DEC Network Integration Server

Installation and Configuration for OpenVMS and DIGITAL UNIX

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Preface

This manual explains how to:

- Install the software for the DEC™ Network Integration Server (DECNIS) on OpenVMS™ and DIGITAL™ UNIX® systems.
- Configure OpenVMS and DIGITAL UNIX systems so that they can downline load the DECNIS software.
- Configure the DECNIS software, using the DECNIS text-based configurator, on OpenVMS and DIGITAL UNIX load hosts.

The DEC Network Integration Server is referred to throughout this manual as the DECNIS.

Refer to the *clearVISN DECNIS Configurator User Guide* for information about configuring the DECNIS on Windows 95/NT systems. Refer to the *DECNIS Management* manual for information about loading the DECNIS.

Audience

This manual is intended for network managers who understand and have some experience of:

- Local Area Networks (LANs)
- Wide Area Networks (WANs)
- DECnet™ routing
- OSI® routing
- IP routing (if using the Internet protocols)
- X.25 (if using the CCITT X.25 protocols)
- OpenVMS (if using an OpenVMS load host)
- DIGITAL UNIX (if using a DIGITAL UNIX load host)

Associated Documentation

Product Documentation

- *DEC Network Integration Server Introduction and Glossary*
- *DEC Network Integration Server Management*
- *DTF (DIGITAL Trace Facility) User Guide*
- *DEC Network Integration Server Problem Solving*

  This is only available on line through the Bookreader™.
- *DEC Network Integration Server Event Messages* (supplied on line)
- *DEC Network Integration Server Release Notes* (supplied on line)
- *Network Information* (supplied on line)

  This supplies profile information about all the public Packet Switching Data Networks that DIGITAL supports.

Hardware Documentation

The following documents are supplied with the DECNIS hardware:

- *Installation and Service Manual*
- *Configuration* card

The following documents are supplied with each Network Interface Card:

- *Cabling Instructions and Specifications* card
- *Problem Solving* card
- *Configuration* card

Related Documentation

- Network management documentation for the load-host operating system you are using.
- *X.25 Security* manual

  This manual explains the underlying concepts of X.25 security. You can order this manual through your local DIGITAL office.
- *Bridge and Extended LAN Reference* manual

  This manual provides a general description of bridging and extended LANs. You can order this manual through your local DIGITAL office.
- RFCs (for IP routing)

RFCs are the working notes for the Internet research and development community. These notes are available in a three-volume set, the *DDN Protocol Handbook*, which can be ordered from the following address:

Network Solutions, Inc.
Attn: InterNIC Registration Service
505 Huntmar Park Drive
Herndon, VA 22070, USA
Tel. 1-800-444-4345 or 619-455-4600

Returning Comments About this Documentation

We would like to know what you think about the DECNIS documentation set and online help.

If you have any comments, or suggestions, please return them in any of the following ways:

- Send an electronic mail message to the Internet address books@reo.mts.dec.com
- Send an electronic mail message to the X.400 address S=IDC BOOKS; O=digital; OU1=reo; P=digital; A=CWMail; C=gb
- Send a fax to (+44)1734 206018

Conventions

The following conventions are used in this manual:

Return	Key names are shown enclosed to indicate that you press a key on the keyboard.
Ctrl/*x*	This symbol indicates that you press the Ctrl key at the same time as you press another key. For example, Ctrl/C, Ctrl/Y, and so on.
Italics	This indicates variable information.
decnis	This indicates that you should substitute the node name of the DECNIS. If you are using a DECdns namespace or a local namespace, enter the name registered in the namespace.
Prompts	The following prompts precede commands that you enter: For OpenVMS: $ For DIGITAL UNIX: # For NCL: NCL> For NCP: NCP>

1
Introduction

This manual describes how to do the following on OpenVMS and DIGITAL UNIX load hosts.

- Install DECNIS software.
- Run the load-host configurator to set up downline loading information.
- Start and run the DECNIS text-based configurator. You use this configurator to set up your DECNIS as a bridge/router.

Refer to the manual *DECNIS Management* for information about loading the DECNIS, and managing it once it is loaded.

Note

You cannot run the clearVISN DECNIS configurator on OpenVMS or DIGITAL UNIX load hosts.

1.1 Summary of Steps Required

In order to set up your DECNIS hardware unit as a working system, carry out the steps shown in Table 1–1.

Table 1–1 Steps to Set Up the DECNIS

Step	Action	Refer to:
1	Install the DECNIS software	Chapter 2 and Chapter 4
2	Make a note of the information you will need when running the load-host configurator	Chapter 12
3	Run the load-host configurator and enter the required information	Chapter 3 and Chapter 5
4	Make a note of the information you will need when running the DECNIS text-based configurator	Chapter 13
5	Run the DECNIS text-based configurator and enter the required information	Chapter 7 to Chapter 9
6	Create the DECNIS configuration files	Chapter 10
7	Downline load the configured software onto the DECNIS hardware unit	*DECNIS Management*

Part I

OpenVMS Load Hosts: Installation and Configuration

This part describes how to install the DECNIS software and run the load-host configurator on OpenVMS load hosts.

It contains the following chapters:

- Chapter 2 describes how to install the DECNIS software on OpenVMS load hosts.
- Chapter 3 describes how to use the load-host configurator to configure DECnet-Plus for OpenVMS load hosts for downline loading to the DECNIS.

2

Installing: OpenVMS Load Hosts

This chapter describes how to install the DECNIS software on OpenVMS load hosts.

2.1 OpenVMS Background Information

The following table gives information needed before you install the software.

Item	Value/Description
Prerequisite software	OpenVMS V6.2 or later
	OpenVMS VAX systems: DECnet™/OSI® for OpenVMS VAX V6.2 or later.
	OpenVMS Alpha systems: DECnet-Plus for OpenVMS Alpha V6.2 or later
Prerequisite hardware	OpenVMS VAX systems: VT220™ or later terminal, or VAXstation™ running DECwindows™
	OpenVMS Alpha systems: VT220 or later terminal, or Alpha Workstation or AlphaStation running DECwindows
	DECNIS hardware unit
Kit description	OpenVMS VAX: 1 TK50 OpenVMS Alpha: 1 CD-ROM
Use of multiple load hosts	Install the kit on at least 2 load hosts so that a backup host is available
Required privileges	Account with SYSTEM privileges
Disk space requirements	OpenVMS VAX: 150,000 blocks (+ up to 64,000 blocks per dump) OpenVMS Alpha: 105,000 blocks (+ up to 64,000 blocks per dump)
Time required for installation	30 minutes
Stopping the installation	Enter Ctrl/Y
Backup procedures	Back up system before installing the software

2.1.1 Setting System Parameters

On OpenVMS VAX load hosts, you should set system parameters as follows:

- VIRTUALPAGECNT must be at least 56000.
- It is recommended that GBLPAGES and PGFLQUOTA be increased from the minimum DECnet-Plus values, as compilation will then be faster.

On OpenVMS Alpha load hosts, you do not need to make any changes to the minimum values for system parameters or process quotas.

2.2 OpenVMS Installation Procedure

To install the DECNIS software, do the following:

Step	Action
1	Mount the DECNIS kit on a suitable device

2	Issue the following command:
	On OpenVMS VAX hosts:
	`$ @SYS$UPDATE:VMSINSTAL NIS041 device-name OPTIONS N`
	On OpenVMS Alpha hosts:
	`$ @SYS$UPDATE:VMSINSTAL NIS041 device-name:[KITS] OPTIONS N`
	where *device-name* is the device where the kit is mounted.

3	Select the option you require from the Release Notes Menu
4	Read the Release Notes before using the product

2.3 OpenVMS Online Documentation

Table 2–1 lists the online information contained in the documentation kit. You can edit and print the text files if you wish.

Table 2–1 Location of Online Information: OpenVMS

Item	Location
X.25 Network information	SYS$HELP:FCNS$NI.TXT
Event messages	SYS$HELP:NIS$EVENTS.TXT
Release notes	SYS$HELP:NIS041.RELEASE_NOTES
DECNIS Problem Solving manual	NIS$PROBLEM_SOLVING.DECW$BOOK in SYS$COMMON:[DECW$BOOK]
Bookshelf for *DECNIS Problem Solving* manual	NIS$PROBLEM_SOLVING.DECW$BOOKSHELF in SYS$COMMON:[DECW$BOOK]
Example NCL script files	SYS$EXAMPLES:*.NCL

2.3.1 DECNIS Problem Solving Manual

The DECNIS installation automatically does the following:

- Installs the online *DECNIS Problem Solving* manual and its bookshelf, as shown in Table 2–1.
- Edits the file LIBRARY.DECW$BOOKSHELF to include the contents of NIS$PROBLEM_SOLVING.DECW$BOOKSHELF. On a standard OpenVMS system, LIBRARY.DECW$BOOKSHELF is in the DECW$BOOK directory.

2.4 The DECNIS V4.1 Software Image

The DECNIS software image, NIS041.SYS, is a double image. It contains two system images, with the following internal names:

Internal Name	Description
NIS_*version-number*	Only supports MPC-I features
NIS_*version-number*B	Supports MPC-II/III features

where *version-number* is the version number of the DECNIS software.

Console Supported with MPC-II/MPC-III Only

Note that the DECNIS console is supported only if either the MPC–II or MPC–III management processor card is installed. Refer to Table 2–2 for the part numbers of the management processor cards.

2.4.1 Which Internal Image Is Loaded?

The DECNIS only loads one of the internal images into nonvolatile memory. Which internal image is loaded depends on which management processor card is installed, as shown in Table 2–2:

Table 2–2 Images and Management Processor Cards

This internal image is used...	If this card is installed...	Part Number of MPC
NIS_*version-number*	MPC–I	DNSAN-AH
NIS_*version-number*B	MPC–II	DNSAN-BH or Upgrade to MPC-II: contact DIGITAL Services
NIS_*version-number*B	MPC–III	DNSBN-AH (16 MB DRAM) or DNSBN-BH (32 MB DRAM) or Upgrade to MPC–III: contact DIGITAL Services

2.4.2 Deleting an Internal Image from the Double Image

If you wish, you can delete one of the internal images from the double image. You may want to do this to save disk space on the load host, or loading time to the DECNIS.

To delete an image, you use the program MOD_FLSH. Section 2.4.2.1 and Section 2.4.2.2 describe how to do this. Refer to the *DECNIS Management* manual for a detailed description of MOD_FLSH.

2.4.2.1 Load Host Loading or Part Nonvolatile Memory Loading

If you have specified load host or part nonvolatile memory loading, follow these steps on the load host:

1. Enter the following command to define MOD_FLSH as a foreign command:

   ```
   $ MOD_FLSH :== $ SYS$SYSTEM:MOD_FLSH.EXE
   ```

   This equates MOD_FLSH to the command `RUN SYS$SYSTEM:MOD_FLSH`.

2. Now, enter the following command to run MOD_FLSH:

   ```
   $ MOD_FLSH NIS041.SYS
   ```

3. The display will show the images, with their index numbers. The MPC-II/III image (NIS_*version-number*B) is index 1; the MPC-I image (NIS_*version-number*) is index 2.

4. Enter the following command:

   ```
   delete n
   ```

   where *n* is the index number of the image.

2.4.2.2 Full Nonvolatile Memory Loading

If you have specified full nonvolatile (flash) memory loading, the configurator will create a combined file. If you wish, you can delete the unwanted internal image from the double image, before you run the configurator, by following the steps in Section 2.4.2.1. Alternatively you can delete the internal image from the combined file.

