DEC ChannelServer II

DEC ChannelServer II Installation

This manual explains how to install the DEC ChannelServer II system and diagnose minor installation problems. Installation includes site preparation, unpacking, cabling, and diagnostic testing.

Revision/Update Information: This is a new manual.

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Preface

The DEC ChannelServer II is a communications device that connects a Digital Equipment Corporation network to an International Business Machines Corporation System-370 compatible mainframe. The DEC ChannelServer II hardware and the DECnet/SNA Gateway-CT software together form a system that enables Ethernet nodes to communicate with an IBM® System-370 compatible mainframe.

This manual tells you how to install and test the DEC ChannelServer II hardware.

Audience

This document is intended for qualified service personnel.

Document Structure

This document contains the following chapters:

Chapter 1	Introduces the DEC ChannelServer II and generally describes the system hardware and informs you about configuration.
Chapter 2	Provides functional specifications and site preparation information.
Chapter 3	Instructs you step-by-step on how to install the DEC ChannelServer II.
Chapter 4	Describes how you cable the DEC ChannelServer II to the mainframe and to Ethernet.
Chapter 5	Explains how you install the diagnostic image on a VMS host system.
Chapter 6	Describes how you run diagnostic tests available in the MicroVAX Diagnostic Monitor (MDM).
Chapter 7	Describes how you run DESNX, to test the DEC ChannelServer II's ability to communicate with the 370-type channel.

Chapter 8   Discusses various hardware and diagnostic problems that you can solve at the system location.

Conventions

This manual uses the following conventions.

`SNANCP> SET LINE line-id`	In command examples, black monospaced type indicates system output. Red monospaced type indicates user input.
	Uppercase letters represent text that you must enter exactly as shown. Lowercase letters in italics represent variables for which you must substitute specific information.
Return	Unless otherwise specified, end every command by by pressing the Return key.
Ctrl/x	This symbol indicates that you press and hold down the key labeled Ctrl while simultaneously pressing another key (for example, Ctrl/C or Ctrl/T).

Associated Documents

The DEC ChannelServer II system and DECnet/SNA Gateway-CT system include the following documentation sets:

DEC ChannelServer II Hardware Manuals

- *DEC ChannelServer II Installation*
- *DEC ChannelServer II Problem Solving*
- *DEC ChannelServer II Identification Card*

Gateway-CT Software Manuals

- *DECnet/SNA Gateway-CT Guide to IBM Parameters*
- *DECnet/SNA Gateway-CT Installation*
- *DECnet/SNA Gateway-CT Problem Determination*

Gateway Management Manuals

- *DECnet/SNA VMS Gateway Management Installation*
- *DECnet/SNA VMS Gateway Management Management*

MicroVAX Diagnostic Monitor Manuals

- *MicroVAX Diagnostic Monitor Reference Card*
- *MicroVAX Diagnostic Monitor User's Guide*

Related Hardware Manuals

The following manuals tells you about some of the modules and hardware you use with the DEC ChannelServer II system:

- *MicroVAX 650 CPU Module User's Guide*

- *DESQA User's Guide*

- *VT100 User Guide*

- *VT200 User Guide*

- *VT300 User Guide*

International Safety Warnings and Cautions

WARNING—This unit should not be opened for any reason by untrained persons. If this unit is in need of repair, only qualified personnel familiar with the safety procedures for electrical equipment and this product should access components inside the unit.

WARNING—To remove all power from the unit, disconnect the power cord.

WARNING—A Safety Earth Ground Wire has been incorporated into this product via the three wire plug cap of the AC power cord. For continued protection against the risk of electric shock, this product must be connected to a three wire wall receptacle that has its grounding terminal reliably connected to the building's Safety Earth Ground.

CAUTION—Perform the cabling procedure carefully. Communications to the mainframe are interrupted if the DEC ChannelServer II is not connected properly. A representative from the mainframe computer support staff should be on site for consultation.

CAUTION—Unplug the unit before removing or replacing any modules in the DEC ChannelServer II system.

VORSICHT! Dieses Gerät darf nur von qualifiziertem Personal geöffnet, gewartet und repariert werden, das mit diesem Gerät und den Sicherheitsvorkehrungen für Elektrogeräte vertraut ist.

VORSICHT! Trennen Sie das Gerät vollständig vom Stromnetz. Ziehen Sie dazu das Netzkabel aus der Steckdose.

VORSICHT! Das Stromkabel in diesem Gerät und das zugehörige Netzkabel sind mit einem Schutzleiter versehen. Um optimale Sicherheit zu gewährleisten, dürfen Sie es nur an eine ordnungsgemäß geerdete Schuko-Steckdose anschließen.

ACHTUNG! Schließen Sie die Kabel ordnungsgemäß an. Die Kommunikation mit dem Großrechner wird unterbrochen, wenn der DEC ChannelServer II nicht korrekt angeschlossen ist. Achten Sie darauf, daß während der Installation ein Servicespezialist für Großrechner anwesend ist.

ACHTUNG! Lösen Sie alle Kabelverbindungen, bevor Sie Module aus dem DEC ChannelServer II entfernen oder diese austauschen.

DANGER—En aucun cas ne laisser une personne non qualifiée accéder aux éléments internes de cet équipement. En cas de réparation, seules des personnes qualifiées connaissant les mesures de sécurité propres aux matériels électriques et formées sur cet équipement ne peuvent accéder aux composants internes.

DANGER—Pour vous assurer que l'équipement est isolé du secteur, débranchez le cordon d'alimentation.

DANGER—Cet équipement est mis à la terre au moyen du fil de terre du cordon d'alimentation secteur. Afin d'assurer une protection efficace contre tout risque d'électrocution, cet équipement doit être raccordé à une prise secteur équipée d'un contact de mise à la terre effectivement relié à la terre secteur du bâtiment.

DANGER—Débranchez le cordon d'alimentation avant toute intervention sur les composants internes du DEC ChannelServer II.

ATTENTION—Effectuez les opérations de câblage avec le plus grand soin. Tout défaut de connexion sur le DEC ChannelServer II peut entraîner l'interruption des communications avec l'ordinateur central. Un représentant du support de l'ordinateur centrale doit être présent sur le site pour tout conseil.

ATENCION: Bajo ningún concepto deberían abrir este equipo personas sin preparación para ello. Si necesita reparación, sólo debería tener acceso a los componentes internos personal cualificado, que conozca este producto y los requisitos para seguridad con equipos eléctricos.

ATENCION: Se elimina toda corriente del equipo desconectando el cable de alimentación.

ATENCION: Se ha incluido toma de tierra de seguridad en este producto por medio de la tapa del enchufe trifásico del cable de alimentación. Para una protección permanente contra descargas eléctricas, se ha de conectar el equipo a un enchufe trifásico de pared, con el terminal de tierra bien conectado a la toma de tierra del edificio.

PRECAUCION: El proceso de cableado ha de realizarse con detenimiento, dado que las comunicaciones con el ordenador central se interrumpen cuando el DEC ChannelServer II no está bien conectado. Es aconsejable contar con un técnico cualificado para proceder a esta instalación.

PRECAUCION: Desenchufar el equipo antes de quitar o cambiar cualquier módulo del sistema DEC ChannelServer II.

⚠ ATTENZIONE—Quest'unità non deve essere aperta, per nessuna ragione, da personale non qualificato. Nel caso in cui se ne rendesse necessaria la riparazione, questa dovra' essere effettuata solo da personale qualificato.

ATTENZIONE—Per eliminare completamente la tensione di rete dall'unità, disconnettere il cavo di alimentazione.

ATTENZIONE—Quest'apparecchiatura è dotata di cavo di alimentazione con collegamento a terra. Per evitare il rischio di scosse elettriche è necessario connettere l'apparecchiatura ad una spina a muro dotata di collegamento a terra.

ATTENZIONE—Effettuare il cablaggio accuratamente. La comunicazione con il mainframe risulta essere interrotta se il DEC ChannelServer II non viene connesso correttamente. È necessario che personale qualificato, di supporto al mainframe, sia presente, durante la fase di cablaggio.

ATTENZIONE—disconnettere il cavo di alimentazione dell'unità prima di rimuovere o sostituire qualsiasi modulo all'interno del sistema DEC ChannelServer II.

注意：このユニットを開く場合には，必ず専門の担当者に依頼して下さい。修理が必要な場合，エレクトロニクス製品および本製品の安全な取り扱い方法を理解した専門の担当者が，ユニット内部の部品を取り扱うようにして下さい。

注意：ユニット全体の電源を切るには，電源コードをコンセントから抜いて下さい。

注意：本製品のアース線は，ＡＣ電源コードの三極プラグに接続されています。感電の危険防止のため，本製品は，設置建物内のアース線に確実につながっている接地端子のついた三極コンセントに接続して下さい。

注意：配線は慎重に行って下さい。
DEC ChannelServer IIの接続が不適切に行われた場合，メインフレームとの通信に障害が生じます。配線の際には，メインフレーム・コンピュータのサポート担当者に立ち合いを依頼して下さい。

注意：DEC ChannelServer IIシステムのモジュールを取り外したり，交換する場合には，その前に，必ずユニットの電源を切って下さい。

CHAPTER 1

1

Introduction

This chapter introduces the DEC ChannelServer II system and helps you to configure the system.

1.1 Functional Overview

The DEC ChannelServer II is a communications device that connects a Digital Equipment Corporation network to an International Business Machines Corporation System 370-compatible mainframe. The channel-attached connection handles Systems Network Architecture (SNA) protocols between the mainframe and the Ethernet local area network (LAN). The DEC ChannelServer II hardware and the DECnet/SNA Gateway-CT software together enable Ethernet nodes to communicate with an IBM® System 370-compatible mainframe.

Figure 1-1 and Figure 1-2 show the system with and without its front cover.

Figure 1-1   Front View of the DEC ChannelServer II
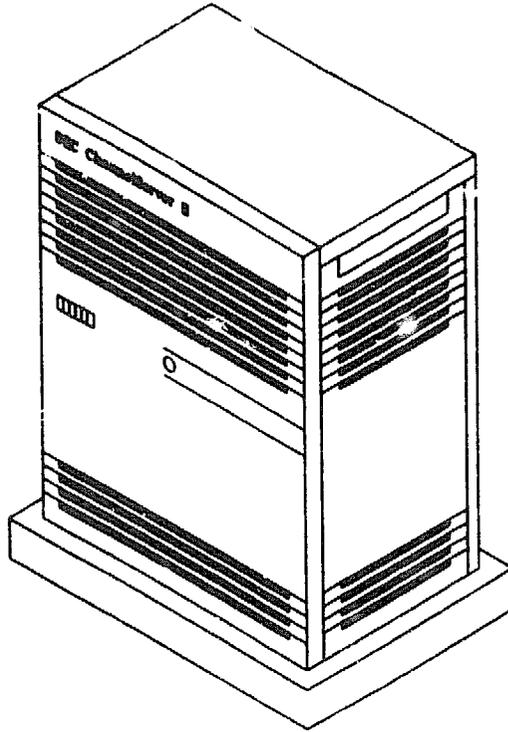
LKG-3852-90A

Figure 1-2   Front View of the DEC ChannelServer II (Cover Removed)
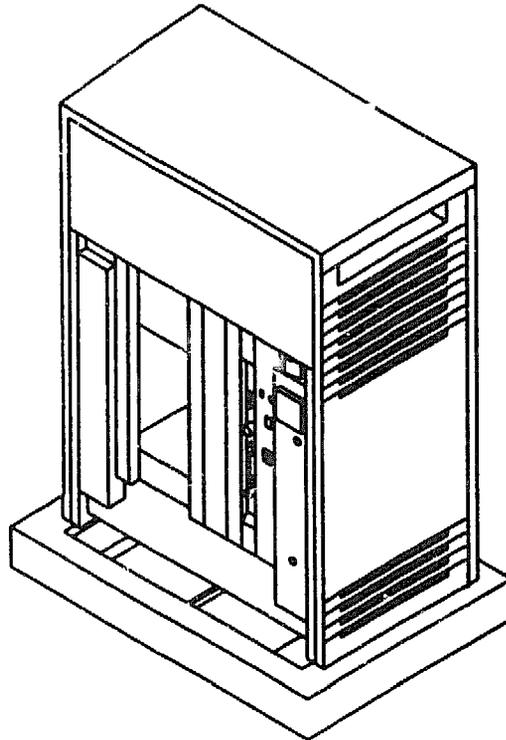
LKG-3853-90A

The DEC ChannelServer II connects to the mainframe channel through bus and tag cables. The system appears to the mainframe as a channel-attached device.

The DEC ChannelServer II connects to the Ethernet LAN through a Thickwire or ThinWire Ethernet. The DECnet/SNA Gateway-CT software is down-line loaded to the DEC ChannelServer II from a host system through the LAN. Diagnostic programs, such as the MicroVAX Diag iostic Monitor (MDM) and DESNX are also down-line loaded through the LAN.

Figure 1-3 is a diagram showing a typical DEC ChannelServer II installation. In this example, the DEC ChannelServer II system is the last device on the channel, so terminators are shown on the "tag out" and "bus out" connectors of the DEC ChannelServer II.

Figure 1-3 Sample Network Configuration of the DEC ChannelServer II
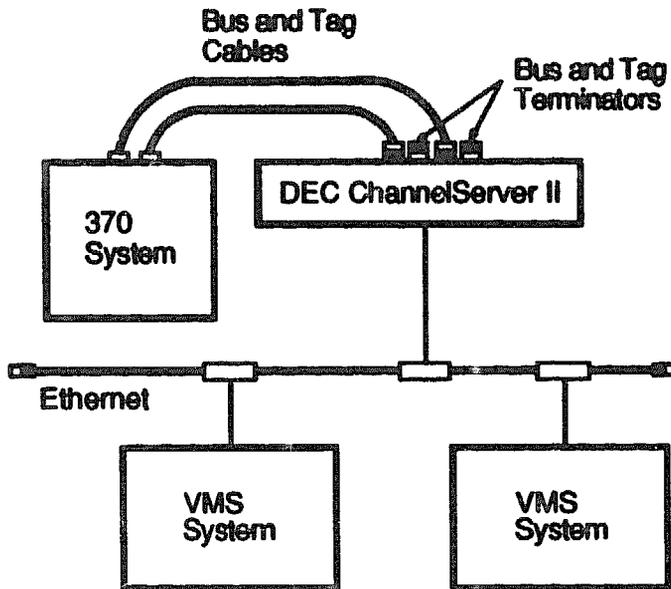
LKG-4212-90R

1.2 DEC ChannelServer II Components

The DEC ChannelServer II is a MicroVAX system with additional modules that interface with the mainframe and an Ethernet LAN. The basic components of the DEC ChannelServer II include:

- BA213 pedestal enclosure
- Power supply
- H3600 CPU Control Panel
- KA655-BA central processor unit (CPU)
- MS650-BA memory module
- DESQA Ethernet Controller
- Channel I/O panel and interface module set
- Q22A-bus backplane

Figure 1–4 shows a complete DEC ChannelServer II system.

Figure 1–4   Complete DEC ChannelServer II System

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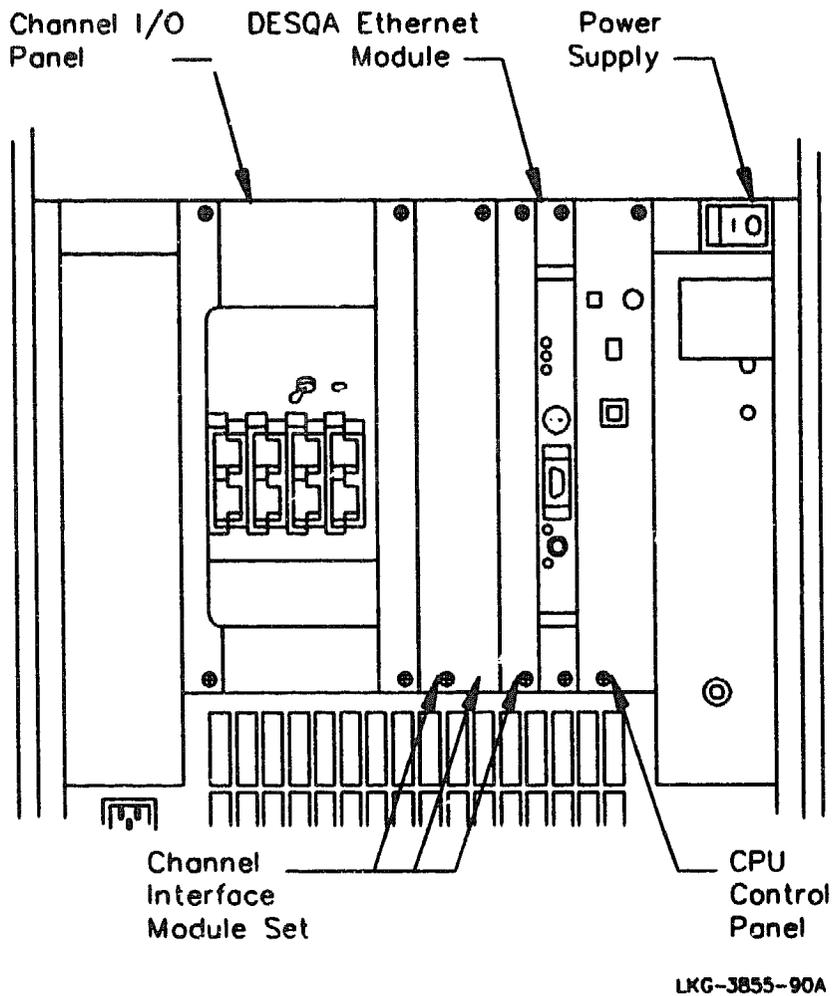
1.2.1   Power Supply Switches and Indicators

The power supply for the DEC ChannelServer II is located on the right side of the cabinet and contains the switches and indicators illustrated in Figure 1–5. Table 1–1 describes the system's power supply.

