# Ethernet Installation and Configuration

This chapter provides detailed steps for installing the hardware and software components required for VCO/4K Ethernet communications. The installation process includes connecting the appropriate physical cables for host links, installing software, and configuring peripherals for network access.

Additional details pertaining to application-specific Ethernet communications are provided in Chapter 3, "Host Communications."

## Connecting the Host Link

The Ethernet host communication link terminates on the Storage/Control I/O Module, which is located at the back of the system.  The Storage/Control I/O Module and the Ethernet host communication link are shown in Figure 2-1.

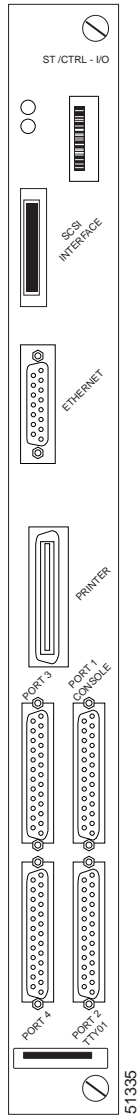*Figure 2-1     Storage/Control I/O Module Front Panel*



Table 2-1 lists the DB-15 connector pinouts, which are the same for the CPU-TM card and the Storage/Control I/O Module.

*Table 2-1    DB-15 Connector Pinouts*

| Pin | Signal | Signal Name |
|-----|--------|-------------|
| 2 | C+ | Collision + (Input) |
| 3 | T+ | Transmit + (Output) |
| 5 | R+ | Receive + (Input) |
| 6 | GND | Ground |
| 9 | C– | Collision – (Input) |
| 10 | T– | Transmit – (Output) |
| 12 | R– | Receive – (Input) |
| 13 | +12VF | +12 Vdc Power |

Use an office Attachment Unit Interface (AUI) cable between the DB-15 connector and the network transceiver. The physical Ethernet network determines the transceiver type.

# Installing Ethernet Software

For users of system software version 5.1(3) and higher, install and configure Ethernet communications from the System Configuration menu by selecting the Ethernet/NFS/SNMP Configuration option. For information on using this configuration screen, refer to Chapter 4 of the *Cisco VCO/4K System Administrator's Guide*. When the Ethernet/NFS/SNMP configuration is complete, reboot the CPU from the Alarm Arbiter Card.

For users of system software version 5.1(2) or earlier, install and configure the Ethernet optional software by using the following steps. Repeat these procedures for installing software on the B-side.

Step 1    Insert the Ethernet software diskette and press **Enter**.

After the system loads the Ethernet files from the diskette, the Ethernet Installation Utilities menu is displayed. (See Figure 2-2.)

The cursor is located in the Enter Selection data entry field.

*Figure 2-2    Ethernet Installation Utilities Menu*

```
              I N S T A L L A T I O N    U T I L I T I E S


          1) Install/Configure Ethernet Optional Package
          2) Incremental Install Ethernet Option
          3) Disk Utilities
          4) Install Another Software Option
          5) Database Conversion
          6) License Configuration
          7) Set Extended Operational Mode
          8) Enable C-Bus Mode
          x) Terminate Installation



          Enter Selection: __
```

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**Step 2**    Type **1** and press **Enter** to begin the Ethernet software installation process.

The following message is displayed:

```
Do You Wish To Back-Up The System Data Base? (Y/N) =N?_
```

**Step 3**    Press **Enter** (this defaults to N).

You will not be backing up the database at this time.

The Ethernet Configuration menu is displayed. (See Figure 2-3.)