To delete an internal image from the combined file, follow these steps:

1. When you have configured your DECNIS, create a combined file for loading, as described in the Chapter 10.
2. Enter the following command:

   ```
   $ MOD_FLSH :== $ SYS$SYSTEM:MOD_FLSH.EXE
   ```

3. Now, run MOD_FLSH, giving the name of the combined file:

   ```
   $ MOD_FLSH NIS041_client-name.SYS
   ```

   where *client-name* is the load client name of the DECNIS.
4. Follow steps 3 and 4 in Section 2.4.2.1.

2.5 After Installation

This section describes postinstallation tasks.

2.5.1 Registering the DECNIS in a Namespace

If you specified the use of a naming service in the load-host configurator, the configurator will attempt to register the DECNIS node in either the local namespace or the DECdns namespace. This section describes how you determine which namespace it will use.

By default, the load-host configurator will attempt to register the DECNIS in the local namespace, even if DECdns is listed as the primary naming service.

To override the default and register the DECNIS in DECdns, complete the following steps **before** you run either configurator:

1. Create a decnet_register initialization command file, and define the environment variable DECNET_REGISTER_INIT to point to its file name.

2. Insert the following command in the file:

```
SET DEFAULT DIRECTORY_SERVICE DECdns
```

For more information about DECNET_REGISTER initialization files, refer to the online help provided with decnet_register.

2.5.2 Configuring a DECNIS for the First Time

If you are configuring a DECNIS for the first time, you need to carry out the following tasks:

1. Run the load-host configurator, as described in Chapter 3.
2. Run the DECNIS text-based configurator, as described in Section 7.2.
3. Create a load file, as described in Chapter 10.
4. Load the DECNIS, as described in the manual *DECNIS Management*.
5. Assign a name to the DECNIS, as described in Section 2.5.2.1.

2.5.2.1 Assigning a Name to the DECNIS

When you first load a DECNIS, by default it does not know its name. You need to assign a name to the DECNIS.

After the DECNIS is first loaded, enter the following command:

```
NCL> RENAME NODE p4-name NEW NAME decnis
```

where *p4-name* is the Phase IV name for the DECNIS, and *decnis* is its DECdns name (including the namespace name) or local namespace name.

2.5.3 Updating a Previously Installed DECNIS

If you have previously set up DECNIS systems using the load-host configurator, you must update these systems so they can use the current version of DECNIS software. You need to do this even if you do not want to change your configuration.

Procedure

After you have installed a new version of the DECNIS software, follow these steps:

1. Run the automatic Update procedure, as described in Section 3.9.
2. Start the DECNIS text-based configurator, as described in Section 7.2.
3. Select `Modify an existing configuration` from the Main Menu.
4. The screen shows a list of load client names. Select the DECNIS that you are updating.

5. The screen now shows the Sections Menu. Select NCL Script. You will go to the Create NCL Script section.
6. Select Create an NCL Script. This will create a master NCL script file that is valid for the new version of the DECNIS software.
7. Create a new load file: either a CMIP file or a combined file.
8. Repeat steps 2 to 7 for each DECNIS that will use the new version of the software.
9. Reload the DECNIS systems, as described in the manual *DECNIS Management*.

2.5.4 Verifying the Installation

To verify the installation, run the installation verification procedure. Enter:

```
$ @SYS$TEST:NIS$IVP.COM
```

2.5.5 Deleting Installed Files

To delete the files installed by the installation procedure, enter:

```
$ @SYS$MANAGER:NIS$DEINSTALL.COM
```

2.5.6 Checking Your Terminal Setup

In order to run the load-host configurator and the DECNIS text-based configurator, you must use one of the types of terminal listed in Section 2.5.6.1, and set up the terminal as described in Section 2.5.6.2.

2.5.6.1 Type of Terminal

You can run the configurators on the following types of terminal:

- A VT220 (or later) terminal
- A VAXstation terminal window

2.5.6.2 Terminal Setup

You must set up your terminal as follows:

- Set the tab stops on your terminal or terminal window to 8-column tabs.
- Set the terminal parameter NEW LINE to NO NEW LINE.
- Issue the terminal command, SET TERM/INQUIRE.

2.5.7 Reporting Problems

For instructions on reporting problems to DIGITAL, refer to the manual *DECNIS Problem Solving*.

2.6 VAXcluster Load Hosts

To set up several nodes in a VAXcluster™ as load hosts, follow these steps:

1. Install the DECNIS software on a node in the VAXcluster, as described in Section 2.2.
2. Run the program NIS$PROVIDE_NCL.EXE on all of the other nodes in the VAXcluster. Enter the following command on each node:

   ```
   $ RUN SYS$SYSTEM:NIS$PROVIDE_NCL.EXE
   ```

   This program enables a system to use the latest version of the NCL command parsing tables which have been installed. The program is automatically run by the DECNIS installation procedure on the node on which you install the DECNIS software. However, you must run the program separately on the other nodes in a VAXcluster on which NCL is going to be used to manage the DECNIS.
3. Run the load-host configurator on one node within the VAXcluster,
4. On the other VAXcluster nodes that will be used as load hosts, enter the command:

   ```
   $ @SYS$MANAGER:NIS$HOST_CONFIG RESTORE
   ```

   This creates loading information for the DECNIS on each of these nodes.
5. Run the DECNIS text-based configurator on one node within the VAXcluster and configure the DECNIS.

2.7 Installing on Multiple Load Hosts

You should install the DECNIS software on at least two load hosts, so that a backup load host is available.

3

Using the Load-Host Configurator: OpenVMS Load Hosts

This chapter describes how to use the load-host configurator to configure the DECNIS to load from OpenVMS load hosts.

3.1 What Is the Load-Host Configurator?

The load-host configurator is a menu-based program, supplied with the DECNIS software. You use the program to:

- Enter information required for a load host to downline load DECNIS software and configuration files onto DECNIS hardware, and to receive upline dumps.
- Delete, modify, list, update and restore load information.

You must run the load-host configurator before you run the DECNIS text-based configurator.

3.1.1 Definition of a Load Host

A load host is a system which can downline load the configured DECNIS software to the DECNIS hardware in response to a load request.

3.1.2 Load Protocol

DECnet-Plus (formerly DECnet/OSI) for OpenVMS load hosts use MOP (Maintenance Operations Protocol) for loading and dumping.

MOP is a DIGITAL-specific protocol used for loading and dumping.

3.2 Starting the Load-Host Configurator

To start the load-host configurator, follow these steps:

1. Log into any account which has OPER and SYSPRV privileges.
2. Enter the command:

```
$ @SYS$MANAGER:NIS$HOST_CONFIG
```

3.3 Menu Options

When you run the load-host configurator, it displays a menu with these options:

- `Add a router`

  To enter DECNIS load information for the first time.

- `Delete a router`

  To delete loading information for a DECNIS.

- `Modify a router`

  To modify load information previously entered using the load-host configurator.

- `List a router`

  To display a list of all DECNIS systems configured by the load-host configurator.

- `Restore a router`

  To recreate loading and dumping information for a DECNIS.

- `Update a router`

  To update load information to the latest version of DECNIS software.

3.4 How to Enter Load Information

To enter load configuration information about a DECNIS for the first time, follow these steps:

1. Select `Add a router` from the Main Menu.
2. The screen will display:

```
Select the type of router, or return to the Main Menu.

Return to Main Menu
DECNIS 600
DECNIS 500
```

   Select the type of router to load to.

3. Enter load information.

3.5 Load Information

This section describes the information you enter in the load-host configurator.

3.5.1 Load Client Name

The load client name identifies the DECNIS for downline loading and upline dumping.

3.5.1.1 Finding the Load Client Name

You create the load client name yourself. The only restrictions are:

- The name must be unique to this router on the network.
- The maximum length of the name is 32 characters.

3.5.2 Hardware Address

This is the hardware address of the DECNIS. The format is six pairs of hexadecimal digits, separated by hyphens, with a 0 (zero) as the final digit. For example:

08-00-2B-02-AA-20

3.5.2.1 Finding the Hardware Address

The address is printed on the label on the Processor Card on your DECNIS system. Enter the address just as it is on the label, including the 0.

3.5.3 MOP Circuit

This is a circuit defined specifically for downline loading. A MOP circuit is automatically created during DECnet-Plus installation.

3.5.3.1 Finding the MOP Circuit Name

To find the MOP circuit name, follow these steps:

1. Enter the following NCL command:

   ```
   NCL> SHOW MOP CIRCUIT * ALL IDENTIFIER
   ```

2. Use the name, or one of the names, displayed.

3.5.3.2 Requirement for MOP Circuit

The MOP circuit must exist before you enter it. The load-host configurator will check that it does exist. If it does not exist, the configurator will not let you continue.

3.5.4 Phase IV Address

Enter a DECnet Phase IV address for the DECNIS if you want the DECNIS to communicate with DECnet Phase IV systems.

Format

The format of the Phase IV address is:

area-number.node-number

where: *area-number* is the number of the area where the DECNIS is located

node-number is the node number of the DECNIS

Example: 21.47

3.5.5 Type of Loading

The load-host configurator asks how the DECNIS is to be loaded when it is rebooted:

```
Nonvolatile memory for both CMIP and image
Load host for CMIP; nonvolatile memory for image
Load host for both CMIP and image
```

3.5.5.1 Definition of Nonvolatile (Flash) Memory

The term **nonvolatile memory** refers to an area of DECNIS memory that is used to store its software image and (as an option) its CMIP and profile files.

Nonvolatile memory is sometimes referred to as flash memory.

3.5.5.2 Advantages of Nonvolatile Memory Loading

The main advantages of nonvolatile memory loading are:

- It is quicker than loading from a load host.
- Once the DECNIS is loaded, you do not need a load host on the network to reload it when it is rebooted.

Refer to the manual *DECNIS Management* for more information.

3.5.6 Specifying a Dump File

The load-host configurator asks if you want a dump file to be created on the load host.

- If you select No, the load host will not be able to receive dumps from the DECNIS.
- If you select Yes, the DECNIS will dump to the file:

  SYS$COMMON:[MOM$SYSTEM]NIS_*load-client-name*.DMP

It is important to check that there is enough disk space on your load host to receive dumps. The table in Section 2.1 shows the amount of disk space required for dumps.

3.5.7 Use of DECdns and the Local Namespace by the Configurators

The load-host configurator asks the question:

```
You can choose whether or not the configurators use
information from a naming service to set up addresses.

Only select Yes if a DECdns name server is reachable from
this load host, or you have a local namespace.

Do you wish a naming service to be used?   No   Yes
```

This section explains how you decide what to answer.

3.5.7.1 Background: the DECNIS and the DECnet-Plus Naming Services

The DECNIS does not use naming service lookups to find the location of the DECnet systems to which it sends messages (for example, event sinks). Instead, it uses NCL commands in the master NCL script file generated by the DECNIS configurator.

These NCL commands set up a complete specification of each DECnet system the DECNIS sends messages to. The commands are CREATE SESSION CONTROL KNOWN TOWER commands.

3.5.7.2 Generating KNOWN TOWER Commands

The question on the screen is asking you to name the method the configurator should use to generate these commands.

There are two alternative methods:

- If you choose Yes, the DECNIS text-based configurator uses DECdns or local namespace lookups to generate the commands.

