

IBM 4694-2x5

NETWORKING INSTALLATION and CONFIGURATION

INSTRUCTIONS For DOS and WINDOWS

March, 1999

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**For additional information see the IBM Retail website at :
<http://www.ibm.com/solutions/retail>.**

SECTION II. INTRODUCTION

This document provides driver support information for only the IBM 4694-2x5 DOS and Windows systems Network LAN's. Support is provided for the following network adapters:

| | |
|------------|--|
| 2x5_IEA | - The 4694-2x5 Integrated Ethernet Adapter |
| SYMBOL | - OEM Wireless LAN (Symbol) support |
| ETHERNET | - IBM Ethernet LAN support |
| TOKEN-RING | - IBM Token-Ring LAN support |

Network support is provided for the following Operating System and Networks:

| | |
|---------|----------------------------------|
| DOS7.0 | - IBM DOS 7.0 |
| DLS40 | - DOS Lan Services Version 4.0 |
| DLS50 | - DOS Lan Services Version 5.0 |
| LANT60 | - Lantastic Networks Version 6.0 |
| LANT70 | - Lantastic Networks Version 7.0 |
| NOVELL | - Novell Networks Version 3.12 |
| WIN311 | - Windows for Workgroup |
| WIN95 | - Windows 95 w/ Service Pack 1 |
| WINT351 | - Windows NT 3.51 |
| WINT40 | - Windows NT 4.0 |

We recommend that you read the 4694-2x5 Installation and Setup Instructions (4694INST.PDF) and the 4694-2x5 OS Installation Recommendations (4694_REC.PDF) before proceeding with 4694-2x5 network driver installation. The files can be found on IBM Website.

- **The 4694-2x5 integrated Ethernet adapter network drivers can be found on the Internet at:**

<http://www.raleigh.ibm.com/rds/>

Follow the links to "Terminal Hardware" and then "4694 Software Downloads".

Download the appropriate 4694 Support files from the download table.

SECTION III

The IBM 4694-2x5 Integrated 10/100 MB Ethernet Adapter

CHAPTER 3.0 INFORMATION

- **TIPS for Novell Netware**

The PCnet driver (PCNTNW) has the following NET.CFG options available for buses:

```
DMA ( 3 , 5 , 6 , 7 )
INT ( 3 , 4 , 5 , 9 )
PORT( 300H , 320H , 340H , 360H )
NODE ADDRESS
FRAME
PROTOCOL ( IPX )
FASTISA
```

FASTISA mode increases the performance of the PCnet-ISA, PCnet-ISA+, and PCnet II in ISA machines by reducing the memory read and write cycle time to 350 nS. Older machines with slower memory may not support this mode.

For the PCnet-ISA+, PCnet-32, and PCnet-PCI devices, the DMA, INT, and PO are not required for the driver. In some cases, using these keywords would be the bus specification. All other keywords may be used with the family. Keywords listed in the software keywords section may be used in NET.CFG. When using an ethernet hub in the network configuration, turn OFF full duplex by adding fdup=off to the net.cfg file.

- **TIPS for using the correct NDIS Driver for Windows Operating Systems**

The network device drivers for Windows 95, 98 or Windows NT come in the form of a zip file. The file can be download from the 4694-2X5 Integrated Ethernet Network Driver Web page described on page 4 of this document. After the file has been unzipped, there are three directories for network device drivers. Listed below are the directories and an explanation of the differences:

\\WINNT\MAC\NDIS3

NDIS3 is an older NDIS 3.A driver written to be compatible with Windows NT 3.51 and Windows 95.

\\WINNT\MINIPOINT\NDIS3

Miniport NDIS3 is an NDIS 3.1 driver written to the Windows NT4.0 miniport spec. This driver is compatible with both Windows NT 4.0 and Windows 95 OSR2.

\WINNT\MINIPORT\NDIS4

Miniport NDIS4 is an NDIS4.0 driver written to the Window NT 4.0 miniport spec and is compatible with both Windows NT and Windows 98.

Below are examples of 4694-2x5 config.sys, autoexec.bat, and protocol.ini files for using a NDIS Driver with the on board 4694-2x5 Ethernet adapter”

CONFIG.SYS

```
DEVICE=C:\PROTMAN\PROTMAN.DOS
/i:C:\PCNET
DEVICE=C:\PCNET\PCNTND.DOS
```

AUTOEXEC.BAT

```
SET PATH=C:\PROTMAN;C:\PCNET;%PATH%
```

PROTOCOL.INI

[PROTMAN]

```
DRIVERNAME = PROTMAN$
DYNAMIC     = YES
PRIORITY    = NETBEUI
```

[NETBEUI_XIF]

```
DRIVERNAME = NETBEUI$
SESSIONS   = 6
NCBS       = 12
BINDINGS   = PCNTND_NIF
LANABASE   = 0
```

[PCNTND_NIF]

(AMD PCnet Ethernet Adapter)

```
DRIVERNAME = PCNTND$
FDUP = OFF ( TURNS OFF FULL DUPLEX )
FDUP = UTP ( FULL DUPLEX ON 10BASE T )
```

The 4694-2x5 Wake on LAN Feature

In the customer's LAN Enterprise Environment, the use of the Magic Packet feature can be implemented using a LAN Management tool such as NetFinity(IBM), LANDesk (Intel) and SMS (Microsoft). These are just a few of the LAN management tools that can take advantage of the Magic Packet feature to wake up (power up) the 4694-2x5 remotely. Note that only 4694's with the power management feature installed can take advantage of this feature.

For example, NetFinity from IBM uses a piece of code (an agent) on the client's system that tells NetFinity the computer's model number, operating system, MAC address and whether the system has Wake on LAN capability. With this information and Wake on LAN enable on the 4694-2x5, NetFinity can generate and send a Magic Packet to power up this system remotely. NetFinity can also provide a menu item in an event scheduler to allow this function to take place at certain times during the day. For more information about Netfinity and Wake on Lan see IBM's web page at <http://netfinity.raleigh.ibm.com>.