*Figure 2-3      Ethernet Configuration Menu*

```
                 E T H E R N E T    C O N F I G U R A T I O N


        1) Install Ethernet Options
        2) Edit Ethernet Parameters
        3) Edit SNMP Management Station Parameters
        4) Edit NFS Parameters
        5) Edit Gateway Routing Table Parameters
        6) Exit Ethernet Configuration



        Enter Selection: __
```

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# Installing Ethernet Options

Type **1** and press **Enter**. The following message is displayed:

```
Copy A:/BOOT/ETHERMGR.EXE
1 file(s) copied
Ethernet Option Enabled
```

**Note**      If you do not need to edit Ethernet parameters (system Ethernet address and/or subnet mask), SNMP management station parameters, NFS parameters, or gateway routing parameters, type **6** and press **Enter** to exit the Ethernet installation. Otherwise, continue with the next section.

If you installed an updated CPU as part of this upgrade, you must edit Ethernet/NFS/SNMP parameters.

## Editing Ethernet Parameters

**Step 1**    Type **2** (Edit Ethernet Parameters) and press **Enter**.

The following message is displayed:

```
System Internet Address = 107.3.254.98?
```

**Note**    The Ethernet and Internet address numbers that you see in the screen messages in this section are only examples. In your system these numbers are replaced by numbers that represent your system addresses.

**Step 2**    Set the Internet address of this system and press **Enter**.

The following message is displayed:

```
Set System Internet Address To 107.3.254.98 (Y/N) =Y?
```

**Step 3**    If you change the address, you are prompted to confirm your new address. Type **Y** to confirm your selections.

The following confirmation message is displayed:

```
System Internet Address Configured
```

**Step 4**    Set the system subnet mask, or press **Enter** to accept the displayed value.

After you complete this step, you can connect a remote console to your system via Telnet.

## Editing SNMP Management Station Parameters

**Step 1**    Type **3** and press **Enter** to set the SNMP management station Internet address.

The following message is displayed:

```
SNMP Management Internet Address = 0.0.0.0?
```

**Step 2**    Set the Internet address to the address of the system that you are using as the NMS (Network Management System), and press **Enter**. If you are not using SNMP and a NMS, then set this address to the address of your host.

The following message is displayed:

```
Set SNMP Management Internet Station Address To [internet address] (Y/N) =Y?
```

**Step 3**    Type **Y** to confirm your selections.

The following confirmation message is displayed:

```
SNMP Management Station Internet Address Configured
```

After you complete this step, the system reports SNMP trap messages to the NMS that you selected.

 • If you *are not* going to boot your system over the network, go to the "Completing Ethernet Configuration" section on page 2-9.

 • If you *are* going to boot your system over the network, continue with the next section.

# Editing NFS Parameters

**Step 1**   Create a directory for log and trace files on your NFS server and set the appropriate access permissions.

**Step 2**   Make an entry in the /etc/exports file on your NFS server that indicates the path for the NFS mount point. This allows the file to be shared.

**Step 3**   Type **4** to set the Network File System (NFS) server parameters.

The following selections appear one at a time. Enter the information for your system. For more information concerning these selections, refer to Table 2-2.

```
Enable NFS Access (Y/N) =Y?
NFS Server Internet Address = 000.0.000.000?
NFS Server Name =xxx?
NFS Mount Directory Point #?
Target System Name =
Target System User Id =
Target System Group Id =
Target System Umask =
Update NFS Configuration With Above Data (Y/N) =Y?
```

*Table 2-2    NFS Parameters*

| Parameter | Definition | Options | Recommended Value |
|---|---|---|---|
| NFS Server Internet Address | Internet address assigned to the device (usually the host computer) on which the log and trace files are to be stored. | Valid internet address in standard dot notation (e.g., 0.9.153.155). | Value supplied by NFS administrator. |
| NFS Server Name | Name assigned to the device (usually the host computer) on which the log and trace files are to be stored. | — | Value supplied by NFS administrator. |
| NFS Mount Directory Point | Name of the mount directory device into which the log and trace files are to be stored. | Valid directory specification created for system log and trace files. | Value supplied by NFS administrator. |
| Target System Name | Name assigned to the VCO by the system administrator. | This name can not include underscore characters. For configurations that include NFS, this name must also be included in the NFS server's /etc/hosts file. | Value supplied by VCO administrator. |
| Target System User Id | UNIX user ID associated with the directory (log or trace files) of the NFS system. | Valid user ID in decimal notation. | Value supplied by NFS administrator. |

