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First Edition (October 1995)

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About This Manual

This manual describes installation and configuration of EtherJet ISA Ethernet adapters, installation of device drivers, and testing and troubleshooting the adapter.

This manual also contains information about the IBM LAN Client MPS and its installation.





Safety Information



Danger: Before you begin to install this product, read the safety information in *Caution: Safety Information—Read This First*, SD21-0030-02. This booklet describes safe procedures for cabling and plugging in electrical equipment.



Varning — livsfara: Innan du börjar installera den här produkten bör du läsa säkerhetsinformationen i dokumentet *Varning: Säkerhetsföreskrifter—Läs detta först*, SD21-0030-02. Där beskrivs hur du på ett säkert sätt ansluter elektrisk utrustning.



Fare: Før du begynner å installere dette produktet, må du lese sikkerhetsinformasjonen i *Advarsel: Sikkerhetsinformasjon — Les dette først*, SD21-0030-02 som beskriver sikkerhetsrutinene for kabling og tilkobling av elektrisk utstyr.



Fare! Før du installerer dette produkt, skal du læse sikkerhedsforskrifterne i *NB: Sikkerhedsforskrifter—Læs dette først* SD21-0030-02. Vejledningen beskriver den fremgangsmåde, du skal bruge ved tilslutning af kabler og udstyr.



Gevaar: Voordat u begint met de installatie van dit product, moet u eerst de veiligheidsinstructies lezen in de brochure *PAS OP! Veiligheidsinstructies—Lees dit eerst*, SD21-0030-02. Hierin wordt beschreven hoe u elektrische apparatuur op een veilige manier moet bekabelen en aansluiten.



Gevaar Voordat u begint met het installeren van dit product, dient u eerst de veiligheidsrichtlijnen te lezen die zijn vermeld in de publicatie *Caution: Safety Information - Read This First*, SD21-0030-02. In dit boekje vindt u veilige procedures voor het aansluiten van elektrische apparatuur.



Vorsicht: Bevor mit der Installation des Produktes begonnen wird, die Sicherheitshinweise in *Achtung:*

Sicherheitsinformationen—Bitte zuerst lesen, IBM Form SD21-0030-02. Diese Veröffentlichung beschreibt die Sicherheitsvorkehrungen für das Verkabeln und Anschließen elektrischer Geräte.



危険： 導入作業を開始する前に、安全に関する小冊子SD21-0030 の「最初にお読みください」(Read This First)の項をお読みください。この小冊子は、電気機器の安全な配線と接続の手順について説明しています。



Danger : Avant d'installer le présent produit, consultez le livret *Attention : Informations pour la sécurité — Lisez-moi d'abord*, SD21-0030-02, qui décrit les procédures à respecter pour effectuer les opérations de câblage et brancher les équipements électriques en toute sécurité.



Danger: Avant de procéder à l'installation de ce produit, lisez d'abord les consignes de sécurité dans la brochure *ATTENTION: Consignes de sécurité—A lire au préalable*, SD21-0030-02. Cette brochure décrit les procédures pour câbler et connecter les appareils électriques en toute sécurité.



Pericolo: prima di iniziare l'installazione di questo prodotto, leggere le informazioni relative alla sicurezza riportate nell'opuscolo *Attenzione: Informazioni di sicurezza — Prime informazioni da leggere* in cui sono descritte le procedure per il cablaggio ed il collegamento di apparecchiature elettriche.



Perigo: Antes de iniciar a instalação deste produto, leia as informações de segurança *Cuidado: Informações de Segurança — Leia Primeiro*, SD21-0030-02. Este documento descreve como efectuar, de um modo seguro, as ligações eléctricas dos equipamentos.



Peligro: Antes de empezar a instalar este producto, lea la información de seguridad en *Atención: Información de Seguridad — Lea Esto Primero*, SD21-0030-02. Este documento describe los procedimientos de seguridad para cablear y enchufar equipos eléctricos.



Perigo: Antes de começar a instalar este produto, leia as informações de segurança contidas em *Cuidado: Informações Sobre Segurança—Leia Isto Primeiro*, SD21-0030-02. Esse folheto descreve procedimentos de segurança para a instalação de cabos e conexões em equipamentos eléctricos.



VAARA: Ennen kuin aloitat tämän tuotteen asennuksen, lue julkaisussa *Varoitus: Turvaohjeet—Lue tämä ensin*, SD21-0030-02, olevat turvaohjeet. Tässä kirjasessa on ohjeet siitä, miten sähkölaitteet kaapeloidaan ja kytketään turvallisesti.



위험: 이 제품을 설치하기 전에 반드시
"주의: 안전 정보-시작하기 전에"
(SD21-0030) 에 있는 안전 정보를
읽으십시오.



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This First" SD21-0030 手冊中所提
供的安全注意事項。這本手冊將會說明
使用電器設備的纜線及電源的安全程序。



Uwaga:
Przed rozpoczęciem instalacji produktu należy zapoznać się z instrukcją:
"Caution: Safety Information - Read This First", SD21-0030.
Zawiera ona warunki bezpieczeństwa przy podłączeniu do sieci elektrycznej
i eksploatacji.



Upozornění: než zahájíte instalaci tohoto produktu, přečtete si
nejprve bezpečnostní informace v pokynech „Bezpečnostní
informace“ č. 21-0030. Tato brožurka popisuje bezpečnostní
opatření pro kabeláž a zapojení elektrického zařízení.



Vigyázat: Mielőtt megkezdi a berendezés üzembe helyezését,
olvassa el a "Caution: Safety Information— Read This First,
SD21-0030-02 könyvecskében leírt biztonsági információkat. Ez a
könyv leírja, milyen biztonsági intézkedéseket kell megtenni az
elektromos berendezés huzalozásakor illetve csatlakoztatásakor.



Pozor: Preden začnete z instalacijo tega produkta
preberite poglavje: "Opozorilo: Informacije
o varnem rokovanju-preberi pred uporabo,"
SD21-0030. To poglavje opisuje pravilne
postopke za kabliranje,



Related Publications

IBM LAN Technical Reference IEEE 802.2 and NETBIOS API, SC30-3587

IBM Transmission Control Protocol/Internet Protocol Version 2.1 for DOS: Programmer's Reference, SC31-7046

Novell NetWare DOS Requester

Novell Workstation for DOS and MS Windows

Microsoft LAN Manager Installation and Configuration Guide

IBM LAN Server Command and Utilities, S10H-9686

Guide to LAN Server Books, S10H-9688

DOS LAN Services and User's Guide, S10H-9684



Chapter 1. Introduction

The IBM EtherJet ISA Adapter and IBM EtherJet 10BASE-T ISA Adapter are ISA Ethernet adapters that allow you to attach IBM Personal Computer systems, or IBM-compatible ISA computers to an Ethernet network.

- Adapter operating speed is 10 Mbps.
- Cabling
 - EtherJet 10BASE-T ISA Adapters use 10BASE-T cabling
 - EtherJet ISA Adapters can use 10BASE-T, 10BASE2, or AUI cabling
- Full-duplex technology
- Enabled for Plug and Play

Included with this adapter are:

- LAN Adapter Installation and Diagnostic (LANAID), which simplifies installation and setup of the adapter. See Chapter 5, “Configuring the Adapter with LANAID”
- IBM LAN Client Multiple Protocol Support for DOS and Windows which significantly reduces DOS memory consumption in many environments. See Chapter 7, “IBM LAN Client MPS”
- A \READ.ME directory on the Device Drivers diskette that provides you with the latest information about your adapter. Be sure to read the information provided there.



Chapter 2. Preparation and Installation Checklist

Perform the following steps to prepare and install your new EtherJet ISA Adapter.

- **1** Before beginning installation, be sure to check the README files on the Device Driver diskette. These are text files that can be viewed with any PC editor.
- **2** Verify that you have the items listed under Chapter 3, "Package Contents."
- **3** Verify that you have the correct cables listed under "Cabling Requirements" on page 3-3.
- **4** Verify that your computer hardware and software meets the requirements listed under "Hardware Requirements for the Adapter" on page 3-4 and "Software Requirements for the Adapter" on page 3-4.
- **5** Install the EtherJet ISA Adapter, following instructions under Chapter 4, "Installing the Adapter."
- **6** Configure the EtherJet ISA Adapter, following instructions under Chapter 5, "Configuring the Adapter with LANAIID."
Note: Step 6 is not necessary for computers that are enabled for Plug and Play.
- **7** Install the device drivers, following instructions under Chapter 6, "Installing the Device Drivers for Your Network Environment."

For future reference, store these instructions with the instruction manual supplied with your computer.





Chapter 3. Package Contents

The adapter kit consists of :

- An EtherJet ISA Adapter or an EtherJet 10BASE-T ISA Adapter
- A BNC T-type connector, shipped with the EtherJet ISA Adapter only

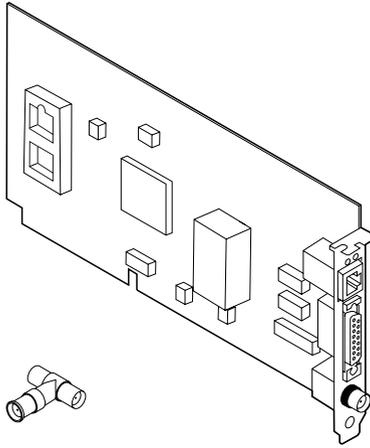


Figure 3-1. EtherJet ISA Adapter and BNC T Connector



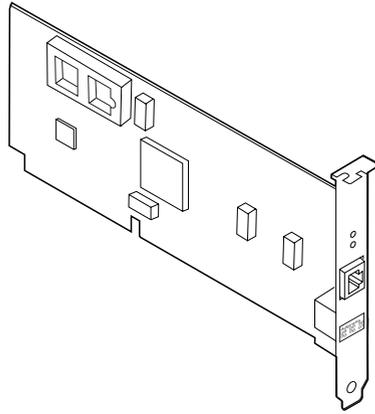


Figure 3-2. EtherJet 10BASE-T ISA Adapter

- Four diskettes and a Safety Information booklet

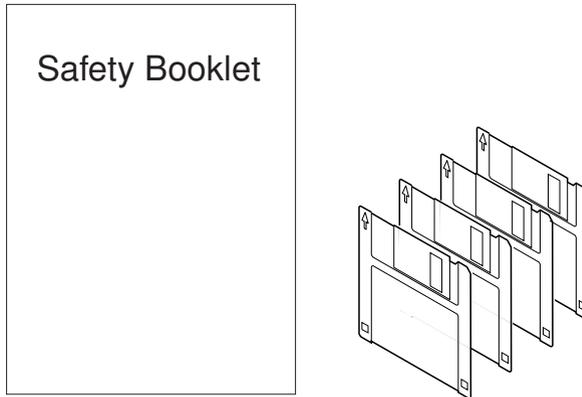


Figure 3-3. Diskettes and Safety Booklet

- Disk 1: Device Drivers
- Disk 2: LANAID
- Two IBM LAN Client MPS diskettes

If any item is missing or damaged, contact your place of purchase.



Cabling Requirements

In order to connect the Ethernet adapter to your network, you will need one of the following cables (not supplied with this kit).

- A Category 3, 4, or 5 cable with RJ-45 connectors, for use with twisted-pair (10BASE-T) cabling in your Ethernet network.