  In this case, you must supply the full node name or node synonym for the DECNIS. The configurator then extracts addressing information from the namespace entry, and uses this information to generate the required commands.

- If you choose No, the DECNIS text-based configurator uses addressing information you supply.

3.5.8 Node Name (Naming Service Users Only)

If you choose to use a naming service, you must enter the full node name of the DECNIS system. The name you specify must conform to DECdns naming conventions. For details about the syntax of DECdns names, refer to the DECdns manual for your load host.

3.5.9 Node Synonym (Naming Service Users Only)

This is an alternative node name for the DECNIS. For convenience, you may use the Phase IV node name.

The node synonym is optional.

3.6 Delete a Router

When you select `Delete a router`, the screen displays a list of routers that were previously entered using the load-host configurator. You select the name of the router you wish to delete.

3.6.1 Effect of Deleting

If you delete a DECNIS, the load-host configurator renames the DECNIS configuration files, as follows:

- The master NCL script file for the deleted DECNIS is renamed:

  SYS$COMMON:[MOM$SYSTEM]NIS_*client-name*.NCL_OLD

- The CMIP file for the deleted DECNIS is renamed:

  SYS$COMMON:[MOM$SYSTEM]NIS_*client-name*.CMIP_OLD

- The data file for the deleted DECNIS is renamed:

SYS$COMMON:[MOM$SYSTEM]NIS_*client-name*.DAT_OLD

where *client-name* is the load client name of the DECNIS.

Example

In the load-host configurator, you set up a DECNIS with the load client name EASTERN. You then configure EASTERN using the DECNIS configurator. A master NCL script file is created with the name:

NIS_EASTERN.NCL

If you delete EASTERN in the load-host configurator, the master NCL script will be renamed:

NIS_EASTERN.NCL_OLD

3.7 Modify a Router

When you select `Modify a router`, the screen displays a list of routers that were previously entered using the load-host configurator. Select the name of the DECNIS you wish to modify.

3.7.1 Information that Cannot Be Modified

The only DECNIS load information you cannot modify is the load client name.

3.7.2 Running the DECNIS Configurator After Modifying

It is strongly recommended that you rerun the DECNIS text-based configurator after using the Modify option. This is because changes to loading information may affect or even invalidate information entered in the DECNIS text-based configurator.

Refer to Section 11.5 for details.

3.7.3 Modifying the Type of Loading

If you change the type of loading—for example, from nonvolatile memory loading to load-host loading—you must do the following for your changes to take effect:

1. Run the DECNIS text-based configurator.
2. Go to the `Create NCL Script` section, and create an NCL script file.
3. In the same section, create a new CMIP file or combined file.

3.7.3.1 Results of Changing Back to Load Host Loading

If you change from nonvolatile memory to load host loading, the combined file is deleted on the load host.

3.8 Restore a Router

The Restore option reissues the NCL commands which set up MOP loading information.

Restore is useful if the permanent information is lost or deleted. You also use it when setting up VAXcluster nodes as load hosts, as described in Section 2.6.

There are two ways of using the Restore option:

- Restore a router option in the load-host configurator, to restore an individual DECNIS.
- The automatic Restore procedure, to restore all the DECNIS systems set up by the load-host configurator.

3.8.1 Automatic Restore

To use automatic Restore, enter the following:

```
$ @SYS$MANAGER:NIS$HOST_CONFIG RESTORE
```

3.9 Update a Router

When you install a new version of DECNIS software, you need to update existing DECNIS systems so that they can use the new version of the software. There are two kinds of update procedure:

- Update a router option in the load-host configurator, to update an individual DECNIS.
- The automatic Update procedure, to update all DECNIS systems.

3.9.1 Automatic Update

To use automatic Update, enter the update command. When you start this procedure, you can also specify the type of loading for the updated DECNIS systems, as shown in Section 3.9.1.1 to Section 3.9.1.3. The default type of loading is full nonvolatile memory loading.

Note that if you change the type of loading from the one previously specified, you must follow the instructions in Section 3.7.3.

3.9.1.1 Update Command: Full Nonvolatile Memory Loading

To update all DECNIS systems and specify that the combined image and configuration file be loaded from nonvolatile memory, enter the following:

```
$ @SYS$MANAGER:NIS$HOST_CONFIG UPDATE
```

You can achieve the same result by entering:

```
$ @SYS$MANAGER:NIS$HOST_CONFIG UPDATE FLASH_FULL
```

3.9.1.2 Update Command: Part Nonvolatile Memory Loading

To update all DECNIS systems, and specify that CMIP and profile files be loaded from the load host and the software image from nonvolatile memory, enter the following:

```
$ @SYS$MANAGER:NIS$HOST_CONFIG UPDATE FLASH_PART
```

3.9.1.3 Update Command: Load Host Loading

To update all DECNIS systems, and specify that the CMIP and profile files and the software image be loaded from the load host, enter the following.

```
$ @SYS$MANAGER:NIS$HOST_CONFIG UPDATE NETWORK
```

3.10 Getting Help in the Load-Host Configurator

You can get online help at any time while running the configurator by pressing Help. Help in the load-host configurator works in a similar way to help in the DECNIS text-based configurator. See Section 7.5 for details.

3.11 Errors when Running the Load-Host Configurator

If there are any errors when you are running the load-host configurator, they will be recorded in the following log file:

MOM$SYSTEM:NIS_DECNIS.LOG

3.12 The Load-Host Data File

The load-host configurator saves all load-host configuration information in a private data file, known as the load-host data file. When you select a menu option, the load-host configurator uses the load-host data file to find the information that was previously entered.

The name of the load-host data file is:

SYS$COMMON:[MOM$SYSTEM]NIS_HOST_CONFIG.DAT

3.12.1 Saving the Load-Host Data File

Each time you run the load-host configurator and add, modify or delete information, the configurator creates a new load-host data file. It also saves the previous version of the load-host data file.

The name of the previous version is the same as the name of the current one, except that it has the suffix .OLD instead of the suffix .DAT.

3.13 What the Load-Host Configurator Does with Load Information

When you have finished entering information in the load-host configurator, it does the following:

- Saves the information in the load-host data file, as described in Section 3.12.
- Issues NCL commands to set up load details, and enters the commands in permanent configuration files.
- If you have entered naming service information during load-host configuration, registers the DECNIS in the local namespace or the DECdns namespace.

  Section 2.5.1 describes how the load-host configurator decides whether to register the DECNIS in the local or DECdns namespace.

Part II

DIGITAL UNIX Load Hosts: Installation and Configuration

This part describes how to install the DECNIS software and run the load-host configurator on DIGITAL UNIX load hosts. It also describes how to configure UNIX systems for BOOTP loading.

It contains the following chapters:

- Chapter 4 describes how to install the DECNIS software on DIGITAL UNIX load hosts.
- Chapter 5 describes how to configure DIGITAL UNIX load hosts for downline loading to the DECNIS.
- Chapter 6 describes additional steps needed to set up DIGITAL UNIX load hosts for BOOTP loading.

4

Installing: DIGITAL UNIX Load Hosts

This chapter describes how to install the DECNIS software.

4.1 DIGITAL UNIX Background Information

The following table gives information needed before you install the software on DIGITAL UNIX load hosts.

Item	Value/Description
Prerequisite software	DIGITAL UNIX Alpha V3.1 (or later). For BOOTP /TFTP loading, subset OSFCLINET031
	DECnet/OSI for DIGITAL UNIX ™V3.1 (or later), with the following subsets: DNABASE031 (DECnet/OSI base components), DNAMOP031 (DECnet/OSI MOP Utilities) and DNANETMAN031 (DECnet/OSI Network Management)
Prerequisite hardware	VT220 or later terminal, or Alpha Workstation or AlphaStation running DECwindows
	DECNIS hardware unit
Kit description	1 CD-ROM
Use of multiple load hosts	Install the kit on at least 2 load hosts so that a backup host is available
Required privileges	Superuser account
Disk space required	22,000 Kbytes + up to 32,000 Kbytes per dump
Time required for installation	10 minutes
Backup procedures	Back up system before installing the software

4.2 DIGITAL UNIX Installation Procedure

To install the DECNIS software on DIGITAL UNIX load hosts, do the following:

Step	Action
1	Issue the following commands: `# cd /` `# setld -l /dev/`*`device-name`* where *device-name* is the device where the kit is mounted
2	Read the Release Notes before using the product

4.3 DIGITAL UNIX Online Documentation

Table 4–1 lists the online information contained in the documentation kit. You can edit and print the text files if you wish.

Table 4–1 Location of Online Information: DIGITAL UNIX

Item	Location
X.25 Network information	/usr/lib/dnet/fcns_ni.txt
Event messages	/usr/lib/dnet/nis_event.txt
Release Notes	/usr/lib/dnet/nis041.release_notes
DECNIS Problem Solving manual	/usr/lib/dxbook/decnispsg.decw_book
Bookshelf for *DECNIS Problem Solving*	/usr/lib/dxbook/decnispsg.decw_bookshelf
Example NCL script files	/usr/lib/dnet/*.ncl

4.3.1 DECNIS Problem Solving Manual

The installation automatically installs the online *DECNIS Problem Solving* manual, as shown in Table 4–1.

To access this manual using the Bookreader, you need to edit the file /usr /lib/dxbook/library.decw_bookshelf to include the contents of decnispsg.decw_ bookshelf.

4.4 The DECNIS V4.1 Software Images

The DECNIS software image, NIS041.SYS, is a double image. It contains two system images, with the following internal names:

Internal Name	Description
nis_*version-number*	Only supports MPC–I features
nis_*version-number*B	Supports MPC–II/III features

where *version-number* is the version number of the DECNIS software.

Console Supported with MPC–II/MPC–III Only

Note that the DECNIS console is supported only if either the MPC–II or MPC–III management processor card is installed. Refer to Table 4–2 for the part numbers of the management processor cards.

4.4.1 Which Internal Image Is Loaded?

The DECNIS only loads one of the internal images into nonvolatile memory. Which internal image is loaded depends on which management processor card is installed, as shown in Table 4–2:

Table 4–2 Images and Management Processor Cards

This internal image is used...	If this card is installed...	Part Number of MPC
NIS_*version-number*	MPC–I	DNSAN-AH
NIS_*version-number*B	MPC–II	DNSAN-BH or Upgrade to MPC–II: contact DIGITAL Services
NIS_*version-number*B	MPC–III	DNSBN-AH (16 MB DRAM) or DNSBN-BH (32 MB DRAM) or Upgrade to MPC–III: contact DIGITAL Services

4.4.2 Deleting an Internal Image from the Double Image

If you wish, you can delete one of the internal images from the double image. You may want to do this to save disk space on the load host, or loading time to the DECNIS.

To delete an image, you use the program MOD_FLSH. Section 2.4.2.1 and Section 2.4.2.2 describe how to do this. For a detailed description of MOD_ FLSH, refer to the *DECNIS Management* manual.

4.4.2.1 Load Host Loading or Part Nonvolatile Memory Loading

If you have specified load host loading (or part nonvolatile memory loading), follow these steps on the load host:

1. Run the program MOD_FLSH:

   ```
   # /usr/lib/dnet/mod_flsh nis041.sys
   ```

2. The display will show the images, with their index numbers. The MPC-II/III image (NIS_*version-number*B) is index 1; the MPC-I image (NIS_ *version-number*) is index 2.

3. Enter the following command:

   ```
   delete n
   ```

where *n* is the index number of the image.