Figure 1-5   The DEC ChannelServer II Power Supply
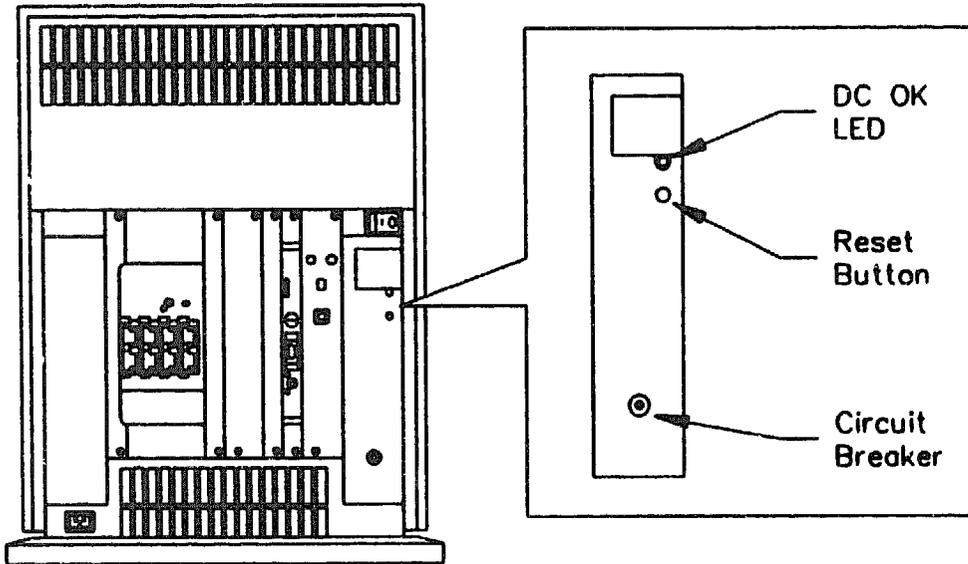
LKG-3856-90A

Table 1-1   Power Supply Indicators and Switches

Control	Description
DC OK LED	When the DC OK LED is lit, the power supply is operating correctly.
Reset Button	A recessed reset button enables you to reset the system without turning it off. Resetting the system aborts all current and pending operations—use this option carefully. Use your fingertip or a small tool to press the button.
Circuit Breaker	The circuit breaker trips to protect the system from power surges. When tripped, the circuit breaker is in the out position. Push the button to reset the Circuit Breaker.

1.2.2   Central Processing Unit (CPU)

The CPU controls the execution of all instructions and processes. The CPU circuits contain all the logic, arithmetic, and control functions used by the system. The CPU module is located behind the CPU control panel.

1.2.3 CPU Control Panel

The CPU control panel covers the CPU and memory modules. The panel
contains one LED display, the connector for the console terminal, two system
switches on the front of the panel, and another switch on the rear of the panel.
(see Figure 1-6). The LED displays a countdown during system self-tests.
Table 1-2 describes the CPU Control Panel components.

Figure 1-6   CPU Control Panel
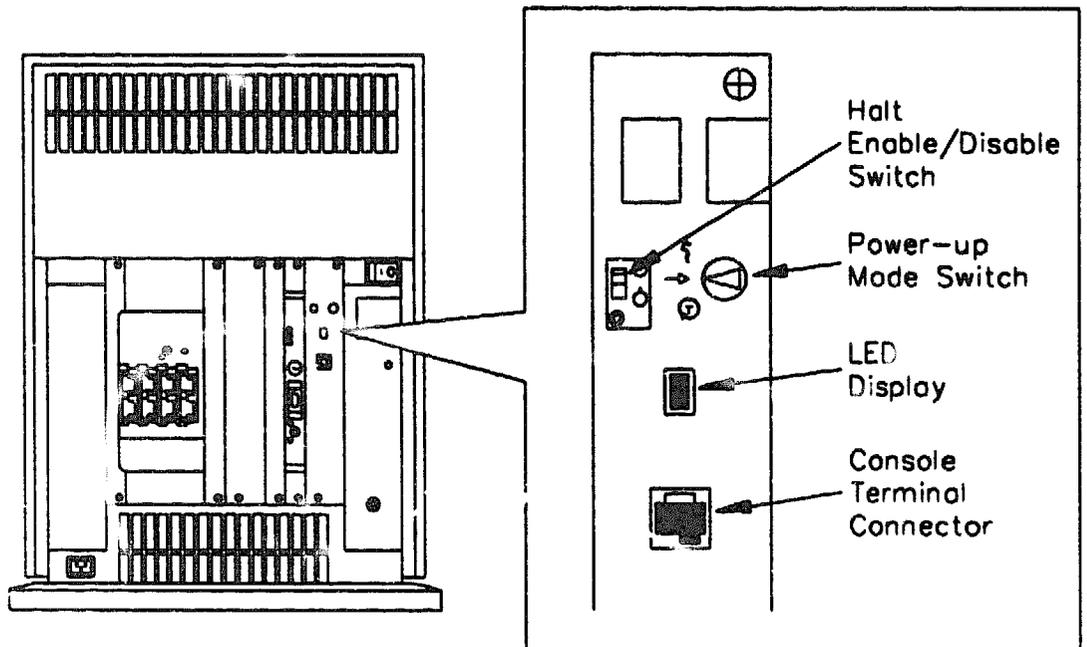
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Table 1-2   CPU Control Panel Components

Component	Description
Halt Enable/Disable Switch	**Enable**, the "up" position (indicated by a dot in a circle), allows you to stop the processor at the console with the [Break] key. The system will stop at the console prompt (>>>).
	Disable Switch, the "down" position (indicated by the dot above the circle), allows the system to automatically boot on power-up. The [Break] key on the console keyboard is disabled.
Power-up Mode Switch	**Run mode** (normal operation), indicated by an arrow.
	Language inquiry mode, indicated by a human profile, displays language selection screen on console on power-up under certain conditions.
	Test mode, indicated by a circled T, is used for manufacturing tests only. Do not operate the DEC ChannelServer II in this mode.
Baud Switch (on rear of CPU panel)	Determines the baud rate for the system. This switch and the console terminal baud switch must be set to the same baud rate. The usual setting for VT100, VT200, and VT300 series terminals is 9600 baud. To change the setting, you must remove the CPU panel as described in Chapter 3.
Console Terminal Connector	Connector for VT100, VT200, and VT300 series terminals.
LED Display	Shows a countdown when the system runs self tests.

1.2.4   Main Memory

Main memory provides the physical storage area for all data and instructions used by the CPU. The memory module provides the DEC ChannelServer II with 16 megabytes of main memory, and is located behind the CPU panel.

When you boot your system, you can load either diagnostic software or Gateway-CT software into main memory over the Ethernet.

1.2.5   DESQA Ethernet Network Controller

The DESQA Ethernet network controller connects the DEC ChannelServer II to the Ethernet LAN with a Thickwire or ThinWire Ethernet cable. The DEC ChannelServer II is configured for ThinWire Ethernet when it is shipped. If you want to connect the DEC ChannelServer II to a Thickwire Ethernet LAN, you must either move a jumper block or press a pushbutton to change the Ethernet board setting. See Chapter 4 for more details.

1.2.6 Channel Interface

The channel interface consists of four modules. Three are connected to the backplane and are called the channel interface module set. The fourth is a driver/receiver module, which is physically attached to the channel I/O panel (see Figure 1–4).

The channel I/O panel is the slanted panel covering the left six slots in the DEC ChannelServer II cabinet.

Bus and Tag cables connect the driver/receiver module to the mainframe. The three channel interface modules provide the interface between the driver/receiver module and the backplane.

The driver/receiver module provides the interface from a mainframe I/O interface channel through four connectors: BUS IN, BUS OUT, TAG IN, TAG OUT.

1.2.7 Q22A-Bus Backplane

All the modules, except the driver/receiver module, are installed in the Q22A-bus backplane. The Q22A-bus provides the data, address, control signals, and power lines to each of the modules.

CHAPTER 2

2

Site Preparation

This chapter tells you about site preparation and functional specifications for the DEC ChannelServer II, and interconnection cabling.

2.1 Site Requirements

Before you install the DEC ChannelServer II, review the following site requirements to ensure a suitable environment for reliable system operation. Also, verify that you have either a Thinwire Ethernet connection or a suitable transceiver (H4000, H4005, DELNI) for communication on the Ethernet.

2.1.1 Space Planning

Place the DEC ChannelServer II as follows:

- Install the DEC ChannelServer II in raised floor environment to allow the channel cables to extend downwar I through an opening in the floor.

- Arrange the floor tiles in such a way as to allow the channel, power, and Ethernet cables to extend up through the floor. A partial floor tile can be used for this. Ensure that the opening in the floor does not create a tripping hazard.

- Allow enough space for maintenance access to the front of the system.

- Ensure that the floor supports a unit of approximately 28.1 kilograms (62 pounds).

- Position the system so that it does not block or restrict access to a fire exit or safety equipment (such as fire extinguishers).

- Ensure that system cables do not obstruct walkways.

Figure 2–1 shows a typical raised-floor installation.

Figure 2–1   Typical DEC ChannelServer II Installation

Partial
Floor
Tile

Power
Cord

Channel
Cables

ThinWire
Cable

LKG–3859–90A
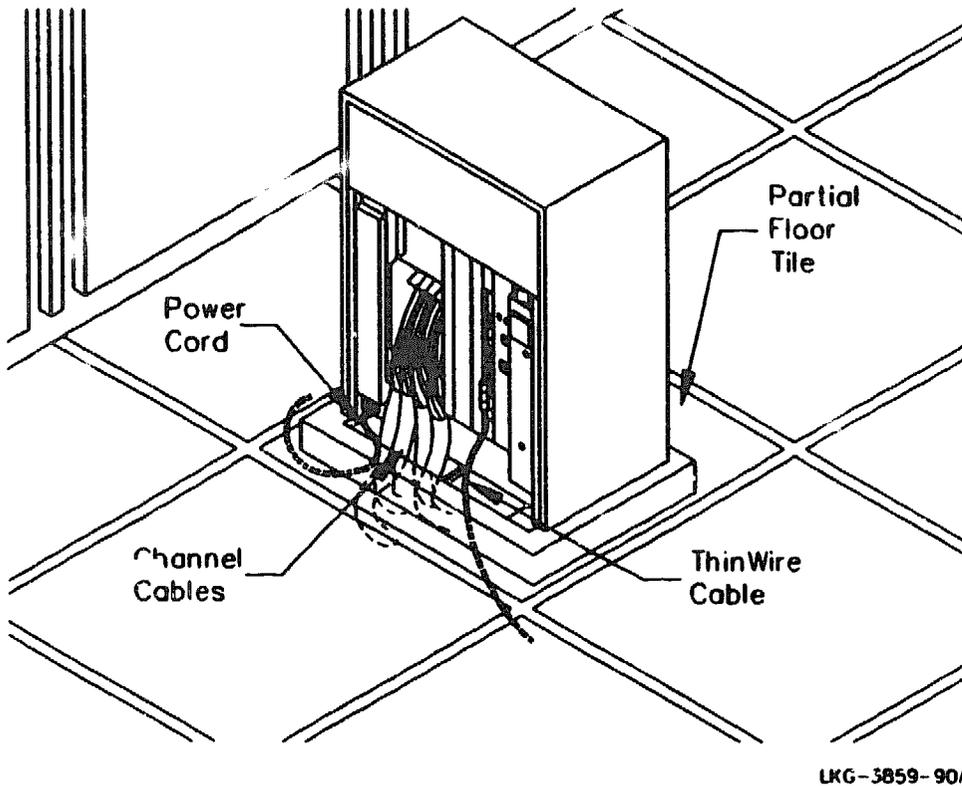
2.1.2   System Environmental Requirements

Table 2–1 gives the environmental specifications of the DEC ChannelServer II.

Table 2-1   System Environmental Specifications

Parameter	Operating	Nonoperating
Temperature	10° C (50° F) to 40° C (104° F)	-40° C (-40° F) to 66° C (151° F)
Temperature rate of change	11° C per hour maximum (19.8° F per hour maximum)	
Relative humidity	20% to 80%	10% to 90%
Maximum altitude	2440 m (8000 ft)	4900 m (16,000 ft)

*Note Decrease the operating temperature range values by
1.8° C per 1000 m above sea level (1° F per 1000 ft).*

Follow these guidelines to prevent damage to the DEC ChannelServer II system:

- Keep air circulating around the unit.

- Keep the system away from heaters, photocopiers, and direct sunlight.

- Minimize static electricity buildup; locate the system away from busy areas, and keep the environment at the recommended humidity levels (static electricity can cause system failures).

- Lay antistatic carpets or mats in the area of the system.

- Use antistatic safety procedures when handling system modules.

- Keep the area clean. Avoid putting food, drinks, or other liquids near the DEC ChannelServer II.

- Keep the area free from dust (dust particles can interfere with the system cooling and damage hardware).

2.1.3 Physical Size

Table 2-2 gives the dimensions of the DEC ChannelServer II.

Table 2-2   Dimensions of the DEC ChannelServer II

Height	69 cm (27 in.)
Width	53 cm (21 in.)
Depth	46 cm (18 in.)
Weight	28.1 kg (62 lbs.)

2.1.4 Power Requirements

Table 2-3 gives the power requirements of the DEC ChannelServer II.

Table 2-3   Power Requirements

Tolerance	120 Vac	240 Vac
Voltage tolerance	104 to 128 Vac	190 to 256 Vac
Power-source phasing	Single	Single
Frequency	50 to 60 Hz	5C to 60 Hz
Line-frequency tolerance	49 to 61 Hz	49 to 61 Hz
Steady-state current (max)	2.8 A	1.4 A
Power consumption (max)	340 W	340 W

The DEC ChannelServer II is equipped with detachable power cables to accommodate different country types (see Table 2-4).

Table 2-4   Power Cable Part Numbers

Country	Part Number	Voltage
USA, Canada, Japan, and Mexico	17-00083-43	120 Vac
U.K.	17-00209-04	240 Vac
Generic Europe	17-00199-07	240 Vac
Switzerland	17-00210-04	240 Vac
Germany	17-00209-04	240 Vac
Australia and New Zealand	17-00198-04	240 Vac
Italy	17-00364-05	240 Vac
France	17-00199-07	240 Vac

2.1.5 Software Requirements

To properly test the hardware installation, have the proper diagnostic software available on a host connected by the same Ethernet LAN. The host system you use for testing does not have to be the load host you use for the DECnet/SNA Gateway-CT software. See Chapter 5 for details.

2.2 Interconnection Cabling

All the points of interconnection for external cabling are on the front of the DEC ChannelServer II cabinet. No cables are attached anywhere else on the DEC ChannelServer II. Use the following information to order cables.

- To connect the DEC ChannelServer II to an Ethernet tranceiver, use either Digital 15-pin connector Thickwire cable (BNE3H, BNE3L, or BNE3M) or a Thinwire Ethernet cable (BC16M-XX).

- To connect the DEC ChannelServer II to the mainframe, use two 40-pin channel cables, IBM part number 5353920 (or compatible).

CHAPTER 3

3

Hardware Installation

The following sections tell you step-by-step how to install the
DEC ChannelServer II hardware.

3.1 Overview of the Hardware Installation Procedure

Before you start the DEC ChannelServer II installation procedure, be sure
you have performed the site preparation requirements discussed in Chapter 2.
Then follow these steps:

- Unpack the hardware.

- Complete the *DEC ChannelServer II Identification Card*.

- Install the DEC ChannelServer II.

- Select the switch settings on the DEC ChannelServer II.

- Power up the unit.

