

**KAL1000™**  
**Local Area Network**

**Installation Manual**

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**SoftNet Communication, Inc.**

*"Communication is the Key."*

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# INTRODUCTION

## Section 1.00 - KAL1000 Local Area Network

The KAL1000 series Local Area Network (LAN) Adapter Cards are designed specifically for the popular personal computers with expansion slots. Adapter cards are available for IBMPC/XT/AT, compatibles and also the Zenith Z100 systems. KAL1000 adapter card is complemented with a CMOS gatearray and dissipates less than one Watt of power. Below is a list of the main features of KAL1000 Local Area Network:

- 2 Mega bits/sec Data Rate
- 300 to 600 Kb/s Data Throughput (15%-30% efficiency)
- Up to 254 Logical Addresses per network
- CSMA/CA/CD/PA with Positive Acknowledge, Buss topology
- Interrupt driven to the host
- Baseband, Manchester encoded, digital PLL clock recovery
- Highly reliable communication with three levels of error detection implemented in hardware;
  - Manchester check on every bit
  - Parity check on each frame (16 bits)
  - CRC check on packets
- Bit error rate computed at  $1.5e-17$
- Operates on standard RG58/U coaxial cable
- Cable length of up to 10,000 feet with repeaters
- Connection to the cable is a simple BNC connector

To install a KAL1000 Local Area Network all nodes must be equipped with an adapter card and the ViaNet software. Each adapter card is supplied with its own ViaNet software package. The transmission medium for the KAL1000 network is RG58/U (or equivalent) 50 Ohm coaxial cable which is

very flexible, inexpensive, shielded and widely available. The connection to the cable is a simple BNC connector which is also inexpensive and widely used in many applications. The KAL1000 adapter uses only four I/O ports and one interrupt line on the system and does not use any DMA channels or other resources.

KAL1000 is a totally digital technology with a unique network access scheme which is a combination of Token Bus and Contention systems where only the token is placed in contention. This type of network access uses the network bandwidth much more efficiently and operates at much higher data throughput which is the real test of performance.

KAL1000 Local Area Network does not need any active or passive hubs, servers, network managers ...etc. To form a minimum network you will need two computers, two adapters with ViaNet software and a piece of RG58/U coaxial cable. Additional nodes are added by installing BNC Tee connectors anywhere along the network.

## Section 1.10 - Minimum System Requirement

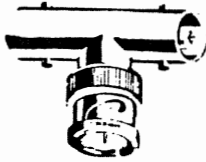
The minimum system requirements is as follows;

- IBM PC/XT/AT or compatible or Zenith Z100/120 system with minimum of 256K bytes of RAM.
- Minimum of one floppy or fixed disk storage device (fixed disk is highly recommended).
- KAL1000 Local Area Network adapter.
- PCDOS or MSDOS 2.00 or later.

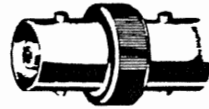
**Warning:** Vianet operating system will require 256K Bytes of memory to boot but will take about 100K bytes from your system's memory. It is highly recommended to equip your system with as much memory as possible.

## Section 1.20 - Network Nodes

There are two types of nodes within the KAL1000 LAN, End Nodes and Middle Nodes. All the nodes are connected by means of coaxial cable and "BNC" connectors (see figure 1) placed along the cable in a linear fashion.



1a. "Tee"



1b. "In-line"



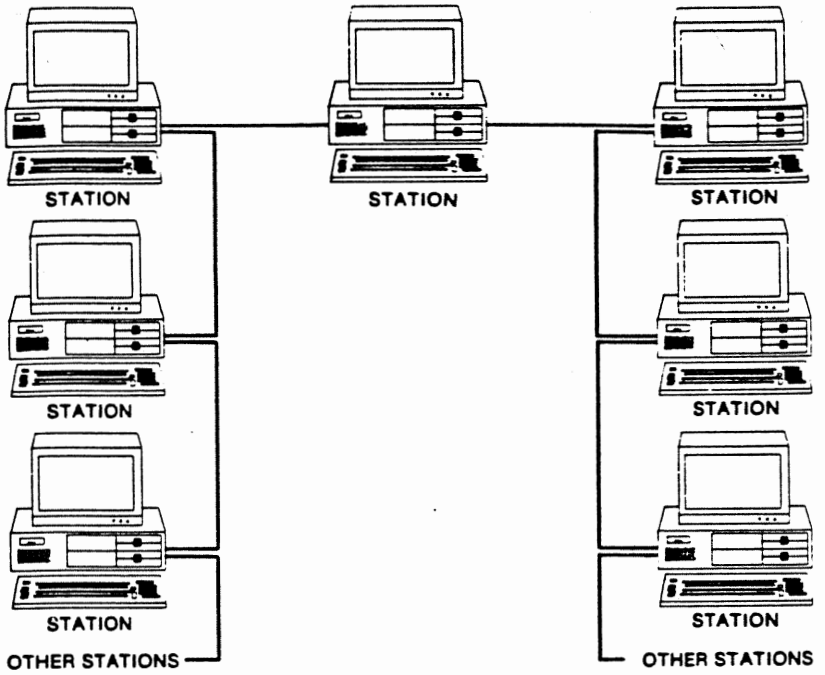
1c. "Male"



1d. "Female"