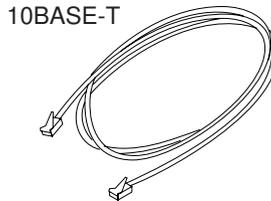


Figure 3-4. 10BASE-T Cable

The maximum length of twisted-pair cable is 100 meters (328 feet).

- An RG-58, standard, coaxial cable (10BASE2) with bayonet connectors (BNCs), terminators, and a BNC T-type connector. The T connector is shipped with your EtherJet ISA Adapter kit.

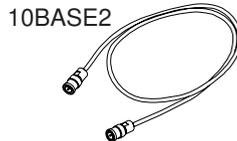


Figure 3-5. 10BASE2 Cable

The maximum length of thin coaxial cable is 185 meters (607 feet).

- A shielded, twisted-pair drop cable with AUI connectors, if your Ethernet network uses external transceivers.

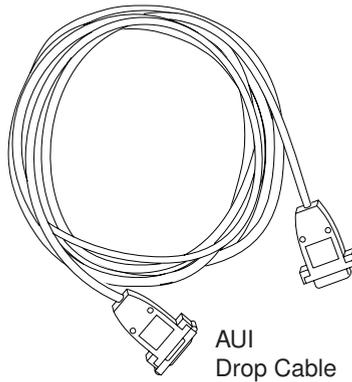


Figure 3-6. AUI Cable

The maximum length of this cable is 50 meters (164 feet).

Hardware Requirements for the Adapter

- An IBM or IBM-compatible personal computer with an 80386 or higher processor and an available 16-bit expansion slot.

Software Requirements for the Adapter

The EtherJet ISA Adapter and EtherJet 10BASE-T ISA Adapter can be used in a computer equipped with a network operating system or network application that uses the Network Driver Interface (NDIS) or NetWare** Open Data-Link Interface (ODI).

The following list shows the network environments that are compatible with the adapters. Verify that you have the required software for your computer's network environment.

- NetWare Server
- NetWare Client for DOS
- NetWare Client for OS/2 2.1 and higher
- OS/2 LAN Transports
- Windows NT**
- Windows for Workgroups
- Windows 95**
- Microsoft** LANManager**

- DOS LAN Transports

Hardware Requirements for IBM LAN Client MPS

Note: IBM LAN Client MPS is described in Chapter 7, "IBM LAN Client MPS."

- 80386 or higher processor
- Hard-disk drive with at least 3 MB of free storage
- At least 4 MB of RAM
- Connection to the network

Software Requirements for IBM LAN Client MPS

- A supported operating system from the following list
 - PC-DOS 5.0 or higher
 - Windows 3.1 with DOS 5.0 or higher
 - Windows for Workgroups 3.11 with DOS 5.0 or higher
 - MS-DOS** 5.0 or higher
- HIMEM.SYS memory manager

Note: If EMM386.EXE is in use it must be Version 4.49 or higher. EMM386.EXE is provided with your DOS operating system. To determine what level you are using, simply type **EMM386** at a DOS command line. For more information about EMM386.EXE, refer to your DOS manual.



Chapter 4. Installing the Adapter

The following steps describe installing the EtherJet ISA Adapter in your computer.

- **1** Make backup copies of the diskettes that come with the kit using the DOS command DISKCOPY. Store the original diskettes in a safe place.
- **2** Switch OFF the computer and disconnect the power cable from the outlet.
- **3** Disconnect all cables from the computer. Make sure cables are labelled for ease of reconnection.
- **4** Remove the cover over the expansion slots.
- **5** Insert the adapter in a 16-bit expansion slot. Make sure that the adapter is fully seated.
- **6** Replace the cover.
- **7** Connect the adapter cable to the adapter and to the network. See the figures that follow.

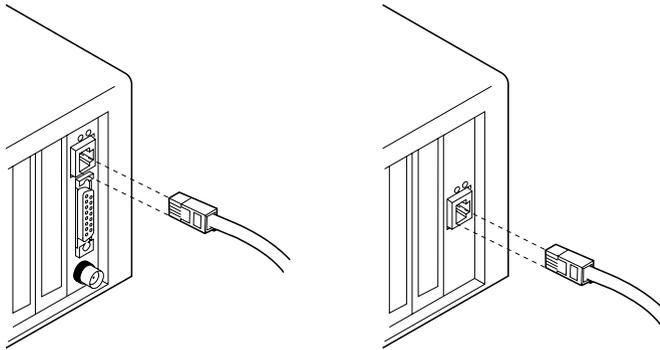


Figure 4-1. 10BASET Connection

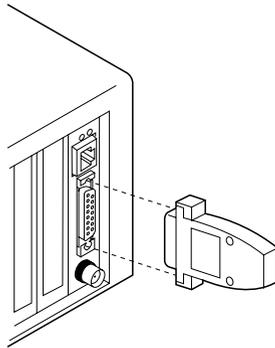


Figure 4-2. AUI Connection

If you are using 10BASE2 media, you must use the T connector provided and a terminator as shown in Figure 4-3 on page 4-3 and Figure 4-4 on page 4-3.

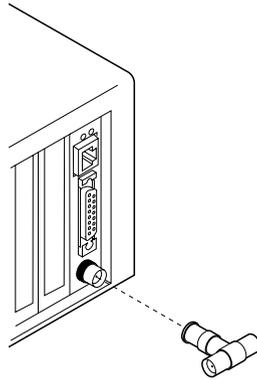
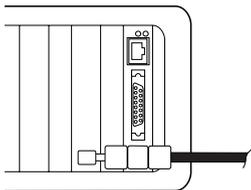


Figure 4-3. Connecting the T connector for 10BASE2

For 10BASE2 connection only, attach the coax cable and terminator to the T connector, as shown in Figure 4-3. You must have the terminator at the end of the line of coaxial connections as shown in the two examples in Figure 4-4.



or

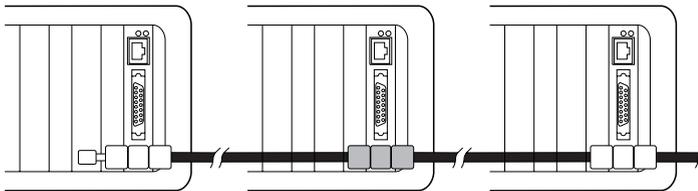


Figure 4-4. Connecting the 10BASE2 Cable and Terminator

— **8** Reconnect all cables to the computer.



___ **9** Plug the computer into a power source.

___ **10** Switch ON the computer.

The physical installation is complete.

Computers that are enabled for Plug and Play do not require you to configure the new adapter. If your computer is enabled for Plug and Play, go to Chapter 6, "Installing the Device Drivers for Your Network Environment" on page 6-1.

For computers that are not enabled for Plug and Play you must configure the adapter. To configure the adapter, continue to Chapter 5, "Configuring the Adapter with LANAIID."

If you do not know if your computer is Plug and Play enabled, see "Determining Plug and Play Status" on page 5-7.

Chapter 5. Configuring the Adapter with LANAID

Note: To LAN Administrators: To do automated installations, use the LANAIDC tool. See “LANAIDC Command Line Program” on page 5-5 for instructions.

After you have physically installed the adapter, it must be configured to relate it to the hardware in your system. If you are using a computer that is *not* enabled with Plug and Play, it is important to run LANAID because this program activates the adapter when you STORE the adapter parameters. NonPlug and Play computers do not require you to run LANAID, as the adapter is configured automatically by the computer.

Notes:

1. Your EtherJet ISA Adapter comes with a version of LANAID that is unique to that adapter type. Other adapter types cannot be configured with this version of LANAID.
2. If you are not certain whether your computer is enabled for Plug and Play, see “Determining Plug and Play Status” on page 5-7.

The MAC Address

The Universally Administered Address Label contains the adapter's universally administered address. This is the unique MAC address that was encoded in the adapter memory at the factory. This 12-digit, hexadecimal address is recorded on the adapter card's label in 2-digit increments from left to right. See Figure 5-1 on page 5-2.

If you want the adapter to be known on the network by a locally administered address, you must configure the adapter's device driver or protocol driver to use a locally administered address.

The LANAID program identifies each installed adapter by this address. The addresses and serial numbers of all installed adapters are shown in the list on the initial LANAID panel, along with the alternate address of each. The alternate address is the noncanonical form (most significant bit first) of the address.

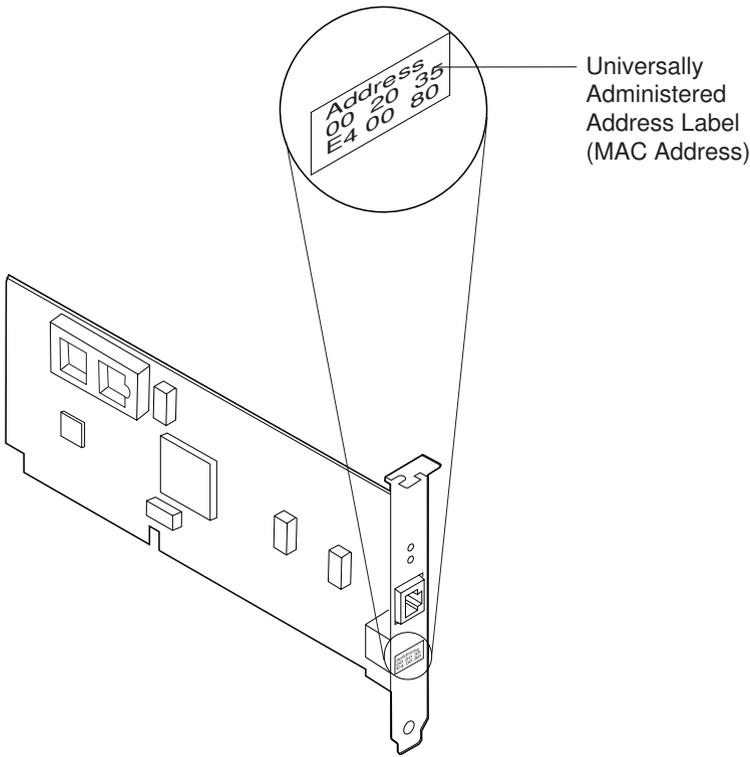


Figure 5-1. MAC Address Label

Starting the LANAIID Program

Before running LANAIID, make sure that you have installed your adapter as described in Chapter 4, "Installing the Adapter."

Note: For Windows NT systems, you must boot the LANAIID diskette and use LANAIIDC. See "LANAIIDC Command Line Program" on page 5-5.

LANAIID options can be selected in at least two ways. You can click with a mouse or other pointing device, or you can make selections by tabbing to your selection and pressing Enter. Push buttons can also be selected with *hot keys*. The hot keys are the letters that correspond to the underlined characters on the push button. Press **Alt** plus the hot key letter.



1 Install LANAID on your hard disk.

The LANAID GUI program operates under DOS or in a full-screen DOS session of Windows or OS/2. You need at least 1.5 MB of free, extended memory and 300 KB of conventional memory to run the program.

Insert the LANAID diskette in your A drive. At the DOS prompt, enter **A:INSTALL**. The installation program will ask you which drive, path, and directory you want to use for LANAID. You can let it default to C: for the drive and \LANAID for the directory.