3.2 Unpacking the DEC ChannelServer II Hardware

To unpack the DEC ChannelServer II:

1 Visually check the equipment for possible damage in shipment.

2 Follow the instructions on the shipping carton to unpack the
   DEC ChannelServer II.

3 Verify that there is enough clearance in the unpacking area for removing
   the DEC ChannelServer II from the skid.

4 Ensure that the shipping carton contains the items illustrated in
   Figure 3–1.

Figure 3-1   Shipping Carton Contents
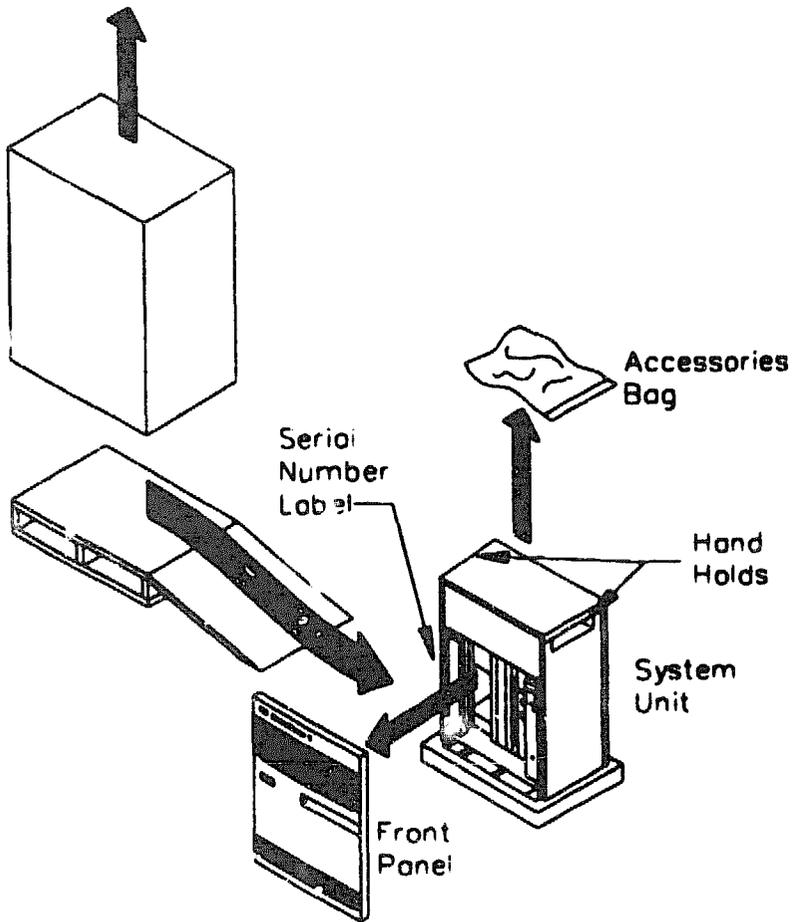
LKG-3861-90A

5   Remove the tools and accessories from the shipping carton and check for the following items:

- DECconnect cable (for console terminal)

- DECconnect-to-RS-232 (EIA-232-D) adapter

- Thickwire Ethernet loopback connector

- ThinWire Ethernet tee

- ThinWire Ethernet terminator (2)

- ThinWire Ethernet strain relief

- System power cable

- System cover panel keys (2)

6   Remove the shipping carton from the DEC ChannelServer II system.

7   Lower the ramp and remove the DEC ChannelServer II unit from the skid according to the instructions on the shipping carton.

8   Roll the DEC ChannelServer II unit to the location where it will be used.

3.3 Completing the Identification Card

Complete the *DEC ChannelServer II Identification Card*. The Ethernet address is written on a label attached to the front of the DESQA module panel. Fold the card, and place it in the pocket that is behind the front panel on the DEC ChannelServer II unit.

3.4 Connecting the DEC ChannelServer II

1   All the system controls for the DEC ChannelServer II are located behind the front panel. Do not install the front panel until you have finished cabling and configuring the system.

2   Install the VT100, VT200, or VT300 series console terminal. The console terminal cable should be unpacked from the accessories bag.

3   Connect the console terminal cable to the console terminal and to the system terminal port (see Figure 3–2). Use the terminal cable adapter included in the accessories bag for VT100 and VT200 series terminals.

4   Connect the terminal console power cord to an ac outlet.

5   Connect the power cord to the DEC ChannelServer II as illustrated in Figure 3–3. Do not plug in the DEC ChannelServer II at this time.

Figure 3–2   Connecting the Console Terminal Cable to the Terminal Port
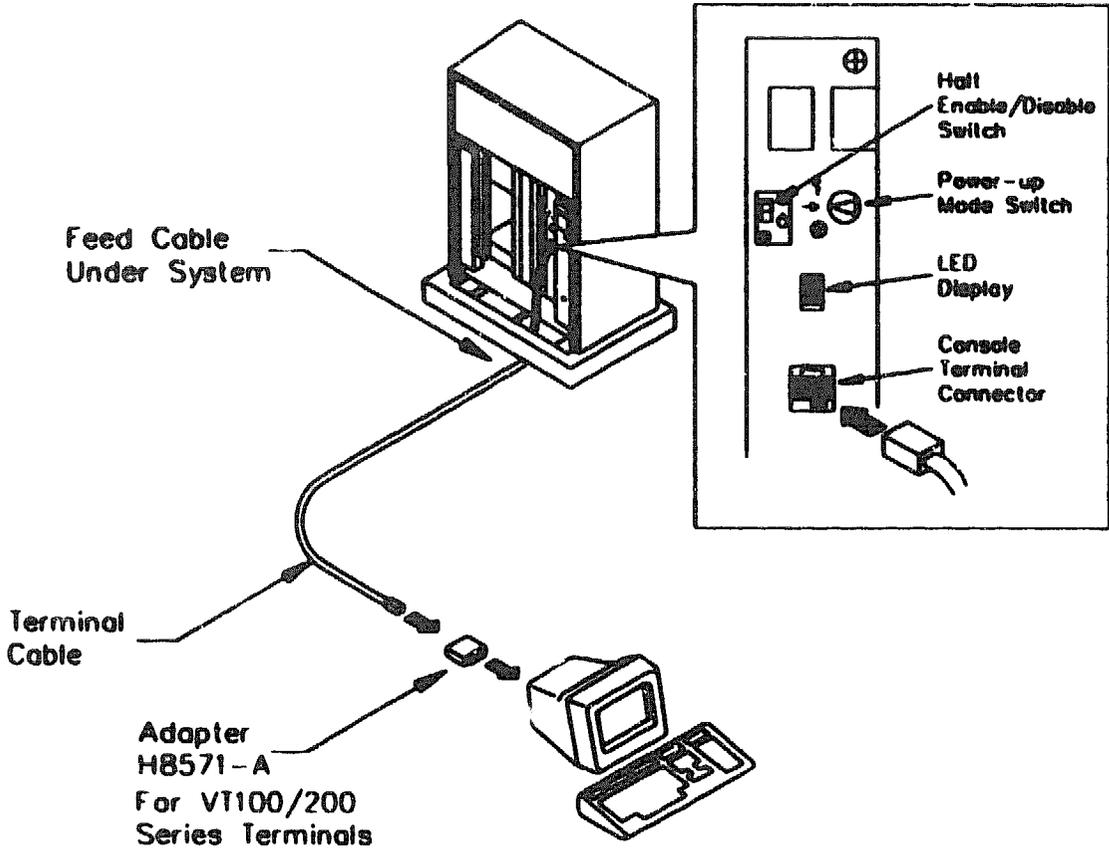
LKG-3882-90A

Figure 3-3   Connecting the System Power Cord

To Outlet
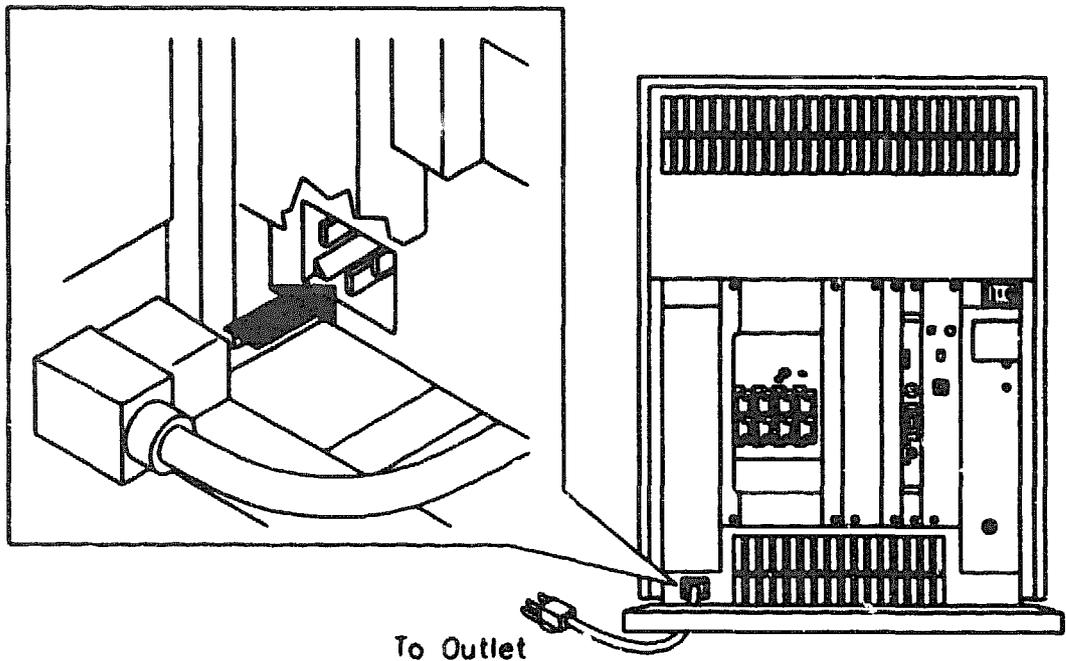
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3.5 Switch Settings on the DEC ChannelServer II

There are four switches on the DEC ChannelServer II system, each is described in the following sections. See Section 3.6 for the actual installation settings.

3.5.1 Halt Enable/Disable Switch

Table 3-1 describes the operation of the Halt Enable/Disable switch.
Figure 3-4 shows the switch.

Table 3-1   Halt Enable/Disable Switch (Two-Position Toggle)

Switch Position	Function
Halt Enable/Disable	Enable, the "up" position (indicated by a dot in a circle), allows you to stop the processor at the console with the [Break] key. The system will stop at the console prompt (>>>).
	Disable, the "down" position (indicated by the dot above the circle), allows the system to automatically boot on power-up. The [Break] key on the console keyboard is disabled.

Figure 3-4   Switch Locations
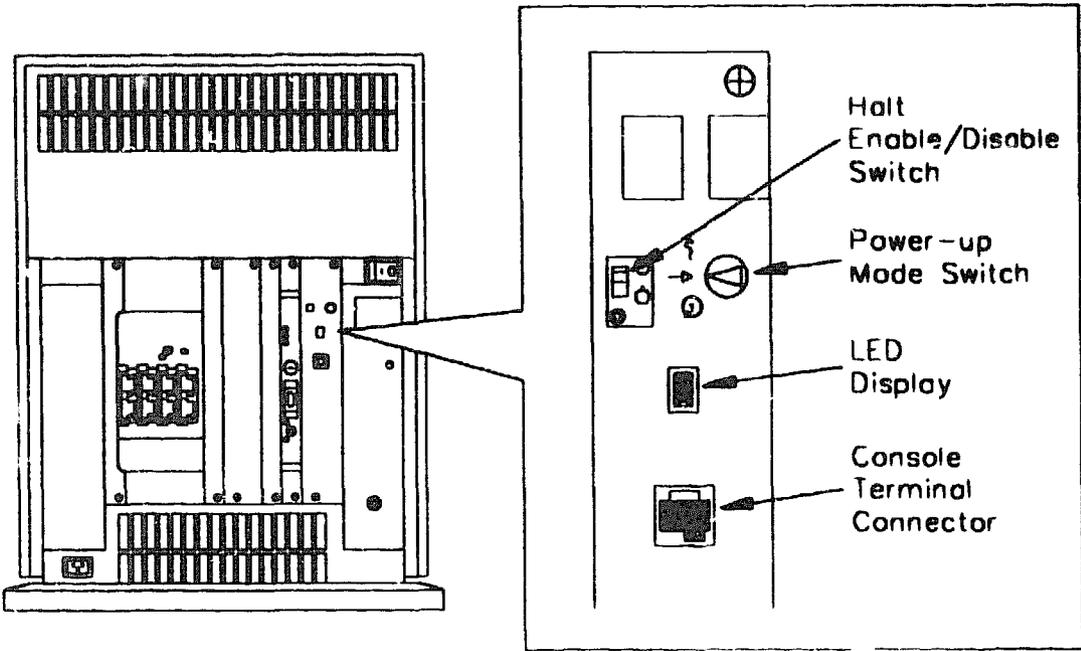
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3.5.2   Mode Switch

The Mode switch operates as described in Table 3-2. Figure 3-4 shows the switch.

Table 3-2   Mode Switch (Three-Position Rotary)

Switch Position	Mode
Human profile	Language Inquiry; displays language selection screen on console on power-up under certain conditions.
Arrow	Run (normal operation); indicated by an arrow.
T in a circle	Test position; used for manufacturing tests only. Do not operate the DEC ChannelServer II in this mode.

3.5.3   Baud Switch

The Baud switch sets the baud rate for communications between the
DEC ChannelServer II and the console terminal. This switch is located
on the back of the CPU panel, and is factory-preset at 9600 baud. Digital
Equipment Corporation recommends that you leave the DEC ChannelServer II
system setting at 9600 baud and set your console terminal at 9600 baud to
match the system setting. If you need to change the setting, take the following
steps:

3.5.3.1   Changing the Baud Rate Setting

1   Disconnect the console terminal cable from the front of the CPU panel.

2   Depress and turn counter-clockwise the two quarter-turn fasteners that
hold the CPU panel onto the cabinet. These fasteners are located at the
top and bottom of the panel (see Figure 3–5).

3   Pull the CPU panel gently away from the cabinet, and rotate it around to
the left. You need not disconnect the ribbon cables that attach the CPU
panel to the CPU.

4   Locate the baud rate switch near the edge of the CPU panel (a white
thumbwheel switch numbered from 0-7) and the table that shows the
correspondence between the baud switch value and baud rates. The table
is printed on a label attached to the back of the CPU panel.

5   Select the appropriate baud rate and reattach the CPU panel with the
two screws, using care not to pinch or damage the ribbon cables during
reassembly.

6   Reattach the console terminal cable.

Figure 3-5   Changing the Baud Setting

Fastener

CPU

Cable
To
CPU

Baud Rate
Select Switch
(9600 is Factory
Setting)

Fastener
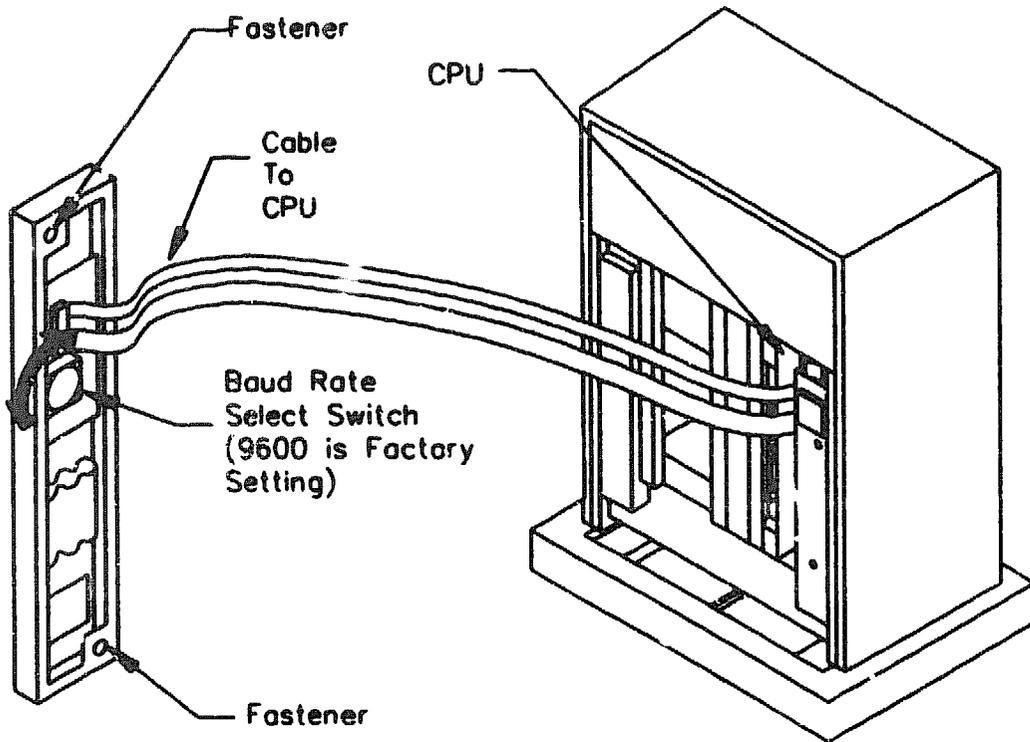
LKG- 4011-90A

3.5.4   Channel Enable/Disable Switch

The Channel Enable/Disable switch (see Figure 3-6) allows the DEC
ChannelServer II to be enabled or disabled on the channel. You can monitor
channel activity at the Channel Activity LED. The switch and LED are located
on the Channel I/O bulkhead. The LED will be lit only when there is actual
communication over the channel.