**FIGURE 1 - BNC Connectors**

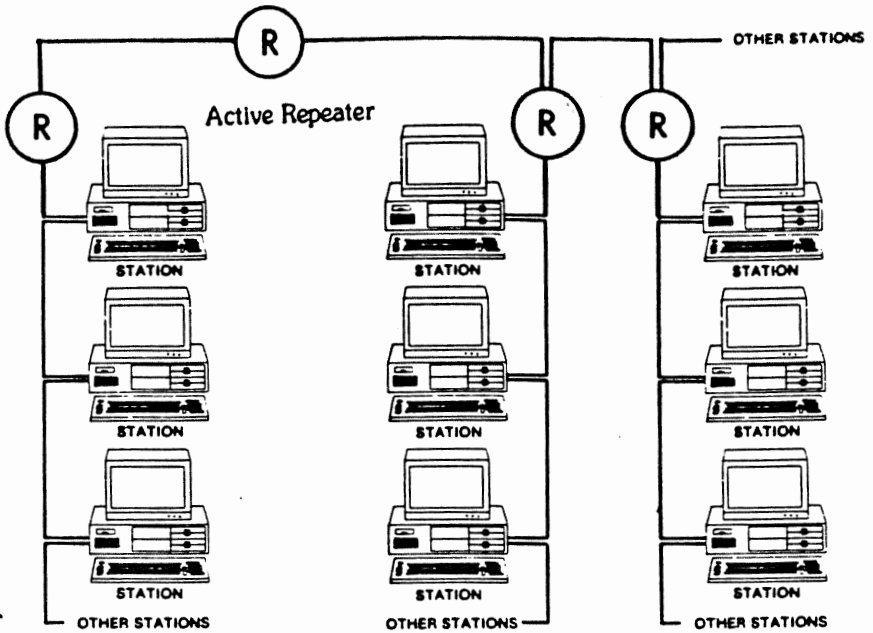
This linear method of connecting network nodes is called "Buss" topology. The Buss topology for networking is efficient in cable usage and is easy to install. Cable segments can be as long as 1200 feet of RG58/U type coax without repeaters (see figure 2a).



**FIGURE 2a - Network Without Repeater**

With repeaters the network can be as long as 10,000 feet (see figure 2b) and can better customize to the layout.





**FIGURE 2b - Network With Repeaters**

To form a network a minimum of two systems is required. These can either be IBM PC, XT, AT or compatibles or Zenith Z100s. (The adapter cards for the Z100 systems are different from the IBM PC type cards but functionally they are identical).

Each workstation must be equipped with a KAL1000 adapter card. No dedicated file server or network manager is required as network software operates in the background in all PC's attached to the network.

# INSTALLATION

## Section 2.00 - Hardware Installation

The very first step in installing a Local Area Network is the cabling requirement. Please read the section concerning the cable installation and connectors carefully before you attempt to install the cable as the majority of problems are experienced during cabling.

Next, the KAL1000 adapter card has to be configured for various options and then installed in the system. The final step in installing the hardware is to run the self diagnostic program on the installed adapter to verify it is operating correctly.

## Section 2.10 - Coaxial Cable and BNC Connectors

Before installing the network cable, carefully evaluate the location of the various PC's that are to become nodes of your network. If additional nodes are to be added to the network it is easier to add these nodes to the end of the network cable. Additional nodes may always be added between two existing nodes by simply installing a new "tee" connector at the appropriate place.

Also make full use of Repeaters and Terminator boxes where appropriate as they will make your installation easier and more flexible. Remember to consider your future needs as well as your requirements today.

The following steps should be considered when installing the coaxial cable:

1. Use RG58/U or equivalent 50 Ohm coaxial cable. This type of cable is readily available in most electronic stores. The cost can be anywhere from 6 cents/foot to 25 cents/foot.
2. Each cable segment is limited to 1200 feet and must have an Active Termination circuit at each end.

There are three ways to terminate the end of your cable.

- I. The End Node jumper on the KAL1000 adapter card enables the termination circuit for that card. When placed at the end of a cable this node must be powered at all times for the termination circuit to operate.
- II. Active Terminator boxes can be placed at each end of the cable to power the network at all times so that there is no need to have any End Nodes.
- III. Active Repeater boxes can also provide termination to your network in addition to other functions they provide. This box also eliminates the need for any End Nodes in the network.

You may use any combination of the above three termination procedures.

3. There are basically two types of BNC connectors available. One is the type that needs soldering equipment and the other is a crimp style connector which is more common today. The BNC crimp connectors also require a crimp tool which is essential if a good contact is to be made. Please use the appropriate tools since the cabling is perhaps the most critical step and one where most people goof. If you can not get the right type of cable your dealer or SoftNet will provide you with your requirements at a reasonable cost.
4. When the cables have been cut and the BNC connectors installed, use an ohmmeter to "buzz" out the cable, make sure of its continuity and verify that there is no short between the braid (ground) and the

center conductor. Also make sure that the connector is on tight and can not be pulled out by hand. The Ohms reading for a 100 foot length of RG58/U is about 1.0 Ohm for the center conductor and about .3 Ohm for the braid.

5. Install "tee" connectors (see figure 1a) as they become needed. Having "tee" connectors on the cable that are unattached to PCs will degrade the network and is not recommended. Unattended "tee" connectors should be replaced by in-line BNC (see figure 1b) connectors.
6. End nodes should be installed with male BNC connectors. Do not have excess attached cable extending beyond the end nodes.
7. The coaxial cable should be placed flat and untwisted along the walls or through dropped ceiling. If it becomes necessary for the cable to cross an area with foot traffic the cable should be protected with a rubber or metal cover designed for such a use. Never place bare cable under carpets or floor mats. Loose cables can cause safety problems for people and also for computers not bolted to desk tops.