The files are automatically decompressed and copied. When this is completed, the LANAID program is automatically invoked.

To run LANAID again, select the drive and directory on which you installed LANAID, and then enter **LANAID**.

- ## 2

When LANAID is started the copyright window is displayed, followed by the first selection window. The MAC addresses and serial numbers of the adapters found are presented at the top. For more information about MAC addresses, see "The MAC Address" on page 5-1.
- ## 3

Click the down arrow at the right of the box to display the list of EtherJet ISA Adapters installed in this computer. Highlight the one you want to configure.
- ## 4

In the center of the window, under *Select a function below*, select **Adapter Configuration**.
- ## 5

The next window is displayed in *notebook* format, with *pages*. The pages' names are at the top of the panel. To change pages, click on the page name at the top of the notebook.

The page named *Hardware* is an information only page. The page named *Configurable* contains all the configurable parameters that apply to your adapter.

6 The following information describes the parameters and their value ranges. You can accept their default values or change them.

On the lower left of the panel are three push buttons: Suggest, Change, and Store. Beneath these are three more: Done, Cancel, and Help.

To accept all default values, simply select **Done**.

To let the computer choose parameters for you, select **Suggest**. The Suggest button will select a set of valid parameters for you that do not conflict with your current configuration. To accept these values, select **Done**.

To set the parameter values yourself, select **Change**. The *Change Configuration* notebook is presented. It has two pages: *Plug and Play* and *Other Parameters*.

On the Plug and Play page, make any changes that you choose and then select **Store**. Choose **OK** on the confirmation pop-up and then select **Done** to complete the changes.

Next, select the *Other Parameters* page. Make any changes that you choose, and then select **Store**, followed by **OK**. Select **Done** to complete the process.

- Adapter configured by Plug and Play

This is the default. In this case, the adapter is automatically configured by your Plug and Play enabled computer. If you do not want to change this option, click on **OK**. You have finished the configuration process. Go to "Software Installation" on page 5-9.

Note: If your computer or operating environment do not support Plug and Play, you must select *Adapter configured Manually*.

- Adapter configured Manually

Select this radio button if you want to manually select the options assigned to your IBM LAN adapter.

- Lock current resources

This option determines whether the adapter will contain a fixed configuration.

Each of the following choices can be selected from a drop-down list. To open the list for any option, simply select the down arrow to the right of the selection box beside the option.

- Interrupt

The interrupt is the interrupt level of your adapter. If the interrupt level is not valid, your input will be ignored. The range is 3—7, 9—12, 14, 15. The default is 10.

- I/O Address

The I/O address is the hexadecimal I/O address of the adapter. The range is X'200'—X'360'. The default is 300.

- Boot ROM Address

The Boot ROM address is the hexadecimal boot PROM address of the adapter. The range is X'C8000'—X'F0000'. The address must be on a 16-KB boundary.

- RAM Address

The RAM address is the hexadecimal Shared Memory Mode address. The range is X'B0000'—X'DC000'. This value must be on a 4-KB boundary.

Note: Your adapter will not function if conflicts exist in the target operating environment.

Continue with “Software Installation” on page 5-9.

LANAIDC Command Line Program

LANAIDC is a command line installation tool that can be used to perform automated adapter installation. LANAIDC must be run from DOS or a full screen DOS session of Windows or OS/2.

LANAIDC is invoked automatically if you boot the LANAID diskette.

Note: This method is required for Windows NT. After the diskette has been booted, simply enter parameters in the form:

```
/parm /parm /parm
```

Enter **/H** for a listing of the parameters and their use.

To start LANAI DC manually, go to the directory where you installed the LANAI D files, or insert your LANAI D diskette in the A drive and go to the A: prompt.

To get a list of all the command line parameters and the help text that goes with each, Enter **LANAI DC /H**

To determine the current adapter settings, enter **LANAI DC /V**.

Once you have determined which values you want to set or change, enter the LANAI DC command with parameters. The format for the LANAI DC command is:

```
LANAI DC /parm /parm /parm ...
```

When you have finished setting the adapter configuration parameters with LANAI DC, continue to Chapter 6, "Installing the Device Drivers for Your Network Environment" on page 6-1.

Finding the Adapter Serial Number

It is necessary to know your adapter serial number when you are installing multiple adapter configurations. Use LANAID or LANAIDC to find the 8-digit hexadecimal serial number of your adapter.

LANAID and LANAIDC can be run in any of three environments:

- DOS
- DOS Full Screen session of Windows
- DOS Full Screen session of OS/2

You can insert the LANAID diskette in drive A or you can go to the directory where LANAID and LANAIDC are stored. Then enter one of the following commands:

- Enter **LANAID**. LANAID displays the serial numbers of all installed EtherJet ISA Adapters, along with their MAC addresses, on the opening panel.
- Enter **LANAIDC /V**. LANAIDC displays the serial number and other information about the adapter.

Note: For Windows NT systems, you must boot the LANAID diskette and then enter **/V**.

Determining Plug and Play Status

You can determine if your computer is enabled for Plug and Play in either of two ways:

Note: Option 2 is the required method for Windows 95 and Windows NT systems.

1.
 - Go to DOS or a full screen DOS session of Windows or OS/2.
 - Insert DISK2: LANAID in your A drive.
 - Enter **A:LANAIDC /V**
2.
 - Boot the LANAID diskette.



- Enter **IV**.



Software Installation

If your system meets the requirements listed under “Hardware Requirements for IBM LAN Client MPS” on page 3-5 and “Software Requirements for IBM LAN Client MPS” on page 3-5 then you can install and use IBM LAN Client MPS. To do this go to Chapter 7, “IBM LAN Client MPS.” Otherwise, go to Chapter 6, “Installing the Device Drivers for Your Network Environment” to install your device drivers. If you are not certain whether you want to install IBM LAN Client MPS on your computer, read “About IBM LAN Client MPS” on page 7-1 for more information.



Chapter 6. Installing the Device Drivers for Your Network Environment

This chapter contains the instructions for installing drivers that the EtherJet ISA Adapter needs for communication over an Ethernet network. It includes both manual and automatic installations.

If you are installing drivers for more than one EtherJet ISA Adapter in the same workstation, make sure that you have performed for each adapter the steps described in Chapter 4, "Installing the Adapter" and Chapter 5, "Configuring the Adapter with LAN AID" before you start the driver installation.

Automatic Driver Installation

Automatic Installation contains instructions for automatically installing the EtherJet ISA Adapter drivers. You must have an installation aid to use the procedures in this section.

Manual Driver Installation

Manual Installation contains instructions for manually installing the EtherJet ISA Adapter drivers. Manual installation must be performed if you do not have an installation aid program. Manual installation involves copying the drivers from the Device Drivers diskette to the appropriate directory on the workstation and editing files, such as the CONFIG.SYS, PROTOCOL.INI, AUTOEXEC.BAT, and NET.CFG files.

Installation Instruction Table

Table 6-1 on page 6-2 is an index to the driver installation instructions. To use the table, locate the row that describes the network environment for your workstation.

Table 6-1. Driver Installation Instructions Index

Your environment:	Go to:
NetWare 3.11 Server	"NetWare 3.11 Server LAN Driver Installation" on page 6-3
NetWare 3.12 Server	"NetWare 3.12 Server LAN Driver Installation" on page 6-7
NetWare 4.x Server	"NetWare 4.x Server LAN Driver Installation" on page 6-11
NetWare Client with DOS	Auto: "NetWare DOS Requester Driver Installation" on page 6-15
	Manual: "Manually Installing the ODI Client Driver for DOS" on page 6-28
NetWare Client with OS/2	"Manually Installing the ODI Client Driver for OS/2" on page 6-30
LSP stand-alone	Refer to LAN Support Program (stand-alone) documentation
OS/2 LAN Transports	Auto: "OS/2 NDIS2 MAC Driver Installation Using LAPS or MPTS" on page 6-17
	Manual: "Manually Installing NDIS Drivers" on page 6-32
Windows NT	"NDIS3 MAC Driver Installation for Windows NT" on page 6-22. Refer to <i>Microsoft Windows NT, Version 3.1</i> or higher.
Windows for Workgroups	"NDIS2 and NDIS3 MAC Driver Installation for Windows for Workgroups 3.11" on page 6-20
Windows 95	"NDIS3 MAC Driver Installation for Windows 95" on page 6-23
LANManager	"LAN Manager (DOS or OS/2) NDIS2 MAC Driver Installation" on page 6-25
Artisoft LANtastic	"NDIS 2.01 for Artisoft LANtastic" on page 6-26
Other DOS workstations Other OS/2 workstations	Auto: "Installing NDIS2 MAC Drivers Using Other Installation Programs" on page 6-27
	Manual: "Manually Installing NDIS Drivers" on page 6-32

NetWare 3.11 Server LAN Driver Installation

Adapter diskette: Device Drivers diskette
 Directory: NETWARE

Before you begin this procedure, make sure that you have the serial number of the cards (up to three cards can be installed) you will be installing. You can find the serial number with LAN Aid or with LAN Aid C. See "Finding the Adapter Serial Number" on page 5-7.

The following information assumes that NetWare 3.11 is already installed as a server on your system. If NetWare is not installed, install it now. During the NetWare server installation process, you will be prompted to install the EtherJet ISA Adapter or EtherJet 10BASE-T ISA Adapter driver and some of the steps below might be completed in the process.

After NetWare server installation is complete, perform the following steps, if you have not already done so, to complete configuration of your system.

1. The target directory should be the directory used by NetWare for the SERVER.EXE file. For example, C:\NETWARE or C:\NOVELL.
2. Copy the following files from the \NETWARE subdirectory on the Device Drivers diskette to your target directory:
 - ETHERTSM.NLM
 - LSLENH.NLM
 - MSM31X.NLM
 - PATCHMAN.NLM
 - IBMEINWS.LAN

Note: If you experience any problems after loading the .NLM files from the Device Drivers diskette, contact Novell to ensure that you have the most current version of these files for Novell 3.11.

3. From the directory containing the SERVER.EXE file, type **server** and then press **Enter** to start the server.

Steps 4 through 8 describe how to configure the server and LAN Driver to load automatically each time the server is started.

4. From the server console prompt, enter **load install**.
5. From within the server installation options program, select the menu item that will allow you to edit the AUTOEXEC.NCF file or that will allow you to create one if it does not exist.
6. Edit the AUTOEXEC.NCF file and add statements that load the LAN driver and bind the NetWare IPX** protocol driver to the EtherJet Adapter LAN driver. The following example illustrates the statements to be added for a single network adapter.

```
MOUNT ALL
LOAD C:\NETWARE\PATCHMAN.NLM
LOAD C:\NETWARE\LSLENH.NLM
LOAD C:\NETWARE\MSM31X.NLM
LOAD C:\NETWARE\ETHERTSM.NLM
LOAD C:\NETWARE\IBMEINWS.LAN SERIAL=<serial number>
BIND IPX to IBMEINWS NET=<network hex number>
```

The BIND statement must follow the LOAD statements. A unique hexadecimal number must be assigned for each LAN. (Consult your network administrator.) If you have two adapters, see the following example:

```
MOUNT ALL
.
.
.
LOAD C:\NETWARE\IBMEIWS.LAN SERIAL=<serial number> NAME=FIRST
LOAD C:\NETWARE\IBMEIWS.LAN SERIAL=<serial number> NAME=SECOND
BIND IPX to FIRST NET=<unique network hex number>
BIND IPX to SECOND NET=<unique network hex number>
```

See Table 6-2 on page 6-5 for a list of parameters that can be used on the LOAD IBMEINWS command line above.