To enable the Wake Up on LAN feature in the 4694-2x5, power up the system enter the setup program by pressing the F1 key when prompted on the screen.. The Configuration/Setup menu should appear.

- Select " Power Management "
- Select " Wake Up on Lan "
- Press the Previous (->->) to "Enable" this parameter.
- Select "Save configuration"
- Select "Exit configuration"

The 4694-2x5 is now set to wake up via a Magic Packet frame.

- **How to replace an installed driver using the IBM LAN Support Program**

If the IBM LAN Support Program for DOS is installed into the 4694-2x5 use the PCNTND.DOS driver to replace the installed driver. To do so please follow the instructions below to change the contents of CONFIG.SYS and PROTOCOL.INI files.

1. Copy PCNTPK.DOS to the directory where the IBM LAN Support program resides. This PCNTPK.DOS driver can be found with the other LAN drivers on the IBM Retail Internet site.
2. Modify the original NDIS device driver statement in CONFIG.SYS as follows:

```
DEVICE = [drive]:\path\PCNTND.DOS
```

3. Modify the PROTOCOL.INI file as follows:

```
BINDINGS = PCNTND  
[PCNTND]  
DRIVERNAME = PCNTND$
```

- **Installation of IBM 4694-2x5 Integrated Ethernet Driver using LSP**

1. Copy the following files into a directory called \DOS on a newly formatted diskette.

```
\DOS\PCNTND.DOS  
\DOS\OEMSETUP.INF
```

2. Install IBM DOS 7.0 or IBM DOS 2000 on your 4694-2x5 system.
3. Insert the IBM LAN Support Program diskette in drive a and type

```
a:dxmaid
```

Press Enter to run the LSP program.

4. To bypass all logo and information screens press ENTER.

Select yes to " Do you have adapter option diskette?"
Select yes to " Do you need 802.2 interface support?"

Do not change any other options.

5. Press Enter for driver files to be processed. When instructed, insert the driver diskette you created in step 1 into the a: drive. Press ENTER on "Process adapter option diskette"

6. On the screen titled "Current Configuration", at the "Selections for Adapter Window" select "AMD PCI Adapter (PCNTPK.DOS)". You may want to leave other windows unchanged. Press F4 to install the driver.
7. Follow instructions to complete installation of LSP.

Your CONFIG.SYS and PROTOCOL.INI files should reflect your card setup by including these statements:

CONFIG.SYS:

```
Device= \LSP\PCNTND.DOS
```

PROTOCOL.INI :

```
[PCNTND_NIF]
```

```
Drivername = PCNTND$
```

8. Now install the LAN Requester program. For more information and instructions, please refer to Chapter 3.1

- **HOW TO MODIFY THE PACKET DRIVERS FOR 4694-2x5**

In the AUTOEXEC.BAT file, add the following statements in lower case :

```
pcntpk int=0x6f irq=10 fdup=00
```

CHAPTER 3.1 DOS 7.0 with DOS with PACKET Driver for the 4694-2x5

Driver installation for the Packet Driver (PCNTPK)

Copy the AMD Packet Driver (PCNTPK.COM) into a directory. The packet driver can be loaded from the DOS prompt or from the AUTOEXEC.BAT file.

The command line format for the packet driver is:

```
PCNTPK [-n] [-d] [-w] <INT=packet_int_no> [IRQ=int_no]
      [IOADDR=io_addr] [DMA=dma_no] [BUSTYPE=bus] [DMAROTATE]
      [TP] [LED0=xx] [LED1=xx] [LED2=xx] [LED3=xx] [FDUP=xx]
```

When using Windows, use either the -w option or the WINPKT utility. (see install.doc)

Note: INT=packet_int_no is a handle for an upper layer interface (normally 0x60 - 66). This is optional. An upper layer application such as TCP scans for the INT Hal between 0x60 - 0x66.

Keyword example:

```
pcntpk int=0x60 irq=3 ioaddr=0x300 dma=5
```

Note: When using an Ethernet hub, turn OFF full duplex by adding: fdup=00 (use lower case characters ONLY). Example:

```
pcntpk int=0x60 irq=10 bustype=pci fdup=00
```

Chapter 3.2 DOS 7.0 with DOS Lan Services 5.0 for the 4694-2x5 Integrated Ethernet adapter

The DOS Lan Services NDIS Driver can be found in the \DOS subdirectory of the driver package and is called PCNTND.DOS.

The IBM 4694-2x5 Integrated Ethernet Adapter is usually configured by the Plug and Play portion of the PCI architecture. The default settings for this adapter will work with the IBM LAN Support Program 1.35 or later. The IBM 4694 NDIS driver program for DOS follows the Microsoft NDIS spec V2.0.1.

Installing DOS Lan Services is not easy. The installation errors read as follows :

```
Install detected the following disk error. The listed file
was not copied, error processing
-> PCNTND.DOS.
```

The following attempts to solve the problem:

1. Copy the driver to Disk 1 of the DOS Lan Services (DLS) Install Disk.
2. Copy the driver to the \net directory.

In order to install DOS Lan Services 5.0, select "no adapter card"; DOS Lan Services installs as if there is a card present. GUI, peer services and windows support will be installed. Complete the remainder of the installation as usual. Then use the files in Appendix A as an example to help configure the setup.

Other Possible Errors and Error Messages:

Recommendation:

You are logged on, but you have not been validated by the server.

Make sure the interrupt level in the protocol.ini is the same as the adapter.

Run-Time Error R6003 - Integer Divided by 0

Make sure the parameters used in the protocol.ini are correct

Refer to the examples in the 46942x5\DOS\DOSLAN directory.
If this problem continues get the DLS40.ZIP file.

CHAPTER 3.3 DOS 7.0 with Lantastic 7.0

IBM 4694-2x5 Integrated Ethernet Adapter Installation procedure for Lantastic 7.0.