## **Section 2.11 - Active Terminator Box (optional)**

The KAL1000 network cable must have Active Termination at both ends. If the termination is to be provided by the adapter card then the End Node jumper must be installed at the two End Nodes. The male BNC connectors at the ends of the cable are used to connect these nodes to the network (see figures 3a & 3b). All other nodes are physically placed between the two End Nodes and are connected to the network via a "tee" BNC connector (see figures 4a & 4b).

In a small office environment the End Nodes can provide termination by remaining on at all times. However, as the network grows in size this becomes an increasingly unmanagable problem. The Active Terminator is a small box that has an active terminator circuit with its own power supply which plugs into any 110 Volt AC outlet. It requires very little power and can be hidden from view very easily. This Active Terminator box replaces the function of the End Nodes by powering the network at all times. When these boxes are installed in the network then all nodes shall be configured to be Middle Nodes.

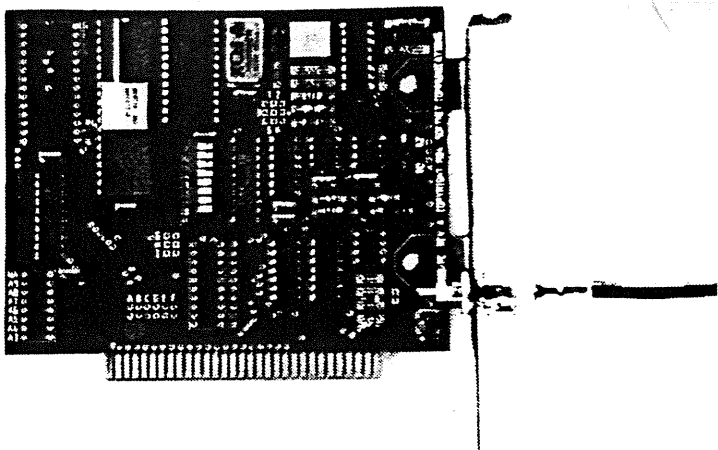


FIGURE 3a - IBMPC/AT End Node

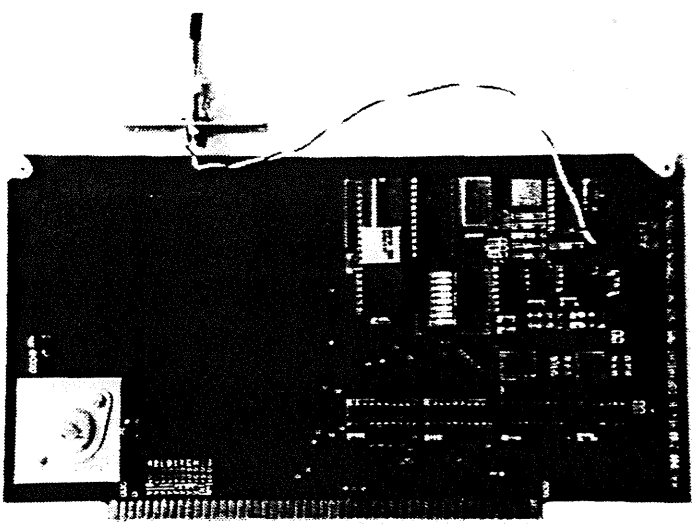


FIGURE 3b - Z100 End Node

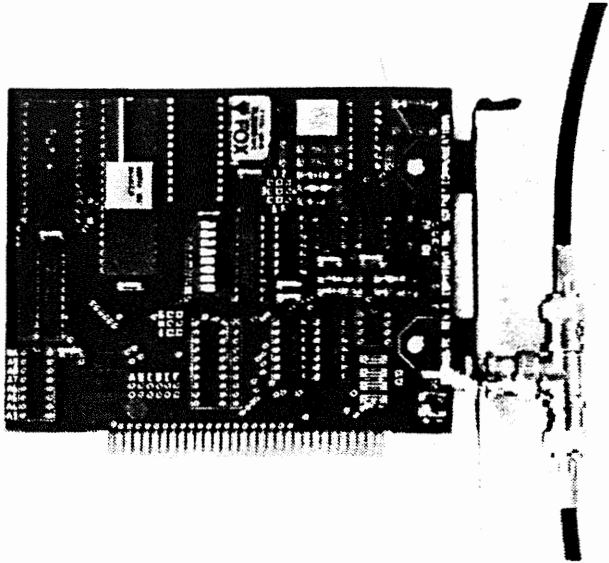


FIGURE 4a - IBMPC/AT Middle Node

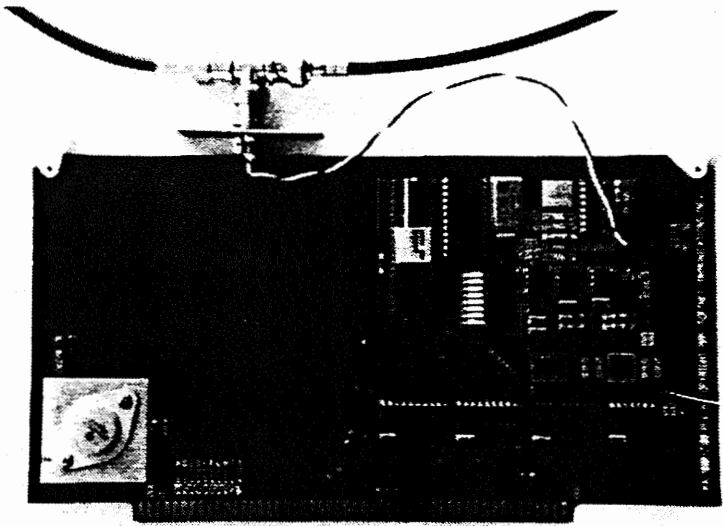


FIGURE 4b - Z100 Middle Node

## **Section 2.12 - Active Repeater Box (optional)**

The Active repeater box has three main functions within the KAL1000 network.