4.4.2.2 Full Nonvolatile Memory Loading

If you have specified full nonvolatile (flash) memory loading, the configurator will create a combined file. If you wish, you can delete the unwanted internal image from the double image, before you run the configurator, by following the steps in Section 4.4.2.1. Alternatively you can delete the internal image from the combined file.

To delete an internal image from the combined file, follow these steps:

1. When you have configured the DECNIS, create a combined file. Refer to Chapter 10 for details.

2. Run the program MOD_FLSH, giving the name of the combined file:

   ```
   # /usr/lib/dnet/mod_flsh nis041client-name.sys
   ```

   where *client-name* is the client name of the DECNIS.

3. Follow steps 2 and 3 in Section 4.4.2.1.

4.5 After Installation

This section describes postinstallation tasks.

4.5.1 Registering the DECNIS in DECdns

If you specified the use of a naming service in the load-host configurator, the DECNIS text-based configurator will attempt to register the DECNIS node in either the local namespace or the DECdns namespace. This section describes how you determine which namespace it will use.

By default, the load-host configurator will attempt to register the DECNIS node name in the local namespace, even if DECdns is listed as the primary naming service.

To override the default and register the DECNIS in DECdns, complete the following steps **before** you run either configurator:

1. Create a decnet_register initialization command file, and define the environment variable DECNET_REGISTER_INIT to point to its file name.
2. Insert the following command in the file:

   ```
   SET DEFAULT DIRECTORY_SERVICE DECdns
   ```

For more information about decnet_register initialization files, refer to the online help provided with decnet_register.

4.5.2 Configuring a DECNIS for the First Time

If you are configuring a DECNIS for the first time, you need to carry out the following tasks:

1. If you plan to use BOOTP/TFTP for loading, check that the BOOTP and the TFTP daemons are started. Refer to Section 6.2.1 for details.
2. Run the load-host configurator, as described in Chapter 5.
3. Run the DECNIS text-based configurator, as described in Section 7.3.
4. Create a load file, as described in Chapter 10.
5. Load the DECNIS, as described in the manual *DECNIS Management*.
6. Assign a name to the DECNIS, as described in Section 2.5.2.1.

4.5.3 Updating a Previously Installed DECNIS

If you have previously set up DECNIS systems using the load-host configurator, you must update these systems so they can use the current version of DECNIS software. You need to do this even if you do not want to change your configuration.

Procedure

After you have installed the new version of the software, follow these steps:

1. Run the automatic Update procedure, as described in Section 5.10.
2. Start the DECNIS text-based configurator, as described in Section 7.3.
3. Select `Modify an existing configuration` from the Main Menu.
4. The screen shows a list of load client names. Select the DECNIS that you are updating.
5. The screen now shows the Sections Menu. Select `NCL Script`. You will go to the `Create NCL Script` section.
6. Select `Create an NCL Script`. This will create a master NCL script file that is valid for the new version of the DECNIS software.
7. Create a new load file: either a CMIP file or a combined file.
8. Repeat steps 2 to 7 for each DECNIS that will use the new version of the software.
9. Reload the DECNIS systems, as described in the manual *DECNIS Management*.

4.5.4 Verifying the Installation

To verify the installation, enter the following:

```
# setld -v NIANIS410
```

4.5.5 Deleting Installed Files

To delete the files installed by the installation procedure, enter:

```
# setld -d NIANIS410
```

4.5.6 Checking Your Terminal Setup

In order to run the load-host configurator and the DECNIS text-based configurator, you must use one of the types of terminal listed in Section 4.5.6.1, and set up the terminal as described in Section 4.5.6.2.

4.5.6.1 Type of Terminal

You can run the configurators on the following types of terminal:

- A VT220 (or later) terminal
- A terminal window on an Alpha workstation

4.5.6.2 Terminal Setup

Set up your terminal as follows:

- Set the tab stops on your terminal or terminal window to 8-column tabs.
- If you are using a terminal window, set it up as follows:
  1. On the terminal window menu bar, select **Custom**.
  2. Select **General**.

     Set the **Terminal ID** to **VT200™** or above, or to **DECterm™ ID**.

     If you set **Terminal ID** to **DECterm ID**, then check that this is VT200 or above.
  3. Set the **Mode** to **VT300™ Mode 7-bit controls**.

4.5.7 Reporting Problems

For instructions on reporting problems to DIGITAL, refer to the manual *DECNIS Problem Solving*.

5

Using the Load-Host Configurator: DIGITAL UNIX Load Hosts

This chapter describes how to use the load-host configurator to configure the DECNIS to load from DIGITAL UNIX load hosts.

5.1 What Is the Load-Host Configurator?

The load-host configurator is a menu-based program, supplied with the DECNIS software. You use the program to:

- Enter information required for a load host to downline load DECNIS software and configuration files onto DECNIS hardware, and to receive upline dumps.
- Delete, modify, list, update and restore load information.

You must run the load-host configurator before you run the DECNIS text-based configurator.

5.1.1 Definition of a Load Host

A load host is a system which can load the configured DECNIS software to the DECNIS hardware in response to a load request.

5.1.2 Load Protocols

DIGITAL UNIX load hosts can use MOP (Maintenance Operations Protocol), BOOTP/TFTP, or both for loading and dumping.

- **MOP** is a DIGITAL-specific protocol used for loading and dumping.
- **BOOTP/TFTP** is a set of protocols used for loading and dumping, defined in RFCs 783 and 951.

5.2 Before You Begin

If you plan to use BOOTP/TFTP for loading, check that the BOOTP and the TFTP daemons are started. Refer to Section 6.2.1 for details.

5.3 Starting the Load-Host Configurator

To start the load-host configurator, follow these steps:

1. Log in as a superuser.
2. Enter the command:

```
# /usr/lib/dnet/nis_host_config
```

5.4 Load-Host Configurator Menu Options

When you run the load-host configurator, it displays a menu with these options:

- `Add a router`

  To set up DECNIS load information for the first time.

- `Delete a router`

  To delete load information for a DECNIS.

- `Modify a router`

  To modify load information previously set up using the load-host configurator.

- `List a router`

  To display a list of all DECNIS systems configured by the load-host configurator.

- `Restore a router`

  To recreate the loading and dumping information for a DECNIS, by reissuing NCL commands, by recreating the file etc/bootptab, or both.

- `Update a router`

  To update load information to the latest version of DECNIS software.

5.5 How to Enter Load Information

To enter load configuration information about a DECNIS for the first time, follow these steps:

1. Select `Add a router` from the Main Menu.
2. If your load host can run BOOTP, the screen displays:

   ```
   Select the method to be used for downline loading:

   MOP
   BOOTP
   Both MOP and BOOTP
   ```

   Choose the method you want to use.

   Note that DIGITAL UNIX load hosts can only use BOOTP if the subset OSFINET12 or later is installed. If the appropriate subset is not installed, you go directly to step 3.
3. The screen displays:

   ```
   Select the type of DECNIS, or return to the Main Menu.

   Return to Main Menu
   DECNIS 600
   DECNIS 500
   ```

   Select the type of DECNIS to load to.
4. Enter load information.

5.6 Load Information

This section describes the information you enter in the load-host configurator.

5.6.1 Load Client Name

The load client name identifies the DECNIS for downline loading and upline dumping.

5.6.1.1 Finding the Load Client Name

You create the load client name yourself. The only restrictions are:

- The name must be unique to this router on the network.
- The maximum length of the name is 32 characters.

5.6.2 Hardware Address

This is the hardware address of the DECNIS. The format is six pairs of hexadecimal digits, separated by hyphens, with a 0 (zero) as the final digit. For example:

08-00-2B-02-AA-20

5.6.2.1 Finding the Hardware Address

The address is printed on the label on the Processor Card on your DECNIS system. Enter the address just as it is on the label, including the 0.

5.6.3 MOP Circuit (MOP Loading Only)

This is a circuit defined specifically for downline loading. A MOP circuit is automatically created during DECnet-Plus (DECnet/OSI) installation.

5.6.3.1 Finding the MOP Circuit Name

To find the MOP circuit name, follow these steps:

1. Enter the following NCL command:

   ```
   NCL> SHOW MOP CIRCUIT * ALL IDENTIFIER
   ```

2. Use the name, or one of the names, displayed.

5.6.3.2 Requirement for MOP Circuit

The MOP circuit must exist before you enter it. The load-host configurator will check that it does exist. If it does not exist, the configurator will not let you continue.

5.6.4 IP Address (BOOTP Loading Only)

If you use BOOTP for loading, you must supply an IP address for the DECNIS.

Format

The format of the IP address is four decimal integers, separated by decimal points. For example, 24.45.21.8.

5.6.5 Phase IV Address

Enter a DECnet Phase IV address for the DECNIS if you want the DECNIS to communicate with DECnet Phase IV systems.

Format

The format of the Phase IV address is:

area-number.node-number

where: *area-number* is the number of the area where the DECNIS is located

node-number is the node number of the DECNIS

Example: 21.47

5.6.6 Type of Loading

The load-host configurator asks how the DECNIS is to be loaded when it is rebooted:

```
Nonvolatile memory for both CMIP and image
Load host for CMIP; nonvolatile memory for image
Load host for both CMIP and image
```

5.6.6.1 Definition of Nonvolatile (Flash) Memory

The term **nonvolatile memory** refers to an area of DECNIS memory used to store its software image and (as an option) its CMIP and profile files.

Nonvolatile memory is sometimes referred to as flash memory.

5.6.6.2 Advantages of Nonvolatile Memory Loading

The main advantages of nonvolatile memory loading are:

- It is quicker than loading from a load host.
- Once the DECNIS is loaded, you do not need a load host on the network to reload it when it is rebooted.

Refer to the manual *DECNIS Management* for more information.

5.6.7 Specifying a Dump File

The load-host configurator asks if you want a dump file to be created on the load host.

- If you select No, the load host will not be able to receive dumps from the DECNIS.
- If you select Yes, the DECNIS will dump to the file:

  /usr/lib/mop/nis_*client-name*.dmp

where *client-name* is the load client name of the DECNIS.

It is important to check that there is enough disk space on your load host to receive dumps. The table in Section 4.1 shows the amount of disk space required for dumps.

5.6.8 Use of DECdns and the Local Namespace by the Configurators

The load-host configurator asks the question:

```
You can choose whether or not the configurators use
information from a naming service to set up addresses.

Only select Yes if a DECdns name server is reachable from
this load host, or you have a local namespace.

Do you wish a naming service to be used?   No   Yes
```

This section explains how you decide what to answer.

5.6.8.1 Background: the DECNIS and the DECnet-Plus (DECnet/OSI)Naming Services

The DECNIS does not use naming service lookups to find the location of the DECnet systems to which it sends messages (for example, event sinks). Instead, it uses NCL commands in the master NCL script file generated by the DECNIS configurator.

These NCL commands set up a complete specification of each DECnet system the DECNIS sends messages to. The commands are CREATE SESSION CONTROL KNOWN TOWER commands.

5.6.8.2 Generating KNOWN TOWER Commands

The question on the screen is asking you to name the method the configurator should use to generate these commands.

There are two alternative methods:

- If you choose Yes, the DECNIS text-based configurator uses DECdns or local namespace lookups to generate the commands.

  In this case, you must supply a full node name or node synonym for the DECNIS. The configurator then extracts addressing information from the namespace entry, and uses this information to generate the required commands.

- If you choose No, the DECNIS configurator uses addressing information you supply.