7. Save changes to the AUTOEXEC.NCF file and exit the server installation options program.
8. Shut down the server by entering **down** at the server console prompt and then entering **exit**.
9. Restart the server by entering **server**. Indicators that show you installation is successful are listed here:

- Messages indicating that the LAN driver, IBMEINWS.LAN, and the NetWare modules (.NLM files) have been installed.
- LEDs on the card show normal operation. (See “The LEDs” on page A-1.)
- You can log on and communicate with the network.

Table 6-2 describes the parameters of the LAN driver.

Table 6-2 (Page 1 of 2). LAN Driver Parameters

Parameter	Explanation
FRAME	<p>This parameter indicates the frame type to be used by the LAN driver and network adapter.</p> <p>Default value: Ethernet_802.2</p> <p>Valid values: Ethernet_802.2, Ethernet_802.3, Ethernet_II, Ethernet_SNAP</p>
NODE	<p>Use this parameter to specify a locally administered address for the EtherJet ISA Adapter. The adapter can be known on the network by its universally administered address (the address encoded in the adapter memory at the factory) or a locally administered address (a unique, user-assigned address).</p> <p>The universally administered address appears on a label on the EtherJet ISA Adapter bracket (see Figure 5-1 on page 5-2).</p> <p>The value of the locally administered address must be unique among the addresses on the network and contain 12 hexadecimal digits.</p> <p>Default value: Universally administered address</p> <p>Valid values: x2xxxxxxxxxx, x6xxxxxxxxxx, xAxxxxxxxxxx, or xExxxxxxxxxx, immediately followed by L. For example:</p> <p>A69876543210L</p>

Table 6-2 (Page 2 of 2). LAN Driver Parameters

Parameter	Explanation
SERIAL	<p>This parameter is the 8-digit, hexadecimal serial number of the adapter. The SERIAL parameter is required when multiple EtherJet adapters are used in one computer. Serial parameter example:</p> <p>SERIAL=89ABCDEF</p> <p>The adapter serial number can be displayed by the LANAID program. See "Finding the Adapter Serial Number" on page 5-7.</p>

NetWare 3.12 Server LAN Driver Installation

Adapter diskette: Device Drivers diskette
 Directory: NETWARE

Before you begin this procedure, make sure that you have the serial number of the cards (up to two cards can be installed) you will be installing. You can access the serial number using LANAIDC. See "Finding the Adapter Serial Number" on page 5-7.

The following information assumes that NetWare 3.12 is already installed as a server on your system. If NetWare is not yet installed, install it now. During the NetWare server installation process, you will be prompted to install the EtherJet ISA Adapter or EtherJet 10BASE-T ISA Adapter driver and some of the steps below might be completed in the process.

After NetWare server installation is complete, perform the following steps, if you have not already done so, to complete configuration of your system.

- 1 The target directory should be the directory used by NetWare for the SERVER.EXE file: For example, C:\NETWARE or C:\NOVELL.
- 2 Copy the following files from the \NETWARE subdirectory on the Device Drivers diskette to your target directory:
 - EHERTSM.NLM
 - MSM31X.NLM
 - MSM.NLM
 - MONITOR.NLM
 - IBMEINWS.LAN

Note: If you experience any problems after loading the .NLM files from the Device Drivers diskette, contact Novell to ensure that you have the most current version of these files for Novell 3.12.

- 3 From the directory containing the SERVER.EXE file, type **server** and then press **Enter** to start the server.

- 4 Steps 4 on page 6-8 through 8 on page 6-8 describe how to configure the server and LAN Driver to load automatically each time the server is started. From the server console prompt, type **load install**.
- 5 From within the server installation options program, select the menu item that will allow you to edit the AUTOEXEC.NCF file or that will allow you to create one if it does not exist.
- 6 Edit the AUTOEXEC.NCF file and add statements that load the LAN driver and bind the NetWare IPX protocol driver to the EtherJet Adapter LAN driver. The following example illustrates the statements to be added for a single network adapter.

```
MOUNT ALL
LOAD C:\NETWARE\MSM31X.NLM
LOAD C:\NETWARE\MSM.NLM
LOAD C:\NETWARE\MONITOR.NLM
LOAD C:\NETWARE\ETHERTSM.NLM
LOAD C:\NETWARE\IBMEINWS.LAN
BIND IPX to IBMEINWS NET=<unique network hex number>
```

The BIND statement must follow the LOAD statements. A unique hexadecimal number must be assigned for each LAN. (Consult your network administrator.) If you have two adapters, consider the following example:

```
MOUNT ALL
.
.
.
LOAD C:\NETWARE\IBMEINWS.LAN SERIAL=<first serial number>
BIND IPX to IBMEINWS NET=<first unique network hex number>
LOAD C:\NETWARE\IBMEINWS.LAN SERIAL=<second serial number>
BIND IPX to IBMEINWS NET=<second unique network hex number>
```

See Table 6-2 on page 6-5 for the list of parameters that can be used on the LOAD IBMEINWS command line.

- 7 Save changes to the AUTOEXEC.NCF file and exit the server installation options program.

- 8 Shut down the server by entering **down** at the server console prompt and then entering **exit**.
- 9 Restart the server by entering **server**. Indicators that show you installation is successful are listed here:
 - Messages indicating that the LAN driver, IBMEINWS.LAN and the NetWare modules (.NLM files) have been installed.
 - LEDs on the card show normal operation. (See “The LEDs” on page A-1.)
 - You can log on and communicate with the network.

Table 6-3 describes the LAN driver parameters.

Table 6-3 (Page 1 of 2). LAN Driver Parameters

Parameter	Explanation
FRAME	<p>This parameter indicates the frame type to be used by the LAN driver and network adapter.</p> <p>Default value: Ethernet_802.2</p> <p>Valid values: Ethernet_802.2, Ethernet_802.3, Ethernet_II, Ethernet_SNAP</p>
NODE	<p>Use this parameter to specify a locally administered address for the EtherJet ISA Adapter. The adapter can be known on the network by its universally administered address (the address encoded in the adapter memory at the factory) or a locally administered address (a unique, user-assigned address).</p> <p>The universally administered address appears on a label on the EtherJet ISA Adapter bracket (see Figure 5-1 on page 5-2).</p> <p>The value of the locally administered address must be unique among the addresses on the network and contain 12 hexadecimal digits.</p> <p>Default value: Universally administered address</p> <p>Valid values: x2xxxxxxxxxx, x6xxxxxxxxxx, xAxxxxxxxxxx, or xExxxxxxxxxx immediately followed by L. For example:</p> <p>A69876543210L</p>

Table 6-3 (Page 2 of 2). LAN Driver Parameters

Parameter	Explanation
SERIAL	<p>This parameter is the 8-digit, hexadecimal serial number of the adapter. The SERIAL parameter is required when multiple EtherJet adapters are used in one computer. Serial parameter example:</p> <pre>SERIAL=89ABCDEF</pre> <p>The adapter serial number can be displayed by the LANAID program. See "Finding the Adapter Serial Number" on page 5-7.</p>

NetWare 4.x Server LAN Driver Installation

Adapter diskette: Device Drivers diskette
 Directory: NETWARE

Before you begin this procedure, make sure that you have the serial number of the cards (up to two cards can be installed) you will be installing. You can access the serial number using LANAIDC. See "Finding the Adapter Serial Number" on page 5-7.

The following information assumes that NetWare 4.x is already installed as a server on your system. If NetWare is not yet installed, install it now. During the NetWare server installation process, you will be prompted to install the EtherJet ISA Adapter or EtherJet 10BASE-T ISA Adapter driver and some of the steps below might be completed in the process.

After NetWare server installation is complete, perform the following steps, if you have not already done so, to complete configuration of your system.

- 1 The target directory should be the directory used by NetWare for the SERVER.EXE file: for example, C:\NETWARE or C:\NOVELL.
- 2 Copy the following files from the \NETWARE subdirectory on the Device Drivers diskette to your target directory:
 - EHERTSM.NLM
 - MSM.NLM
 - IBMEINWS.LAN

Note: If you experience any problems after loading the .NLM files from the Device Drivers diskette, contact Novell to ensure that you have the most current version of these files for Novell 4.0.

- 3 From the directory containing the SERVER.EXE file, type **server** and then press **Enter** to start the server.

- 4 Steps 4 on page 6-12 through 8 describe how to configure the server and LAN Driver to load automatically each time the server is started. From the server console prompt, type **load install**
- 5 From within the server installation options program, select the menu item that will allow you to edit the AUTOEXEC.NCF file or that will allow you to create one if it does not exist.
- 6 Edit the AUTOEXEC.NCF file and add statements that load the LAN driver and bind the NetWare IPX protocol driver to the EtherJet Adapter LAN driver. The following example illustrates the statements to be added for a single network adapter.

```
MOUNT ALL
LOAD C:\NETWARE\MSM.NLM
LOAD C:\NETWARE\ETHERTSM.NLM
LOAD C:\NETWARE\IBMEINWS.LAN
BIND IPX to IBMEINWS NET=<unique network hex number>
```

The BIND statement must follow the LOAD statements. A unique hexadecimal number must be assigned for each LAN. (Consult your network administrator). If you have two adapters, do the following:

```
MOUNT ALL
.
.
.
LOAD C:\NETWARE\IBMENIWS.LAN SERIAL=<first serial number>
BIND IPX to IBMEINWS NET=<first unique network hex number>
LOAD C:\NETWARE\IBMENIWS.LAN SERIAL=<second serial number>
BIND IPX to IBMEINWS NET=<second unique network hex number>
```

See Table 6-2 on page 6-5 for the list of parameters that can be used on the LOAD IBMEINWS command line.

- 7 Save changes to the AUTOEXEC.NCF file and exit the server installation options program.
- 8 Shut down the server by entering **down** at the server console prompt and then entering **exit**.

9 Restart the server by entering **server**. Indicators that show you installation is successful are listed here:

- Messages indicating that the LAN driver, IBMEINWS.LAN and the NetWare modules (.NLM files) have been installed.
- LEDs on the card show normal operation. (See “The LEDs” on page A-1.)
- You can log on and communicate with the network.

Table 6-4 describes the LAN driver parameters.