1. The electrical signal on the coaxial cable will degrade with distance and number of taps. The cable length of KAL1000 network (using RG58/U) is limited to 1200 feet per each segment and the number of taps is limited to 32 per segment. Each cable segment must use an Active Repeater to amplify the signal.
2. The Active Repeater also has an ground isolation circuitry built in so that the chance for an electrical shock due to differential in ground potential is eliminated. In modern buildings there is usually not much of a difference in ground potential within an office or its adjacent offices. However, there can be significant potential for a shock hazard when longer distances are involved. In some older buildings there is even a large ground potential between walls in the same room because of the way the older buildings were grounded to earth ground. It is highly advisable to carefully inspect your installation and whenever in doubt use an Active Repeater to isolate any potential shock hazard.
3. The third function of the Active Repeater is that it has the equivalent of the Active Terminator box built in. You will not need an Active Terminator box at the end of a cable if you are going to use an Active Repeater.

The Active Repeater is house in a small box with its own power supply which plugs into any 110 Volt AC outlet. It requires very little power and can be hidden from view very easily. When these boxes are installed in the network then



all nodes in that cable segment shall be configured to be Middle Nodes.

## Section 2.20 - Adapter Card Configuration

The KAL1000 adapter card can be configured to use any of the optional resources available in the IBMPC or Z100 I/O system. The only selections are for Adapter Card End Node jumper, hardware interrupt and the Node ID switch which are detailed in the next sections.

You can even use a hardware interrupt other than those offered but it requires addition of berg pins to the adapter card. Please refer to the KAL1000 Technical Reference manual for additional information. If you choose to use an interrupt other than the default please refer to the KAL1000 Driver Parameter section for changes to the Driver Parameter.

The KAL1000 adapter card also uses four consecutive I/O ports (38C-38F for IBMPC & 7C-7F for Z100) in the system which is fixed but can be altered if needed. Please refer to the KAL1000 Technical Reference manual for additional information on changing the port addresses.

**Warning:** Please remember to handle boards by their edges to minimize possible damage to adapter card due to static discharge. Touching the metal covering on your PC before handling the adapter cards will discharge any static electricity from your body and minimize any possible damage to the adapter cards.

## Section 2.21 - End Node Jumper

The KAL1000 network cable must have active termination at both ends. There is an active termination circuit on the adapter card that can be selected by use of a jumper. When this jumper is installed the node is designated as an End Node. The male BNC connectors at the ends of the cable are used to connect these nodes to the network (see figures 3a & 3b). KAL1000 adapter cards are shipped with End Node jumper installed. If Active Terminator or Active Repeater boxes are installed in your network then you do not need the End Node jumper on any of the adapter cards. The following table shows how an adapter card is selected to be an End Node or a Middle Node:

### For All Adapter Cards

- Jumper 7 (on)      Selects End Node (Default)
- Jumper 7 (off)    Selects Middle Node

### **Warning:**

The End Nodes in the KAL1000 system MUST be powered at all times for the network to operate and should be powered on first when bringing up the network. Middle nodes may be powered on or off whenever necessary without affecting network operation.

## Section 2.22 - Interrupt (IRQ) Jumper

The Interrupt (IRQ) Jumper selects which of the available hardware interrupts the KAL1000 adapter uses. The following shows the selection of different hardware interrupts:

### For IBMPC/XT/AT Adapter Card

- Jumper B    Selects IRQ3 interrupt (Default)
- Jumper F    Selects IRQ7 interrupt

### For Z100 Adapter Card

- Jumper D    Selects VI3\* interrupt (Default)
- Jumper H    Selects VI7\* interrupt

#### **Warning:**

The interrupt selected must not conflict with any device co-existing within your system or you may not be able to use the KAL1000 adapter or the conflicting device. Also please note that IRQ3 is used by COM2 device in the IBMPC systems.

If you choose to use a different interrupt then make the appropriate hardware change by selecting the jumper and then change the appropriate parameter for the KAL1000 device driver to enable the selected interrupt. The supplied files are all setup for the default interrupt lines.