1. Copy the following files into a newly formatted diskette (A:\):

```
\DOS\LANT70\PCNTND.DOS
\DOS\LANT70\PCNTND.NIF
\DOS\LANT70\PROTOCOL.INI
```

2. Start installation process for Lantastic 7.0. When prompted to select one of the following adapters to run with Lantastic software select "NDIS Support for Network Adapters" and press Enter.

3. At the next menu, "Insert the manufacturer's driver diskette". Insert the diskette created in step 1 into drive a: and type in the path of the driver: A:\

4. After completing the installation of Lantastic, your CONFIG.SYS file should include the following statements to reflect the driver installation.

```
DEVICE=.. \LANTASTI\PCNTND.DOS
```

The protocol.ini file in the directory where your Lantastic files were written, such as C:\Lantasti, should include the following:

```
[PCNTND_NIF]
Drivername = PCNTND$
```

Possible error code during Installation :

```
Cannot build a proper protocol.ini. And continue with
installation;
```

Solution: Continue with the installation and review the protocol.ini in Appendix A. The protocol.ini in this directory should be used as an example to help configure the protocol.ini file.

Possible error code during IPL :

```
Serial number not available. Fails at " REDIR XXXXX
@STARTNET.CFG. "
(XXXXX = The workstation name)
```

Solution: The licenses have run out for this Lantastic Software package. If the Lantastic 7.0 Network Software is for a single user then it cannot be installed on both the server and 4694-2x5. Also the limit may have been exceeded for licenses purchased for Lantastic.

CHAPTER 3.4 DOS 7.0 with Novell Netware 3.12

The files in this NETWARE sub directory are organized as follows:

| Directory | Contents |
|---|------------------------------|
| \NOVELL\DOS | IPX/SPX driver for DOS (ODI) |
| (The programs can be found in the 46942x5\DOS\NOVELL\WKSTN sub directory) | |

The ODI Driver program allows you to run multiple protocol stacks. It also allows you to install up to two network adapters in a workstation. The ODI driver supports "port, node address, protocol and frame" options. You can use these options to create your own NET.CFG file. The IBM 4694-2x5 Integrated Ethernet Adapter uses INT=9 and PORT=10A0 as default (Check SETUP for the correct settings of your IBM 4694). For detailed information on keywords, please refer to Novell manual "NetWare ODI shell for DOS - NET.CFG options".

NOTE: The IPX.COM driver is not supported on the 4694-2x5. Use the PCNTNW.COM to configure this system. An example is in Appendix A.

- 1) Copy the PCNTNW.COM and NET.CFG files (from this diskette) to the directory which contains Novell's LSL.COM, IPXODI.COM and NETx.COM files.
- 2) Follow Novell's instructions on using the ODI programs. You can substitute the PCNTNW.COM whenever a reference is made to the Hardware Specific Module.
- 3) A typical startup for an ODI workstation is as follows:

```
>LSL          --Link Support Layer Module provided by Novell

>PCNTNW       --Hardware Specific Module provided by IBM

>IPXODI       --IPX Protocol Stack Module provided by Novell

> NETBIOS . EXE -- Netbios Protocol provided by Novell

>NETx         --DOS Support Module provided by Novell

>F :

>LOGIN
```

IBM DOS 7.0 is the preferred Operating System, this error could occur using a back level Novell NETX.EXE, network driver:

The Netware Workstation Shell (netx.exe) SHELL-332-29 Shell requires DOSv3.x through DOSv6.x.

To resolve this problem obtain the new version of " netx.exe " that supports DOS 7.0.

:

Possible Errors and Error Messages

Recommendation:

Workstation hangs after the netx.exe driver is loaded

Make sure the parameters in the

Workstation hangs after the ipxodi driver is loaded

Make sure the enabler parameter and path are in the NET.CFG file. Review the NET.CFG file in the sub-directory mentioned above. Make sure the parameters in the NET.CFG are correct.

Having through-put problems or excessive collisions

When using a hub, turn off full duplex y adding fdup=off to the net.cfg file

.

Chapter 3.5 DOS 7.0 with Windows for Workgroups (3.11)

IBM 4694-2x5 Integrated Ethernet Adapter Installation procedure for Windows for Workgroups.

1. Copy the following files into a newly formatted diskette (A:):

```
\WFW\PCNTN3 . 386  
\WFW\PCNTND . DOS  
\WFW\OEMSETUP . INF
```

2. Start installation process for Windows for Workgroups. When prompted to select an adapter from a menu to run with Windows for Workgroups software, select "Have a disk" and press Enter.
3. At the next menu, "Insert the manufacturer's driver diskette", insert the diskette created in step 1 into drive a: and type in the path of the driver: A:\
4. Complete the installation of Windows for Workgroups.

Chapter 3.6 Windows 95 or 98

IBM 4694-2x5 Integrated Ethernet Adapter Installation procedure for Windows 95.

NOTE:

During the installation of Windows 95, the software's hardware detection (wizard) will automatically default the Integrated Ethernet Adapter to NE2000 driver. Also, during the installation of Windows 98, the software's hardware will configure the Intergrated Etherent Adapter to a back level driver. IBM Retail recommends the following driver to be used.

1. Remove the NE2000 driver or back level driver and protocols associated with it from the network.

2. Shutdown and restart the 4694_2X5

3. Copy the following files into a newly formatted diskette (A:\):

For Windows 95:

```
\WIN95\NDIS3MAC\PCNTN3.VXD  
\WIN95\NDIS3MAC\PCNTND.DOS  
\WIN95\NDSI3MAC\NETAMD.INF
```

For Windows 95 OSR2

```
WIN95\NDIS3MP\PCNTN3M.SY5  
WIN95\NDIS3MP\PCNTND.DOS  
\WIN95\NDIS3MP\NETAMD.INF  
\WIN95\NDIS3MP\PCNET.HLP
```

For Windows 98

```
\WIN95\PCNTN4M.SYS  
\WIN95\PCNTND.DOS  
\WIN95\NETAMD.INF  
\WIN95\PCNET.HLP
```

4. Select the " Control Panel " from the Desktop.

5. Select the " Network Icon ".

Select " Add "

Select " Adapter"

Select " Add "

Select "Have a disk " press Enter.