Table 6-4 (Page 1 of 2). LAN Driver Parameters

Parameter	Explanation
FRAME	<p>This parameter indicates the frame type to be used by the LAN driver and network adapter.</p> <p>Default value: Ethernet_802.2</p> <p>Valid values: Ethernet_802.2, Ethernet_802.3, Ethernet_II, Ethernet_SNAP</p>
NODE	<p>Use this parameter to specify a locally administered address for the EtherJet ISA Adapter. The adapter can be known on the network by its universally administered address (the address encoded in the adapter memory at the factory) or a locally administered address (a unique, user-assigned address).</p> <p>The universally administered address appears on a label on the EtherJet ISA Adapter bracket (see Figure 5-1 on page 5-2).</p> <p>The value of the locally administered address must be unique among the addresses on the network and contain 12 hexadecimal digits.</p> <p>Default value: Universally administered address</p> <p>Valid values: x2xxxxxxxxxx, x6xxxxxxxxxx, xAxxxxxxxxxx, or xExxxxxxxxxx immediately followed by L. For example:</p> <p>A69876543210L</p>

Table 6-4 (Page 2 of 2). LAN Driver Parameters

Parameter	Explanation
SERIAL	<p>This parameter is the 8-digit, hexadecimal serial number of the adapter. The SERIAL parameter is required when multiple EtherJet adapters are used in one computer. Serial parameter example:</p> <pre>SERIAL=89ABCDEF</pre> <p>The adapter serial number can be displayed by the LANAID program. See "Finding the Adapter Serial Number" on page 5-7.</p>

NetWare DOS Requester Driver Installation

Adapter diskette: Device Drivers diskette

Novell NetWare WSDOS_1

Diskette

Note: If the NetWare DOS Client software installation package is distributed on the CD-ROM, it must be converted to its individual component diskette images in order to produce the NetWare WSDOS_1 install diskette.

- 1 Start the installation program from the NetWare WSDOS_1 installation diskette.
- 2 At the NetWare Client installation panel, make sure the destination directory is the directory that contains your NetWare files and that you have answered 'yes' to the question about modifying your AUTOEXEC.BAT and CONFIG.SYS files.
- 3 Highlight the step on the panel that will select the driver.
- 4 Remove the NetWare WSDOS_1 installation diskette.
- 5 Insert the Device Drivers diskette
- 6 Press **Enter**.
- 7 Using the cursor keys, select **IBM EtherJet ISA Adapter** and press **Enter**. The settings panel is displayed.
- 8 With the settings panel displayed, enter changes to the configuration as required. Return to the Install panel.
- 9 At the NetWare Client Install panel, select the last step on the panel and press **Enter**.
- 10 Exchange diskettes as prompted on the panel.
- 11 When the message is displayed on the panel stating that the installation process has been completed, press **Enter** to exit the installation program.



Note: It might be necessary to edit the AUTOEXEC.BAT and CONFIG.SYS files to remove references to any previous NetWare workstation files. The previous contents of these files have been saved with .BNW extensions to assist in this editing process.

12 Reboot your system.



OS/2 NDIS2 MAC Driver Installation Using LAPS or MPTS

Adapter diskette: Device Drivers diskette
 Directory: (root)

The OS/2 NDIS MAC device driver is needed to run in an OS/2 LAN Server environment. The Device Drivers diskette contains the OS/2 NDIS MAC device driver under the name `IBMEINDI.OS2` in the root directory.

`IBMEINDI.OS2` will support up to three EtherJet ISA Adapters in the same system unit. If you want to use multiple EtherJet ISA Adapters in the same workstation, see “Supporting Multiple Adapters with NDIS Drivers” on page 6-34 for more details.

You can use the OS/2 device driver installation tool, the LAN Adapter and Protocol Support program (`LAPS.EXE`), or you can use MPTS to install the OS/2 NDIS MAC device driver. Refer to *IBM Operating System/2 Local Area Network Server Network Administrator's Reference, Volume 1: Planning and Installation* form number SH10-9680, for instructions on using IBM LAN Transports.

The following information assumes OS/2 2.11 or Warp and LAPS or MPTS have already been installed on your system. If LAPS or MPTS has not yet been installed, install it now. If you do not have LAPS or MPTS, go to “Manually Installing NDIS Drivers” on page 6-32 to manually install your adapter drivers.

- 1 Select the LAPS or the MPTS program icon from the OS/2 desktop. You can also initiate `LAPS.EXE` or `MPTS.EXE` from the `\IBMCOM` directory on your OS/2 workstation. Select **OK** on the logo panel that is presented.
- 2 Select **Install** on the LAPS or MPTS window.
- 3 The next window will prompt you to enter the source of the network information files (`.NIF`). Verify that the drive and path are correct. If the files are in drive A, verify that the Device Drivers diskette is in drive A and select **OK**.

- 4 Several work-in-progress panels will appear, followed by a message stating that the IBM EtherJet ISA adapter driver has been installed. Select **OK**.
- 5 Select **Configure** in the next window.
- 6 On the Configure panel make sure **LAN adapter and protocols** button is selected. Select **Configure**.
- 7 The panel named LAPS CONFIGURATION appears next (for both LAPS and MPTS). In the Network Adapters list box, select either the IBM EtherJet ISA Adapter or the IBM EtherJet 10BASE-T ISA Adapter and select **Add**.

The adapter name will show up in the Current Configuration list box at the bottom of the panel.

Note: You can edit network parameters for this adapter by selecting it from the Current Configuration list box and then selecting Edit.
- 8 In the Protocols list box, select the protocols you need for the adapter and then select Add after each one you have selected. If you are not certain what protocols you need, then select both IEEE 802.2 and NetBIOS.

Note: You can edit network parameters for each of the protocol drivers by selecting them in the Current Configuration list box and then selecting Edit.
- 9 If you are installing more than one card, repeat the previous two steps for each card you want to configure.
- 10 Select OK from the LAPS Configuration panel when you have finished your selections for your cards.
- 11 Exit the program. You will see update windows for changes to the CONFIG.SYS, STARTUP.CMD, and the PROTOCOL.INI files. Select Exit or OK in each window.
- 12 Shut down and restart your computer for all changes to take effect. Messages will tell you that installation is completing



successfully. If you get error messages or notice problems go to Appendix A, "Testing and Troubleshooting" to resolve these problems.



NDIS2 and NDIS3 MAC Driver Installation for Windows for Workgroups 3.11

Adapter diskette: Device Drivers diskette
Directory: (root)

The NDIS2 or NDIS3 MAC device drivers can be installed in a Microsoft** Windows for Workgroups environment. To do so, perform these steps:

- 1 Log on as an administrator, if required.
- 2 From the Program Manager window double click the Network group icon.
- 3 Double click the **Network Setup** icon in the Network window. The Network Setup window is presented.
- 4 At the bottom of the screen select the **Drivers...** button.
- 5 On the Network Drivers panel, select **Add Adapter**.
- 6 Select **Unlisted or Updated Network Adapter** from the top of the list box in the Add Network Adapter window and then select **OK**.
- 7 You will be prompted for the source of the network driver files. Check that A:\ is specified. Verify that the Device Drivers diskette is in drive A and select **OK**.
- 8 The next window lists adapter drivers. Select **NDIS2** and/or **NDIS3** and then select **OK**.
- 9 You will be returned to the Network Drivers window and your selection should be presented in the Network Drivers list box.

Note: In cases where you are installing more than one adapter, repeat the previous three steps for each additional adapter that you are installing.

Specify the serial number of each adapter to each adapter driver listed by selecting the adapter driver name and then

selecting **Setup**. In the next window select **Adapter Card Serial Number** from the Advanced Network Adapter Settings listbox. Click the **Value** button in the Network Address group box below and enter the serial number of the adapter. Select **Set**, and then select **OK**.

- 10 When you have finished with the Network Drivers window, select **Close**.
- 11 On the Network Setup panel select **OK**.
- 12 Select **Yes** to any update messages that are presented. At one point you will be prompted to insert the Windows for Workgroups application. Insert the disk or CD-ROM.
- 13 When updates are finished, exit and restart Windows for Workgroups for all changes to take effect.
- 14 The indicators that installation is complete and successful are shown here:
 - The LEDs on the adapter indicate normal operation.
 - You are able to log on and communicate with the network.

NDIS3 MAC Driver Installation for Windows NT

Adapter diskette: Device Drivers diskette
 Directory: (root)

Refer to the *Microsoft Windows NT System Guide* for the general procedure for installing network drivers for Windows NT. The main points are summarized here:

Note: During installation, you are required to provide the serial number of the adapter. If you do not know this number, you can use the LANAIDC program to determine the number. Go to “Finding the Adapter Serial Number” on page 5-7 and then return here.

- 1 Boot the LANAID diskette. The command line version of LANAID (LANAIDC) starts automatically.
- 2 See “LANAIDC Command Line Program” on page 5-5. to learn how to input the parameters for LANAIDC.
- 3 When you have finished, remove the LANAID diskette and restart your computer to allow any changes to take effect.
- 4 The indicators that installation is complete and successful are shown here:
 - The LEDs indicate normal operation
 - You are able to log on and communicate with the network.

If you get error messages or have problems go to Appendix A, “Testing and Troubleshooting.”

NDIS3 MAC Driver Installation for Windows 95

Adapter diskette: Device Drivers diskette
Directory: A:\WIN95

Windows 95 Installation diskette
or
Windows 95 CD-ROM

To install NDIS3 MAC drivers on your Windows 95 system, perform the following steps.

- 1 After the adapter is installed in your computer, apply power and boot Windows 95.
- 2 Log on as an administrator, if required.
- 3 If the New Hardware Found window is presented continue with step 4. Otherwise go to step 5.

4

Select **Driver from disk provided by manufacturer**, and then select **OK**.

- a. You will be prompted to insert the manufacturer's diskette. Insert the Device Drivers diskette in drive A. Indicate the source drive and path for the files by clicking on the drop-down list under *Copy manufacturer's files from*. Select **A:\WIN95**, and then select **OK**.
- b. The Select Device Type window is presented. Make sure that the IBM EtherJet ISA Adapters is selected. Select **OK**.
- c. You will be prompted to insert the Windows 95 operating system software. Insert the diskette or CD-ROM and then select **OK**.
- d. Go to step 6 6.

5

- a. When the Windows 95 panel is presented, select the **Start** push button on the bottom left of the screen.

- b. Move the pointer to Settings and then select **Control Panel**.
- c. From the Control Panel window, select the **Network** icon.
- d. Click the **Add** push button.
- e. Click the **Have Disk** push button.
- f. When instructed, insert the Device Drivers diskette in drive A and click **OK**.

6 Select **OK** on any update windows that are presented.

7 Shut down and restart Windows 95 for all changes to take effect.

The indicators that installation is complete are shown here.

- You are able to log on and communicate with the network.
- The LEDs indicate normal operation. See “The LEDs” on page A-1.

If you have problems, go to Appendix A, “Testing and Troubleshooting.” For additional information about driver installation with Windows 95, see your Windows 95 user documentation and online help information.

LAN Manager (DOS or OS/2) NDIS2 MAC Driver Installation

Adapter diskette: Device Drivers diskette
 Directory: MSLANMAN.DOS
 Device Drivers diskette
 Directory: MSLANMAN.OS2

The NDIS MAC device drivers can be installed in a Microsoft LANManager environment for either DOS or OS/2. For operation in this environment, the Device Drivers diskette contains the necessary device driver and other files in these directories:

```
\MSLANMAN.DOS\DRIVERS\ETHERNET\IBMISA  
\MSLANMAN.OS2\DRIVERS\ETHERNET\IBMISA
```

In each directory there is a PROTOCOL.INI file that contains the configuration parameters and an IBMEINDI.NIF file with information about each parameter.

Other files named IBMEINDI.NIF are located in a separate directory for each environment. These are used by the Microsoft LANManager Setup program, and its contents differ from those of the IBMEINDI.NIF files mentioned in the preceding paragraph.