Parameters for interrupt change consideration are Software Interrupt (second half of P2 on KA\_DRVR command line located in the VIANET\*\* .BAT files), Master Mask and Slave Mask (P7). Use the following table to set the Software Interrupt, Master Mask and Slave Mask:

## For IBMPC/XT/AT Adapter Card

Master & Slave Mask	Software Interrupt
for IRQ7 1 0 0 0 0 0 0 0 - 80	F
IRQ6 0 1 0 0 0 0 0 0 - 40	E
IRQ5 0 0 1 0 0 0 0 0 - 20	D
IRQ4 0 0 0 1 0 0 0 0 - 10	C
IRQ3 0 0 0 0 1 0 0 0 - 08	B --> Default
IRQ2 0 0 0 0 0 1 0 0 - 04	A
IRQ1 0 0 0 0 0 0 1 0 - 02	9
IRQ0 0 0 0 0 0 0 0 1 - 01	8

For example:

IRQ 3 parameters: (PC @ 4.77 MHz, 1 wait-state)

KA\_DRVR 0508 800B 0018 038C 0020 0020 0808

IRQ 7 parameters: (PC @ 4.77 MHz, 1 wait-state)

KA\_DRVR 0508 800F 0018 038C 0020 0020 8080

IRQ 7 parameters: (AT @ 6 MHz, 1 wait-state)

KA\_DRVR 0508 860F 0040 038C 0020 0020 8080

IRQ 7 parameters: (AT @ 8 MHz, 1 wait-state)

KA\_DRVR 0508 8A0F 0040 038C 0020 0020 8080

## For Z100 Adapter Card

Slave Mask										Software Interrupt
for VI7*	1	0	0	0	0	0	0	0	- 80	4F
VI6*	0	1	0	0	0	0	0	0	- 40	4E
VI5*	0	0	1	0	0	0	0	0	- 20	4D
VI4*	0	0	0	1	0	0	0	0	- 10	4C
VI3*	0	0	0	0	1	0	0	0	- 08	4B --> Default
VI2*	0	0	0	0	0	1	0	0	- 04	4A
VI1*	0	0	0	0	0	0	1	0	- 02	49
VI0*	0	0	0	0	0	0	0	1	- 01	48

**Warning:** Do not alter the Master Mask !!!

For example:

VI3\* parameters: (Z100 @ 5 MHz, 1 Wait-state)

KA\_DRVR 151 804B 001B 007C 00F2 00F0 0808

VI7\* parameters: (Z100 @ 5 MHz, 1 wait-state)

KA\_DRVR 151 804F 001B 007C 00F2 00F0 0880

## Section 2.23 - Node ID Switch

Each node on the network must be assigned a unique binary number as set by the eight bit switch on the network adapter card. The following table shows the assignment of each switch:

<u>Switch No.</u>	<u>ID Bit</u>
1	0 (LSB)
2	1
3	2
4	3
5	4
6	5
7	6
8	7 (MSB)

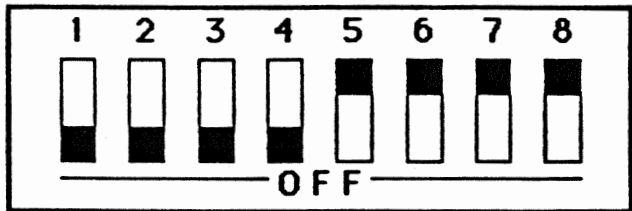
**Note:**

"ON" position represents a binary "ZERO".  
 "OFF" position represents a binary "ONE".  
 Node numbers "0" or "255" are not permitted.

For example, the following switch setting;

(S8-S1) ==> ON ON ON ON OFF OFF OFF OFF

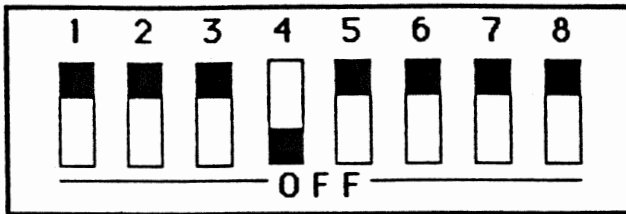
represents the binary number "00001111" which is equivalent to decimal number 15.



and,

(S8-S1) ==> ON ON ON ON OFF ON ON ON

represents the binary number "00001000" which is equivalent to decimal number 8.



**Warning:** Each adapter cards number must be unique within the network or else serious damage may happen to your files.

Once you have set this number check it against the result of the SELFCK program.

### Section 2.30 - Adapter Card Installation

**Warning:** Please remember to handle boards by their edges to minimize possible damage to adapter card due to static discharge. Touching the metal covering on your PC before handling the adapter cards will discharge any static electricity from your body and minimize any possible damage to the adapter cards.

1. Referring to your Personal Computer Owner's Manual, remove the top cover of your computer.
2. For the IBMPCs remove any one of the slot covers from the back of the computer and save fastening screw.

For the Z100 remove a DB25 I/O cover from the back of the computer. Install the BNC female connector through the opening and fasten using the pair of 4-40 screws and nuts provided. The BNC female is attached to a self locking, polarized connector via a 10 inch twisted pair wire. This connector is to be inserted into its male counterpart which is located on the top, right corner of the adapter card.

3. With the End Node jumper installed insert the KAL1000 adapter card into any free slot (including AT's) and fasten it to the chassis with the fastening screw. The card should snap into place if seated correctly and should be flush along the top with the other cards in the computer.
4. Before connecting the adapter card to the network cable and putting the top back on computer execute the SELFCK program to verify the adapter card is operating properly. If SELFCK verifies that the adapter card is operating properly then go to step 6 if this node is to be an End Node or to step 5 if this is to be a Middle Node.
5. If this node is a Middle Node then remove the adapter card from the computer. After removing the End Node jumper put the adapter card back in its slot and fasten the screw if IBMPC or connect the polarized jumper to the card if Z100.



**Warning:**

For the IBMPCs you MUST fasten the screw to ensure a good ground to your system's chassis.