5.6.9 Node Name (Naming Service Users Only)

If you choose to use a naming service, you must enter the full node name of the DECNIS system. The name you specify must conform to DECdns naming conventions. For details about the syntax of DECdns names, refer to the DECdns manual for your load host.

5.6.10 Node Synonym (Naming Service Users Only)

This is an alternative node name for the DECNIS. For convenience, you may use the Phase IV node name.

The node synonym is optional.

5.7 Delete a Router

When you select `Delete a router`, the screen displays a list of DECNIS systems that were previously entered using the load-host configurator. You select the name of the DECNIS you wish to delete.

5.7.1 Effect of Deleting

If you delete a DECNIS, the load-host configurator renames the DECNIS configuration files, as follows:

- The master NCL script file for the deleted DECNIS is renamed:

  /usr/lib/dnet/nis_*client-name*.ncl_old

- The CMIP file for the deleted DECNIS is renamed:

  /usr/lib/mop/nis_*client-name*.cmip_old

- The data file for the deleted DECNIS is renamed:

  /usr/lib/dnet/nis_*client-name*.dat_old

where *client-name* is the load client name of the DECNIS.

Example

In the load-host configurator, you set up a DECNIS with the load client name EASTERN. You then configure EASTERN using the DECNIS configurator. A master NCL script file is created with the name:

NIS_EASTERN.NCL

If you delete EASTERN in the load-host configurator, the master NCL script will be renamed:

NIS_EASTERN.NCL_OLD

5.8 Modify a Router

When you select `Modify a router`, the screen displays a list of DECNIS systems that were previously entered using the load-host configurator. Select the name of the DECNIS you wish to modify.

5.8.1 Information that Cannot Be Modified

The only DECNIS load information you cannot modify is the load client name.

5.8.2 Running the DECNIS Configurator After Modifying

You must rerun the DECNIS text-based configurator after using the load-host configurator Modify option. This is because changes to loading information may affect or even invalidate information entered in the DECNIS text-based configurator.

Refer to Section 11.5 for details.

5.8.3 Modifying the Type of Loading

If you change the type of loading—for example, from nonvolatile memory loading to load-host loading—you must do the following for your changes to take effect:

1. Run the DECNIS text-based configurator.
2. Go to the `Create NCL Script` section, and create an NCL script file.
3. In the same section, create a new CMIP file or combined file.

5.8.3.1 Results of Changing Back to Load Host Loading

If you change from nonvolatile memory to load host loading, the combined file is deleted on the load host.

5.9 Restore a Router

The Restore option does the following:

- For MOP loading, reissues the NCL or NCP commands which set up MOP loading information.
- For BOOTP loading, reenters information in the file etc/bootptab.

Restore is useful if the permanent information is lost or deleted.

There are two ways of using the Restore option:

- Restore a router option in the load-host configurator, to restore an individual DECNIS.

- The automatic Restore procedure, to restore all the DECNIS systems recorded by the load-host configurator.

5.9.1 Automatic Restore

To use automatic Restore, enter the following:

```
# /usr/lib/dnet/nis_host_config -r
```

5.10 Update a Router

When you install a new version of DECNIS software, you need to update existing DECNIS systems so that they can use the new version of the software. There are two kinds of update procedure:

- Update a router option in the load-host configurator, to update an individual DECNIS.
- The automatic Update procedure, to update all DECNIS systems.

5.10.1 Automatic Update

To use automatic Update, run the automatic Update procedure. When you start this procedure, you can also specify the type of loading for the updated systems, as shown in Section 5.10.1.1 to Section 5.10.1.3. The default type of loading is full nonvolatile memory loading.

Note: If you change the type of loading from that previously specified for a DECNIS, you must then follow the instructions in Section 5.8.3.

5.10.1.1 Update: Full Nonvolatile Memory Loading

To update all DECNIS systems and specify that the combined image and configuration file be loaded from nonvolatile memory, enter the following:

```
# /usr/lib/dnet/nis_host_config -u
```

You can achieve the same result by entering:

```
# /usr/lib/dnet/nis_host_config -u flash_full
```

5.10.1.2 Update: Part Nonvolatile Memory Loading

To update all DECNIS systems, and specify that CMIP and profile files be loaded from the load host and the software image from nonvolatile memory, enter the following:

```
# /usr/lib/dnet/nis_host_config -u flash_part
```

5.10.1.3 Update: Load Host Loading

To update all DECNIS systems, and specify that the CMIP and profile files and the software image be loaded from the load host, enter the following:

```
# /usr/lib/dnet/nis_host_config -u network
```

5.11 Getting Help

You can get online help at any time while running the configurator by pressing Help. Help in the load-host configurator works in a similar way to help in the DECNIS text-based configurator. See Section 7.5 for details.

5.12 Errors when Running the Load-Host Configurator

If there are any errors when you are running the load-host configurator, they will be recorded in the log file:

/usr/lib/dnet/nis_decnis.log

5.13 The Load-Host Data File

The load-host configurator saves all load-host configuration information in a private data file, known as the load-host data file. When you select a menu option, the load-host configurator uses the load-host data file to find the information that was previously entered.

The name of the load-host data file is:

/usr/lib/dnet/nis_host_config.dat

5.13.1 Saving the Load-Host Data File

Each time you run the load-host configurator and add, modify or delete information, the configurator creates a new load-host data file. It also saves the previous version of the load-host data file.

The name of the previous version is the same as the name of the current one, except that it has the suffix .old instead of the suffix .dat.

5.14 What the Load-Host Configurator Does with Load Information

When you have finished entering information in the load-host configurator, it does the following:

- Saves the information in the load-host data file, as described in Section 5.13.
- For MOP loading, issues NCL commands to set up load details, and enters the commands in permanent configuration files.
- For BOOTP loading, writes load details into the file /etc/bootptab.
- If you have entered naming service information during load-host configuration, registers the DECNIS in the local namespace or the DECdns namespace.

  Section 4.5.1 describes how the load-host configurator decides whether to register the DECNIS in the local or DECdns namespace.

6

Setting Up BOOTP on Load Hosts

6.1 Introduction

This chapter describes how to set up DIGITAL UNIX and non-DIGITAL UNIX® systems for BOOTP loading.

6.2 Setting Up DIGITAL UNIX Systems as BOOTP Load Hosts

To set up DIGITAL UNIX systems for BOOTP loading, check the steps in Section 6.2.1.

6.2.1 Basic Steps

1. When you run the load-host configurator, select either BOOTP or MOP and BOOTP.
2. Ensure that the BOOTP and TFTP daemons are started on system startup. Follow these steps:
   a. Edit the file /etc/services to include the following lines:

      ```
      bootps    67/udp
      tftp      69/udp
      ```

   b. Edit the file /etc/inetd.conf to include the following lines:

      ```
      bootps dgram udp wait root /usr/sbin/bootpd -s
      tftp dgram udp wait root /usr/sbin/tftpd tftpd
      ```

   c. Enter the following command to force the inetd daemon to reread the inetd.conf file:

      ```
      kill -1 process-id
      ```

      where *process-id* is the process number of the inetd process.

6.3 Setting Up Non-DIGITAL UNIX Systems as BOOTP Load Hosts

To set up a non-DIGITAL UNIX system as a BOOTP load host, follow these steps:

1. Run the load-host configurator on a DIGITAL UNIX system, as described in Chapter 5. For each DECNIS to be loaded, select the BOOTP option.
2. Run the DECNIS configurator to generate NCL script files for each DECNIS.
3. Generate the required load file, and copy it to the UNIX load host:
   - If you are using nonvolatile memory loading, generate a combined image/CMIP/profile file, and copy it to the UNIX load host.
   - If you are using load host loading, generate a CMIP file. Then copy the CMIP file, the image file, and any profile files to the UNIX load host.

   Refer to Chapter 10 for details.
4. If the UNIX load host is not already configured as a BOOTP server, ensure that the BOOTP and TFTP daemons are started on system startup. Refer to the load-host operating system documentation for details of how to do this.

Part III

Configuring the DECNIS

This part describes how to start and use the DECNIS text-based configurator, and create configuration files.

It contains the following chapters:

- Chapter 7 describes how to start the DECNIS text-based configurator on supported load hosts.
- Chapter 8 gives an overview of the sections in the DECNIS text-based configurator.
- Chapter 9 describes how to use the DECNIS text-based configurator.
- Chapter 10 describes how to create the configuration files.
- Chapter 11 describes how to modify a DECNIS configuration in the DECNIS text-based configurator.

7

Starting the DECNIS Text-Based Configurator

This chapter describes:

- How to start the DECNIS text-based configurator.
- The keys you can use.
- How to get online help.

7.1 Before You Start

Before you start, check that you have done the following:

- Set up your terminal as described in Section 2.5.6 and Section 4.5.6.
- Run the load-host configurator. You must do this before you run the DECNIS text-based configurator.

7.2 Starting the DECNIS Text-Based Configurator: OpenVMS Load Hosts

To start the DECNIS text-based configurator, follow these steps:

1. Log into any account which has OPER and SYSPRV privileges.
2. Enter the command:

```
$ @SYS$MANAGER:NIS$DECNIS_CONFIG
```

7.3 Starting the DECNIS Text-Based Configurator: DIGITAL UNIX Load Hosts

To start the DECNIS text-based configurator, follow these steps:

1. Log in as a superuser.
2. Enter the command:

```
# /usr/lib/dnet/nis_decnis_config
```

7.4 Configurator Keys

Table 7–1 shows the keys you can use to enter and change information, and to move through the configurator sections.

Table 7–1 OpenVMS Configurator Keys

Use this key...	To do this...
Up Arrow	Move the cursor to the field above
Down Arrow	Move the cursor to the field below
Left Arrow	Move the cursor to the left in a field
Right Arrow	Move the cursor to the right in a field
Enter or Return	Enter the option you have chosen
Help or PF2	Get help on a field or section
F10	Leave Help and go back to entering data
F8	Leave the configurator without saving any data
Prev Screen	Go to the previous data entry screen in a section
Next Screen	Go to the next data entry screen in a section
Ctrl/A or F14	Toggle between insert and overstrike when typing data
Ctrl/U or Remove	Remove all text in a field
Ctrl/W	Refresh the screen
<X	Delete the character to the left of the cursor
F7	Move cursor to the previous column (on screens with two columns)

7.5 Online Help

You can get online help when running the load-host configurator and the DECNIS text-based configurator. This section describes how to get online help, how to leave online help, and the different types of online help you can get.

7.5.1 How to Get Online Help

To get help in the load-host configurator or the DECNIS text-based configurator, press Help.

7.5.2 Help on Fields and Menu Choices

If you press Help when the cursor is on a field or menu, three lines of text appear near the bottom of the screen, telling you what sort of value to enter, or what the results are of making a menu choice.

If you press Help again, another screen appears with more information. If there are several screens of information, you can page through them by pressing Next Screen or Prev Screen.

If you look in the upper righthand corner of a Help screen, it will say how many pages of Help text there are. For example, `Page 1 of 2`.

To leave a Help information screen, press F10.

7.5.3 Help on the Configurator

You can get help on the configurator (for example, the keys you can use) by pressing Help while you are on any other Help screen.

7.5.4 Keys to Get Help

Table 7–2 lists the keys you can use to get Help, or to leave Help.