The DOS installation network information file is located in the
\MSLANMAN.DOS\DRIVERS\NIF
directory on the device driver diskette.

The OS/2 installation network information file is located in the
\MSLANMAN.OS2\DRIVERS\NIF
directory on the device driver diskette.

To install the adapter NDIS MAC device drivers, follow the instructions in the *Microsoft LANManager Installation and Configuration Guide* for using the LANManager Setup program. When you get to the step to add a network device driver configuration, select the **Other Driver** option from the Network Adapter Drivers panel. When prompted, insert the device driver diskette in drive A, and press **Enter**.

NDIS 2.01 for Artisoft LANtastic

Adapter diskette: Device Drivers diskette
Directory: LANTASTI

1. If Artisoft** LANtastic** 6.0 is not already installed on your computer, use the DOS MD command to create a subdirectory called LANTASTI on the device where LANtastic is to be installed.
2. Insert the LANtastic 6.0 installation diskette in drive A. At the DOS prompt, enter **a:\install**.
3. Follow the instructions on the installation panels. Refer to the LANtastic manual for help in answering prompts. In addition, you will need the following information during installation:
 - The default name for the directory where LANtastic is to be installed is LANTASTI.
 - Select **LANtastic features**.
 - ON the Select Network Adapter panel, select **NDIS Support for Network Adapters**.
 - When prompted to insert the manufacturer's diskette, insert the DEVICE DRIVERS diskette.
 - Select **OK to perform the installation**.
 - Insert the LANtastic diskettes when prompted.
4. After the installation has completed, restart the computer to load the NDIS driver and the protocol driver.

If NDIS 2.01 driver error messages are displayed or you have problems using the adapter go to Appendix A, "Testing and Troubleshooting" on page A-1.

Installing NDIS2 MAC Drivers Using Other Installation Programs

Adapter diskette:	Device Drivers diskette Directory: DOS
Other OS/2 workstations	Device Drivers diskette Directory: (root)

If your network operating system or network application provides an installation program that can be used to install an NDIS adapter driver and an NDIS-compliant protocol driver, refer to that product's documentation for instructions on the use of the program to install the NDIS MAC driver (IBMEINDI.DOS or IBMEINDI.OS2) and the protocol driver. Microsoft Windows for Workgroups is an example of a product that provides driver installation programs.

- 1** Reboot the workstation to load the drivers. Look for messages that indicate that the drivers have been installed.
- 2** If the messages indicate that the drivers have been installed, the installation is now complete, and you have finished with this document.
- 3** If error messages have been displayed, or you do not see messages that indicate that the drivers have been installed, refer to the documentation provided with the installation program.

Manually Installing the ODI Client Driver for DOS

Adapter diskette: Device Drivers diskette
Directory: \DOS

You can install the DOS ODI client driver to use the EtherJet ISA Adapter in an existing ODI workstation, such as that provided by the NetWare DOS Requester or by the Novell NetWare DOS ODI Shell. The following steps describe the incorporation of the driver into an existing installation of the NetWare Requester.

- 1 Find the target directory path on the diskette or the hard disk where the NetWare Requester code is installed, for example, C:\NWCLIENT.
- 2 From the \DOS subdirectory on the Device Drivers diskette, copy IBMEINWC.COM to the target directory.
- 3 If the PATH statement in AUTOEXEC.BAT has not already been changed, add the directory path from step 1 to the PATH statement: for example,
PATH=C:\DOS;C:\NWCLIENT
- 4 The NetWare Requester is started with batch commands that can be incorporated into the AUTOEXEC.BAT, called from the AUTOEXEC.BAT or entered manually.

For example, create a batch file, STARTNET.BAT in C:\NWCLIENT, which is invoked from the AUTOEXEC.BAT file and contains the following batch commands:

```
LSL
IBMEINWC.COM
IPXODI
VLM or NETX
```

- 5 To change the IBMEINWC.COM driver parameter default values, edit the NET.CFG file. See the following example or *Novell NetWare Workstation for DOS and MS Windows* for a sample NET.CFG file. Copy the edited NET.CFG file to the

target directory (where the NetWare Requester code is installed).

Link Driver IBMEINWC

; The following are sample ODI keywords for IBMEINWC:

FRAME ETHERNET_802.2

NODE ADDRESS 020000000001

SERIAL 789ABCDE

Note: You can use any DOS text editor to edit the AUTOEXEC.BAT and NET.CFG files.

Table 6-5 on page 6-31 contains the parameters that can be configured at DOS workstations by setting keywords in the NET.CFG file.

Manually Installing the ODI Client Driver for OS/2

Adapter diskette: Device Drivers diskette
Directory: OS2

To install the driver on an OS/2 workstation, perform the following steps:

- 1 Choose a target directory path on the diskette or the hard disk (for example, C:\NETWARE) for installation of the IBMEINWC.OS2 driver and its associated files.
- 2 Copy the IBMEINWC.OS2 file to the target directory.
- 3 Add the following lines to the CONFIG.SYS file (if not already present):

```
DEVICE=C:\NETWARE\LSL.SYS  
RUN=C:\NETWARE\DDAEMON.EXE  
DEVICE=C:\NETWARE\IBMEINWC.OS2  
DEVICE=C:\NETWARE\IPX.SYS
```

Notes:

- a. The Novell NetWare OS/2 support files must be installed before running the OS/2 requester. Refer to *Novell NetWare Requester for OS/2* for more information on how to install the NetWare Requester for OS/2.
 - b. These lines must appear in the order indicated. Refer to *Novell NetWare Requester for OS/2* for more information on editing the CONFIG.SYS file.
- 4 If you need to change any IBMEINWC.OS2 driver parameter values from the defaults, edit the NET.CFG file to change only those parameters.

You can use any text editor to edit the NET.CFG file. Refer to *Novell NetWare Version 3.11 Installation* or the *NetWare 4.0 Workstation for OS/2* for more information about the NET.CFG file. Table 6-5 on page 6-31 contains the parameters that can be configured at OS/2 workstations by setting keywords in the NET.CFG file.

Table 6-5. Configurable IBMEINWC Client Driver Parameters

Parameter	Explanation
NODE ADDRESS	<p>To set a locally administered address for the adapter, type in the local address you want to use. The local address must contain 12 hexadecimal characters, followed immediately by an L. Valid values are x2xxxxxxxxxL, x6xxxxxxxxxL, xAxxxxxxxxxL, or xExxxxxxxxxL. Example:</p> <p>A69876543210L</p> <p>This keyword is specified as NODE ADDRESS in NET.CFG for DOS and OS/2 workstations. See the sample NET.CFG file shown in step 5 on page 6-28.</p> <p>Notes:</p> <ol style="list-style-type: none"> 1. Do not assign the same local address to two or more stations. Severe station communication or network failures can occur when two or more stations are assigned the same address. 2. If you do not assign a locally administered address, the adapter uses the universally administered address (the address encoded in the adapter memory at the factory). The universally administered address appears on a label on the EtherJet ISA Adapter (see Figure 5-1 on page 5-2).
FRAME	<p>This parameter indicates the Ethernet frame type to be used by the LAN driver and network adapter.</p> <p>Default value: Ethernet_802.2 Valid values: Ethernet_802.2, Ethernet_802.3, Ethernet_II, Ethernet_SNAP</p>
SERIAL	<p>This parameter is the 8-digit, hexadecimal serial number of the adapter <i>in double quotes</i>. The SERIAL parameter is required when multiple EtherJet adapters are used in one computer. Serial parameter example:</p> <p>SERIAL 89ABCDEF</p> <p>The adapter serial number can be displayed by the LAN AID program. See "Finding the Adapter Serial Number" on page 5-7.</p>

Manually Installing NDIS Drivers

Adapter diskette:	DOS Workstations	Device Drivers diskette Directory: DOS
	OS/2 Workstations	Device Drivers diskette Directory: root

- 1 Copy the DOS or OS/2 NDIS MAC driver files from the Device Drivers diskette to the directory on the workstation that contains the files for the workstation's network operating system or network application. Those files include an NDIS-compliant protocol driver. Examples of protocol drivers are the IBM LAN Transports IEEE 802.2 NDIS protocol driver (LANDD.OS2), and the IBM TCP/IP Version 2.1 for DOS driver (DOSTCP.SYS).

- For DOS, copy the files from the DOS directory on the Device Drivers diskette.

IBMEINDI.DOS - NDIS DOS driver

IBMEINDI.NIF - DOS network installation file

- For OS/2, copy the following files from the root directory on the Device Drivers diskette:

IBMEINDI.OS2 - NDIS OS/2 driver

IBMEINDI.NIF - OS/2 network installation file

- 2 Edit the CONFIG.SYS file in the root directory. Add a device statement to load the NDIS MAC driver or, if you are using multiple EtherJet ISA Adapters, (see "Supporting Multiple Adapters with NDIS Drivers" on page 6-34). Place that statement after the Device statement for the Protocol Manager (PROTMAN.DOS or PROTMAN.OS2).

For DOS,

```
DEVICE=C:\ ..path.. \IBMEINDI.DOS
```

For OS/2,

```
DEVICE=C:\ ..path.. \IBMEINDI.OS2
```

Verify that the DOS CONFIG.SYS file does not contain the following statement:

STACKS = 0,0

Use the workstation's default allocation as a minimum value.

- 3 Locate the PROTOCOL.INI file. The file is in the path specified after the /i: parameter in the Protocol Manager (PROTMAN.DOS or PROTMAN.OS2) statement in the CONFIG.SYS file. If there is no /i: parameter in the Protocol Manager statement, check the LANMAN directory for the PROTOCOL.INI file.

Edit the PROTOCOL.INI file. See the following examples of PROTOCOL.INI files for DOS and OS/2. See the following table for explanations of the PROTOCOL.INI parameters supported by the NDIS MAC drivers.

For DOS and OS/2

```
[IBMEINDI_MOD]
Drivername = IBMEIND$
```

You must bind the protocol drivers to the NDIS MAC device driver. Edit the BINDINGS= statement of those protocol drivers. For DOS and OS/2:

```
[A_PROTOCOL_DRIVER]
Bindings = IBMEINDI_MOD
```

Table 6-6 (Page 1 of 2). Keyword Parameters for the Adapter PROTOCOL.INI File

Keyword Parameter	Description
NODE ADDRESS	Use this parameter to specify a locally administered address for the EtherJet ISA Adapter. The adapter can be known on the network by its universally administered address (encoded in the adapter at the factory) or by a locally administered address (assigned by the user). The value of this parameter is a hexadecimal string of 12 digits. For example: nodeaddress="08005ACA0080" The universally administered address appears on a label on the adapter. See Figure 5-1 on page 5-2.

Table 6-6 (Page 2 of 2). Keyword Parameters for the Adapter
 PROTOCOL.INI File

Keyword Parameter	Description
SERAIL	<p>This parameter is the 8-digit, hexadecimal serial number of the adapter <i>in double quotes</i>. The SERIAL parameter is required when multiple EtherJet adapters are used in one computer. Serial parameter example:</p> <pre>SERIAL="89ABCDEF"</pre> <p>Note the double quotes. The adapter serial number can be displayed by the LAN Aid program. See "Finding the Adapter Serial Number" on page 5-7.</p>

Supporting Multiple Adapters with NDIS Drivers

When multiple adapters are installed in the same workstation, there must be one `DEVICE=C:\..path..\statement` in the CONFIG.SYS file for each EtherJet ISA Adapter in the workstation and one NDIS MAC device driver section in PROTOCOL.INI for each adapter.

