STEPS FOR INSTALLING/CONFIGURING THE ADAPTER:

This section lists the steps for installing and configuring your adapter, and
tells where to find specific information. It is important that you perform
the steps in the order indicated.
1. Read "Avoid Configuration Conflicts." Although, for most installations,
   the default factory settings for the Ethernet adapter will not create
   configuration conflicts, it is important that you be aware of the settings
   commonly used by other devices and computer functions.
2. Configure the adapter. Refer to "Configuring the Adapter."
3. If you want to install an optional ROM device (to connect a diskless PC to
   a network, for example), refer to the section "Installing a Boot ROM."
4. Install the adapter in your computer. Refer to the section "Adapter
   Installation."
5. Connect the adapter to thin Ethernet, standard (thick) Ethernet, or
   unshielded twisted pair cable. Refer to the section "Network Inter-
   connection."
6. Configure the software driver. Refer to the section "Software Configura-
   tion Using Setup."
7. Load the network software package.

AVOIDING CONFIGURATION CONFLICTS:
In most cases the adapter's preconfigured jumper settings for I/O base
address, RAM base address, and IRQ level will not conflict with other devices
or functions in your computer. To verify that the preconfigured jumper
settings are satisfactory for your installation, acquaint yourself with the
configuration settings typically used by other devices and computer func-
tions. This will also enable you to change the settings if they are not sat-
isfactory for your installation.

This section provides information on configurations used by other devices and
computer functions. Read the information, and use the System Configuration
Chart in Appendix C to record the configurations of devices and computer
functions in your computer. Refer to this chart when selecting configuration
options for the Ethernet adapter. (The first row lists the Ethernet adapter's
preconfigured settings.)

INPUT/OUTPUT (I/O) BASE ADDRESS:
The Ethernet adapter requires 32 contiguous I/O addresses (20hex). The I/O
base address is used to assign the location of this address space.

Table 1 lists all possible I/O base addresses for your Ethernet adapter in
Column 1. Notice that the range is 200-3E0 (hex). Column 2 lists potentially
conflicting devices and their typical I/O addresses. Use this table as a
guide when selecting an I/O base address for your adapter. If, for example,
you have a Tandy 1000 TL/2 with a SmartDrive (which typically uses I/O base
address 320), select an I/O base address other than 320. Make sure that the
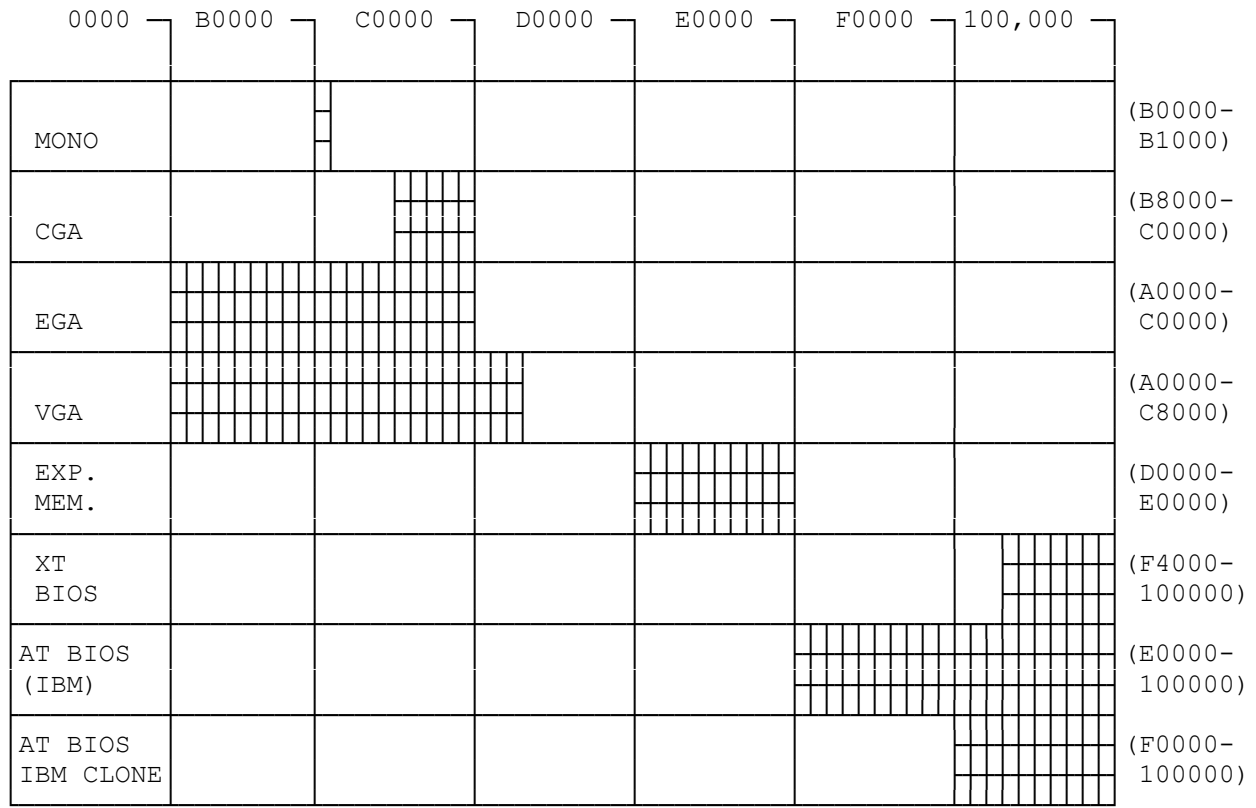address you select is not used by some other device.