Figure 3-6   Checking the Channel Enable/Disable Switch
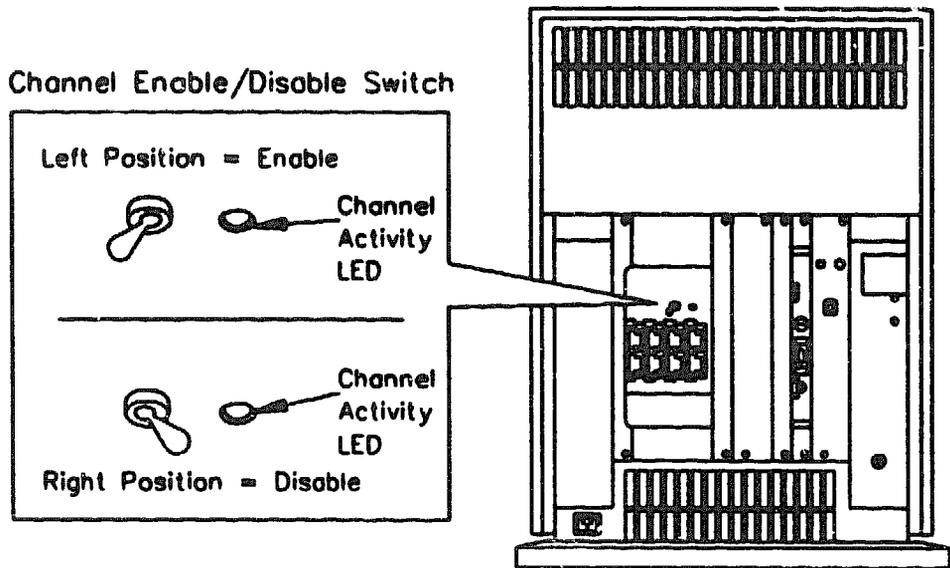
LKG-3868-90A

3.6 Switch Settings for Installation

1   Set the Baud switch to the same baud rate as the console terminal, usually 9600 (switch setting number 5).

2   Set the Mode switch to the top position for the Language Inquiry Mode (see Figure 3-4).

3   Set the Halt/Enable switch to the Enable position (up). This setting is next to the dot-inside-a-circle-figure, as shown in Figure 3-4.

4   Verify that the Channel Enable/Disable switch is set to the Disable position (see Figure 3-6).

3.7 Power Up the DEC ChannelServer II

1   Verify that the power switch on the control panel is OFF (0).

2   Plug in the DEC ChannelServer II power cord.

3   Set the baud rate on the console terminal to the correct baud rate, usually 9600 baud. The DEC ChannelServer II unit is factory preset to 9600 baud.

4   Set the terminal power switch to ON (1).

5   At the front of the system, turn on the power by setting the ON/OFF switch
    to the ON (1) position. The switch glows orange when power is applied to
    the system.

6   If the LED display on the CPU panel is not lit and/or you do not hear the
    sound of the cooling fan, turn off the system. Unplug the main power cable
    immediately. Check power cables and outlets and try again.

7   As the DEC ChannelServer II powers up, the Language Selection Menu
    may display on the console terminal (see Figure 3–7).

Figure 3–7   Language Selection Menu

```
KA655-B V5.3, VMB 2.7

1) Dansk
2) Deutsch (Deutschland, Oesterreich)
3) Deutsch (Schweiz)
4) English (United Kingdom)
5) English (United States)
6) Espanol
7) Francais (Canada)
8) Francais (France/Belgique)
9) Francais (Suisse)
10) Italiano
11) Nederlands
12) Norsk
13) Portugues
14) Suomi
15) Svenska
(1..15):
```
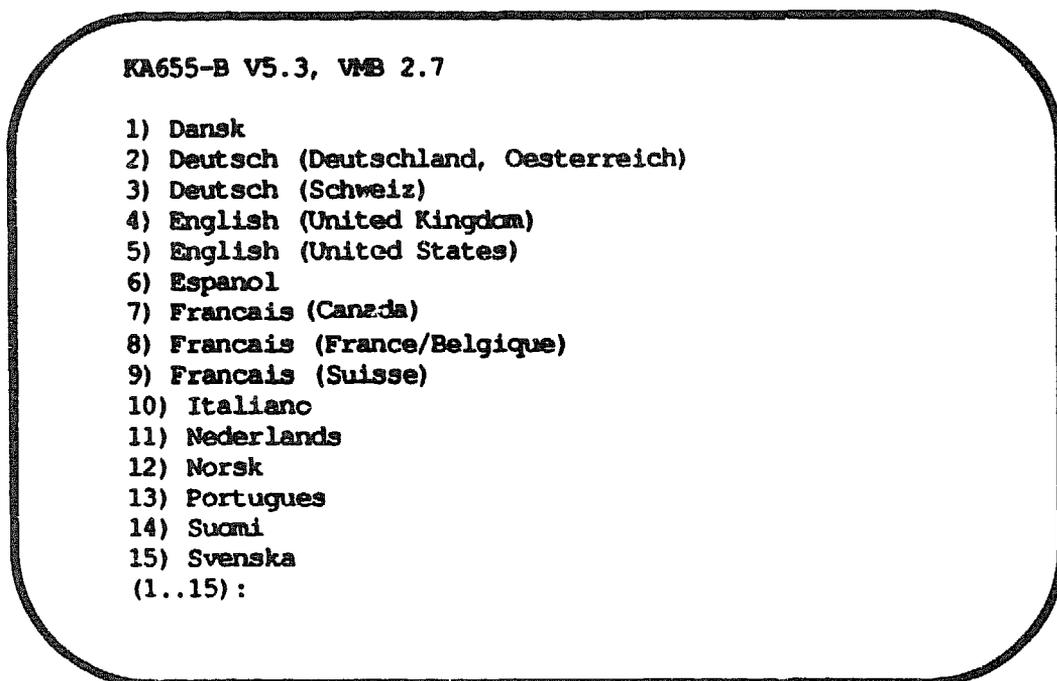
8   On the CPU Panel, notice that the LED display is halted at 8 (see
    Figure 3–8). The language selection menu will then appear on the console
    screen.
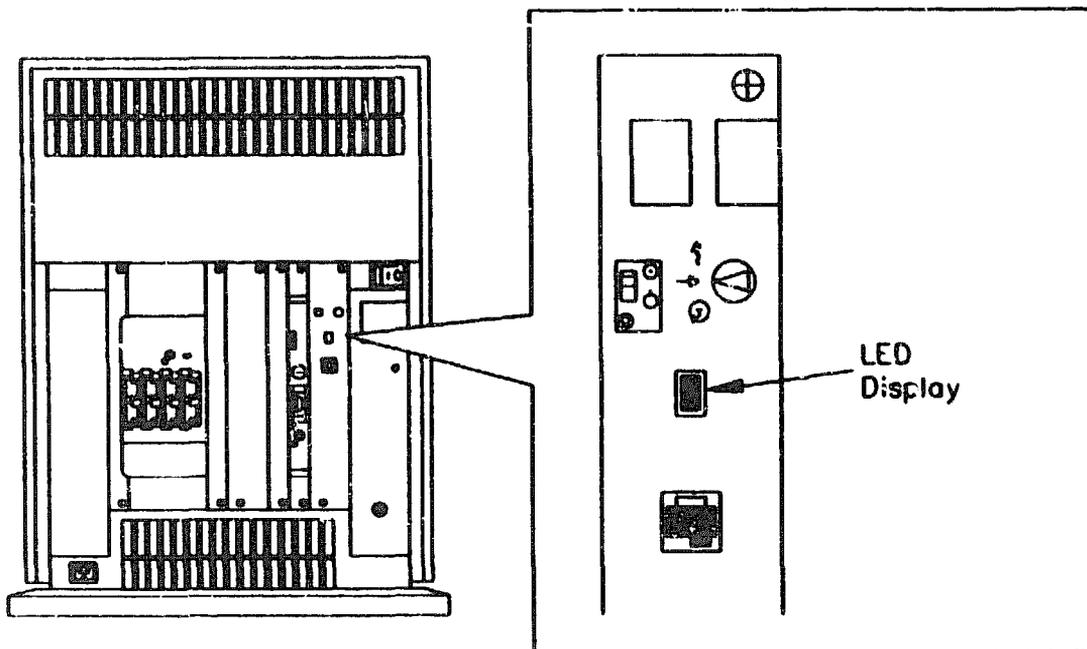
LKC-3870-90A

9   Enter the number corresponding to the appropriate language choice, and press the ⌈Return⌋ key.

Note If the terminal does not support multiple languages, the selection menu does not appear and the system defaults to English.

10 You will see a countdown from 40 to 3 on the terminal console. This countdown takes a few seconds. Then the console displays the >>> console prompt.

11 Verify that the Successful Power-On display appears if the system passed the self-tests. (see Figure 3-9).

Figure 3-9   Successful Power-On Display

```
KA655-B V5.3, VMB 2.7
Performing normal system tests.

40..39..38..37..36..35..34..33..32..31..30..29..28..
27..26..25..24..23..22..21..20..19..18..17..16..15..
14..13..12..11..10..09..08..07..06..05..04..03..

Tests completed.
>>>
```

12 Turn the Mode switch to the Run Mode, indicated by an arrow. The
   selected language is saved.

CHAPTER 4

4

Cabling

This chapter describes 370-type mainframe channel principles and shows you how to attach channel and Ethernet cables to the DEC ChannelServer II.

4.1 Channel Principles

The channel is the connection device for 370-type architecture systems. The channel connects with two cables each containing up to 24 individually shielded conductors that end in 48-pin connectors. One cable is the bus cable, which carries data and command signals; the other is the tag cable, which carries channel control signals.

Channel devices, including DEC ChannelServer II systems, are daisy-chained together on the channel. The bus cable from the mainframe is connected to the BUS IN connector on the first channel device. The BUS OUT connector on that device is connected to the BUS IN connector on the next device. The same procedure follows for the TAG cables. If the DEC ChannelServer II is the last device on the channel, a terminator is installed on the BUS OUT and TAG OUT connectors.

The connectors on the cables and connecting devices are either a lighter color or a darker color. The IN connector on the channel or channel device is the darker color; the OUT connector is a lighter color. In all cases, dissimilar colors connect. You may want to label the connectors and cables to avoid confusion.

4.2 Channel Cabling Procedure

Before starting the cabling procedure, verify that the DEC ChannelServer II system meets the following conditions:

- The entire cabling procedure is performed with the DEC ChannelServer II power OFF.

- The mainframe channel bus and tag cables are installed on the channel, (but disabled for this cabling operation), and the cable ends are labeled appropriately "bus" and "tag."

Note *Perform the cabling procedure carefully. Communications to the mainframe are interrupted if the DEC ChannelServer II is not cabled properly. Someone from the mainframe computer support staff should be on site for consultation.*

4.2.1 Site Identification

You must first determine whether you are installing the DEC ChannelServer II as a connecting node or an end node. Figure 4–1 and Figure 4–2 are conceptual illustrations of a connecting node and an end node. See Section 4.2.2 if your DEC ChannelServer II is a connecting node. See Section 4.2.3 if your DEC ChannelServer II is an end node.

Figure 4–1   DEC ChannelServer II as a Connecting Node
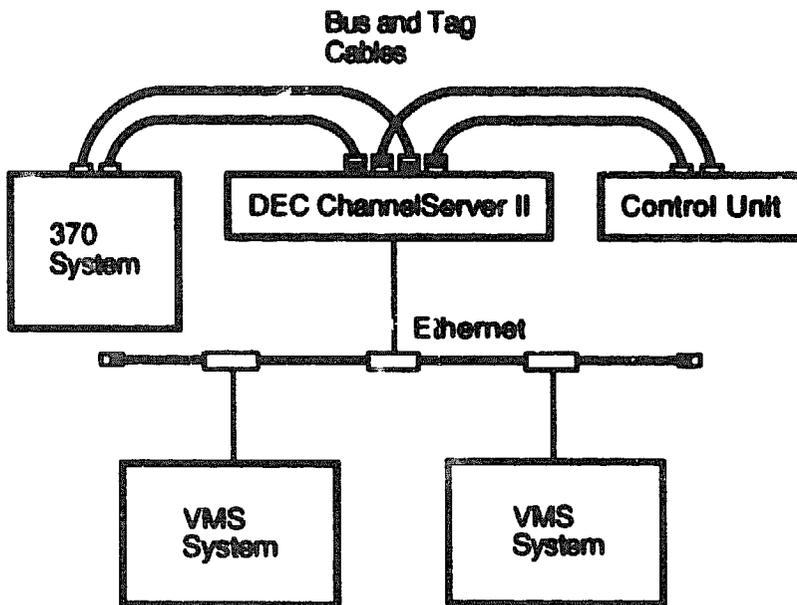
LKG–4213–90R

Figure 4-2   DEC ChannelServer II as an End Node

LKG-4212-90R
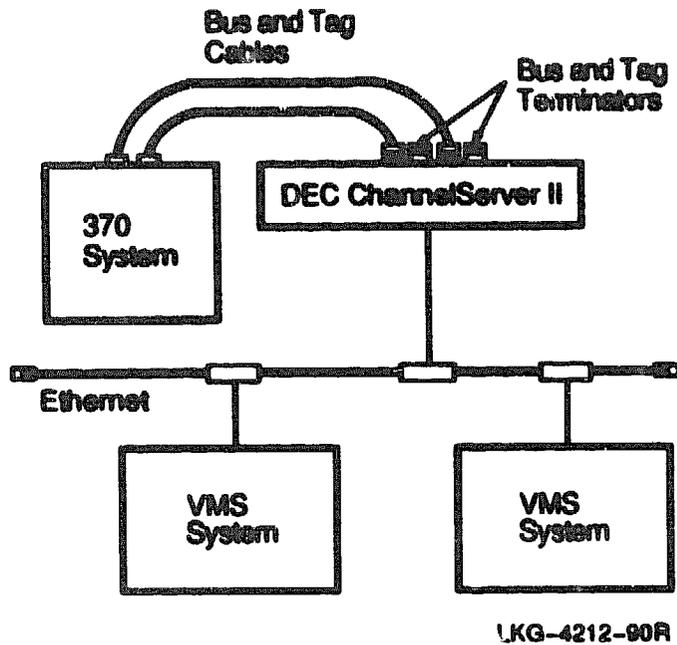
4.2.2 Connecting your DEC ChannelServer II as a Connecting Node

Connect the cabling to the DEC ChannelServer II in the following sequence (see Figure 4-3):

NOTE You will need a flat-blade screwdriver for this procedure.

Figure 4-3   Bus and Tag Cable Connectors

LKG-3875-90A
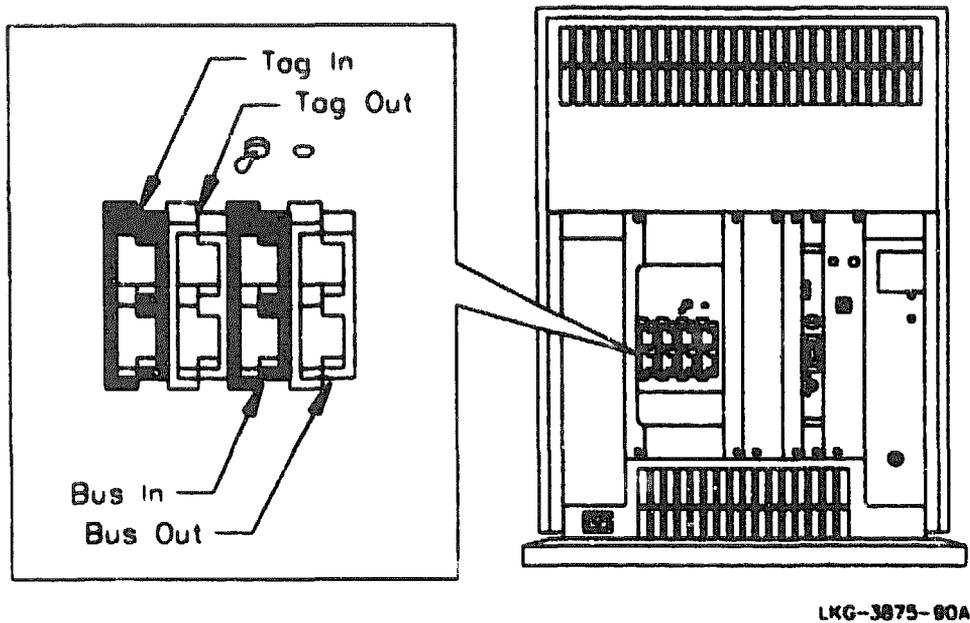
NOTE *Use care when you handle the bus and tag connectors because the pins in these connectors are fragile.*

1   Verify that the mainframe is halted or the channel isolated before you disconnect the bus and tag cables.

2   Locate the connector of the TAG cable that you wish to use as the TAG IN cable for the DEC ChannelServer II. (This connector will be at the other end of the TAG OUT cable of the previous device along the channel.)

   a   Connect the tag cable to the dark-colored TAG IN connector on the DEC ChannelServer II.

   b   Secure the connector with the screw located in the center of the connector.

3   Locate the connector of the TAG cable that leads to the next device along the channel. (This connector will be the attached to the TAG OUT connector on the DEC ChannelServer II.)

   a   Connect the tag cable to the light-colored TAG OUT connector on the DEC ChannelServer II.

   b   Secure the connector with the screw located in the center of the connector.