6. Attach cable to computer by pushing the male end of the BNC "tee" connector into the female BNC connector of the adapter card then twisting ring in appropriate direction to lock the connection.

### Section 2.31 - Self Diagnostic (SELFCK)

This utility will check the KAL1000 adapter card for any hardware problems. Once executed all sections of the adapter will be checked continuously and any problems will be reported on system console. This program is destructive to the network and can not be used while the network software is operational. Note that your network must be powered when this test is performed (End Nodes powered) or the adapter card should be removed from the network cable and an End Node jumper be installed.

The SELFCK diagnostic program has been separated to three different programs:

SELFCKPC	For all 8088 based IBMPCs.
SELFCKAT	For all 80286 based IBMATs.
SELFCKZ	For all 8088 based Z100s

These programs have been tested on variety of machines and up to 8 MHz clock speed.

Usage,

A>SELFCKPC<cr>	(for IBMPC/XT)
A>SELFCKAT<cr>	(for IBMAT)
A>SELFCKZ <cr>	(for Z100)

The program will respond as follows:

SoftNet KAL1000 Self Check --PC--- Version 2.00  
Copyright (c) SoftNet Communications Inc., 1986

Controller ID = 7

Pass # 112

1) Reset Flags	0
2) Auto Reset (Send)	0
3) Auto Reset (Receive)	0
4) Word Sent Flag	0
5) Word Received Flag	0
6) Sync Flag	0
7) Valid Word Flag	0
8) Busy Flag Triggering	0
9) Busy Flag Duration	76 <-- Error
10) Collision Avoided Flag	0
11) Word Overwritten Flag	0
12) CRC and Data Valid	0
13) Normal Interrupt	0
14) Broadcast Interrupt	0

If you encounter such a problem first make sure that the proper SELFCK routine has been used since there are three versions. One is for the IBMPC family (or the 8088 systems), another is for the IBMAT family (or the 80286 systems) and the third one version is for the Z100.

Next verify that either the network is powered (End Nodes powered) or the adapter card is removed from the network cable and an End Node jumper is installed.

If you have followed these steps and still have errors then your adapter card is defective and should be returned to factory for repair. Contact your dealer to make the necessary arrangements.

**Note:**

This diagnostic program has been tested for up to 8 MHz operation on both 8088 and 80286 based machines. If your system clock speed is higher than 8 MHz you might see a busy flag duration problem when executing SELFCK. You can ignore this problem since it is caused by the SELFCK program itself and not the adapter card.

## INSTALLATION (Cont'd)

### Section 3.00 - Software Installation

To install the software for the KAL1000 Local Area Network you must install the ViaNet (R) LAN software and then the KAL1000 Device Driver. There is a Auto install batch utility provided to aid in the installation of ViaNet.

### Section 3.10 - VINSTALL Auto Install Utility

ViaNet software is distributed on two floppy diskettes. The first diskette contains the drivers and the installation programs and the second diskette contains the utilities and the update documentation files.

**Warning:** ViaNet software is serialized and can not co-exist on two nodes at the same time. Each KAL1000 adapter is shipped with a different ViaNet serial number, although there is no relationship between the adapter serial number and the ViaNet serial number. You **MUST** use a different ViaNet software package for each node being installed.

Use the VINSTALL batch utility on diskette number 1 to install the ViaNet software. Put distribution diskette 1 in a floppy drive, make the drive the default drive and change the current directory to the VINSTALL directory.

Example:

```
A:\>cd \vinstall      <cr>  
A:\VINSTALL>vinstall <cr>
```

The screen will display instructions on how to install for your particular system. If you are installing to a floppy system you MUST pre-format 2 diskettes. The FLOPPY utility requires 2 diskettes of which the first disk is to be bootable. You must pre-FORMAT Disk 1 with the /S and Disk 2 without the /S Option. If you are installing ViaNet on a 1.2Mbyte Floppy, you should use the HARDDISK option with the 1.2 Mbyte drive as the Y: in the menu.

### **Section 3.11 - The CONFIG.SYS File**

When the installation program is completed your original (if any) CONFIG.SYS file on the target drive will have been named to CONFIG.OLD and a new CONFIG.SYS file would be generated as listed below:

#### For IBMPC/XT/AT Adapter Card

```
device = ansi.sys
device = netdrvrv.sys vector = 5b
files = 99
buffers = 10
break = on
```

#### For Z100 Adapter Card

```
device = ansi.sys
device = netdrvrv.sys
files = 60
buffers = 10
break = on
```

You can use a word processor (ie. EDLIN) to merge the CONFIG.OLD file into this newly created file. If your CONFIG.OLD had more buffers or open files you can increase them accordingly.

**Warning:** The device driver netdvr.sys must be the last device on the list.

### Section 3.12 - Configuration Table (NETCNF.SYS)

The NETCNF.SYS file located in the NETSYS sub-directory contains an ASCII file describing the configuration of your system. After you have installed the ViaNet software you should edit this file with a word processor (ie. EDLIN) to accurately reflect your system's configuration and the resources you may want to share with the network. You may also add a name to your node so that it may be identified easier on the network.