All addresses without a description in Column 2 are generally available for
use. Be aware, though, that computers with small built-in LED or LCD displays
(to show disk cylinder data or clock speed) may also use these address
spaces.

RAM BASE ADDRESS:

Refer to Table 2 when selecting a RAM base address. Table 2 shows the RAM address spaces generally used by other devices and computer functions (shaded area). Select a RAM base address that is not being used.

POSSIBLE I/O BASE ADDRESSES	POTENTIALLY CONFLICTING DEVICES AND THEIR TYPICAL I/O ADDRESSES
200	Game Controller/Joystick (200-20F)
	Expansion Unit (210-217)
220	
240	
260	LPT2: (278-27F)
280*	
2A0	
2C0	
2E0	COM4: (2E8-2EF) GPIB-Adapter 0 (2E1)
	COM2: (2F8-2FF) Data Acquisition (2E2-2E3)
300	Prototype Card (300-31F)
	3COM EtherLink factory setting (300-31F)
320	XT Hard Disk Interface (320-32F)
340	
360	LPT1: (378-37F)
380	SLDC/Secondary BI-Sync Interface (380-38C)
3A0	Primary BI-Sync Interface (3A0-3A9)
	Monochrome Display Control (3B0-3BB)
3C0	EGA Display Control (3C0-3CF)
	Color/Graphics Display-CGA (3D0-3DF)
3E0	COM3: (3E8-3EF)
	Floppy Disk Controller (3F0-3F7)
	COM1: (3F8-3FF)
* Factory default for Ethernet adapter.	

RAM USED BY VARIOUS DEVICES

	0000	B0000	C0000	D0000	E0000	F0000	100,000	
MONO		▓						(B0000-B1000)
CGA			▓					(B8000-C0000)
EGA		▓▓▓						(A0000-C0000)
VGA		▓▓▓▓						(A0000-C8000)
EXP. MEM.				▓▓				(D0000-E0000)
XT BIOS							▓	(F4000-100000)
AT BIOS (IBM)					▓▓▓			(E0000-100000)
AT BIOS IBM CLONE						▓		(F0000-100000)

MEMORY MANAGEMENT UTILITY CONFLICTS:
If you are using memory management utilities (for example, QEMM or 386-to-the-Max), it is important that you know how to exclude the Ethernet adapter's RAM address space from your memory management driver. This is necessary because many memory utilities use the area in memory normally used by the Ethernet adapter. The task of excluding the Ethernet adapter's RAM base address space from your memory management driver is usually accomplished by a command line option in the CONFIG.SYS file.

A similar situation exists with programs such as Windows in 386 mode, which maps memory between 640KB and 1MB. Again, the best solution is to exclude the Ethernet adapter's RAM address space from the memory management driver.

IRQ LEVEL:
A unique interrupt (IRQ) level must be assigned to the Ethernet adapter. The configuration options are IRQ 2, 3, 4, 5, 7, 10, 11, and 15.

Some of these options are listed in Column 1 of Table 3. Columns 2 and 3 show the devices and computer functions in an XT computer and in an AT computer, respectively, that are likely to use the IRQ levels shown in Column 1. For example, the hard disk inside an XT is likely to use IRQ 5; whereas the LPT2 port in an AT is likely to use IRQ 5. Therefore, to avoid a conflict, you should not configure the Ethernet adapter to use IRQ 5 if you have a hard disk installed in your XT computer, or if the LPT2 port is being used in your AT computer.