Table 7–2 Keys Used to Get Help

Pressing this key...	From this screen...	Gives you this...
Help or PF2	Data entry screen	3-line Help
Help or PF2	Data entry screen with 3-line Help displayed	Full Parameter Help
Help or PF2	Full screen of help	Procedures Help menu
Next Screen	Full screen of help, Procedures Topic	Next screen of information
Prev Screen	Full screen of help, Procedures Topic	Previous screen of information
F9	Procedures Topic	Return to Procedures Help menu
F10	Full screen of Help, Procedures Help menu, Procedures Topic	Leave Help and return to entering data

8

DECNIS Text-Based Configurator Sections

When you run the DECNIS text-based configurator, you go through a series of sections, each corresponding to a type of information used for configuration. Sections 8.1 to 8.20 describe the purpose of each section in the configurator. Figure 8–1 gives an overview of the sections.

8.1 Identify the DECNIS Node

In this section, you choose which DECNIS to configure. The screen displays a menu of the DECNIS hardware units listed in the load-host data file. These are the DECNIS systems previously set up with the load-host configurator.

In the menu, each DECNIS is designated by a load client name. This is a name entered during load-host configuration. It is used simply to identify the DECNIS for the purpose of downline loading and upline dumping.

8.2 Select Network Interface Cards

In this section, you indicate which type of Network Interface Card will occupy each slot on the DECNIS hardware unit.

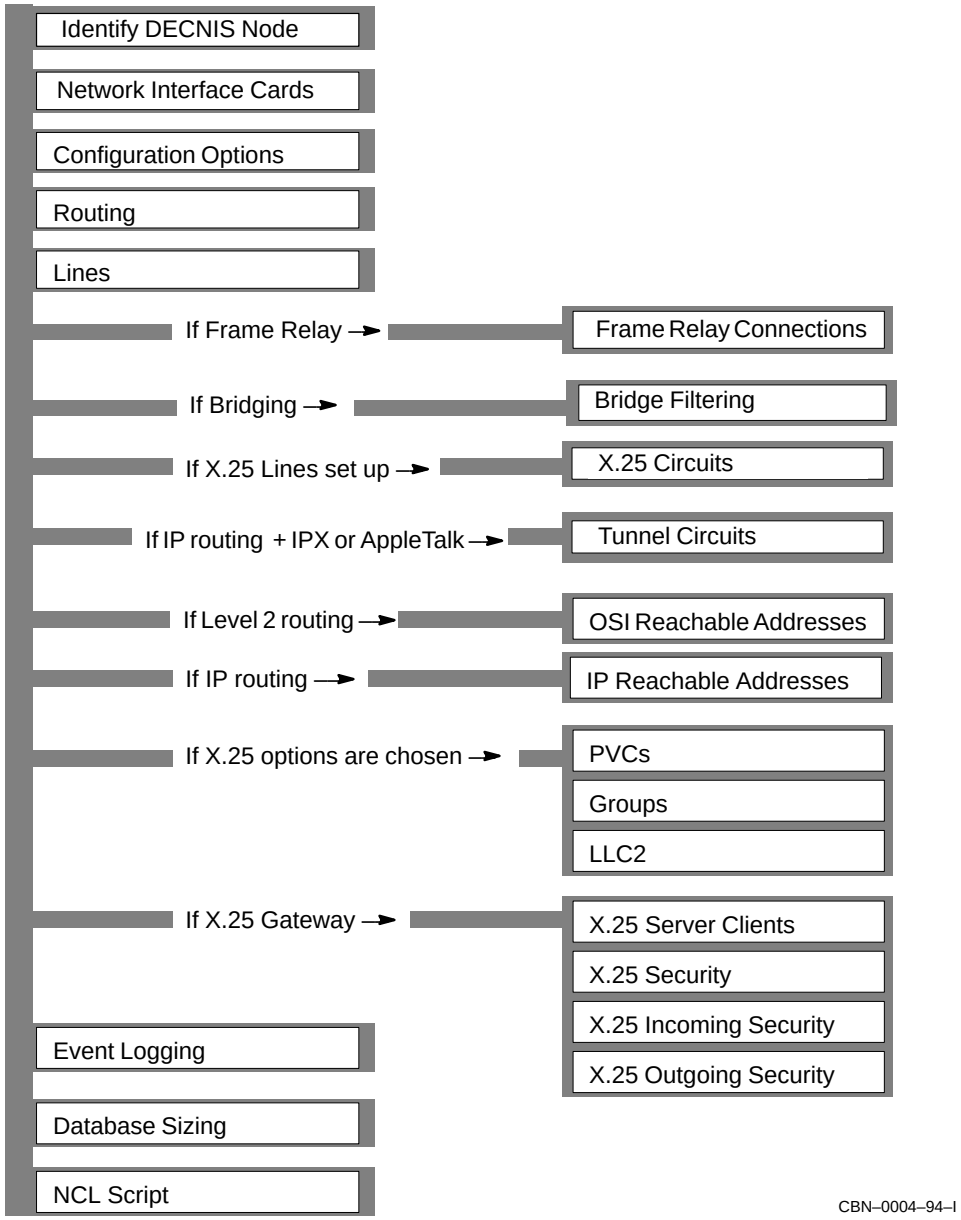
You can find the types of card supported on your DECNIS in the System Support Addendum (SSA) for your DECNIS.

8.3 Configuration Options

In this section, you choose whether you want to use:

- Internet Protocol (IP) routing
- Bridging
- X.25 gateway functions
- Special X.25 gateway options

Figure 8–1 DECNIS Configurator Sections



- VCP (Vitalink® Communications Protocol)

You also supply other basic information.

8.4 Routing

In this section, you provide information to set up the DECNIS for OSI routing, DECnet routing and IP routing.

The information you are asked for depends on the options you have selected in the Configuration Options section. For example, you are only asked for IP information if you selected IP routing in Configuration Options.

8.4.1 System IP Address

If you supplied an IP address in the load-host configurator, the DECNIS will use it as a **system IP address**.

All IP packets transmitted by the DECNIS must contain a source IP address. The DECNIS uses the system IP address as the source IP address for any IP packets that do not have their own source IP address.

8.5 Lines

You must set up at least one line in this section. A line corresponds to a DECNIS hardware port.

The lines you configure can be used for:

- DECnet routing
- IP routing protocols:
  - Integrated IS–IS (only if the DECNIS is running the Phase V routing algorithm at one or both levels
  - RIP
  - EGP (only if the DECNIS is a Level 2 router)
  - OSPF
- NetWare IPX routing (only CSMA/CD, FDDI, VCP, PPP or CHDLC lines)
- AppleTalk routing (only CSMA/CD, FDDI or VCP lines)
- X.25 routing circuits (only synchronous lines)
- X.25 gateway switched virtual circuits (only synchronous lines)
- LLC2 communications (only CSMA/CD or FDDI lines)

- Bridging ports, on the following Network Interface Cards and lines:
  - For local bridging: CSMA/CD or FDDI lines.
  - For remote bridging on W622 cards: HDLC, PPP, CHDLC or VCP lines.
  - For remote bridging on W614 and W618 cards: HDLC, PPP or CHDLC lines.
- Frame relay channels (only on W622 cards)

8.6 X.25 Circuits

If you selected X.25 as the protocol for any of the lines, you are asked if you want to set up X.25 routing circuits. You can use these circuits for any or all of the following:

- DECnet routing
- IP routing
- Connecting to another OSI domain, using static addresses
- Connecting to another IP network, using static addresses

There are four types of X.25 circuit:

- Static Outgoing, to call a DTE on a DECnet router.
- Static Incoming, to receive calls from a DTE on a DECnet router.
- Permanent, to connect to a DECnet Phase IV system, using a Permanent Virtual Circuit (PVC).
- Dynamically Assigned (DA), to connect to DTEs in other OSI routing domains and/or other IP networks.

Each circuit defines a link between specified DTEs on the DECNIS and a DTE on another system.

8.6.1 Special Points About X.25 DA Circuits

Note that:

- You can only create X.25 DA circuits on the DECNIS if it is a Level 2 router.
- For every DA circuit to an OSI domain, you must set up an OSI reachable address (see Section 8.9).
- For every DA circuit to an IP host, subnet or network, you must set up an IP reachable address (see Section 8.10).

- You can set up DA circuits regardless of whether the DECNIS is using the link state (Phase V) or the routing vector (Phase IV) algorithm.

8.7 Frame Relay Connections

In the Lines section, you can set up a line as a frame relay channel—that is, a physical connection to a frame relay network. In this section, you create frame relay connections on the frame relay channels.

Frame relay connections are virtual circuits that operate over a frame relay channel. You must create these connections in order to be able to use a channel. On the DECNIS, you can create up to 32 frame relay connections on each frame relay channel.

You can use a frame relay connection for DECnet Phase IV, OSI IP and IPX routing, and for bridging.

8.8 Bridge Filtering

In this section, you define the way the DECNIS does bridge filtering. You can specify that the DECNIS only forwards named protocol types, or that it only blocks named protocol types.

This is the only type of filtering you can specify in the configurator. For information about other kinds of bridge filtering, see the *DECNIS Management* manual.

8.9 OSI Reachable Addresses

In this section, you can specify static routes to other OSI routing domains.

You only see this section if you have specified Level 2 routing for the DECNIS.

You must set up an OSI reachable address for each X.25 Dynamically Assigned (DA) circuit with an OSI template that you have set up.

8.10 IP Reachable Addresses

In this section, you can specify static routes to other IP hosts, subnets or networks.

You must set up an IP reachable address for each X.25 Dynamically Assigned (DA) circuit with an IP template that you have set up.

8.11 PVCs

In this section, you can set up nonrouting Permanent Virtual Circuits (PVCs). A PVC is a permanent association between two specific DTEs. Two DTEs connected by a PVC can communicate without the need for call clearing or call setup.

Complete this section only if you have subscribed to this facility from a PSDN.

8.12 Groups

If a DTE belongs to a Closed User Group (CUG), it can communicate freely with remote DTEs that are also members of that CUG. Its communications with DTEs outside the group may be restricted, depending on your PSDN subscription options.

Complete this section only if you have subscribed to this facility from a PSDN.

8.13 LLC2

LLC2 is a data link protocol which enables the X.25 packet-level protocol to run over an ISO 8802-2 LAN, rather than a synchronous line. On the DECNIS, LLC2 links use CSMA/CD or FDDI ports.

Normally, you only set up the DECNIS to use LLC2 if you want the DECNIS to act as a CONS LAN/WAN relay. When acting as a CONS LAN/WAN relay, the DECNIS switches calls between LLC2 systems on the LAN and one or more PSDNs. The LLC2 systems must be capable of running the ISO 8802-2 Class II protocol over the ISO 8802-3 protocol.

If you want to use LLC2, you must set up an LLC2 DTE for each remote system you want to connect to on the LAN.

8.14 X.25 Server Clients

X.25 server clients identify Client systems using the DECNIS system as an X.25 gateway. You must set up X.25 server clients if you want Client systems to be able to use the DECNIS as an X.25 gateway.

8.14.1 Definitions of X.25 Gateway Systems and Client Systems

An X.25 gateway is a Connector system allowing Client systems to connect to a PSDN or communicate across an X.25 point-to-point link.

Examples of Client systems are VAX™ P.S.I. Access systems and DEC X.25 for ULTRIX Gateway Client systems.

You do not need to set up X.25 server clients for systems on the network that are only using LLC2 to communicate with the DECNIS.

8.14.2 Filters

You must set up at least one filter to associate with each X.25 server client. A filter is a mechanism for matching incoming calls to Client systems.