6. At the next menu, "Insert the manufacturer's driver diskette", Insert the diskette created in step 1 into drive A: and type in the path of the driver: A:\

7. Complete the installation of adding an adapter to Windows 95.

PROBLEM A: A 4694-2x5 is installed with Windows 95 using Microsoft's TCPIP. Unable to copy a 6MB file from one workstation to another (peer to peer) or copy a 6MB file from a Windows NT 4.0 server to the 4694-2x5 within a 15 second time frame.

SOLUTION: Change the Bus Type and Full Duplex parameters in the ethernet adapter to:

```
Bus Type = PCI
Full Duplex = OFF
```

To do it from the Windows 95 Desktop:

1. Select " Control Panel "
2. Select " Network Icon "
3. Highlight the " AMD PCNET Family Ethernet Adapter (PCI&ISA)
4. Select " Properties "
5. Select " Advance"
6. Select Bus Type = PCI
7. Select Duplex = OFF

With this configuration a 6MB file was copied 12 seconds.

Note: The defaults for these two parameters are

```
Bus Type defaults to " ALL ".
Full Duplex defaults to " Defaults ".
```

Chapter 3.7 Windows NT 4.0

Setup Information:

While installing Windows NT 4.0 these errors may occur:

"Setup is unable to locate the hard drive partition prepared by MS-DOS portion of Setup."

"When you run the MS-DOS Windows NT setup program you must specify a temporary drive that is supported by Windows NT. See your system guide."

Solution : Install DOS 7.0 on the hard drive then install Windows NT 4.0.

IBM 4694-2x5 Integrated Ethernet Adapter Installation procedure for Windows NT 4.0.

1. Copy the following files into a newly formatted diskette (A:):

For NDIS3 Windows 3.51

```
\NDIS3MAC\AMDDL.G.DLL
\NDIS3MAC\AMDPCN.SYS
\NDIS3MAC\PCNET.HLP
\NDIS3MAC\OEMSETUP.INF
```

For NDIS3MP Windows 4.0

```
\NDIS3MP\AMDDL.G.DLL
\NDIS3MP\PCNTN3M.SYS
\NDIS3MP\PCNET.HLP
\NDIS3MP\OEMSETUP.INF
```

For NDIS4MP Windows 4.0

```
\NDIS4MP\AMDDL.G.DLL
\NDIS4MP\PCNTN4M.SYS
\NDIS4MP\PCNET.HLP
\NDIC4MP\OEMSETUP.INF
```

2. Start installation process for Windows NT 4.0. When prompted to select an adapter from a menu to run with Windows NT 4.0 software select "Have a disk " and press Enter.
3. At the next menu, "Insert the manufacturer's driver diskette", insert the diskette created in step 1 into drive A: and type in the path of the driver or select the default (A:\).
4. Complete the installation of Windows NT 4.0.

Note: If Windows NT 4.0 was installed with or without an adapter, the following directions can be used to add the correct adapter (PCI AMD).

1. Remove the NE2000 driver and protocols associated with it from the network.
2. Shutdown and Restart the 4694-2x5
3. Select the " Control Panel " from the Desktop.
4. Select the " Network Icon ".
5. Select " Add "
6. Select " Adapter"
7. Select " Add "
8. Select "Have a disk " press Enter.
9. At the next menu, "Insert the manufacturer's driver diskette", insert the diskette created in step 1 into drive A: and type in the path of the driver: A:\
10. Complete the installation for adding an adapter to Windows NT 4.0.

SECTION IV. The IBM Turbo Token-Ring 16/4 Adapter

CHAPTER 4.0

- **INFORMATION (TURBO_TR)**

For a configuration of 4694-2x5 with the 4694 POS Adapter II and the auto or auto wake 16/4 token-ring adapter or the turbo 16/4 token-ring adapter using Lanaid to configure it:

| | |
|----------------------|--------------------------|
| Adapter Mode | Auto16 Compatible |
| Configuration | Legacy (Note at the end) |
| I/O Address | A20-A23 |
| Interrupt | 11 (Note at the end) |
| Ram Address | D0000 - D3FFF |
| Rom Address | D4000 - D5FFF |
| Remote IPL | Enable |
| Token-Ring Date Rate | 4 or 16 |
| Auto Sense Date Rate | Enable |
| Adapter Bus Width | 16 |

Notes:

Configuration = Legacy : The 4694-2x5 models are not designed to be completely for Plug and Play(PnP) compliant, so Legacy mode is not required but recommended.

Interrupt Level = 11 : This interrupt level will work if the SIO is set to 7. If SIO or the 4694 POS Adapter II is set to 11 then use interrupt level 9. There will be a conflict (9*) on this parameter when viewing it using LANAID but the adapter will function correctly.

- **OTHER SETTINGS**

4694 SETUP

| | |
|---------------|--|
| NVRAM start | D9000 |
| NVRAM 1st 4k | Enabled |
| NVRAM 2nd 4k | Page 1 |
| SRAM start | D8000 |
| SIO Interrupt | IRQ7 (If 4694 POS Adapter II is used, set the interrupt to 11) |

The **TURBO TOKEN-RING NETWORK DRIVERS** can be found at:
<http://www.network.ibm.com/tra/traprod.html>

Updated diskette images for the IBM Turbo 16/4 Token-Ring ISA Adapter or IBM Auto Wake Token-Ring Adapter can now be obtained via the World Wide Web at:

<http://www.raleigh.ibm.com/nes/nestoken.htm>

Select your Adapter. All the items in the list are complete diskette images. This is in addition to the dial-in BBS at 1-919-517-0001

4694 POS Adapter II Dip Switch settings: (used for some flat panel displays):
1 = DOWN, 2 = DOWN, 3 = DOWN, 4 = DOWN, 5 = UP, 6 = UP)