The same principle applies to the other IRQ levels shown in Table 3. Note

that some IRQ levels might be usable for your LAN adapter even though the chart indicates a conflict.

IRQ LEVELS OF COMMON DEVICES:

IRQ	XT	AT
2	EGA/VGA*	EGA/VGA*
3	COM2 or COM4	COM2 or COM4
4	COM1 or COM3	COM1 or COM3
5	HARD DISK	LPT2
7	LPT1	LPT1
10	N/A	UNUSED
11	N/A	UNUSED
15	N/A	UNUSED
* See Text.		

For example, even though EGA and VGA video adapters are installed and potentially can use IRQ2, most applications do not; hence, IRQ2 might be available for use with the Ethernet adapter. Likewise, even though you have a printer installed at LPT1, using IRQ7 might not create a problem. This is because most applications do not use LPT1 with interrupts.

CONFIGURING THE ADAPTER:
The Ethernet adapter has been designed for maximum configuration flexibility using a minimum number of jumpers. This is achieved primarily through the use of the W1 jumper block.

W1 jumper block enables you to choose among three options: two preassigned hardware configuration settings and one setting that enables you to select any valid configuration via the software setup program that comes with the adapter. The setup program provides a variety of additional configuration settings from which to choose.

NOTE: The factory-configured I/O base address associated with the soft jumper setting is 240, and both the RAM base address and the IRQ settings are disabled to avoid conflicts.

In addition to jumper block W1, there is a W2 jumper block. W2 enables you to select memory space for an optional ROM device. See Figure 1 in the "Introduction."

W1:
The W1 jumper block sets the adapter's I/O base address, IRQ level, and on-board shared memory base address (RAM). Table 4 shows the settings associated with the three possible jumper configurations.

If the factory default setting (I/O base address 280, IRQ 10, RAM base ad-

dress D0000-D3FFF) conflicts with the configuration of another board or computer function use the other jumper setting (I/O base address 300-31F, IRQ 10, RAM base address CC000). Most configuration conflicts can be avoided using one of these two choices.

If, however, both hardware settings result in a conflict between the Ethernet adapter and another option board or computer function, you must change the configuration of the other board or computer function or set the Ethernet adapter jumper (W1) to SOFT and run the software setup program.

If neither of the two preconfigured settings is satisfactory (or if you are installing more than two adapters in the same computer), set the jumper to SOFT and run the software setup program to configure the adapter. This will enable you to choose from a variety of different configurations. (Refer to the "Software Configuration Using Setup" section.
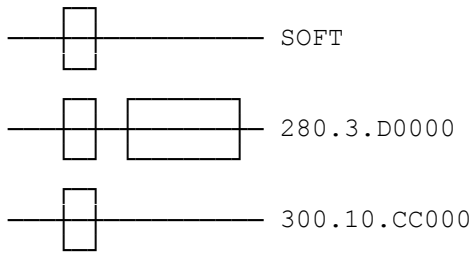
CONFIGURATION SETTINGS W1:

The soft jumper setting is
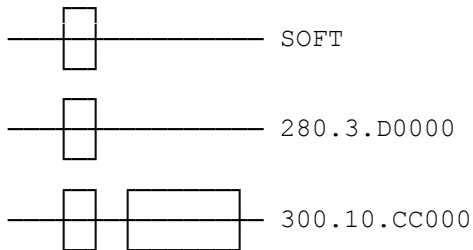used to configure the adapter
using the setup program.   SOFT

(I/O Base Address = 280)
                                                    280.3.D0000

                                                    300.10.CC000
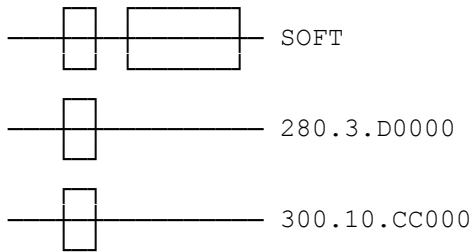
I/O Base Address = 280
IRQ = 3; Enabled   SOFT
RAM Base Address = D0000

                                                    280.3.D0000

                                                    300.10.CC000

I/O Base Address = 300
IRQ = 10; Enabled   SOFT
RAM Base Address = CC000

                                                    280.3.D0000

                                                    300.10.CC000

W2:
The W2 jumper block is used with an optional boot ROM device. (Refer to Table 5 in the "Installing a Boot ROM" section.) The jumper should be set to NONE/ SOFT if you are not using a ROM device. The "Installing a Boot ROM" section provides detailed instructions on inserting and configuring an optional boot ROM.