Each filter contains a list of characteristics corresponding to fields in an incoming call request packet. You assign values to the characteristics you want matched. If the characteristics in an incoming call match those listed in a filter, then the call is passed to the server client associated with that filter.

8.15 X.25 Security

In this section, you specify whether or not you want to set up X.25 security. You only see this section if you are using the X.25 gateway function.

If you choose to set up X.25 security, you will need to define X.25 security in detail for incoming and/or outgoing calls; see Section 8.16 and Section 8.17.

If you choose not to set up X.25 security, the configurator will set up open security. This means that the DECNIS will:

- Accept all incoming calls, provided that they match a filter that is in use.
- Allow all outgoing calls from any of the Client systems using the DECNIS to any remote DTE.

If you set up open security, you do not see the other security sections described below.

8.16 Incoming Security for X.25 Server Clients

You use incoming X.25 security to prevent unauthorized incoming calls to either or both of the following:

- X.25 server clients served by the DECNIS.
- PVCs set up on the DECNIS.

You only set up incoming security if you are using the X.25 gateway function.

To set up incoming security, you specify the remote DTEs that you expect to send calls to X.25 server client systems. You also specify the type of access: ALL, NONE or REMOTE CHARGE.

If setting up PVC security, you specify remote DTEs that are using DECNIS PVCs. In this case, the only types of access are ALL or NONE.

You are only asked to supply the remote DTEs that have ALL access; any you do not supply have NONE.

8.17 Outgoing Security for Client Systems

You use outgoing X.25 security to prevent unauthorized outgoing calls from either or both of the following:

- Client systems using the DECNIS.
- PVCs set up on the DECNIS.

You only set up outgoing security if you are using the X.25 gateway function.

In this section, you specify Client systems using the DECNIS. You also specify the type of access they should have to remote DTEs: ALL, NONE or REMOTE CHARGE.

If setting up PVC security, you specify local DECNIS PVCs. In this case, the types of access are ALL or NONE.

8.18 Event Logging

Event logging is used to monitor your system and help in problem solving. In this section, you may set up event streams and event sinks. An event stream contains events generated by the DECNIS. An event sink is a node to which event streams are sent.

The configurator produces event streams with a standard, predefined set of events. You cannot alter these event streams within the configurator. To alter the event streams, you modify the user NCL script files produced by the configurator.

8.19 Database Sizing

In this section, you can adjust the amount of memory resources allocated to DECNIS database components

The routing database on the DECNIS is split into a number of components that interoperate to provide routing information. Each component has a value which specifies how much memory is allocated to it.

The configurator provides a default value for each component. This section allows you to change those values.

Note that if you increase some values, you may need to reduce others, so as not to use up the total amount of memory.

8.20 NCL Script

When you have entered all your configuration information, the configurator creates an NCL script using this information. Refer to Chapter 10 for details.

9

Using the DECNIS Text-Based Configurator

This chapter describes how to run the DECNIS text-based configurator. You should read Chapter 7 before you read this chapter.

9.1 Introduction and Main Menu

When you start the DECNIS text-based configurator, you will see first the copyright screen, and then a brief explanation of the configurator. Press Return. The Main Menu appears:

```
Create a new configuration

Modify an existing configuration

Exit from this procedure
```

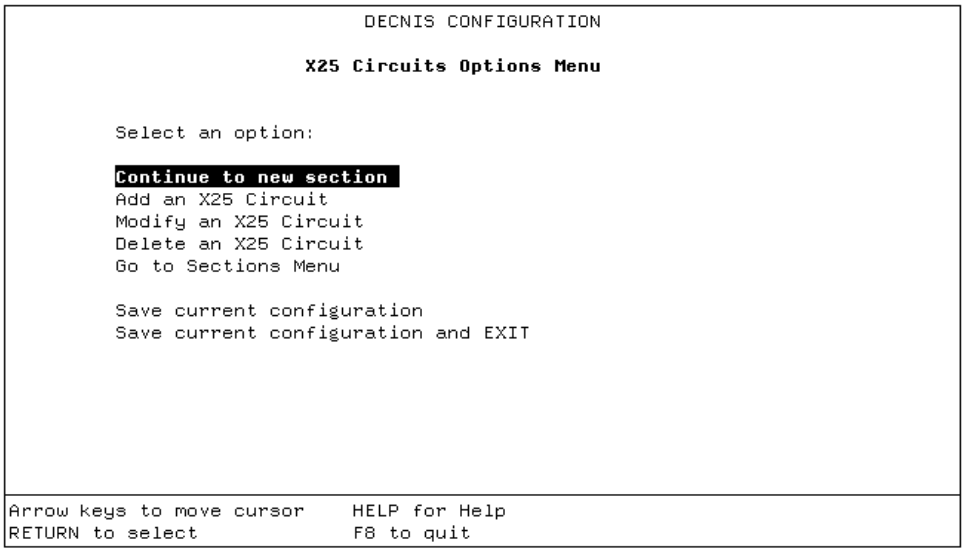
If you are configuring a DECNIS for the first time, choose `Create a new configuration`. You then see the first configurator sections.

9.1.1 The Sections

The DECNIS text-based configurator is divided into sections, each corresponding to a logical group of information. Each section contains a series of screens on which you enter information.

9.1.2 The Options Menu

When you complete the last screen in a section, the screen displays an **Options Menu**. For example:



9.1.3 Meaning of the Options in the Options Menu

The following list gives a brief explanation of each option in Options Menus.

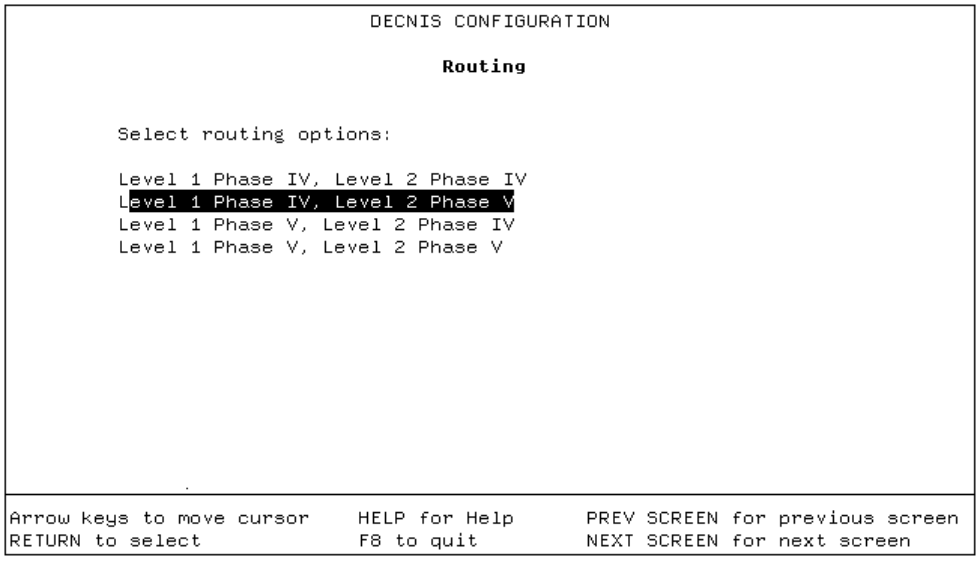
- `Continue to new section` takes you to the next uncompleted section.
- `Add` lets you set up an item. For example, an additional X.25 routing circuit.
- `Modify` lets you change information previously entered.
- `Delete` lets you delete an item set up previously.
- `Sections Menu` takes you to a menu of completed sections. If you select a section, you go to the Options Menu for that section.
- `Save the current configuration` lets you save your configuration so far.
- `Save the current configuration and EXIT` is the same as Save, except that when the configuration is saved, you exit from the configurator.

9.2 Entering Information

This section describes how to enter information in the DECNIS configurator.

9.2.1 Selecting from a Menu

On some screens, you select from a menu. For example:



1. Move the cursor to the item you want, using the up or down arrow keys.
2. Press Return.

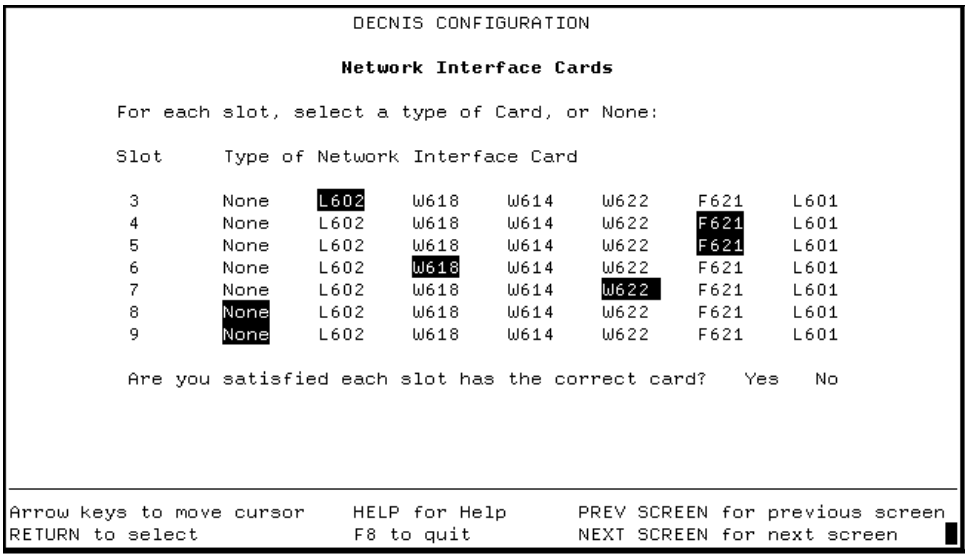
9.2.2 Horizontal Menus

Some screens have a horizontal menu:

1. Move the cursor to the item you want, using the left or right arrow keys.
2. Press Return.

9.2.2.1 Series of Horizontal Menus

A more complicated example of horizontal menus is in the Network Interface Card section. Here, you select from a series of horizontal menus, as shown in the following example screen:



On each line, you do the following:

1. Move the cursor to the card you want, using the left or right arrow key.
2. Press Return. The cursor moves to the first column on the next line.
3. Repeat for every line.

Changing a Selection

To change a selection on a previous line, use the up arrow key to get to the line. You can then use the left or right arrow key to move to a new selection.

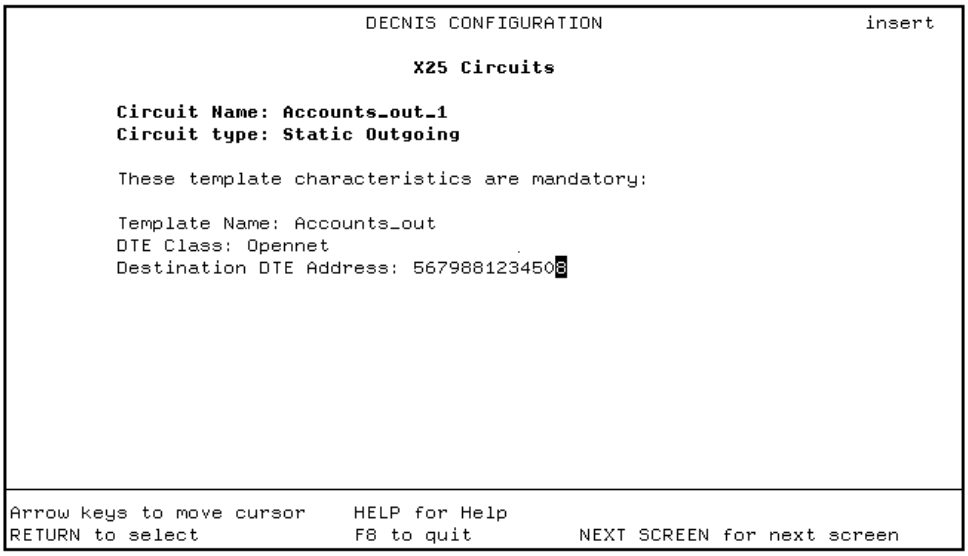
Restrictions on Leaving a Line

If you have moved the cursor horizontally on a line, you must press Return before you can move to another line, or move to the next screen.