Which correspond to the following setup values:

| | |
|-------------|---------------|
| I/O Address | 6C0 - 6DF |
| Shared RAM | DC000 - DFFFF |
| Interrupt | IRQ7 |

Possible Errors:

2 short beeps and long beep when powering on the 4694-124 or-104

IBM POS Error 830E or
Shared buffer Latch or
IBM POS Error 830E or
NVRAM Corrupted

Recommendations

Using either setup or the configuration proxy utility, disable the RPL parameter in CMOS. This will resolve the conflict between the 4694 POS Adapter II and rpl rom

Base I/O address conflict between 4691-XXX SRAM and the 4694 POS Adapter II. Resolve the conflict by using the Example above. Base I/O address conflict between 4694-XXX NVRAM and the 4694 POS II. Adapter

- Other 4694 POS Adapter II switch configurations:

4694 POS Adapter II SETTINGS : (Dip Switches)

| | |
|-------------------|----------------------------|
| 1 = DOWN, 2 = UP, | I/O Address : 640-65F |
| 3 = DOWN, 4 = UP, | Shared RAM : D0000 - D3FFF |
| 5 = UP | PRIMARY ADAPTER |
| 6 = UP | IRQ7 |
| 1 = UP, 2 = DOWN | I/O Address : 680-69F |
| 3 = UP, 4 = DOWN | Shared RAM : D8000 - DBFFF |
| 5 = UP | PRIMARY ADAPTER |
| 6 = UP | IRQ7 |

NOTE: SWITCH 5 = DOWN -> SECONDARY ADAPTER

SWITCH 6 = DOWN -> IRQ11

CHAPTER 4.1 DOS 7.0 with DOS Lan Services 5.00 (Turbo_TR)

A common source of install problems is conflicts between EMM386 and the RAM and ROM areas assigned to the adapter. Please ensure that you exclude the area (ROM and RAM) used by the adapter from use by EMM386. '/X=CC00-D000' on the EMM386 line in CONFIG.SYS will exclude the region from CC00 through D000 from being used by EMM386. Remember to reboot your machine after changing CONFIG.SYS.

Windows 3.0 system hang when Windows starts. When running Windows 3.1 or WFWG, you must prevent Windows from using the memory locations assigned to the adapter. In the file system.ini (in the windows directory) under the heading 386Enh, Add the statement "EMMExclude=xxxx-yyyy". For example, if the adapter is configured in enhanced mode at location D000, add "EMMExclude=D000-D200".

While installing DOS Lan Services if an installation error occurs

```
"Install Detected the following disk error. The listed file was not
copied, error processing -> IBMTOK.DOS."
```

If the following attempts to solve the problem fail:

1. Copy the driver to Disk 1 of the DOS Lan Services (DLS) Install Disk.
2. Copy the driver to the \net directory.

Install DOS Lan Services 5.0, select "no adapter card"; DOS Lan Services installs as if there is a card present. GUI, peer services and windows support will be installed and complete the remainder of the installation as usual.

CHAPTER 4.2 DOS 7.0 with Novell Netware 3.12 (Turbo_TR)

Interrupt 11 and I/O Base 380 are the preferred settings for this LAN driver. Alternatively, I/O Base 340 and 360 will work with this driver and interrupt levels 9 and 10. Since IBM DOS 7.0 is the preferred Operating System, this error could occur using Novell NETX.EXE, network driver: The Netware Workstation Shell (netx.exe).SHELL-332-29 Shell requires DOSv3.x through DOSv6.x. To resolve this problem obtain the new version of " netx.exe " that supports DOS 7.0.

Possible Errors and Error Messages:

Recommendation:

The workstation hangs

Make sure Link Driver TOKENCS is being used in the NET.CFG file

The workstation hangs after the netx.exe driver is loaded

Make sure the Frame Ethernet_802.3 is in the NET.CFG file.

Chapter 4.3 DOS 7.0 with Windows for Workgroups (3.11) (Turbo_TR)

IBM 4694-2x5 Turbo_TR installation procedure for Windows for Workgroups:

1. Use Disk 2, the IBM Turbo 16/4 Token-Ring ISA Adapter Device Drivers: The Windows for Workgroups device driver (IBMTOK5.386) is located in the \WFW sub-directory.
2. Start installation process for Windows for Workgroups. When prompted to select an adapter from a menu to run with Windows for Workgroups software, select "Have a disk", press Enter.
3. At the next menu, "Insert the manufacturer's driver diskette", Insert the Disk 2 into drive a: and type in the path of the driver: A:\;
|
4. Complete the installation of Windows for Workgroups.

Chapter 4.4 Windows 95 (Turbo_TR)

IBM 4694-2x5 Turbo TR Installation procedure for Windows 95.

NOTE:

During the installation of Windows 95, the software's hardware detection (wizard) will automatically default the Token Ring adapter. The following procedure is recommended instead of using generic Windows driver.

1. Copy the following files into a newly formatted diskette (A:\

IBMTOK5.VXD
NETTIBM.INF

2. Select the " Control Panel " from the Desktop

3. Select the " Network Icon".

Select "Add "
Select "Adapter"
Select "Add"
Select "Have a disk"
press Enter.

4. At the next menu, "Insert the manufacturer's driver diskette", insert the diskette created in step 1 or use Disk 2, from the IBM Turbo 16/4 ISA Adapter Device Drivers into drive A: and type in the path of the driver:
A:\ for the diskette created in step 1.
A:\WIN95 for Disk 2.
5. Complete the installation.
6. Delete the NE2000 driver and protocols associated with it from the network.

Chapter 4.5 Windows NT 4.0 (Turbo_TR)

Setup Information:

IBM 4694-2x5 Turbo TR Adapter Installation procedure for Windows NT 4.0.