4   Locate the connector of the BUS cable that you wish to use as the BUS IN
    cable for the DEC ChannelServer II. This connector will be at the other
    end of the BUS OUT cable of the previous device along the channel.

    a   Connect the bus cable to the dark-colored BUS IN connector on the
        DEC ChannelServer II.

    b   Secure the connector with the screw located in the center of the
        connector.

5   Locate the connector of the BUS cable that leads to the next device along
    the channel. This connector will be attached to the BUS OUT connector on
    the DEC ChannelServer II.

    a   Connect the bus cable to the light-colored BUS OUT connector on the
        DEC ChannelServer II.

    b   Secure the connector with the screw located in the center of the
        connector.

6   Set the Channel Enable/Disable switch to the Channel Enable position.
    When you finish cabling the DEC ChannelServer II, your system should
    look like Figure 4-4.

Figure 4-4   Bus and Tag Cables installed
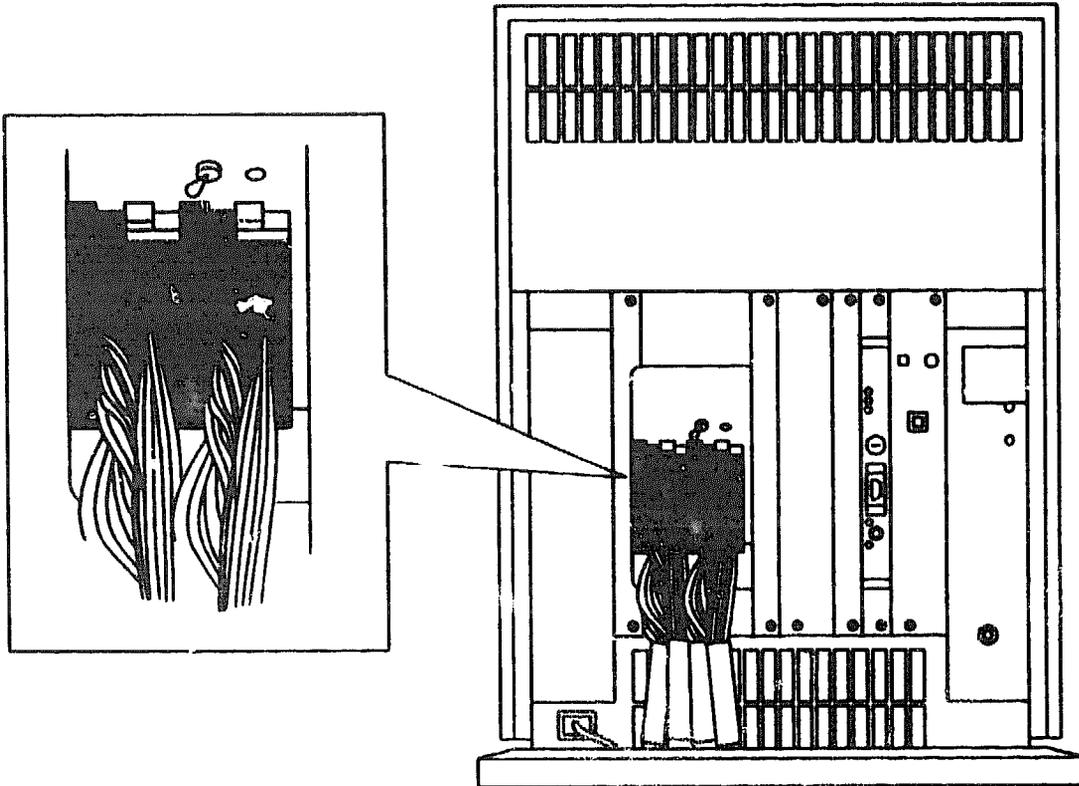
LKG-3876-90A

4.2.3   Connecting your DEC ChannelServer II as a End Node

If you are connecting your DEC ChannelServer II as an end node (the last
device on a channel), you still follow the cabling procedures described in
Section 4.2.2. However, instead of connecting BUS OUT and TAG OUT cables,
attach the terminators, as shown in Figure 4-5. Remember to set the Channel
Enable/Disable switch to the Channel Enable position when you finish.

*NOTE The Bus and Tag terminators are **not** interchangeable. Ensure that you install
the correct terminator on each connector.*

Figure 4-5 DEC ChannelServer II Cabled as an End Node

Bus Terminator

Tag Terminator
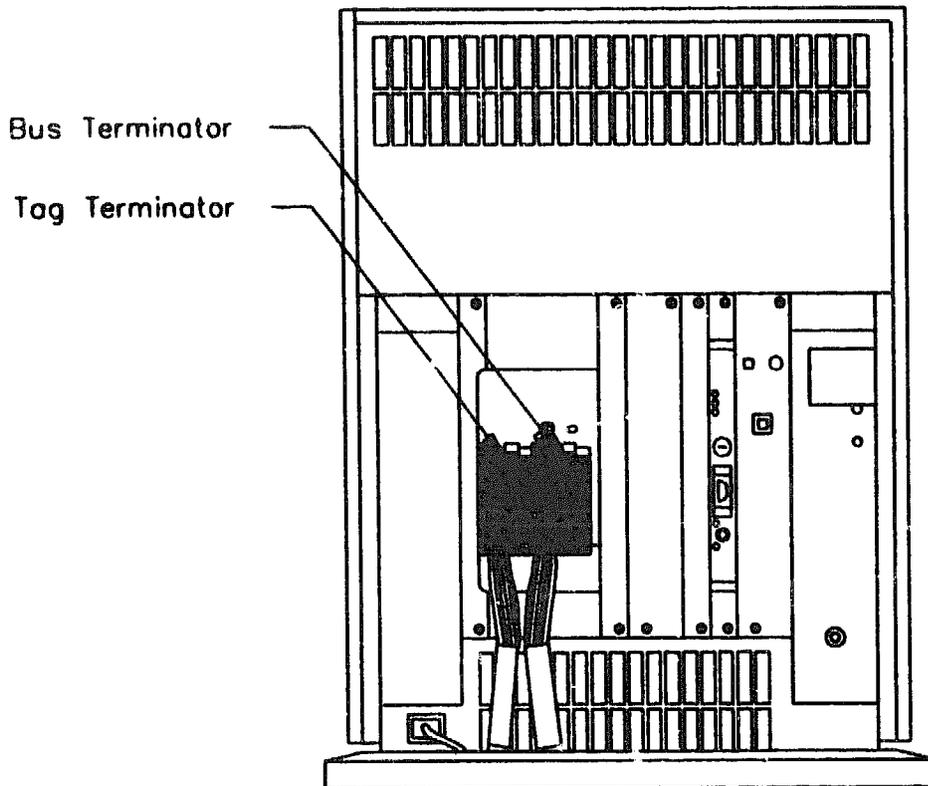
LKG-4125-90A

4.3 Ethernet Identification and Cabling Procedure

NOTE You will need a flat-blade screwdriver for this procedure.

Step 1: Identify the Ethernet connection available at your site.

As part of the Ethernet cabling procedure, you need either a ThinWire or Thickwire connection at your site. See Figure 4-6.

A ThinWire Ethernet connection need not terminate at the DEC ChannelServer II system, as Figure 4-9 shows. If your ThinWire Ethernet cable continues beyond the DEC ChannelServer II system, attach the plastic strain-relief clamp included in the accessory bag. To attach the clamp, make a loop in the ThinWire cable no less than 8 centimeters (3.2 inches) in diameter. Attach the clamp at the base of the loop where the cable meets and runs

parallel to itself. This will prevent a sharp bend in the ThinWire Ethernet cable and ensure proper operation of your Ethernet connection.

Figure 4-6   The Two Types of Ethernet Connections

Thickwire   ThinWire
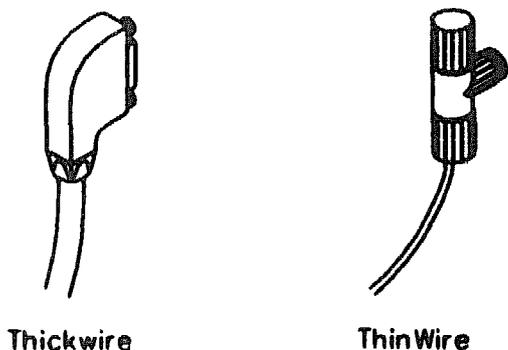
LKG-4128-90A

Step 2: Identify the Ethernet module shipped with your DEC ChannelServer II system.

You must manually configure your DEC ChannelServer II system to work properly with your Thickwire or ThinWire Ethernet connection. Because one of two types of Ethernet modules may be shipped with your DEC ChannelServer II system, you must first identify the module installed in your particular DEC ChannelServer II.

The first type of module has a pushbutton switch on the front panel that is labeled "Thickwire/ThinWire"; the second type has no pushbutton, but instead has a jumper block on the printed circuit board of the Ethernet module. See Figure 4-7 for the location of the pushbutton or jumper block.

Figure 4-7   Location of Pushbutton or Jumper Block on the Ethernet Controller Board

Jumper Block
in Thickwire Ethernet
Position
(Not on all modules)

Thickwire/ThinWire
Switch
(Not on all
modules)
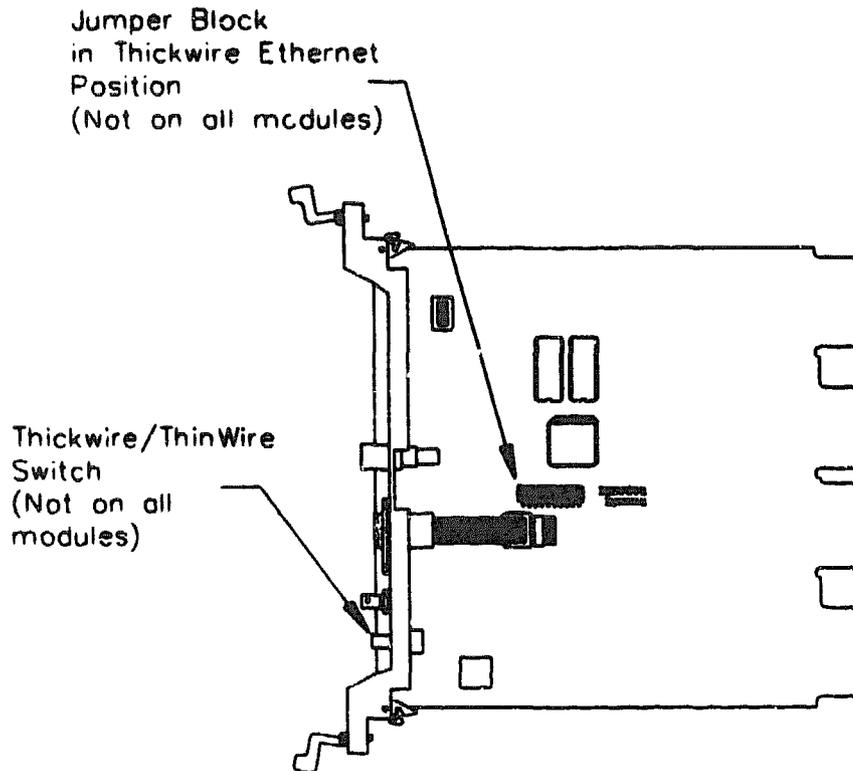
LKG-4127-90A

Once you know the type of Ethernet connection available at your site and the type of Ethernet module shipped with your particular DEC ChannelServer II system, refer to the Ethernet Module Identification Chart (Figure 4-8.) This chart will direct you to the section in this chapter that explains how to configure your Ethernet board and attach the cable. Find the callout number that fits your situation, and turn ahead to the section that describes the procedure that meets your needs.

Figure 4-8   Ethernet Module Identification Chart

| | Ethernet Connection Type | |
	Thinwire	Thickwire
Ethernet Board Type — Jumper block on DESQA board	①	③
Ethernet Board Type — Pushbutton on DESQA handle	②	④

① ThinWire Ethernet Connection (Jumper block DESQA board)

The DEC ChannelServer II is configured at the factory for ThinWire Ethernet. If you are using ThinWire Ethernet, and this is the first installation of the DEC ChannelServer II, connect the ThinWire Ethernet cable as shown in Figure 4-9. You are now finished with the Ethernet cabling procedure for the DEC ChannelServer II system.

If the DEC ChannelServer II was previously configured for Thickwire Ethernet, move the jumper block mounted on the Ethernet board to the "ThinWire" setting. Follow the procedure described in Section 4.3.1 to complete this step. After you have moved the jumper block, connect the ThinWire cable as shown in Figure 4-9.

Figure 4-9   Attaching the ThinWire Ethernet Cable
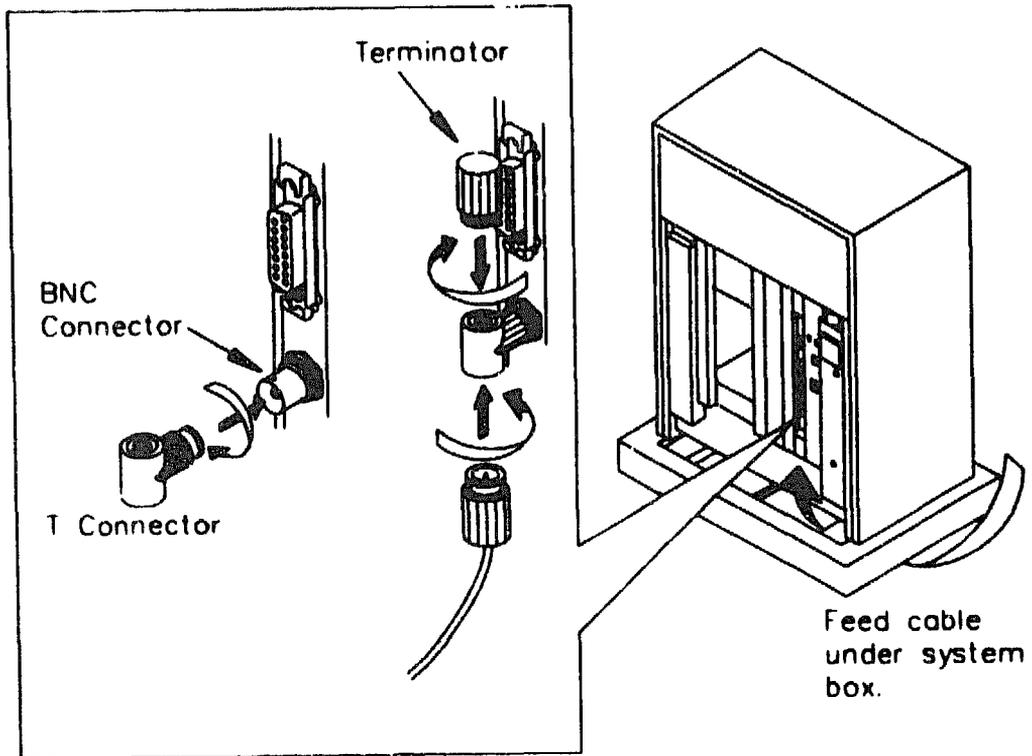
BNC
Connector

T Connector

Terminator

Feed cable
under system
box.

LKG-4129-90A

❷ ThinWire Ethernet Connection (pushbutton on DESQA panel)

The DEC ChannelServer II is configured at the factory for ThinWire
Ethernet. If you are using ThinWire Ethernet, and this is the first
installation of the DEC ChannelServer II:

Step 1: Connect the ThinWire Ethernet Cable

Connect the ThinWire Ethernet cable as shown in Figure 4-9.

Step 3: Check the pushbutton setting

Verify that the pushbutton on the front of the Ethernet module is still
in the "ThinWire" position, as it was when shipped from the factory.
You are now finished with the Ethernet cabling procedure for the DEC
ChannelServer II system.

● **Thickwire Ethernet Connection (jumper block on DESQA board)**

If you are using Thickwire Ethernet at your site, move the jumper block
on the Ethernet module board to the "Thickwire" position. Follow the
procedure described in Section 4.3.1 to complete this step.

After you have moved the jumper block to the Thickwire position, connect
the Thickwire Ethernet cable as shown in Figure 4-10. You are now
finished with the Ethernet cabling procedure.