**Note:** Once you have edited this file you must re-boot the ViaNet system to install the new configuration.

### Section 3.20 - KAL1000 Driver Parameters

The KAL1000 driver (KA\_DRVR.EXE) is installed on your target drive during VINSTALL utility. This driver requires a number of parameters on its command line of which two are system speed sensitive and need to be altered accordingly. The following shows the KAL1000 driver command line and its parameters:

```
KA_DRVR P1 P2 P3 P4 P5 P6 P7
```

**Note:**

All parameters are listed in hex (words). The default values are for the PC and AT compatibles with values listed for other machines when required.

**P1: Timer.Interval/Timer Interrupt**

Default = 0508

Z100 = 0151

**P2: Relative Speed/Software Interrupt**

Default = 800B

Z100 5MHz 1 wait-state = 804B

AT 6MHz 1 wait-state = 860B

AT 8MHz 1 wait-state = 8A0B

**P3: Broadcast Delay**

Default = 0018

Z100 5MHz 1 wait-state = 001B

AT 6MHz 1 wait-state = 0040

AT 8MHz 1 wait-state = 005E

**P4: Base Port Address**

Default = 038C

Z100 = 007C

**P5: Master PIC Port Address**

Default = 0020

Z100 = 00F2

P6: Slave PIC Port Address

Default = 0020

Z100 = 00F0

P7: Master PIC Mask/Slave PIC Mask

Default = 0808

For example:

IBMPC (4.77 MHz 8088 cpu, Index=189)

KA\_DRVR 0508 800B 0018 038C 0020 0020 0808

IBMAT (6 MHz 1 wait-state 80286 cpu, Index=521)

KA\_DRVR 0508 860B 0040 038C 0020 0020 0808

IBMAT (8 MHz 1 wait-state 80286 cpu, Index=727)

KA\_DRVR 0508 8A0B 0040 038C 0020 0020 0808

Z100 (5.00 MHz 8088 cpu, Index=206)

KA\_DRVR 151 804B 001B 007C 00F2 00F0 0808

If your system is not a compatible system to one listed above then the two timing parameters (Relative Speed and Broadcast Delay) need to be computed. Since there are a good number of variations found in many of these clone systems we developed a program (INDEX.COM & INDEXZ.COM) to accurately measure the relative performance of the system as required by the KAL1000 driver. The two graphs (found in the appendix section) show the expected timing parameters relative to the result of the INDEX program.



Follow these steps to compute the Relative Speed and Broadcast Delay;

1. Execute the INDEX program on the TARGET machine to find a relative performance index.

Usage,

```
A>INDEX <cr> (for IBMPC/XT/AT)
A>INDEXZ <cr> (for Z100)
```

The program will respond as follows:

INDEX - Version 1.00

(C) Copyright 1986 by SoftNet Communication, Inc.

WARNING - This program must be run on the target machine to obtain valid results.

Computed index is NNN

Use this index to calculate the Relative Speed and Broadcast Delay

**Note:**

NNN is the computed index for your machine.

2. Look up the Relative Speed and Broadcast Delay on the graphs provided in the appendix section of this manual. Remember that these two numbers are in hexadecimal format.
3. Using a word processor (i.e. EDLIN) enter these new numbers on the KAL1000 driver command line in the appropriate batch utility to boot ViaNet (ie. VIANET.BAT).

**Note:**

There are several batch utilities created on the distribution disks that are for more common systems such as a genuine IBMPC or AT. These files will be copied to your target drive during VINSTALL utility.

**Section 3.30 - Z100 Wild Interrupt**

After extensive testing of the Wild Interrupt problem with the Z100 using the KAL1000/Z100 LAN adapters cards, we have concluded that the intermittent WILD INTERRUPT is due to INT 47H and INT 4FH when the interrupt controllers are exercised rapidly.

We have developed two programs to first verify and then fix this problem. The WILDIMON.COM program determines which wild interrupt is being generated by your machine and the TRAP.COM program will install an IRET for the specific wild interrupt. This seems to work fine with most applications since INT 47H is for the parallel printer (rarely used) and INT 4FH is for Vectored Interrupt 7 on the buss. However, there is a potential conflict between this fix and any application that may decide to use these interrupts.

Execute the WILDIMON program on the TARGET machine to find which Wild Interrupt is being generated. There is a better than a good chance that the result will be the same as ours.

Usage,

```
A>WILDIMON<cr>
```

The program will respond as follows:

Wild Interrupt Monitor - Version 1.00

Copyright (C) 1984, 1985, 1986 Ventura Micro, Inc.

Copyright (C) 1986 SoftNet Communications, Inc.

\*\*\*\*\* Please reboot the system when testing is completed \*\*\*\*\*

The Wild Interrupt Monitor program is now installed. Please remember the warning to reboot your system when testing is completed. Rebooting is the only way to un-install the program. With this program installed you now have to wait until a WILD INTERRUPT is generated. This may take many hours or even days since this problem is totally random and there are no specific sequence of events to make it happen. When a WILD INTERRUPT is generated the screen will display the actual Interrupt Number, in hex, and the contents of registers at the time of the interrupt. In our extensive testing the only two interrupts generated were INT 47H and INT 4FH.