After you configure the adapter and (if desired) install an optional boot ROM device, you are ready to install the adapter in your computer.

SOFTWARE CONFIGURATION USING SETUP:
If the factory default configuration conflicts with the configuration of
another board or computer function, consider changing the jumper at W1. Refer
to Table 4.

If the values associated with the other preassigned jumper setting also
conflict, set the jumper at W1 to SOFT and run the software setup program to
select a configuration.

This section explains how to use the software setup program. in addition to
the settings associated with the SOFT at W1, the setup program can be used to
change the ROM base address (the setting associated with the SOFT jumper at
W2) and other configuration parameters. See Table 6.

Before running the software setup program, make sure that:
* You have installed the adapter in your computer. Refer to the user's guide
  for instructions on installing expansion adapters.
  NOTE: Always handle the adapter by its edges.
* Network software must not be running on this computer. If network software
  is running on the computer, remove the network software from your
  CONFIG.SYS or AUTOEXEC.BAT file, if necessary. Then, reboot the computer to
  ensure proper functioning of the configuration software.
* If more than one LAN adapter is to be installed, know the identification of
  the adapter you want to configure. If a single adapter is to be installed,
  the setup program will automatically fine it. If there is more than one
  adapter, you must tell the setup program which adapter to configure. Each
  Ethernet adapter can be identified by its 12-character node address (loca-
  ted on the NETWORK ADDRESS label attached to the adapter) or by its I/O
  base address.

After Installing the Ethernet adapter, use the software setup program to
configure the adapter only if:
* neither of the two preconfigured W1 jumper settings is suitable because of
  conflicts with other devices
OR
* you are installing more than two adapters in the same computer, thus
  requiring more than two configurations.
OR
* you wish to configure twisted pair to disable link integrity.

SOFTWARE CONFIGURATION PROCEDURE:
Software changes can be made while the W1 and W2 jumper blocks are set in any
position. The values entered in this way will take effect only when the
jumpers are moved to the SOFT position.

If necessary, you can use the configuration software in one computer to
configure an adapter that will be installed in a second computer, such as a
"diskless" workstation. If you do this, make sure that the adapter's old and
new I/O base addresses do not conflict with any other option board installed
in the computer used for configuration.

Once you install the Ethernet adapter in your computer and your are sure that
the network software is not running on the computer, you are ready to
configure the adapter using the setup program. Use the interactive method to
configure the adapter (where the program prompts you), or use a command line.

If the setup program cannot locate the Ethernet adapter while it is installed

in the computer, move the W1 jumper to another position. If it fails in all
three positions, remove all adapters other than the Ethernet adapter and the
hard drive controller. then, configure the Ethernet adapter and re-install
the other adapters. This technique also works when you install two adapters
and the setup program recognizes only one of them.

Selection between coaxial and twisted pair network interface is automatic.
when connected to a valid twisted pair link, the adapter will switch into
twisted pair interface mode (indicated by "link" LED on). When no valid
twisted pair interface mode (indicated by "link" LED off) the adapter will
switch into coaxial mode.

INTERACTIVE METHOD:
If you want the setup program to prompt you, perform the following steps:
1. Place your software driver diskette in a diskette drive, and change to the
   drive containing the diskette.
2. Type: ezsetup and press ENTER.
3. Follow the instructions displayed on the screen.

NOTE:
* When entering a RAM-Based-Address, use only five digits in the address
  unless more than 1MB of RAM is present and you are placing the RAM Buffer
  above the 1MB boundary.
* Network Connection Option 1 (BNC or 10BaseT) supports both thin Ethernet
  and twisted-pair Ethernet. This is the default. Option 3 is for earlier
  network designs using twisted pair without link integrity, like StarLAN.

COMMAND LINE METHOD:
If you are familiar with EZSETUP and want to skip the interactive prompts,
you can use a command line to change the values associated with the soft set-
ting. The command line consists of three components: the command, EZSETUP,
the adapter identification (required only when more than one adapter is in-
stalled), and the configuration parameters. The adapter identification can be
either the I/O base address or the node address. The command for identifying
the adapter using the node address is /node:x, where x is the adapter's
12-digit node address.