CONFIG.SYS:

For DOS:

```
DEVICE=C:\..path..\IBMEINDI.DOS
DEVICE=C:\..path..\IBMEINDI.DOS
```

For OS/2:

```
DEVICE=C:\..path..\IBMEINDI.OS2
DEVICE=C:\..path..\IBMEINDI.OS2
```

PROTOCOL.INI:

For DOS and OS/2

```
[IBMEINDI_MOD]
Drivername = IBMEIND$
SERIAL = "01234567"
```

```
[IBMEINDI2_MOD]
Drivername = IBMEIN2$
SERIAL = "01234567"
```

```
[A_PROTOCOL_DRIVER]
Bindings = IBMEINDI_MOD, IBMEINDI2_MOD
```



Chapter 7. IBM LAN Client MPS

This chapter describes IBM LAN Client MPS and tells you how to install it using LAN AID 2.0.

About IBM LAN Client MPS

IBM LAN Client MPS prevents excessive consumption of DOS conventional memory in DOS-based computers by drivers and protocol stacks. Now, IBM's LAN adapter drivers and protocol stacks no longer require large amounts of DOS memory below 1 MB.

In addition, IBM LAN Client MPS provides support using one adapter-specific LAN device driver instead of two different kinds of drivers for your clients and servers. You select the appropriate device drivers and protocol stacks for your computer. The correct modules are automatically loaded, based on the options you select. IBM LAN Client MPS provides support for the following protocols:

- For DOS 5.0 or higher:
 - NetWare Client-32 (IPX/SPX)
 - IEEE 802.2
 - DOS LAN Services
- For Windows 3.1:
 - NetWare Client-32 (IPX/SPX)
 - IEEE 802.2
 - TCP/IP
 - DOS LAN Services
- For Windows for Workgroups 3.11:
 - NetWare Client-32 (IPX/SPX)
 - IEEE 802.2
 - TCP/IP
 - DOS LAN Services

IBM LAN Client MPS Features

- As little as 2 KB conventional memory required.
- Protocol NLMs

These are dynamically loadable and unloadable modules that operate in 32-bit protect mode and implement the various protocol functions.

Supported protocols include 802.2, IPX/SPX, TCP/IP, and NetBIOS.

- New Novell NetWare Client-32 for DOS/Windows
 - 32-bit protect mode client
 - Automatically reconnects an entire network environment, including open files
 - Enhanced cache (large, configurable network cache)
 - Enhanced native installation and configuration utilities
- Provides backwards compatibility for existing DOS 802.2 and NetBIOS applications
- Uses NET.CFG file, consistent with other products
- Concurrent multiple frame types and protocols
- Winsock 1.1 support for TCP/IP

Note: Memory consumption does not increase when you combine multiple protocols.

Installation of IBM LAN Client MPS Using LANAID 2.0

Installing IBM LAN Client MPS and the Protocol Drivers

1. Start LANAID 2.0 from the LANAID 2.0 diskette or from the directory where you have stored a copy. Remember, LANAID 2.0 must be run from DOS or from a DOS full screen of Windows or OS/2.
2. The first panel is presented with the MAC Address at the top and three push buttons in the center. Select the **Software** push button.
3. In the drop-down list at the top of this panel, display the list of operating systems by clicking on the down arrow at the right. Highlight your choice of operating system with a single click. The default is DOS/Windows.

To install IBM LAN Client MPS using LANAID 2.0, the only valid choices are:

- DOS with Windows 3.10 or higher
 - DOS (without Windows)
 - Windows for Workgroups v3.11
4. If you have chosen an operating system that works with IBM LAN Client MPS, a list of software options is presented in the center of the panel. Select **IBM LAN Client MPS Install**.

At this time the Express and the Custom push buttons are active. You can choose Express to have the LANAID program install IBM LAN Client MPS using the defaults provided for your adapter type and operating system.

If you choose Express the installation of IBM LAN Client MPS will be completed automatically, with all default values selected. All protocol stacks are loaded.

If you want to customize parameters for your IBM LAN Client MPS installation, select **Custom**.

The IBM LAN Client MPS Install panel displays a selection box with the following choices:

NetWare Client-32 (IPX/SPX)

NetWare Client is Novell's version of client software. When you select NetWare Client, you are asked for the directory in which it is to be installed, whether to update CONFIG.SYS and AUTOEXEC.BAT (default is yes), and for the name of the Windows directory.

DOS LAN Services (DLS)

DLS is the DOS client software for IBM LAN servers. When you select DLS you are asked for the following:

- Machine ID
- User Name
- Domain Name
- Full, Basic, or Virtual Redirector

When DLS is selected, NetBIOS and 802.2 are automatically selected as well.

NetBIOS (Network Basic I/O System)

When you select NetBIOS, you are given an opportunity to change the values for Station, Session, Commands, and Names. See "NetBIOS Device Driver Parameters" on page 7-5. When you select NetBIOS, 802.2 is selected automatically.

802.2

Choose 802.2 when you are using the IEEE 802.2 protocol on your LAN.

When you select 802.2 you are asked whether to force Primary (Adapter 0) or Alternate (Adapter 1). If you do not force a selection, then the adapters are assigned in the order in which their drivers are loaded. If only one 802.2 adapter is present, it is Primary. When a second is added, it is Alternate. With this option you can force the first adapter to Alternate when there is only one, or you can make the the second adapter Primary and the first Alternate. *IBM LAN Client MPS supports a maximum of two adapters.*

TCP/IP (Transmission Control Program/Internet Protocol)

Choose TCP/IP when you are using the TCP/IP protocol on your network.

When you select TCP/IP, you are required to select a frame type. You can optionally choose a Local IP Address and Default Gateway. The Local Subnet Mask is set to 255.255.255.0 by default. You can change it by typing in a new value and selecting **OK**.

You cannot select both DLS and NetWare Client; however, all other combinations are accepted. Some options are selected automatically, based on your other choice. If you select NetBIOS, then 802.2 is selected automatically. If you choose DLS, then NetBIOS and 802.2 are selected for you.

The push buttons on this panel are Info, Cancel, Help, and Continue. To get information about the options presented, use the Info push button.

When you have made your selections, press the **Continue** push button. The options that you have selected will be installed automatically. When LAN AID is finished, the main panel is displayed and your installation is complete.

NetBIOS Device Driver Parameters

You can elect to use the default values provided or you can change them within the limits described. Some parameters are not included in the installation process. To change the default values for the remaining parameters, you must edit the NETBAPI.COM file. Most users will not need to change any of these parameters.

NetBIOS parameters that are included in the installation process, as laid out in the NETBAPI.COM file.

st = <nnn> STATIONS range=0 to 254 default=16 Maximum number of NetBIOS interface link stations that can be defined. If set too high, the adapter fails to open. If other than the default value is used, then CLOSE.ON.RESET must be set to YES.

s = <nnn> SESSIONS range=0 to 254 default=16 Maximum NetBIOS interface device driver sessions that can be defined. Must be equal to or greater than the number of stations. If set too high, the adapter fails to open.

c = <nnn> COMMANDS range=0 to 255 default=12
Maximum NetBIOS interface commands that can be outstanding at one time. If set too high, the adapter fails to open.

n = <nnn> NAMES range=0 to 254 default=17 Maximum NetBIOS interface driver names that can be defined.

Other NetBIOS Parameters

NetBIOS Parameters that are not included in the installation process are listed here. To change the default values for these parameters, you must edit NETBAPI.COM.

anr = y/n ADAP.ADD.NOT.REVERSED Y or N default=N

dg = y/n DATAGRAM.MAX Y or N default=N Causes the maximum length datagram transmitted by the NetBIOS interface driver to be based on the size of the transmit buffer of data hold buffer.

dt = <n> DHB NUMBER range=0 to 9 default= varies with adapter The number of DHBs allocated by the adapter.

ds = <nnnn> DHB.SIZE range=0, 200 to 17960 default= varies with adapter The size of the adapter transmit buffers.

es = <nn> EXTRA.SAPS range=0 to 99 default=0 The number of additional SAPs requested by NetBIOS.

est = <nnnn> EXTRA.STATIONS range=0 to 245 default=0
The number of additional link stations requested by NetBIOS.

mi = <n> DLC.MAXIN range=0 to 9 default=1 The number of I-frames received before sending an acknowledgment. Maxin must always be less than maxout.

mo = <n> DLC.MAXOUT range=0 to 9 default=2 The number of I-frames sent before waiting for an acknowledgment. Maxout must always be less than maxin.

r = <nnnn> RECEIVE.BUFFER.SIZE 0 to 9999 default= varies with adapter The size of receive buffers for the adapter.

- ra = <n> RING.ACCESS range=0 to 3 default=0** This adapter's ring access priority for device driver interface messages. 0 is the lowest priority, and 3 is the highest.
- rc = <nnn> DLC.RETRY.COUNT range=0 TO 255 default=8**
The number of link retries to be made by the LLC code.
- rdc = y/n REMOTE.DIAGRAM.CONTROL Y or N default=N**
Indicates whether SEND DATAGRAMS uses the RND function.
- rnd = <nnn> REMOTE.NAME.DIRECTORY range=0 to 255 default=0** The number of remote names that can be saved by the local node.
- tc = <nn> TRANSMIT.COUNT range=0 to 10 default=6** The number of times that queries are transmitted.
- tl = <nn> DLC.TI range=0 TO 10 default=10** Time to wait in inactive state for an acknowledgment.
- | | |
|---------------|----------------|
| 1 = 1-2 sec | 2 = 2-3 sec |
| 3 = 3-4 sec | 4 = 4-5 sec |
| 5 = 5-6 sec | 6 = 5-10 sec |
| 7 = 10-15 sec | 8 = 15-20 sec |
| 9 = 20-25 sec | 10 = 25-30 sec |
- tt = <nn> TRANSMIT.TIMEOUT range=0 to 20 default=1** Time between transmission of queries in 1/2 second increments. 1 = 0.5 second.
- t1 = <nn> DLC.T1 range=0 TO 10 default=5** Time to wait for an acknowledgment before retransmitting LL frame. The range is from 0.2 seconds to 6 seconds, and the default is 1 second.
- | | |
|-----------------|------------------|
| 1 = 0.2-0.4 sec | 2 = 0.4-0.6 sec |
| 3 = 0.6-0.6 sec | 4 = 0.8-1.0 sec |
| 5 = 1.0-1.2 sec | 6 = 1.0-2.0 sec |
| 7 = 2.0-3.0 sec | 8 = 3.0-4.0 sec |
| 9 = 4.0-5.0 sec | 10 = 5.0-6.0 sec |
- t2 = <nn> DLC.T2 range=0 TO 11 default = 2** Maximum delay before sending an acknowledgment. The range is from 0.04 to 2.4 seconds, and the default is 0.1 second.



1 = 0.04-0.08 sec	2 = 0.08-0.12 sec
3 = 0.12-0.16 sec	4 = 0.16-0.20 sec
5 = 0.20-0.24 sec	6 = 0.40-0.80 sec
7 = 0.8-1.2 sec	8 = 1.2-1.6 sec
9 = 1.6-2.0 sec	10 = 2.0-2.4 sec
11 = disabled	



Appendix A. Testing and Troubleshooting

This appendix provides information to help you solve problems with your EtherJet ISA Adapter or its installation.