Now that you have identified the actual Wild Interrupt numbers you can use the TRAP program to simply disable them by issuing a IRET immediately after the WILD INTERRUPT. You will never see the actual WILD INTERRUPT associated with that interrupt number again until the system is rebooted which un-installs the TRAP program until it is executed again. To use the TRAP program enter the program name followed by the interrupt number in hex (assuming you also get only INT 47H and 4FH):

Usage,

```
A>TRAP 47 <cr>
```

The program will respond as follows:

```
Trap - Version 1.00  
Copyright (C) 1986 SoftNet Communications, Inc.  
Int 47H Trapped
```

You have now trapped INT 47H so that it will no longer generate any wild interrupts. Now do the same for INT 4FH as follows:

```
A>TRAP 4F <cr>
```

The program will respond as follows:

```
Trap - Version 1.00  
Copyright (C) 1986 SoftNet Communications, Inc.  
Int 4FH Trapped
```

Now both INT 47H and INT 4FH are trapped so that they will not generate a WILD INTERRUPT. Once you are convinced that this fix works you should add these two traps to your autoexec.bat file where they are automatically executed upon power up of your Z100 system.

### Section 3.31 - Z100 Printer Spooling Utilities

The ViaNet software has four utility programs for Printer Spooling functions.

VIASPOOL	Memory resident Print Spooler.
VIAPRINT	Utility to print into spooler from DOS.
SETPRT	Utility to print into spooler from an application.
REDIRPRT	Utility to redirect print into spooler from an application.

Of these four programs the two dealing with printing from an application (SETPRT & REDIRPRT) are strictly for IBMPC type systems and do NOT work with the Z100 systems.

The VIASPOOL utility (on the distribution diskette marked for Z100) has been modified to be used with a Z100.

The VIAPRINT utility has NOT been modified for the Z100 but can be used by using the MACASGN utility. Since the VIAPRINT utility will look for the C drive on the spooling node for the viaspool sub-directory, you must substitute the E drive to enable the VIAPRINT to find the directory. Use the following MACASGN command on all nodes that want to print into the spooler (including the spooling node itself);

```
MACASGN Z:\NODENAME\E Z:\NODENAME\C <cr>
```

Where NODENAME is the name of the Z100 node where print spooler is active. This command must be repeated for every Z100 spooler on the network.

For example, if you have two Z100 nodes (i.e. NODE01 & NODE02) that have VIASPOOL installed then the following two MACASGNs must be executed on ALL nodes wishing to print into these spoolers.

```
MACASGN Z:\NODE01\E Z:\NODE01\C <cr>
```

```
MACASGN Z:\NODE02\E Z:\NODE02\C <cr>
```

Since the ANSI.SYS device driver for the Z100 is still not functioning properly, use the /D option with VIAPRINT to suppress all ANSI graphics.

## SOFTSTAT.EXE Utility

This program is a statistical utility for the KAL1000 driver (KA\_DRVR.EXE). All possible errors within the driver are accumulated and are shown in a tabular form when this program is executed.

Usage,

```
A>SOFTSTAT      <cr>  (for IBMPC/AT)
A>SOFTSTAT Z    <cr>  (for Z100)
```

the program will display the data in this format:

SOFTNET Driver Statistics for VIANET - Version 1.00  
(C) Copyright Ventura Micro, Inc. 1986

Sender		Receiver	
-----		-----	
Send Attempts	123	Receive Attempts	144
Send PCI Errors	4	Receive PCI Errors	5
Send command	1	Receive command	0
		Cmd overwritten	0
		No buffer	0
		Bad destination	0
Receive IDs	0	Echo IDs	5
IDs mis-match	0		
Send Spd/Type	0	Receive Spd/Type	1
		Bad Type	0
Receive Spd/Type	0	Send Spd/Type	0
Type mis-match	0		
Send Count	0	Receive Count	0
		Buffer too small	0
Receive Count	0	Return Count	0
Count mis-match	0		
Send data err	0	Receive data err	0
		Net not busy	0
Send CRC	0	Receive CRC	0
		CRC error	0
Receive ACK	0	Send ACK	0

## WARRANTY

SoftNet will warrant the KAL1000 adapter cards (Product) to be free from any defects in material and workmanship under normal use for a period of one (1) year from date of purchase. Defective adapter cards shall be promptly returned to SoftNet where they will be examined by its technical personnel. Upon verification SoftNet will either refund or replace the defective Product at its option. This warranty is automatically voided if the Product has been damaged physically or electrically due to accidents, misuse or abuse.

THERE ARE NO IMPLIED OR EXPRESSED WARRANTIES WITH RESPECT TO MERCHANTABILITY OR FITNESS FOR A PARTICULAR APPLICATION OR USE. IN NO EVENT SHALL SOFTNET COMMUNICATION, INC. BE HELD LIABLE FOR DAMAGES INCLUDING LOST PROFITS, LOST SAVINGS OR OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF USE OR INABILITY TO USE THE KAL1000 ADAPTER CARDS.

All returned Product must be accompanied with a RMA number. All transportation, handling and insurance charges must be pre-paid. SoftNet will not accept title to the returned Products at any time and the registered owner shall bear the responsibility of risk of loss. To obtain a RMA number call or write our main office during normal business hours.

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## SPECIFICATIONS

Data Rate	2 Mega bits/Second
Protocol	CSMA/CA/CD/PA Carrier Sensed Multiple Access Collision Avoidance Collision Detection Positive Acknowledgement
Topology	Buss
Transmission Signal	Baseband, Manchester Encoded Digital PLL Clock Recovery
Transmission Medium	RG58/U Coaxial Cable Maximum 1200 feet/segment Maximum 10,000 feet with repeater
Network Connectors	BNC Male, Female, Tee
Operating Voltage	+5 VDC
Power Dissipation	< 1 Watt
Operating Temperature	10-40 Degrees Centigrade



