriticalSection=10000  
UniqueDOSPSP=TRUE
```

For more information about these settings, see the SYSINI.WRI file.

In addition:

- If you purchase 10Net for Windows, it will install additional Windows components that will enhance the functionality available in Windows File Manager, Control Panel, and Print Manager.
- You cannot use File Manager to format floppy disks when running versions

of 10Net prior to 5.0.

2.12 Ungermann-Bass Net/One

Make sure you choose the proper network option when you set up Windows.

- Ungermann-Bass Net/One is based on Microsoft Network. Choose the Microsoft Network Or 100% Compatible option when running Windows Setup.
- Ungermann-Bass Net/One LAN Manager is based on Microsoft LAN Manager. Choose the Microsoft LAN Manager option when running Windows Setup. Setup should correctly identify your network and the proper version number.

In addition:

If you are using an Ungermann-Bass network card with any network, including networks not produced by Ungermann-Bass, your system may not run correctly in 386 enhanced mode unless you have the proper settings in your SYSTEM.INI file.

If you experience problems, follow these steps:

1. Open your SYSTEM.INI file by using a text editor such as Notepad. SYSTEM.INI is located in your Windows directory.
2. Find or add the [386Enh] section in the file.

If you're using Notepad, you can find this section by choosing Find from the Search menu, typing **[386Enh]**, and then choosing the OK button.

3. Find or add the **TimerCriticalSection=10000** line in this section.
 4. Save your SYSTEM.INI file.
 5. Quit and restart Windows.
- If you are using an Ungermann-Bass XNS transport stack, you must make sure it is configured not to use expanded memory when running Windows version 3.1 in 386 enhanced mode.

3.0 Other Online Documents

The following table describes other online documents that contain important information about Windows version 3.1 that is not included in the *Microsoft*

Windows User's Guide or in online Help.

Document	Contains
APPS.HLP	Information about updating some older Windows applications for use with Windows version 3.1. You can view this file by starting Windows Help from any application, and then using the Open command on the File menu to open the file. For more information about using Help, see Chapter 1, "Windows Basics," in the <i>Microsoft Windows User's Guide</i> .
SETUP.TXT	Information about problems that may occur when you are setting up Windows.
README.WRI	Information about using Windows with Multimedia Extensions 1.0, specific displays and system configurations, and non-Windows applications, and information that was unavailable when the <i>Microsoft Windows User's Guide</i> was printed.
PRINTERS.WRI	Information about particular printers and fonts.
SYSINI.WRI	Information about the settings in the SYSTEM.INI file.
WININI.WRI	Information about the settings in the WIN.INI file.