Figure 4-10   Attaching the Thickwire Ethernet Cable
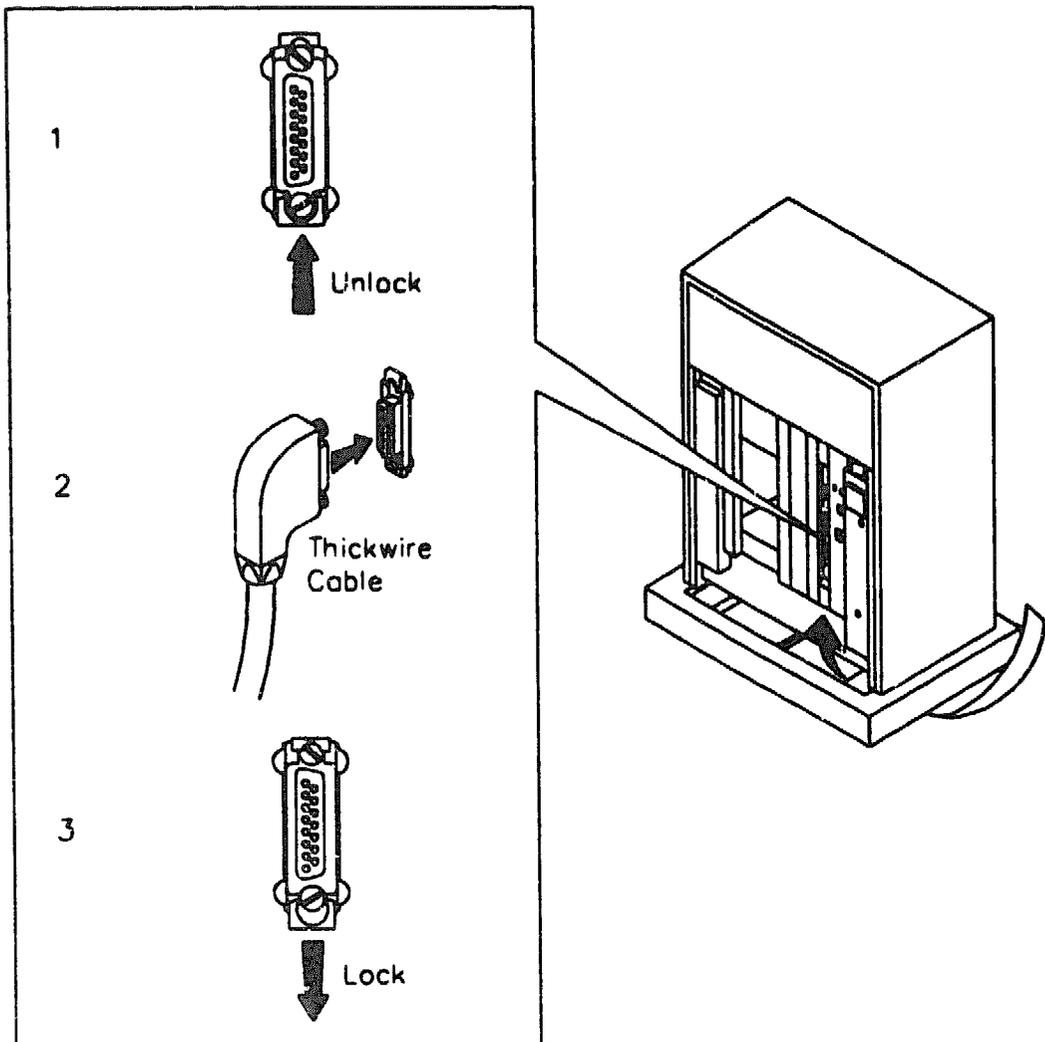
LKG-4130-90A

🔀 Thickwire Ethernet Connection (pushbutton on DESQA panel)

The DEC ChannelServer II is configured at the factory for ThinWire
Ethernet, so you must change the setting of the pushbutton on the front of
the Ethernet module to the Thickwire setting.

Verify that the pushbutton on the front of the Ethernet module is set to the "Thickwire" position, and connect the Thickwire Ethernet, as shown in Figure 4-10. You are now finished with the Ethernet cabling procedure.

4.3.1 Moving the Jumper Block on the Ethernet Module Board

To determine if you need to follow the procedure described in this section, refer to Section 4.3 to identify your Ethernet connection.

Step 1: Remove the Ethernet module from the DEC ChannelServer II system

Disconnect any Ethernet cables attached to the module.

Loosen the two quarter-turn fasteners securing the Ethernet module to the card cage by pressing the fasteners in and turning them counterclockwise.

Pull the release levers on the module outward to release the module from the backplane, as shown in Figure 4-11. Gently slide the module out of the DEC ChannelServer II.

Figure 4-11   Removing the Ethernet Board
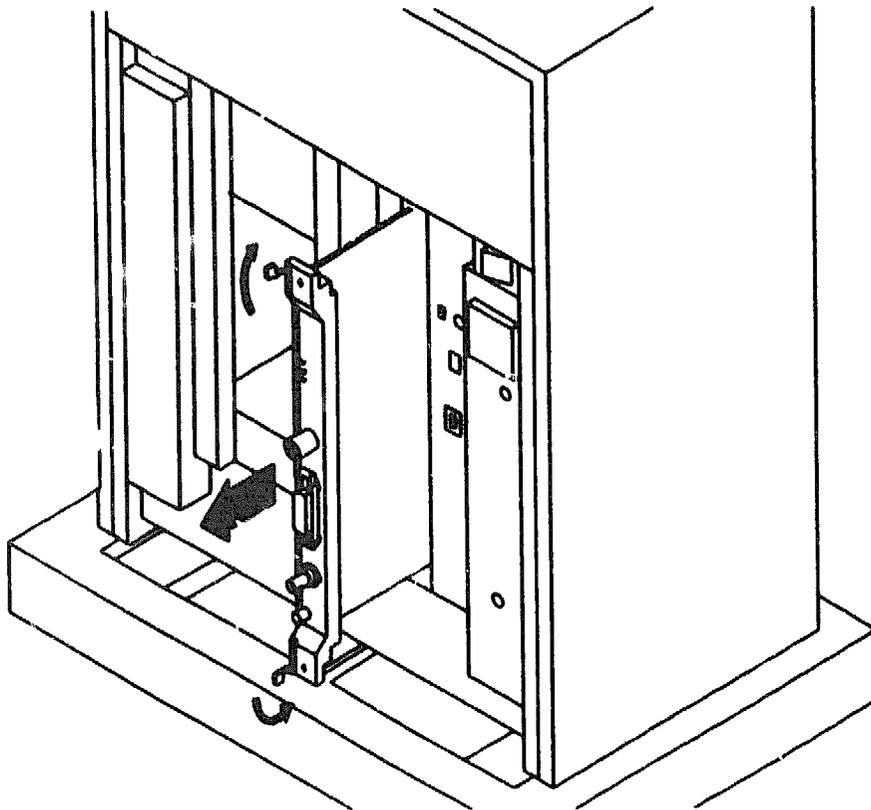
LKG– 4131–90A

Step 2: Move the jumper block

Locate the jumper block on the Ethernet module board as shown in
Figure 4-12. Carefully pry the jumper block loose with either your fingernails
or a small screwdriver. Notice that the jumper block has two rows of sockets,
and the Ethernet board has three rows of pins. The center row of pins is
common to both Thickwire and ThinWire connections. Place the jumper block
over the two rows of pins that will give you the Ethernet setting you want.
The Ethernet board itself is labeled "ThinWire" and "Thickwire" next to the
appropriate rows of pins.

Figure 4–12   Location of Jumper Block on the Ethernet Controller Board

Jumper Block
in Thickwire Ethernet
Position
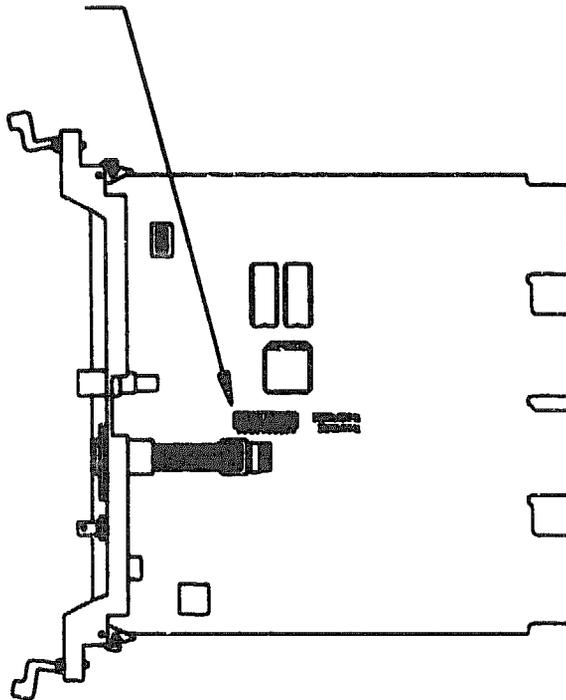
LKG-3883-90A

Step 3: Reinstall the Ethernet Module

After you have moved the jumper block to the set of pins that matches
your site's Ethernet connection, slide the Ethernet module back into the
DEC ChannelServer II cabinet. Ensure that the top and bottom edges of the
module follow the plastic guides in the cabinet, and seat the module firmly into
the backplane with the release levers. Reattach the quarter-turn fasteners.

Return to the appropriate section of this chapter to complete the Ethernet
cabling procedure.

CHAPTER 5

5

Installing Software Diagnostics

This chapter explains how to install the diagnostic software cn a diagnostic host. This host must be on the same Ethernet LAN as the DEC ChannelServer II and can also be the software load host. After you have installed the diagnostic software on a host system, you can down-line load portions of it into the DEC ChannelServer II's memory as you need them.

5.1 Installing the Diagnostic Software

As you install the DECnet/SNA Gateway-CT software, the system will prompt you to choose between installing just the diagnostic software or installing the entire DECnet/SNA Gateway-CT software kit. When prompted, choose to install only the diagnostic software, as this documentation does not explain the software installation.

The procedure for installing files on a VMS system is automated. You simply answer questions displayed while the procedure (VMSINSTAL) runs. Most questions require a yes (Y) or no (N) answer.

The following illustration shows how the installation information is presented.

Follow the dialog on the left pages.

Read the explanations of the callouts.
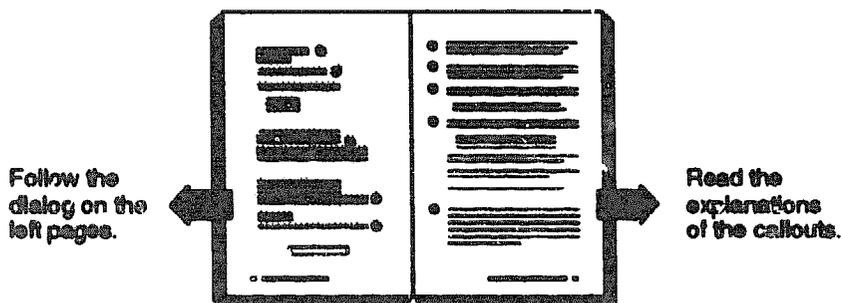
Default answers appear in brackets throughout the installation procedure. Press [Return] to accept a default answer.

```
Username: SYSTEM      [Return]  ●
Password: password [Return]

$ SET DEFAULT SYS$UPDATE [Return]

$ @VMSINSTAL SNACSA020 ddcu: [Return]  ●


       V.../VMS Software Product Installation Procedure V5.3

It is dd-mmm-yyyy at hh:mm.
Enter a question mark (?) at any time for help.


* Are you satisfied with the backup of your system disk [YES]?  ●


The following products will be processed:

  SNACSA V2.0

    Beginning installation of SNACSA V2.0 at hh:mm

%VMSINSTAL-I-RESTORE, Restoring product saveset A...

%VMSINSTAL-I-RELMOVED, The product's release notes have been successfully
moved to SYS$HELP.

        You can install either the entire Gateway-CT kit or just the
        DEC ChannelServer II diagnostic software.

* Do you want to install the entire Gateway-CT kit [YES]? NO      [Return]  ●

%VMSINSTAL-I-MOVEFILES, Files will now be moved to their
                        target directories...

        Installation of SNACSA V2.0 completed at 15:54

        VMSINSTAL procedure done at hh:mm
```

⦿ Digital Equipment Corporation recommends that you install software from the system manager's account [SYSTEM] with your default device and directory set to SYS$UPDATE.

⦿ VMSINSTAL prompts you if you do not supply the product and device names. If you want to be prompted for the product name, device name, and installation options, type the following:

$ @SYS$UPDATE:VMSINSTAL [Return]

SNACSA020:
where SNACSA020 is the name of the distribution kit.

ddcu:
where ddcu is the device name where the distribution kit will be mounted for the Gateway-CT and diagnostics installation media; *dd* is the device, *c* is the controller ID, and *u* is the unit number. It is not necessary to use the console drive to install Gateway-CT. MTA0: is the device name used in examples in this document.

⦿ Before you proceed with the installation, make sure you have a good backup copy. If you are satisfied with the backup of your system disk, press [Return]. If you do not have a good backup copy, type NO and press [Return] to end the installation.

⦿ Type NO and press [Return]. VMSINSTAL copies the diagnostic software to the system and ends the installation.

If you wish to install the DECnet/SNA Gateway-CT software, please refer to *DECnet/SNA Gateway-CT Installation.* Do not attempt to install the DECnet/SNA Gateway-CT software with this manual.

CHAPTER 6

6

Using MDM Diagnostics

This chapter explains how to down-line load and use the MicroVAX Diagnostic Monitor (MDM). Load the diagnostic software onto your diagnostic load host as explained in Chapter 5 before continuing with this chapter. If you have difficulty down-line loading the MDM diagnostics, refer to Section 6.2.3.

Two types of diagnostics are available for the DEC ChannelServer II, MicroVAX Diagnostic Monitor (MDM), and DESNX. The MDM diagnostic tests are designed to isolate and identify faults within the DEC ChannelServer II system to the defective field replaceable unit (FRU). DESNX diagnostic tests find channel-related communication problems (See Chapter 7).

Note *The IBM or compatible 370-type mainframe system is referred to as the mainframe.*

6.1 MDM Diagnostic Tests

Before using the MDM software:

- Notify the mainframe system manager to disable the DEC ChannelServer II from the channel.

- Verify that the Channel Active LED (see Figure 6–1) is not lit and set the Channel Enable/Disable switch to the Disable (right) position.

- Verify that a console terminal is connected to the DEC ChannelServer II.

Figure 6-1   Channel Enable/Disable Switch Location

LKG-·3888-90A
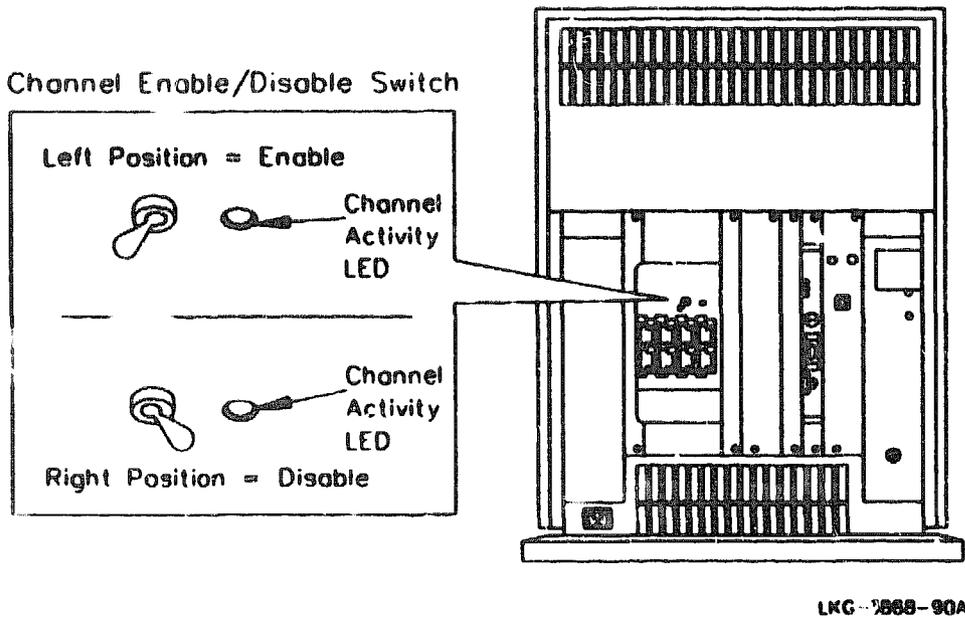
6.2 Loading the MDM Diagnostics

If you have not loaded the diagnostic software onto your diagnostic load host (as described in Chapter 5), do so now. After the diagnostic software is installed on the load host, it can then be down-line loaded to your DEC ChannelServer II as follows:

1   Set the Halt Enable/Disable switch on the CPU control panel to the enable position. See Chapter 1 for the location of the switch.

2   Press Break if the system is running, or turn on the system if the power is off.

3   Observe the countdown on the console terminal. A countdown from 40 through 3 should appear on the console terminal as the system self-tests. Figure 6-2 shows this display.

Figure 6-2 Introductory Countdown

```
KA655-B V5.3, VMB 2.7
Performing normal system tests.

40..39..38..37..36..35..34..33..32..31..30..29..28..
27..26..25..24..23..22..21..20..19..18..17..16..15..
14..13..12..11..10..09..08..07..06..05..04..03..

Tests completed.
>>>
```

4   At the console prompt, type the following command:

```
>>> B 100 XQ
```

to boot the DEC ChannelServer II from the Ethernet. You will then see the
number "2" appear and the prompt "bootfile:". Type:

```
bootfile: SNACSASMDM
```

The system will finish counting down to zero, and the MDM Introductory
Screen will appear.