*Table 2-2    NFS Parameters (continued)*

| Parameter | Definition | Options | Recommended Value |
|-----------|-----------|---------|-------------------|
| Target System Group Id | UNIX group ID associated with the directory (log or trace files) of the NFS system. | Valid group ID in decimal notation. | Value supplied by NFS administrator. |
| Target System Umask | User mask associated with the NFS server. | Valid user mask in hex notation. This must match the permission on the NFS server. No other value is acceptable. | — |

Step 4    After you update the NFS configuration with the new data, the following message is displayed:

```
NFS Configuration Updated
```

You can now save the log files and database to a remote location.

# Editing Gateway Routing Table Parameters

Step 1    Type **5** to set Gateway Routing Table parameters.

The following selections appear. Enter the information for your system.

```
Route No. 1
    Destination Subnet Address =0.0.0.0?
    Gateway System Internet Address =0.0.0.0?
Route No. 2
    Destination Subnet Address =0.0.0.0?
    Gateway System Internet Address =0.0.0.0?
Route No. 3
    Destination Subnet Address =0.0.0.0?
    Gateway System Internet Address =0.0.0.0?
Route No. 4
    Destination Subnet Address =0.0.0.0?
    Gateway System Internet Address =0.0.0.0?
    Update Gateway Routing Table Configuration With Above Data (Y/N) =Y?_
```

Step 2    Type **Y** to update the gateway routing table configuration with the data changes.

If you type **N** at the final prompt, the following message is displayed, and the Ethernet Configuration screen is displayed:

```
Gateway Routing Table Configuration Aborted
```

Note    The Destination Subnet Address refers to the destination subnet address field in the Gateway Routing Configuration screen. The Gateway System Internet Address refers to the gateway IP address field in the Gateway Routing Configuration screen.

## Completing Ethernet Configuration

Step 1    Type **6** (Exit Ethernet Configuration), and press **Enter**.

The Installation Utilities menu is displayed. (See Figure 2-2.)

Step 2    Remove the Ethernet diskette from drive A.

Step 3    To install additional optional software, type **4** (Install Another Software Option).

# Configuring a VCO/4K on a Host LAN

To configure a VCO/4K on a UNIX-host LAN, follow these steps:

Step 1    Define the station name and Ethernet address in the '/etc/ethers' file as follows:

uu:vv:ww:xx:yy:zz VCO_Name

The **uu:vv:ww:xx:yy:zz** value is the hex Ethernet address printed on the system CPU and the **VCO_Name** is a user-defined name for the system. Each CPU in a redundant system has a unique Ethernet address and should also have a unique name.

**Step 2**    Define the station name and Internet address in the '/etc/hosts/' file as follows:

www.xxx.yyy.zzz VCO_Name

The **www.xxx.yyy.zzz** value is the Internet address specific to the LAN on which the system resides and **VCO_Name** is the same as that specified in Step 1.

# Network Security

Because network file support enables Internet access to the system, network security is required to limit Internet hosts from connecting to the system.

From the Host Configuration screen, you can use the following NFS parameters to tailor Ethernet network security:

- *Loc. Port, Rem.Inet.Addr, and the Rem. Port fields*—Lets you limit the access of a specified interface to only the host(s) that the port and IP address value identify. Cisco Systems strongly recommends setting the Rem. Port field to 0. For more information about these fields, refer to the *Cisco VCO/4K System Administrator's Guide.*

- *Connect Password field*—Lets you define a specific password (up to 16 ASCII characters) for each socket. When a host connects to a system socket, the system requests that the host supply the password. If the host fails, the link is shut down. The password feature can be disabled using the System Features menu. For more information about the System Features menu, refer to the *Cisco VCO/4K System Administrator's Guide*.