Table 5 provides two examples of properly constructed command lines. Table 5
provides two examples of properly constructed command lines. Table 6 provides
a detailed description of each option.

Table 5.
Example 1   ezsetup /irq:5 /ram:C8000
Example 2   ezsetup /io:240 /newio:280 /irq:5 /ram:C0000 /rom:D0000

Notice that for each example in Table 5, the command ezsetup starts the
setup program, the adapter identification, if specified, tells the system
which adapter is to be configured, and the remaining information tells the
system how to configure the adapter.

In Example 1, the IRQ level is changed to 5 and the RAM base address is
changed to C8000. Notice in Example 1 that the adapter identification is
omitted. This omission is valid when only one adapter is installed in your
computer.

In Example 2, the I/O base address is changed to 280, the IRQ level is chan-
ged to 5, the RAM base address is changed to C0000, and the ROM base address

is changed to D0000. If you omit a configuration parameter from the command
line, the program uses the default. (Refer to table 6.) To obtain a list of
all the commands you can use, type /?.

NOTE: Any combination of upper- and lowercase letters is valid.

Table 6. Configurable Options

```
COMMAND        DESCRIPTION
/?             Displays all setup program commands.
/default       Forces the adapter to the following settings when the jumper is
               set to SOFT: I/O address 240, IRQ 2, RAM base address CC000.
               This command produces the same result as /factory, except that
               IRQ is enabled.
/factory       Forces the adapter to the default, factory-set values for the
               SOFT jumper position: I/O address 240, IRQ 2 (disabled), RAM
               base address CC000.
/io:x          Identifies the current I/O base address of the adapter you want
               to configure. The factory setting for the I/O base address at
               the SOFT jumper location is 240.
/irq:x         Specifies the interrupt level (IRQ). Possible values for x are
               2,3,4,5,7,10,11, or 15. This command line enables the IRQ
               specified.
/link_int:x    Specifies whether link integrity is enabled or disabled where x
               is either e (enabled) or d (disabled).
/netconn:x     Specifies which kind of network connection you want. Possible
               values for x are: 1= Coax/TP; 2= AUI/10BaseT, or 3= StarLAN (no
               link integrity).
/newio:x       Specifies a new I/O base address. Acceptable values for x are
               200,220,240,260,280,2A0,2C0,2E0,300,320,340,360,380,3A0,3C0,
               and 3E0 (hex).
/node:x        Identifies the node address of the adapter you want to
               configure. x is the 12-digit node address printed on the NET-
               WORK ADDRESS label attached to the adapter. This command is an
               alternative to using the /io command to identify the adapter.
/ram:x         Specifies the RAM base address. The parameter x can be any 16KB
               boundary between 80000 and FFC000. Example: A0000. For RAM base
               address above 1MB, six digits (choices) have to be specified.
               Example: 8C0000.
/rom:x         Specifies the base address of the boot ROM. Possible values for
               x are any address between 80000 and FC000. Note: The address
               must be on a boundary of the ROM size.
/romsize:x     Specifies the size of the ROM window in kilobytes. Possible
               values for x are 0 (ROM disabled), 16, 32, and 64.
```

DIAGNOSTICS:
The diagnostic program provided on the software diskette is used to verify
the correct configuration and operation of a LAN adapter board before instal-
ling the network software.

BEFORE INSTALLING THE PROGRAM:
1. Ethernet boards must be on a properly terminated cable. Use a BNC "T"
   connector with two 50-ohm terminators, an AUI loopback connector, or
   connect to a properly functioning 10BaseT concentrator.
2. Turn on the computer, and display the MS-DOS prompt.

Network memory resident (TSR) programs and device drivers should not be load-

ed while the diagnostic program is active, so you might need to temporarily rename your CONFIG.SYS and AUTOEXEC.BAT files. Network software must not be loaded when you run the diagnostic program.

SCREEN PROMPTS:
The following screen options are used throughout the entire diagnostic pro-
  gram menu system.
ENTER=Select: Press ENTER to select the highlighted option.
ESC=Cancel: Press ESC to back up to the previous screen. At the Main Menu,
  press ESC to exit the diagnostic program.
F1=Help: Displays additional information about any item on the menu. To re-
  turn to the menu options, press ESC.
Arrow Keys: Use the arrow keys to move the cursor to the desired location. In
  addition, several other function keys are used with specific menus. These
  keys are described later in this section.

(css 08/03/93)