Figure 6-3 MDM Introductory Screen

```
MicroVAX Diagnostic Monitor     Release 130    Version V4.1

            CONFIDENTIAL DIAGNOSTIC SOFTWARE
                     PROPERTY OF
            DIGITAL EQUIPMENT CORPORATION

Use Authorized Only Pursuant to a Valid Right-to-use License

Copyright (c) 1986, 1989
Digital Equipment Corporation


The current date and time is:  3-JUL-1988 01:37:03.05

Press the RETURN key to continue,
or enter the new date and time; then press the RETURN key.

        [DD-MMM-YYYY HH:MM]: 11-jan-1990 15:24

The current date and time is: 11-JAN-1990 15:23:59.09

The CONFIGURE command has not been executed.
```

5   Enter the time and date and press [Return].

6.2.1 Performing MDM Tests

Press [Return] and the main menu for MDM will appear as shown in Figure 6-4.

Between menus, you may see various loading and configuring messages. This
is a normal occurrence.

Figure 6-4   MDM Main Menu

```
MAIN  MENU                    Release 130   Version V4.1

1 - Test the system

2 - Display System Configuration and Devices

3 - Display the System Utilities Menu

4 - Display the Service Menu

5 - Display the Connect/Ignore Menu

6 - Select single device tests


Type the number; then press the RETURN key. >
```

If you select option 2 first, you will be able to check that your system contains all the necessary devices. Figure 6-5 shows an example of how your screen should appear. Some numbers in your screen will be different, but the CPU, Memory, DESNAA, and DEQNAA options should appear.

Figure 6-5   System Configuration and Devices Menu

```
MAIN  MENU                    Release 130    Version V4.1
SYSTEM CONFIGURATION AND DEVICES

       CPUA ... MicroVAX/rtVAX CPU
       KA655-BA MC=05 FW=51
       MEMA ... MicroVAX memory system
       16 Megabytes. 32768 Pages
       MS650 ... 16MB memory module
       DESNAA ...  DESNA-XA DECnet/SNA Channel Interface
       DEQNAA ... Ethernet controller
       DELQA/DESQA  L 08-00-2B-0F-5B-96

Press the RETURN key to return to the previous menu. >
```
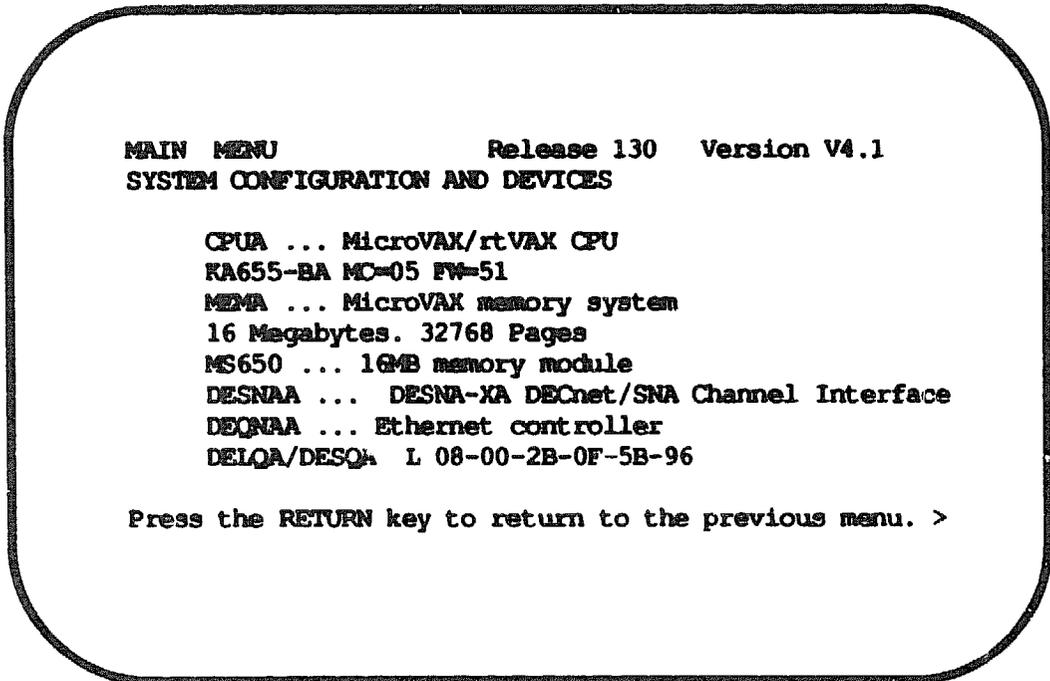
6.2.2   Field Replaceable Unit (FRU) testing

To test all FRUs, select option 1, Test the System, from the main menu. Option
1 runs a quick general test of the devices in the system and the way they work
together.

If you have access to the Field Service version of MDM, you can also test FRUs
under option 4, Display the Service Menu. This is a more involved test for
each of the devices in the DEC ChannelServer II and is described in the MDM
documentation, which you can order separately.

Whenever the test on any particular module fails, verify that the module is
correctly seated in its bus slot. Also, verify that all pertinent cables are not
loose or damaged.

The Ethernet module contains LEDs built into the front of the module itself
that indicate the result of built-in diagnostic tests.

6.2.3 Testing the Ethernet Module

Perform the following tests to verify that the Ethernet controller module and the DEC ChannelServer II are operating properly.

NOTE *To run the Ethernet citizenship test successfully, connect the DEC ChannelServer II to a working Ethernet transceiver (or, in the case of ThinWire connections, to a ThinWire Ethernet LAN), or install an Ethernet loopback connector on the Ethernet controller module's active Ethernet connector.*

6.2.3.1 Ethernet LEDs The Ethernet controller module has three LEDs visible on the front of the module, which indicate the results of the built-in Ethernet diagnostic tests (Figure 6–6). Table 6–1 defines the LED indications.

Figure 6–6   Ethernet LEDs
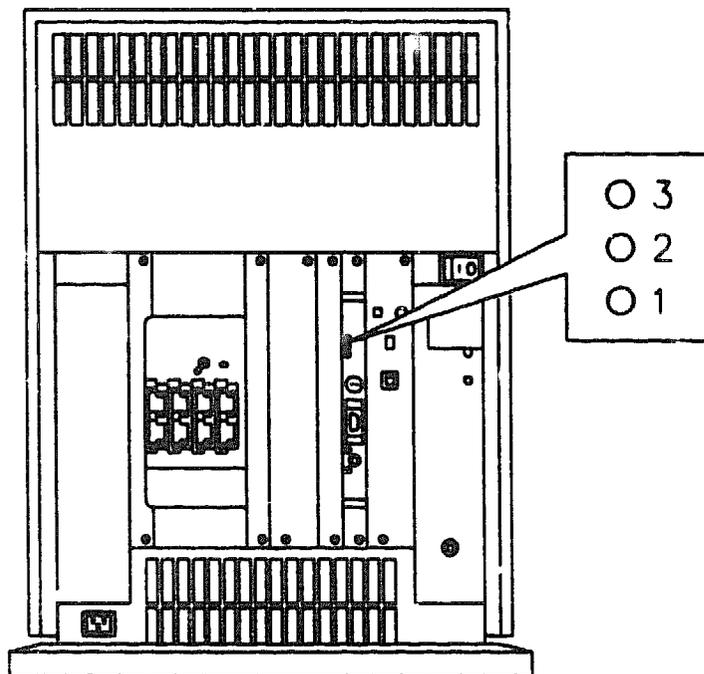
LKG–4018–90A

Table 6-1   Ethernet Controller Module LED Indications

LED 1	LED 2	LED 3	Definition
OFF	OFF	OFF	The module passed the citizenship test
OFF	OFF	ON	Transceiver, Ethernet LAN, or Ethernet cable error
OFF	ON	ON	Module internal error
ON	ON	ON	Cannot load boot/diagnostic ROM contents; the bootstrap has not yet executed; or the first set-up message frame has failed

CHAPTER 7

7

Using DESNX Diagnostics

This chapter explains how to down-line load and use DESNX diagnostics.
Load the diagnostic software onto your diagnostic load host (as explained in
Chapter 5) before continuing with this chapter.

Two types of diagnostics exist for the DEC ChannelServer II, DESNX and
the MicroVAX Diagnostic Monitor (MDM). DESNX diagnostic software
resolves Channel-related communication problems. (MDM diagnostics are
discussed in Chapter 6.) You run the DESNX diagnostic tests to isolate a
fault to a field-replaceable unit (FRU). DESNX tests the interface between the
DEC ChannelServer II and the mainframe, specifically the channel interface
module set, the driver/receiver module, and the bus and tag cables.

DESNX does not contain code to respond to XON/XOFF flow control requests
from the terminal. If DESNX sends output faster than the terminal can
display, then the console display can become garbled. If this occurs, decrease
the console line speed out of the DEC ChannelServer II by using the baud
setting switch on the rear of the CPU control panel. Changing the line speed
(baud rate) is described in Chapter 3. The normal setting for a VT220 is 9600
baud.

DESNX displays console messages to indicate the action it is taking and to
indicate the results of commands received from the channel. These messages
inform you about error conditions. Messages from DESNX are classified
according to their severity, as follows:

Informational messages inform you of DESNX progress. These messages
are not indicated in any special way as such; all other messages have a prefix
that shows the message severity.

-Warning- messages indicate an unusual event. The program continues
with execution. An example of a warning condition is a selective reset on the
channel; such resets do not impair DESNX operation, but repeated warning
messages indicate configuration problems.

-Error- messages indicate some unexpected event either in DESNX or on the channel; the program attempts to continue executing. An example of an error condition would be DESNX receiving an invalid channel command from the mainframe host.

-Fatal- messages correspond to internal DESNX malfunctions and terminate execution immediately. An example of a fatal condition is a memory allocation failure.

System bugcheck messages indicate a problem in the DESNX software. See Section 7.2.12 for further information.

7.1 Using DESNX

Before loading DESNX, do the following:

- Load the diagnostic software onto your diagnostic load host as explained in Chapter 5.

- Verify that the Channel Enable/Disable switch is set to enable.

- Verify that the Halt Enable/Disable switch on the CPU Cover Panel is set to disable.

- Verify that the mainframe is using the MVS, VM, or VSE/SP operating system.

- Verify that the DEC ChannelServer II system is defined to the operating system and to VTAM as a channel-attached 3174 control unit. For details, see the *DECnet/SNA Gateway-CT Guide to IBM Parameters*.

- Find out the channel device address allocated by the mainframe to the DEC ChannelServer II system. This information is available on the *DEC ChannelServer II Identification Card*.

- Find out the names VTAM gives to the major node and physical unit assigned to the DEC ChannelServer II system. This information is also available on the *DEC ChannelServer II Identification Card*.

- Locate the system manager to obtain access to the mainframe system console, and someone to assist in issuing the necessary commands.

7.1.1 Initial Dialog

If you have not loaded the diagnostic software onto your diagnostic load host (as described in Chapter 5), do so now. After the diagnostic software is installed on the load host, it can then be down-line loaded to your DEC ChannelServer II.

1   Set the Halt Enable/Disable switch on the CPU control panel to the enable position. See Chapter 1 for the location of the switch.

2   Press ⌈Break⌉ if the system is running, or turn on the system if the system power is off.

3   Observe the countdown on the console terminal. A countdown from 40 through 3 should appear on the console terminal as the system self-tests. Figure 7-1 shows this display.

Figure 7-1   Introductory Countdown

```
KA655-B V5.3, VMB 2.7
Performing normal system tests.

40..39..38..37..36..35..34..33..32..31..30..29..28..
27..26..25..24..23..22..21..20..19..18..17..16..15..
14..13..12..11..10..09..08..07..06..05..04..03..

Tests completed.
>>>
```

4   At the console prompt, type the following command:

```
>>> B 100 XQ
```

This will boot the DEC ChannelServer II from the Ethernet. You will then see the number "2" appear.

5   At the prompt "bootfile:" Type the following command:

```
bootfile: SNACSASDESNX
```

The system will finish counting down to zero, and the DESNX prompt will appear. DESNX announces itself on the console and displays the Control Status Register (CSR) and vector address at which it expects to find the interface module set. The hardware switch settings on the interface module must match these values—it is not possible to change the expected address in DESNX or in the DECnet/SNA Gateway-CT software.

An example of the initial dialogue follows:

```
DESNX V1.1
 Connectivity test for DEC ChannelServer II.
 Using channel interface at address 161200, vector 300
```

DESNX prompts you to enter the three-digit device address allocated to it on the channel.

When replying to questions, press [Return] to end the line of input; press [Delete] to delete one character; press [Ctrl/U] to delete the entire input line; and press [Ctrl/R] to redisplay the input line.

DESNX prompts you to confirm the address that you entered. If you type N, reenter the device address. If you type Y, DESNX proceeds with the test.

An example of the initial dialogue follows:

```
Enter address on channel, as three hexadecimal digits: 080
Address 080, OK? [Y/N]: Y
```

7.1.2 Test Procedure

First, DESNX allocates and starts the line driver. Starting the line driver causes the interface module set to respond to subsequent attempts to select the assigned device address; therefore, the DEC ChannelServer II system becomes visible on the channel.

The following messages indicate the successful conclusion of these two steps:

```
Line allocated
Line started
```

Next, DESNX attempts to establish contact with the mainframe channel software. It does this by sending a status byte to the channel, simulating the power-up sequence of a 3174 controller. The expected response from the mainframe host is a sense command. By this action, the mainframe host determines the state of the controller. In response, DESNX informs the host that it is not initialized.

```
Attempting to contact channel
Received sense command
```

Once the channel is informed that it is not initialized, you can expect to receive a datalink connect command. DESNX repeats the attempt to contact the channel every 30 seconds until the datalink has been connected.

Ordinarily, the mainframe will not consider the DEC ChannelServer II system to be active at this point. The host, therefore, issues sense commands in response to DESNX attempts to establish contact but takes no further action.

Issue the following VARY commands on the mainframe system console to bring the DEC ChannelServer II system on line and make it active.

The following commands and responses are used in an MVS operating system:

```
VARY nnn,ONLINE
hh.mm.ss  IEE302I  nnn  ONLINE
VARY NET,ACT,ID=majnod,SCOPE=ALL
hh.mm.ss  IST093I  majnod  ACTIVE
hh.mm.ss  IST093I  puname  ACTIVE
```

The following commands and responses are used in a VM operating system:

```
VARY nnn,ONLINE
nnn  VARIED  ONLINE
ATTACH nnn VTAM
CTLR nnn  ATTACH  TO  VTAM
VARY NET,ACT,ID=majnod,SCOPE=ALL
*IST093I  majnod  NODE NOW ACTIVE
*IST093I  puname  NODE NOW ACTIVE
```

Note *The VARY NET commands used in a VSE/SP operating system are the same commands used in the MVS and VM operating systems; however, the VSE/SP operating system commands and responses are different.*

Replace *nnn* in the VARY commands with the appropriate hexadecimal device address; replace *majnod* with the name of the VTAM major node for the DEC ChannelServer II system. The lines beginning with *hh.mm.ss* represent time-stamped output from the mainframe. Other output messages are not time stamped.

After the link has been connected, DESNX expects VTAM to send it SNA requests to activate the physical unit and logical units associated with the control unit. DESNX displays the following messages when the link is connected:

```
Datalink disconnected
Datalink connected
Physical Unit activated
Logical Unit(s) activated
```

Note *The* Datalink disconnected *message might not appear on the console.*

Many logical units might be defined in VTAM for the DEC ChannelServer II system; DESNX displays only one activation message (for the first occurrence).

At this point, the test procedure has been successfully completed. The final message is displayed:

```
Test complete
```

Before halting the DEC ChannelServer II system, deactivate it in the mainframe. To do so, issue the following commands on the mainframe system console.

The following commands are used in an MVS operating system:

```
VARY NET, INACT, ID=majnod
hh.mm.ss   IST105I   puname   NODE NOW INACTIVE
hh.mm.ss   IST105I   majnod   NODE NOW INACTIVE
VARY nnn,OFFLINE
hh.mm.ss   IEE794I   nnn   PENDING OFFLINE
```

The following commands are used in a VM operating system:

```
VARY NET, INACT, ID=majnod
IST105I   puname   NODE NOW INACTIVE
IST105I   majnod   NODE NOW INACTIVE
DETACH   nnn   VTAM
CTLR   nnn   DETACHED   VTAM   nnn
VARY   OFFLINE   nnn
nnn   VARIED   OFFLINE
```

Note *The VARY NET commands used in a VSE/SP operating system are the same commands used in the MVS and VM operating systems; however, the VSE/SP operating system commands and responses are different.*

7.2 Problem Solving

You must run the MDM diagnostic tests successfully before running DESNX. MDM tests check the basic integrity of the channel interface module set. This is important because DESNX cannot distinguish between the channel interface module set and the driver/receiver module. MDM is discussed in Chapter 6.

In each instance of a problem, first check the channel cables for damage and/or loose connections. Also, verify the operation of other devices on the channel. If the other devices are functioning normally, then the cable and the mainframe are probably functional.

The following sections discuss the DESNX failures that might occur.

7.2.1 Channel Interface Not Found

If DESNX cannot find the interface module set at the expected CSR address, it displays a fatal error message and halts.

```
-Fatal-  device not in configuration
```

Use the MDM diagnostics to ensure that the interface module set is configured at the correci address. DESNX displays the required address and vector when it starts up.

See *DEC ChannelServer II Problem Solving*, Chapter 5, for the procedure to check the switch settings on the module.