1. Copy the following files into a newly formatted diskette (A:):
EDITSRAM.DLL
IBMTOK5.SYS
EDITSRAM.HLP
OEMSETUP.INF
2. Start installation process for Windows NT 4.0. When prompted to select an adapter from a menu to run with Windows NT 4.0 software, select "Have a disk", press Enter.
3. At the next menu, "Insert the manufacturer's driver diskette", Insert the diskette created in step 1 or use Disk 2, from the IBM Turbo 16/4 ISA Adapter Device Drivers into drive A: and type in the path of the driver:

A:\ for the diskette created in step 1.

A:\NT for Disk 2.

4. Complete the installation.

NOTE:

When installing Windows NT 4.0 with the Turbo 16/4 adapter, the user will be asked to select from a list of network adapters or to select 'have disk'. If 'have disk' is selected, sometime later you will get the error 'unable to open file ... editsram.dll'. To install NT 4.0 look at <http://www.raleigh.ibm.com/nes/nestoken.htm> and select the item named 16/4 ISA Turbo NT 4.0 adapter install fix. This package contains both instructions and a changed inf file that will let you work around this problem.

Section V.

Chapter 5.0. Windows NT RPL Setup Procedures for the 4694-2x5 .

Windows NT RPL Setup Procedures

The following instructions uses Windows NT Version 3.51 or 4.0. You need to have the Windows Server NT Installation diskettes or CD-ROM available.

Steps:

1. Get a PC running MS-DOS able to connect to the Server.
2. Install DLC protocol on the Server.
3. Install Remoteboot Services on the Server.
4. Start the Remoteboot Service.
5. Create a Remoteboot Configuration for the LANpoint Ethernet Adapter.
6. Copy DOS program files from client workstation to the DOS622 directory on the Server.
7. Upgrade Permissions.
8. Adding a New Profile
9. Activating the 4694-2x5 unit for remote booting.
10. Verifying 4694-2x5 has booted.

Step 1: Get a PC running MS-DOS able to connect to the Server.

Note:::The assumption is that DOS Version 6.22 is to be used.

The first step in getting the 4694-2x5 to be able to boot remotely from a Windows NT Server is to get a PC to be a Network Client for MS-DOS. The DOS files needed to execute the particular version of DOS on the 4694-2x5 will originate from this Client Workstation. At subsequent steps, all the files in the DOS sub-directory of this PC will get copied to a directory on the Server.

A Client Workstation can be created by making a Installation floppy disk from the server and following the instructions from the Windows Server NT installation Guide, Appendix A, Setting up and Configuring Network Client.

On the server go into Network Administration...select "Create Installation Disk", and create the floppies. On the PC that will be the Client Workstation, first boot up in DOS. Make sure all programs that load the network card get loaded. Insert the installation disk in drive A, and run a:\setup from drive C: Once completed, move the command c:\net\net start; from the first line in autoexec.bat to the last line, then reboot the client terminal.. You now should be able to access directories on the server from the Client Workstation.

Step 2: . Install DLC protocol on the Server.
See Windows NT Server Installation Guide...chapter 3..."Installing the DLC protocol" for details.

Step 3: Install Remoteboot services on the Server.
See Windows NT Server Installation Guide...chapter 8..."Installing the Remoteboot Service on the Server" for details.

Go to "CONTROL PANEL; NETWORKS"

Select "ADD SOFTWARE"

Select software component... "Remoteboot Service."

When asked for the location of the Remoteboot files to be stored, select the default
C:\WINNT40\rpl.

When asked for the location of the setup files again, accept the defaults

When asked for the location of the CLIENTS files, type the following:

```
CD DRIVE:\CLIENTS\rpl
```

After software component is installed, select OK.

You will be prompted to reboot the server. Reboot the server at this time.

Step 4: Start the Remoteboot Service

Go to PROGRAM MANAGER; CONTROL PANEL; SERVICES.

Highlight "Remoteboot Server"

Press : Start.

The word; "Started" will appear.

Step 5: Create a Remoteboot Configuration for the 4694-2x5 Integrated Ethernet Adapter(IEA).

On the Server, create a directory:

```
MKDIR DRIVE:\WINNT40\RPL\BBLOCK\NETBEUI\46942X5
```

On the server, copy the NDIS compliant driver, for the 4694-2x5 IEA from the LANpoint 4694-2x5 distribution disk to the Server with the following command:

```
COPY:\SOURCE-DRIVE.:\PCNET.DOSDRIVE:\WINNT40\RPL\BBLOCK\NDIS
```

Copy the Boot Block configuration and the Protocol.ini file from the 4694-2x5 distribution disk to the Server with the following commands:

```
COPY:\SOURCE-DRIVE:\DOSBB.CNF ...
TARGETDRIVE:\WINNT40\RPL\BBLOCK\NETBEUI\46942X5
```

```
COPY:\SOURCE-DRIVE.:\PROTOCOL.INI ...
TARGETDRIVE:\WINNT40\RPL\BBLOCK\NETBEUI\46942X5
```

You must now configure the RPL server to recognize that the 4694-2x5 IEA driver has been added. For this, use the RPLCMD.EXE Configuration Utility. See Windows NT Server Installation Guide...chapter 8. "Creating Remoteboot Configurations for New Adapters" for other details. Follow these instructions to add a new adapter for the 4694-2x5,

```
RPLCMD
ADAPTER BOOT CONFIG PROFILE SERVICE VENDOR WKSTA [QUIT]: B
ADD DEL ENUM: A
BOOTNAME=DOS2X5
VENDORNAME=00001ABBCFILE=BBLOCK\NETBEUI\4694-2X5\DOSBB.CNF
BOOTCOMMENT= DOS 4694_2X5
WINDOWSIZE=0
ADAPTER BOOT CONFIG PROFILE SERVICE VENDOR WKSTA [QUIT]: C
ADD DEL ENUM: A
CONFIGNAME=DOS622B
BOOTNAME=DOS2X5
DIRNAME=DOS
DIRNAME2=DOS622
FITSSHARED=FITS\DOS622.FIT
FITSPERSONAL=FITS\DOS622P.FIT
CONFIGCOMMENTS= DOS 6.22 469142X5
DIRNAME3=
DIRNAME4=
ADAPTER BOOT CONFIG PROFILE SERVICE VENDOR WKSTA [QUIT]: V
ADD DEL ENUM: A
VENDORNAME=00001A
VENDORCOMMENT= 4694-2X5 INTERGRATED ETHERNET ADAPTER
ADAPTER BOOT CONFIG PROFILE SERVICE VENDOR WKSTA [QUIT]: Q
```

Step 6: Copy DOS program files from client workstation to the DOS622 directory on the Server.