The LEDs

Two LEDs are visible on the adapter.

When the green LED is **on** (lit) the integrity of the attached twisted-pair segment is good. This applies **only** to 10BASE-T media. The green LED has no significance for 10BASE2 or AUI.

When the amber LED is **on** there is traffic on the network.

Testing the Adapter

EtherJet ISA Adapter Diagnostics

Diagnostics for the EtherJet ISA Adapter and the EtherJet 10BASE-T ISA Adapter are contained in LANAIID.

1. Begin on a DOS full screen or a DOS full screen session of Windows or OS/2. Go to the directory where LANAIID is installed, and then enter **LANAIID**.
2. When the main options panel is presented, select the **DIAGNOSTICS** push button.
3. The diagnostic procedure is performed automatically.

A Diagnostics window with the results of the diagnostics is displayed. This window displays the adapter type, MAC address, Serial Number, results (Pass/Fail/Disabled) of the individual adapter tests, and a final message: **Diagnostics Passed** or **Diagnostics Failed**.

Getting Help

If you have run adapter tests and are still having trouble with the adapter, contact IBM.

To obtain service for the adapter, contact your reseller or contact IBM. In the United States, call IBM at 1-800-426-7299 or, in Canada, 1-800-565-3344. You might be required to present proof of purchase. For more information, see "Warranty Service" in Appendix B of this publication.

Also, the IBM Bulletin Board System provides modem access to drivers and diskette images free of charge 24 hours per day. For more information on this service, see "IBM Bulletin Board System."

IBM EtherJet ISA Adapter Support

New diskette images for your EtherJet ISA Adapter can be downloaded from IBM at the following World Wide Web address:

[HTTP://WWW.RALEIGH.IBM.COM/NETPROD.HTML](http://www.raleigh.ibm.com/netprod.html)

Another option:

Anonymous ftp to [lansupport.raleigh.ibm.com](ftp://lansupport.raleigh.ibm.com). On a web browser: <http://www.raleigh.ibm.com/>. Select **Resources**, then **Network Environment Support FTP Server**, then directories [pub/products/lanprods](ftp://pub/products/lanprods).

IBM Bulletin Board System

The IBM Bulletin Board System (BBS) contains all diskette images that can be downloaded. Every driver downloaded comes with its own terms and conditions. The drivers and NIF files are available free of charge. The BBS is available 24 hours per day at:

- United States (919) 517-0001
- Vancouver (604) 664-6464
- Toronto (416) 946-4244
- Montreal (514) 938-3022
- Winnipeg (204) 934-2798

- Markham (905) 316-4255
- Halifax (902) 420-0300

The bulletin board can also be reached using anonymous FTP at address FTP.PCCO.IBM.COM. The World Wide Web address is <http://ftp.pcco.ibm.com>. On the IBM Personal Computers home page, select **File Library** and then **Network Support Files**.

Requirements for the asynchronous electronic connection to the Bulletin Board are:

- A modem that supports 1200 baud or more
- Communications software capable of supporting XMODEM file transfer protocols
- A switched telephone line

Make sure that your modem is set to 8 data bits, 1 stop bit, no parity, and a standard transmission speed from 1200 to 9600 baud.

Note: If you plan to download a device driver, you should make certain that you choose the latest version available.



Appendix B. Installation Return Codes

- 01** Insufficient disk space exists to complete installation
- 02** At least one of the following files is write-protected
- 03** These files must be unprotected for installation to succeed
- 04** Insufficient files can be opened in order to complete installation
- 05** No Auto 16/4 ISA Adapters found in this computer
- 06** No LAN adapters found in this computer
- 07** No valid configuration found, restoring original configuration
- 08** IO address in conflict
- 09** Interrupt level in conflict
- 10** RAM address in conflict
- 11** ROM address in conflict
- 12** 8-bit adapter bus width set for 16-bit machine
- 13** Bus width in conflict
- 14** Store failed, restoring to original configuration
- 15** Invalid IO address, parameter ignored
- 16** Invalid interrupt level, parameter ignored
- 17** Invalid ROM address, parameter ignored
- 18** Invalid RAM address, parameter ignored
- 19** Invalid RAM size, parameter ignored
- 20** Invalid NetWare directory
- 21** Invalid Windows directory
- 22** Invalid maximum frame size, parameter ignored
- 23** Invalid node address, parameter ignored



- 24 Creating
- 25 Altering
- 26 Directory
- 27 Copying
- 28 Error Installing
- 29 Error Installing, Out of memory
- 30 Error Installing, Cannot write
- 31 Error Installing, Cannot unpack
- 32 Error Installing, Cannot copy
- 33 Restoring modified files
- 34 Installation failed
- 35 - 39 Severe error- cannot restore updated files
- 40 Installing Novell NetWare requester
- 51 Installing Windows support for Novell NetWare requester
- 52 Insufficient disk space to install Novell NetWare requester
- 53 Insufficient disk space to install Windows support for Novell NetWare
- 54 Another network operating system may be loaded on this machine
- 55 Log file could not be opened
- 56 This may cause problems with NetWare
- 57 ?? files installed
- 58 Uncommenting the following statement will enable NetWare. Please be certain
- 59 you have reviewed any warning messages in CONFIG.SYS and AUTOEXEC.BAT.
- 60 Files CONFIG.SYS and AUTOEXEC.BAT will need to be altered to start NetWare
- 61 Logging installation to

- 62 Installation logged to
- 63 bytes of disk space required
- 64 NIOS removal is complete
- 65 NIOS removal failed

ODI Messages

The following messages can occur during ODI driver installation. In these messages:

- x = C refers to Client
- x = S refers to Server
- yy = DOS refers to the DOS Client
- yy = OS/2 refers to the OS/2 Client
- yy = NW refers to the NetWare Server

For example, IBMEINWC-DOS-100 refers to the DOS client.

IBMEINWx-yy-100 The IBM EtherJet ISA Adapter cannot be found

The device driver was unable to locate the adapter in the system. There might be a resource conflict if the adapter was configured with Plug and Play disabled. Check the adapter configuration.

IBMEINWx-yy-101 The IBM EtherJet ISA Adapter was unable to initialize.

Hardware error. Perform diagnostics.

IBMEINWx-yy-102 The IBM EtherJet ISA Adapter could not be reset.

Hardware error. Perform diagnostics.

IBMEINWx-yy-103 The IBM EtherJet ISA Adapter serial number is missing or incorrect.

If multiple adapters are present in the computer, the serial number must be specified in the NET.CFG file or on the LOAD command line. Use LANAIID to get the serial numbers of each adapter.

IBMEINWx-yy-104 The IBM EtherJet ISA Adapter EEPROM is faulty or not present.

Hardware error. Perform diagnostics.

IBMEINWx-yy-105 The IBM EtherJet ISA Adapter failed the loopback test.

The adapter was unable to transmit and receive a frame during initial testing. Check the configuration. Possible hardware error.

IBMEINWx-yy-106 The IBM EtherJet ISA Adapter is configured for Play and Play on a nonPlug and Play machine. No resources have been assigned to the adapter because the host system is not Plug and Play capable. The adapter must be reconfigured as nonPlug and Play, using LANAIID.

IBMEINWx-yy-107 The IBM EtherJet ISA Adapter failed the media test.

The cable was not detected. Plug the cable into the adapter and restart.

IBMEINWx-yy-110 The IBM EtherJet ISA Adapter RAM failed the memory test.

Hardware error. Try a second time. If this test fails again call IBM support.



Installation Problems?

If you are experiencing problems with your installation procedure, and would like a new device driver diskette image, you can download it from IBM. See "IBM Bulletin Board System" on page A-2 for details.





Appendix C. Product Warranty and Notices

This appendix contains the product warranty, notices, and trademarks.

Product Warranty



International Business Machines Corporation Armonk, NY 10504

Statement of Limited Warranty

The warranties provided by IBM in this Statement of Limited Warranty apply only to Machines you originally purchase for your use, and not for resale, from IBM or an IBM authorized reseller. The term "Machine" means an IBM machine, its features, conversions, upgrades, elements, or accessories, or any combination of them. Machines are subject to these terms only if purchased in the United States or Puerto Rico, or Canada, and located in the country of purchase. If you have any questions, contact IBM or your reseller.

Machine EtherJet ISA Adapter
EtherJet 10BASE-T ISA Adapter

Warranty Period* Lifetime

**Elements and accessories are warranted for three months. Contact your place of purchase for warranty service information.*

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Each Machine is manufactured from new parts, or new and serviceable used parts (which perform like new parts). In some cases, the Machine may not be new and may have been previously installed. Regardless of the Machine's production status, IBM's warranty terms apply.

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IBM warrants that each Machine 1) is free from defects in materials and workmanship and 2) conforms to IBM's Official Published Specifications. IBM calculates the expiration of the warranty period from the Machine's Date of Installation. The date on your receipt is the Date of Installation, unless IBM or your reseller informs you otherwise.

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To obtain warranty service for the Machine, you should contact your reseller or call IBM. In the United States, call IBM at **1-800-426-7299**. In Canada, call IBM at **1-800-565-3344**. You may be required to present proof of purchase.

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Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to



radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult an IBM authorized dealer or service representative for help.

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. Proper cables and connectors are available from IBM authorized dealers. IBM is not responsible for any radio or television interference caused by using other than recommended cables and connectors or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Industry Canada Class B Emission Compliance Statement

This Class B digital apparatus meets the requirements of the Canadian Interference-Causing Equipment Regulations.

Avis de conformité aux normes d'Industrie Canada

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

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When used near a radio or TV receiver, it may become the cause of radio interference.

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List of Abbreviations

API	Application program interface	MAC	Media access control
AUI	Attachment unit interface	MB	Megabyte
BNC	bayonet Niell-Concelman	Mbps	Million bits per second
DLC	Data link control	MC	Micro Channel
DLS	DOS LAN Services	MPS	Multiple Protocol Support for DOS and Windows
DMA	Direct memory access	MSB	Most Significant Bit
DOS	Disk Operating System	NDIS	Network Definition Interface Specification
GUI	Graphical user interface	NetBIOS	Network Basic I/O System
IEEE	Institute of Electrical and Electronics Engineers	NLM	NetWare loadable module
IPX	Internetwork Packet eXchange	NIOS	NetWare I/O Subsystem
ISA	Industry Standard Adapter	ODI	Open Data-link Interface
KB	Kilobytes	OS/2	Operating System/2
LAN	Local area network	PROM	Programmable Read Only Memory
LAPS	LAN Adapter and Protocol Support	RAM	Random Access Memory
LED	Light emitting diode	ROM	Read Only Memory
LLC	Logical Link Control	SNAP	Subnetwork Access Protocol
LSB	Least Significant Bit	SPX	Sequenced Packet eXchange
LSP	LAN Support Program	TCP/IP	Transmission Control Protocol Internet Protocol



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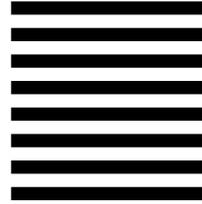


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