7.2.2 No Channel Connection

If there is no channel connection, then DESNX displays the following message on the DEC ChannelServer II console immediately after attempting to contact the channel:

```
-Warning-  channel not operational
```

This message might be caused by the following, in order of probability:

1 There is a problem with the bus or tag cables. Verify that the bus and tag cables are connected and seated properly, and that there are no bent pins. Also check the bus and tag cables for proper connection and damage along the channel back to the system.

2 The driver/receiver or channel interface module is defective.

3 The channel or mainframe is not functioning.

If you solve the problem easily, then you do not need to restart DESNX; the attempt repeats every 30 seconds until it connects.

7.2.3 Channel Not Responding

If the channel appears to be operational to the interface module set but does not respond to DESNX's attempt to contact the channel by presenting asynchronous status, then the following message displays 30 seconds after attempting to contact the channel:

```
-Warning-  asynch status still pending in driver
```

This message might be caused by the following, in order of probability:

1 There is a problem with the bus or tag cables. Verify that the bus and tag cables are connected and seated properly, and that there are no bent pins. Also check the bus and tag cables for proper connection and damage along the channel back to the system.

2 The driver/receiver or channel interface module is defective.

3 The channel or mainframe is not functioning.

The message displays every 30 seconds until the channel responds and accepts the asynchronous status.

7.2.4 Driver/Receiver Module Disabled

The driver/receiver module has a Channel Enable/Disable switch located on the I/O bulkhead (see Figure 6-1). If the switch is in the disable position, no channel communication is possible, and the following message displays:

```
-Warning- enable/disable switch is se* to "disable"
```

Simply toggle the switch to the enable position, and wait 30 seconds for DESNX to retry the operation.

If the toggle switch was in the enable position, then perform the MDM diagnostic test on the channel interface module set with the switch in the enable position. This should cause the MDM diagnostic to fail. If the test passes, then check the cables between the driver/receiver module and the channel interface module set.

7.2.5 Wrong Channel Address Used

If you use an unassigned channel address for the DEC ChannelServer II, then the mainframe reports an error situation when it gets an interrupt from the unassigned address. This error is reported on the mainframe system console. Additionally, a reset is issued on the channel, causing one or both of the following messages to be displayed on the DEC ChannelServer II console.

```
-Warning- channel reset (system or selective)
-Warning- selective reset received on channel
```

If you use a channel address assigned to some other device on the channel for the DEC ChannelServer II, then serious interference might occur with the operation of that device. Therefore, always take very great care when you specify the channel address to DESNX.

7.2.6 No Sense Command Received

The message "attempting to contact channel" is displayed on the DEC ChannelServer II console every 30 seconds, but the DEC ChannelServer II never receives a sense command, nor is any error indicated.

This message might be caused by the following, in order of probability:

1 There is a problem with the bus or tag cables. Verify that the bus and tag cables are connected and seated properly, and that there are no bent pins. Also check the bus and tag cables for proper connection and damage along the channel back to the system.

2 The driver/receiver or channel interface module is defective.

3   The channel or mainframe might not be configured correctly.

7.2.7   No Datalink Connection Message

The message "attempting to contact channel" is displayed on the
DEC ChannelServer II console every 30 seconds; a sense command is received
in reply, but the "datalink connected" message is never seen, nor is any error
indicated.

This problem means that the mainframe is responding to the status sent from
DESNX, but the operating system resources are not active. Ensure that you
correctly issued the VARY ONLINE and VARY ACTIVE commands.

If you used the correct commands and the datalink remains unconnected, then
try forcibly deactivating the control unit from \ TAM's point of view and then
reactivating it:

```
VARY NET, INACT, F, ID=majnod
VARY NET, ACT, ID=majnod, SCOPE=ALL
```

7.2.8   No Physical Unit Activation Message

The datalink connection message appears, but no "physical unit activated"
message is displayed.

Attempt the same recovery procedure as in Section 7.2.7, No Datalink
Connection Message. Be sure to include the SCOPE parameter as shown.

7.2.9   No Logical Unit Activation Message

The physical unit activation message appears, but no "logical unit activated"
message is displayed.

Attempt the same recovery procedure as in Section 7.2.7, No Datalink
Connection Message. Be sure to include the SCOPE parameter as shown.

7.2.10   Channel Parity Errors

A malfunctioning driver/receiver or interface module or a faulty cable might
cause parity errors to occur. These are reported on the DEC ChannelServer II
console as one of the following messages:

```
-Error-  Command byte parity error
-Error-  I/O error: parity error on channel
```

7.2.11   Invalid 3174-1L Commands

The DEC ChannelServer II system must be configured in the mainframe as a
3174 cluster controller. If it is defined as something different, illegal commands
might result. These are reported as:

```
-Error-  Invalid channel command
```

7.2.12 System Bugcheck Problems

When a DESNX software bug is encountered, the console terminal displays:

```
System bugcheck, code nnnnnnnn
```

A bugcheck can be caused by a timing problem. Reload and run DESNX again.

If the bugcheck reappears, refer to Section 6.1 to check the hardware. If MDM passes, call your Digital service representative.

CHAPTER 8

8

Problem Solving

This chapter discusses hardware and diagnostic problems you can solve at the system location, as well as firmware diagnostics (diagnostics built into the DEC ChannelServer II itself). Use these diagnostics for rudimentary problem solving when the normal, down-line loaded diagnostics (MDM and DESNX) are unavailable.

See *DEC ChannelServer II Problem Solving* for more detailed hardware troubleshooting information and *DECnet/SNA Gateway-CT Problem Solving* for software problems. Call a Digital service representative if you cannot solve a problem.

Note *The IBM or compatible 370-type mainframe is referred to hereafter as the mainframe.*

8.1 Typical Installation Problems

- DEC ChannelServer II will not power up.
- Console terminal will not display a countdown.
- System will not load the diagnostics.
- System will not load the DECnet/SNA Gateway-CT software.
- System does not communicate with the mainframe.

NOTE: Once you solve a problem, test the DEC ChannelServer II system using the MDM diagnostic tests (see Chapter 6 and Chapter 7).

8.1.1 DEC ChannelServer II Will Not Power Up

Various types of power problems can occur. Perform the following steps until you locate the fault:

1 Verify that the system ac power cord is connected to the designated outlet and securely plugged in to the front of the DEC ChannelServer II.

2 Verify that the power switch at the front of the cabinet is ON (1).

3 If the lamp is not lit, continue with the following steps:

    a Verify that the ac outlet is providing the correct ac voltage (refer to specifications in Chapter 2, Site Preparation).

    b If the DEC ChannelServer II circuit breaker trips repeatedly, recheck the ac voltage at the outlet for power surges.

8.1.2 Console Terminal Will Not Display a Countdown

Perform the following steps to troubleshoot the console terminal, when it does not display a countdown upon power-up or restart:

1 Verify that the DEC ChannelServer II system is powered up. If the system cannot be powered up, see Section 8.1.1.

2 Verify that the console terminal power switch is ON and that the green power indicator at the front of the terminal, if present, is lit.

3 Ensure that the console terminal passes all of its self-tests, if any.

4 Remove the front panel from the cabinet. (See Chapter 3.)

5 Perform the following steps if the console terminal does not power up:

    a Verify that the console terminal ac power cable is correctly installed at the console terminal.

    b If the console terminal power cable is correctly installed and the terminal still does not power up, either the console terminal or the power cable is defective, and needs replacing.

6 If the console terminal does power up, turn the DEC ChannelServer II off and then on again to restart the CPU.

7 Verify that the LED display (see Figure 8-1) on the front of the CPU panel shows a countdown beginning at F (hexadecimal).

Figure 8-1   Switch Locations

Holt Enable/Disable Switch

Power-up Mode Switch

LED Display

Console Terminal Connector
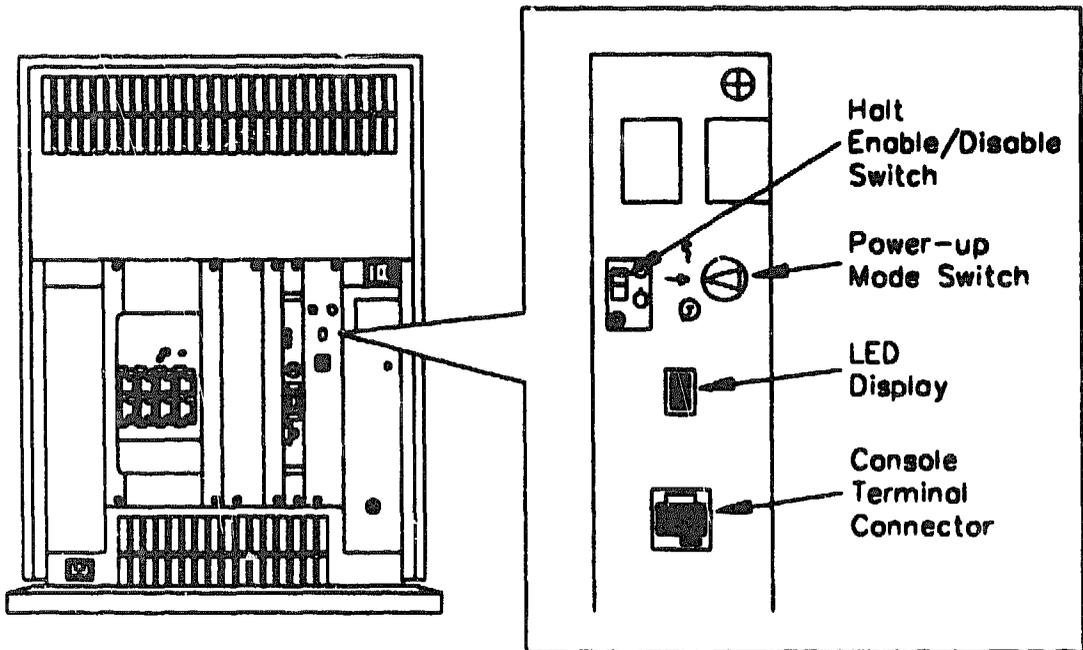
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8   If the LED display does show a countdown, do the following:

   a   Verify that the console terminal cable is correctly installed.

   b   Verify that the Baud switch on the system and the Baud switch on the console terminal are set to the same baud rate (usually 9600). The baud switch on the DEC ChannelServer II is located on the back of the CPU panel. See Chapter 3 for directions to check or change the setting.

   c   Verify that the Mode switch on the system (see Chapter 3) is set to the run mode (designated by an arrow).

   d   Watch the LED display on the CPU Panel (see Figure 8-1).

   e   If the display counts down from F (hexadecimal) to number 8 or lower, then check the console terminal cable connections. If the connections are good, refer to *DEC ChannelServer II Problem Solving* or call your Digital service representative.

f   If the display halts at any number between F and 8, the system has
    failed a self-test. Refer to *DEC ChannelServer II Problem Solving* or
    call the Digital service representative.

8.1.3 System Will Not Load the Diagnostics or Gateway-CT Software

Perform the following steps to troubleshoot the system when you cannot
successfully down-line load diagnostics:

1   Verify that the DEC ChannelServer II system is powered up. If the system
    cannot be powered up, refer to Section 8.1.1, DEC ChannelServer II Will
    Not Power Up.

2   Verify that the ThinWire/Thickwire setting of the Ethernet board in your
    system matches the type of your Ethernet connection. This is a common
    cause of Ethernet problems. See Chapter 4 to check this setting.

3   Read the countdown display on the console terminal.

4   If the countdown stops at 7, 6, 5, 4, 2, or 1, then the system failed a self-
    test. Refer to *DEC ChannelServer II Problem Solving* or call your Digital
    service representative. Continue the procedure if the countdown shows a 3.

5   If the console terminal di_   _ >>>, then type B/100 at the console
    terminal keyboard to boot the diagnostics. Proceed to Chapter 6 and
    Chapter 7 to run the diagnostics. If you still experience problems loading
    the diagnostics or Gateway-CT software, continue with the following steps.

Note *If the console terminal displays >>>, then the Halt Enable/Disable switch
on the system (see Figure 8–1) is set to the enable (up) position.*

6   Verify that the Mode switch (see Figure 8–1) is set to the run mode
    (position designated by an arrow).

7   Verify that the Halt Enable/Disable switch (Figure 8–1) is set to the disable
    (down, dot outside the circle) position.

8   Verify that the Ethernet cable is installed correctly at the DEC ChannelServer II
    and at the transceiver.

9   The problem could be a hardware problem or a software configu-
    ration problem. If you suspect the hardware is at fault, refer to
    DEC ChannelServer II Problem Solving. If you suspect the software is
    at fault, refer to *DECnet/SNA Gateway-CT Problem Solving*, or call your
    Digital service representative.

8.2 Firmware Diagnostics

Table 8–1 lists the diagnostics that are built into the DEC ChannelServer II itself. You can enter these diagnostic commands at the >>> prompt on the DEC ChannelServer II system console.

Table 8–1   Firmware Diagnostics

Command	Action
SHOW QBUS	Displays all Q22-bus I/O addresses that respond to an aligned word read, along with vector and device name information.
SHOW DEVICE	Displays all mass storage devices and Ethernet adapters.
SHOW ETHERNET	Displays all hardware Ethernet addresses for all Ethernet adapters.
SHOW LANGUAGE	Displays the console language and keyboard type.
SET LANGUAGE	Sets the console language and keyboard type.
SET BOOT	Changes the default boot device. The DEC ChannelServer II can only be booted from the Ethernet (XQA0).

8.2.1   System Does Not Communicate with the Mainframe

Perform the following steps to troubleshoot the system when it is unable to communicate with the mainframe. This procedure assumes that the system is powered up and able to load the diagnostics or software.

While troubleshooting the system, remember that the bus and tag terminators differ and should never be swapped. Swapping the terminators causes interruption of communications to the channel.

1   Remove front panel from the cabinet—see Chapter 3.

2   Verify that the Channel Enable/Disable switch (see Figure 8–2) is set to the channel enable (left) position.

3   Verify that the bus cable from the mainframe is installed securely to the BUS IN connector (see Figure 8–2).

Note   *The chr nel bus and tag cable connectors always connect to the unlike color connector. For example, install a cable with a black connector to the light gray connector on the DEC ChannelServer II; a cable with a gray connector connects to the black connector on the DEC ChannelServer II.*

Figure 8-2   Bus/Tag Connectors
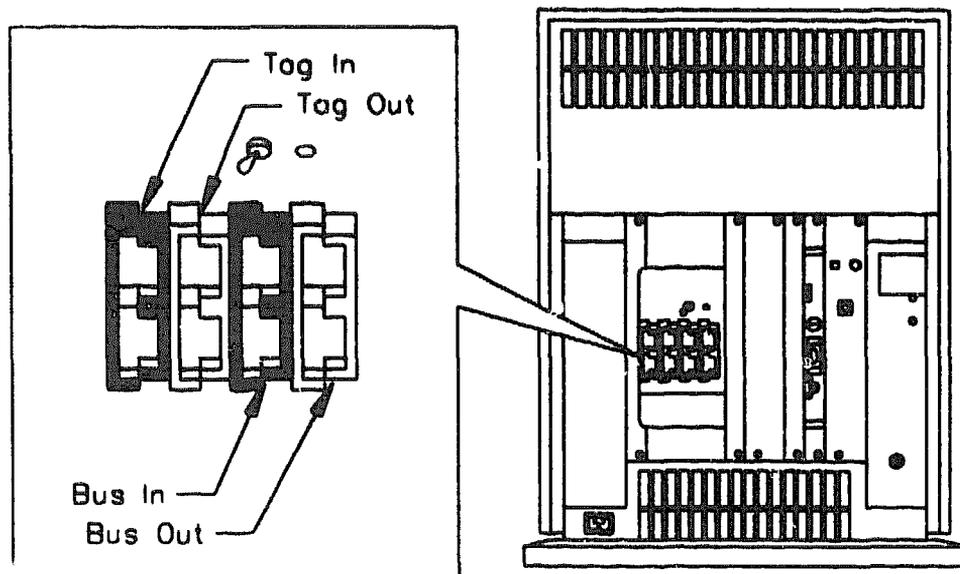
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4   Verify that the bus cable going to the next device on the channel is installed
    securely to the BUS OUT connector (see Figure 8-2). If there is no next
    device on the channel, verify that the bus terminator is installed in the
    BUS OUT connector.

5   Verify that the tag cable from the mainframe is installed securely to the
    TAG IN connector (see Figure 8-2).

6   Verify that the tag cable going to the next device on the channel is installed
    securely to the TAG OUT connector (see Figure 8-2). If there is no next
    device on the channel, verify that the tag terminator is installed in the
    TAG OUT connector.

7   Verify that the bus and tag cables are installed correctly at the mainframe.

Note *If the bus and tag cables are reversed (mislabeled), the system will pass the
MDM diagnostic tests but fail DESNX.*

8   Verify with the mainframe system manager that the mainframe system
    channel address for the DEC ChannelServer II is correct.

8.2.2 Attaching the Front Panel

When you finish diagnosing problems with the DEC ChannelServer II, attach the front panel, as shown in Figure 8-3.

Figure 8-3 Attaching the Front Panel

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