You must now copy a complete copy of the DOS 6.22 files from the Client Workstation to the server. See Windows NT Server Installation Guide...chapter 8..."Installing MS-DOS files for Remote workstations" for other details. You must make a complete copy of all the files in the C:\DOS sub-directory to C:\WINNT\rpl\RPLFILES\BINFILES\DOS622 directory on the server. In addition, you must copy the following files from the root directory on the Client workstation the same location as stated above on the Server:

ON THE CLIENT WORKSTATION:

```
ATTRIB -S -H -R IO.SYS
```

IF MICROSOFT MSDOS IS USED:

```
ATTRIB -S -H -R MSDOS.SYS
```

OR

IF IBM PCDOS IS USED:

```
ATTRIB -S -H -R IBMCOM.SYS
```

```
ATTRIB -S -H -R IBMIO.COM
```

```
RENAME IBMCOM.SYS TO MSDOS.SYS
```

```
RENAME IBMIO.SYS TO IO.SYS
```

```
copy IO.SYS \WINNT\rpl\RPLFILES\BINFILES\DOS622
```

```
copy MSDOS.SYS \WINNT\rpl\RPLFILES\BINFILES\DOS622
```

```
copy COMMAND.COM \WINNT\rpl\RPLFILES\BINFILES\DOS622
```

```
attrib +s +h +r IO.SYS
```

```
attrib +s +h +r MSDOS.SYS
```

Step 7. Upgrade Permissions

It may be necessary to change the security permissions to the RPLUSER and the 4694-2x5 directory.

Go to PROGRAM MANAGER; FILE MANAGER; C:\WINNT40\rp1\RPLFILES

Highlight C:\WINNT40\rp1\RPLFILES.

Go to the pulldown and select SECURITY; PERMISSIONS.

Put a check in the box REPLACE PERMISSIONS ON SUBDIRECTORIES.

Press the ADD button.

Scroll down to RPLUSER and highlight it.

Press ADD and press OK to continue.

PROGRAM MANAGER; FILE MANAGER

Highlight C:\WINNT40\rp1\RPLFILES\PROFILES\46942x5.

Select SECURITY; PERMISSIONS and change the "TYPE OF ACCESS" to "FULL CONTROL."

Put a check in the box REPLACE PERMISSIONS ON SUBDIRECTORIES.

Next Click OK to continue and reply YES to replace permissions on all sub-directories.

Step 8:. Adding a New Profile.

NOTE!!! In order to activate a 4694-2x5 unit, the 4694-2x5 unit must be powered on and counting up, meaning it is sending out RIPL boot requests. This boot request will be detected by the Remoteboot Manager and displayed at a certain point in the New Profile sequence. Once a profile is created, more 4694-2x5's can be added, but they must be powered and sending boot request so the Remoteboot Manger can detect that they are on the network.

Go to PROGRAM MANAGER; NETWORK ADMINISTRATOR and select REMOTEBOOT MANAGER.

Remoteboot Manager will warn you that you must create a profile before you can create or edit workstation profiles, just hit OK.

Choose CONFIGURE; CHECK CONFIGURATIONS.

Select YES to the warning it displays;

Choose CONFIGURE; FIX SECURITY and reply YES to the dialog.

Choose REMOTEBOOT; NEW PROFILE.

In the dialog box go to Configuration and select the DOS 6.22 4694-2x5 entry.

Then type 4694-2x5 in the PROFILE NAME and press OK.

AT THIS TIME THE PROFILE EXISTS AND YOU WILL SEE the MAC(Ethernet) address of all 4694-2x5 units that are powered on and sending a boot request.

Step 9. Activating a 4694-2x5 unit for remote booting.

Highlight the 4694-2x5 MAC(Ethernet) address being displayed in PROFILE.

Go to REMOTEBOOT; CONVERT ADAPTERS.

Verify that the Wksta In Profile has 46942x5, and press OK.

Each 4694-2x5 must have it own unique name.

4694-2x5 should appear under IN PROFILE

Step 10: Verifying the 4694-2x5 has booted.

The moment a 4694-2x5 gets activated, it should start the remote boot process. It will be asking for a login name(too big for the screen)...just press enter...and for a password...just press enter. Contents of DOSBB.CNF as it is in the distribution disk MUST be modified to the following.

```
DOS on 4694-2x5 IEA
BASE D0H
RPL BBLOCK\RPLBOOT.SYS
LDR BBLOCK\RPLSTART.COM ~
DAT BBLOCK\NETBEUI\LANPOINT\PROTOCOL.INI
DRV BBLOCK\RPLDISK.SYS ~ ~ ~
EXE BBLOCK\RPLPRO1.COM ~ 2 ~
EXE BBLOCK\I13.COM ~ ~ ~
EXE BBLOCK\RPLBIND2.EXE ~ ~
EXE BBLOCK\PROTMAN.EXE ~ ~
EXE BBLOCK\RPLBIND1.EXE ~ ~
;
;DRV BBLOCK\TCPDRV.DOS /I:C:\LANMAN.DOS ~ ~
EXE BBLOCK\NETBEUI\NETBEUI.EXE ~ 10 ~
DRV BBLOCK\NDIS\LP_NDIS.SYS ~ ~ ~
DRV BBLOCK\PROTMAN.DOS /I:C:\LANMAN.DOS ~ M
```

Appendix A

DOS LAN REQUESTER 5.0

- **CONFIG.SYS**
- **4694-2x5 CONFIG.SYS FOR DOS/WIN DLS**

```
DEVICE=C:\DOS\HIMEM.SYS
DOS=HIGH,UMB
DEVICE=C:\DOS\EMM386.EXE RAM
FILES=100
BUFFERS=30
DEVICE=C:\DOS\SETVER.EXE
STACKS=9,256
LASTDRIVE=Z
REM-----FOLLOWING LINES ADDED BY DLS
INSTALL-----
DEVICE=C:\NET\PROTMAN.DOS /I:C:\NET
DEVICE=C:\NET\DLShelp.SYS
rem ***** 4694-2x5 IEA Dos Network Driver *****
DEVICE=C:\NET\PCNTND.DOS
```

- **END OF CONFIG.SYS**

- **AUTOEXEC.BAT**

4694-2x5 AUTOEXEC.BAT FOR DOS/WIN DLS

```
C:\WINDOWS\SMARTDRV.EXE
@ECHO OFF
SET PATH=C:\NET;C:\NWDBPATH;C:\;C:\DOS;C:\WINDOWS;%PATH%;
SET TEMP=C:\DOS
LH C:\DOS\MOUSE.COM
LH C:\DOS\DOSKEY.COM
SHARE
C:\NET\NET START
WIN
```

- **END OF AUTOEXEC.BAT**

- **PROTOCOL.INI**

- **4694-2x5 PROTOCOL.INI DOS/WIN DLS, PCMCIA ETHERNET**

```
[network.setup]
version=0x3100
netcard=PCNTND_NIF,1,PCNTND_NIF
transport=ibm$netbeui,IBM$NETBEUI
lana0=PCNTND_NIF,1,ibm$netbeui
[protman]
DriverName=PROTMAN$
PRIORITY=ibm$NETBEUI
```

- **4694-2x5 EXAMPLE BLOCK CREATED BY DLS INSTALL**

```
[PCNTND_NIF]
DriverName=PCNTND$
[IBM$NETBEUI]
DriverName=netbeui$
SESSIONS=20
NCBS=20
BINDINGS=PCNTND_NIF
LANABASE=0
```

- **END of PROTOCOL.INI**

- **NETWORK.INI**

- **4694-2x5 NETWORK.INI DOS/WIN DLS**

```
[network]
computername=BRIAN
lanroot=C:\NET
autostart=netbeui
guiconfig=0,0,1
username=BRIAN
domain=NETWORKT
lslogon=yes
reconnect=yes
passwordcachini=yes
[Password Lists]
ARUBA=C:\NET\BRIAN.PWL
```

- **END OF NETWORK.INI**

END OF DOS LAN REQUESTER

EXAMPLE OF NOVELL SETUP

- **CONFIG.SYS**

```
BREAK = OFF
DOS   = HIGH,UMB
DEVICE = C:\DOS\HIMEM.SYS /numhandles=127
DEVICE=C:\DOS\SETVER.EXE
DEVICE=C:\DOS\SMARTDRV.EXE /DOUBLE_BUFFER
DEVICE=C:\4694\BASE.SYS /C1 /NBASE1
DEVICE=C:\4694\CDR-DRV.R.SYS /P1A /NCDR1
DEVICE=C:\4694\OED-DRV.R.SYS /P1A /NOED1
DEVICE=C:\4694\TCH-DRV.R.SYS /P1A /NTCH1 /K
DEVICE=C:\4694\VFD-DRV.R.SYS /P1A /NDIS1
FILES=83
BUFFERS=26
STACKS=9,256
```

- **END OF CONFIG.SYS**

- **AUTOEXC.BAT**

```
path=c:\dos;c:\editors;c:\pos3;c:\4694;C:\ENETWORK;c:\utils;
prompt $P$G
C:\4694\HBMOUSE /B=0
C:\4694\HBSYSSRV /B=0 /N=1 /C1 /R1=1
c:\4694\setcon /B=0
CHOICE /n /t:y,5 "Press CTRL-C if you want to abort network
load"
cd\enetwork
LSL.COM
PCNTNW.COM
IPXODI.COM
netbios.exe
cd\pos1
NETWERKS POS1.NET
DOSKEY
goto pos_load
:pos_load
cd\pos1
4694w pos1IBM RV L2 999
if errorlevel=99 goto dos
if errorlevel=100 goto do
if errorlevel=333 goto setcontrast
goto end_it
:dos
cd\
goto end_it
:setcontrast
cd\4694
call setcon15
cd\pos1
4694w pos1IBM RV L2 999
if errorlevel=99 goto dos
if errorlevel=100 goto dos
if errorlevel=333 goto setcontrast
goto end_it
:end_it
cd\
```

- **END OF AUTOEXEC.BAT**

- **NET.CFG**

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This file is a sample network configuration file (NET.CFG)
Configure the Link Support Layer (LSL).
Link Support Buffers 8 1514
Default values are as follows:
Port 1000 AMD's PCI ethernet controller. At this Int 10
bios and hardware setup defaults to Mem D0000 400 port
10A0 and interrupt 9 Adapter Access I/O (Describes how the
adapter buffer memory is access. Via programmed I/O or
RAM) Cable Thin Link Driver PCNTNW Use for Adapter
accessed by I/O.

port 1000

int 9

Frame Ethernet_802.3
Frame Ethernet_802.2
Frame Ethernet_II
Frame Ethernet_SNAP
Protocol IPX 0 Ethernet_802.3
Protocol IPX E0 Ethernet_802.2
Protocol IPX 8137 Ethernet_II
Protocol IPX 8137 Ethernet_SNAP

- **END OF NET.CFG**

- **SHELL.CFG**

NETBIOS COMMANDS=32
NETBIOS SESSIONS=32
NETBIOS NAMES=32
NETBIOS SEND BUFFERS=20
NETBIOS RECEIVE BUFFERS=20

- **END OF SHELL.CFG**

- **END OF EXAMPLE NOVELL SETUP**