For example, on line 6, you move the cursor from None to W622. You then decide to move back to line 5 to change your previous selection. You cannot do this until you have pressed Return on line 6.

9.2.3 Typing in Data

On some screens, you type information into a field. For example:



Type data into the field, and press Return.

Horizontal Scrolling

Usually, when you type in data, you can see the entire field. However, sometimes the maximum length you are allowed to type in is too long to fit into the field – for example, a node name, which may be up to 400 characters. In such cases, the field horizontally scrolls as you enter data.

Horizontal scrolling only works if the keyboard is in "Insert" mode, not if it is in "Overstrike" mode. The words "Insert" or "Overstrike" appear in the upper righthand corner of the screen.

To change between modes press Ctrl/A.

9.3 Moving Within and Between Sections

The next sections describe how you can move within and between configurator sections.

9.3.1 Moving Forward Within a Section

When you have filled in the required fields on a screen, a new screen automatically appears. You cannot move forward until you have completed the required fields.

If the fields are filled in already, or are optional, you can move to the next screen by pressing Next Screen.

9.3.2 Moving Back Within a Section

To move back within a section, press Prev Screen.

You can move backwards only as far as the first screen of the section. To get to another section, select `Go to Sections Menu` from any Options Menu. Then select a section.

9.3.3 Moving to a New Section

From the Options Menu, choose:

`Continue to new section`

You move to the first screen of the next section you have not seen. If you have completed all the sections, you move to the final section, `Create NCL Script`.

If you have modified previously completed sections, always use this option after you have finished making your changes.

9.3.4 Moving to a Previous Section

You can move to any section previously completed. This includes optional sections you previously chose to skip.

From the Options Menu, choose:

`Go to Sections Menu`

You see a menu listing the completed sections. When you select a section, you go to the Options Menu for that section.

9.3.5 Restriction on Leaving a Section

You cannot jump to the Options Menu from the middle of a section, even if the section was previously completed. You must go through all the screens.

If the section is complete, you can move quickly through the screens, by pressing Next Screen.

9.4 What You Can Do from the Options Menu

9.4.1 Adding an Item

You use Add to create several of the same type of item—for example, lines, X.25 circuits, reachable addresses. From the Options menu, choose:

Add an *item*

You go to the first screen on which you can enter data.

9.4.2 Modifying a Completed Section

You can change information previously entered. From the Options Menu, choose:

Modify an *item*

You go to the first screen on which you can enter data. All screens will display the information previously entered.

9.4.3 Deleting an Item

You can delete an item previously created. From the Options Menu, choose:

Delete an *item*

9.4.4 Using the Sections Menu

You use the Sections Menu to:

- Go back to a section you previously completed.
- Go back to a section you previously chose to skip.
- Go to the NCL Script section. This section only appears if you have completed all other sections.

When you select a section from the Sections Menu, you go to the Options Menu for that section. The only exception is when you select the NCL Script section. In that case, you go to the first screen of the section.

9.4.5 Saving an Incomplete Configuration

You can save a configuration without completing it. To do this, select either of the following from any Options Menu:

- Save the current configuration. This saves the information you have entered so far, and leaves you on the Options Menu.
- Save the current configuration and EXIT. This saves the information you have entered so far, and then returns you to the operating system.

Both options save your configuration information to a special data file. They do not create a new NCL script file. See Section 10.5 for details.

Once you have saved your incomplete configuration, you can complete it by using the Modify option; see Section 11.2.1.

9.5 Exiting and Quitting the DECNIS Configurator

To leave the DECNIS configurator, you can either exit or quit.

9.5.1 Definition of Exiting

Exiting means that the configurator saves all the information you have entered since starting the configurator and then returns you to the operating system.

9.5.2 How to Exit from the Configurator

You can save your configuration and exit at any of the following points:

- On any Options Menu, by selecting `Save the current configuration and EXIT`.
- In the `NCL Script` section, after you have created an NCL script file.
- In the `NCL Script` section, after you have created a CMIP file.

9.5.3 Definition of Quitting

Quitting means that:

- You leave the configurator and return to the operating system.
- The configurator does not save any information you have entered since the last time you saved your configuration or created an NCL script file.

9.5.4 How to Quit the Configurator

To quit the DECNIS text-based configurator, press F8. This will delete all of the information you have entered since the last time you selected a `Save` option, or created an NCL script file.

9.6 Errors when Running the DECNIS Configurator

If there are any errors when you are running the DECNIS text-based configurator, they will be recorded in the following log files:

- On OpenVMS systems:

  MOM$SYSTEM:NIS_DECNIS.LOG

- On DIGITAL UNIX systems:
  /usr/lib/dnet/nis_decnis.log

10

Creating the Configuration Files

10.1 Introduction

When you finish configuring the DECNIS, you need to do the following:

1. Create a master NCL script file. See Section 10.2.

   This is a text file holding the commands needed to configure your DECNIS. You create this within the DECNIS text-based configurator.

2. As an option, edit the user NCL script files. See Section 10.3.

   These are empty NCL script files. You use them to add NCL commands to modify your configuration (for example, if you want to add facilities that are not in the configurator).

3. Create a binary configuration file. See Section 10.4.

   This is the file that will be downline loaded to the DECNIS.

This chapter describes these files, how to create them and how they are used.

This chapter also describes the DECNIS data files. These are private files created by the DECNIS text-based configurator. Each holds a configuration for a DECNIS. See Section 10.5 for details.

10.1.1 More About NCL Script Files

The DECNIS text-based configurator uses the information you enter, together with system defaults, to create an initialization file for the DECNIS. This initialization file is a text file of Network Control Language (NCL) commands, known as the NCL script file. This file contains the commands necessary for configuring the DECNIS.

The NCL script file produced by the DECNIS text-based configurator is known as the **master NCL script file**. In addition, the first time the DECNIS is configured, the configurator generates three **user NCL script files**. You can enter additional NCL commands in the user NCL script files.

10.2 Creating the Master NCL Script File

You create a master NCL script file in the final section in the configurator, Create NCL Script.

10.2.1 Create NCL Script Section

Requirement

Before you can go to the Create NCL Script section, you must complete all the configurator sections. This means that for each section, you must do one of the following:

- Supply the required information on the screens.
- Select No on the introduction screen, to say that you want to skip that section.

How to Reach the Create NCL Script Section

Once you have completed all the configurator sections, you will go to the Create NCL Script section if you select either of the following:

- Continue to a new section from any Option Menu.
- NCL Script from any Sections Menu.

The Create NCL Script section will not appear on the Sections Menu unless you have completed all the sections.

10.2.2 How to Create the Master NCL Script File

In the Create NCL Script section, follow these steps:

1. The first menu asks you to select an option:

   ```
   Create an NCL Script
   Go to Sections Menu
   ```

2. Select Create an NCL Script.

   Only select Go to Sections Menu if you want to modify any information you have already entered.

10.2.3 Errors when Creating the NCL Script File

If the configurator cannot create the master NCL script file, a failure message appears at the foot of the screen, and the cursor stays on the option Create an NCL Script. You must correct the problem before reselecting the option.

10.3 User NCL Script Files

The user NCL script files are generated by the configurator the first time a DECNIS is configured. When they are first generated, they are empty files. The master NCL script file contains calls to the user NCL script files.

10.3.1 Purpose of the User NCL Script Files

The purpose of the user NCL script files is to allow you to change your DECNIS configuration without editing the master NCL script file. Edit the user NCL script files if you want to:

- Change default information that you cannot change from within the configurator, for example, timer values.
- Set up facilities that you cannot set up within the configurator, for example, setting up the DECNIS as a CONS LAN/WAN Relay.

10.3.2 Why Use the User NCL Script Files?

The master NCL script file is recreated whenever you run the DECNIS text-based configurator. If you edit the master NCL script file, and then rerun the configurator, any changes you have made will be lost. If you insert additional NCL commands in the user NCL script files instead, your changes will be preserved.

10.3.3 User NCL Script File Names

Table 10–1 lists the user NCL script file names. In the table, *client-name* is the load client name of the DECNIS.

See Section A.1 for the full file specifications of these files.

Table 10–1 User NCL Script File Names

File Names: OpenVMS and DIGITAL UNIX	Contain	Where Called in Master NCL Script File
NIS_*client-name*_ EXTRA_CREATE.NCL	CREATE commands	After standard entities have been created
NIS_*client-name*_ EXTRA_SET.NCL	SET commands	After standard entities have been set
NIS_*client-name*_ EXTRA_ENABLE.NCL	ENABLE commands	After standard entities have been enabled

10.3.4 General Recommendations for Editing User NCL Script Files

Follow these recommendations:

- Do not edit the master NCL script file.
- Do not delete the user script files, even if you will not use them.

  The master NCL script file contains calls to the user script files. The CMIP file will not compile if the user script files are not present.

10.3.5 Long NCL Commands

The maximum input for NCL commands is as follows:

- On OpenVMS systems, 1024 characters
- On DIGITAL UNIX systems, 2048 characters

The DECNIS text-based configurator may generate NCL commands that exceed this maximum length, if you provide sufficient input for certain configuration options. If this happens, the command will fail. This failure will be reported in the configurator log file.

To correct this problem, you will need to edit the NCL master script file and replace the long command with several separate commands.

Example

You can replace this long NCL command in the NCL script file:

```
set routing circuit L602-3-1 -
   alternative subnet addresses -
   {{ address =  1.1.50.50, mask =  255.255.255.0 }, -
   {address =  1.1.50.51, mask =  255.255.255.0 }}
```

by the following separate commands:

```
add routing circuit L602-3-1 -
   alternative subnet addresses -
   {{ address =  1.1.50.50, mask =  255.255.255.0 }}
add routing circuit L602-3-1 -
   alternative subnet addresses -
   {{ address =  1.1.50.51, mask =  255.255.255.0 }}
```

10.4 Creating a Configuration Load File

Before you can load the DECNIS software, you must compile the NCL script and user NCL files into a loadable configuration file. This can be either a separate **CMIP file** or a **combined file**.

- A CMIP (Common Management Information Protocol) file is the binary, loadable version of the NCL script files. It can be loaded as a separate file, together with the software image and profile files.
- A combined file consists of the CMIP file, software image and profile files combined into one file. Create this file if you want the DECNIS to reload all files from its own nonvolatile (flash) memory.

Requirement to Create CMIP or Combined File

Note that if you edit the user NCL script files, you must create a new CMIP or combined file before you reload the DECNIS.

10.4.1 Methods for Creating the CMIP File or the Combined File

There are two ways to create the CMIP file or the combined file:

- From within the DECNIS text-based configurator.
- After exiting from the configurator. Use this method if you want to edit the user NCL script files.

10.4.2 Creating the CMIP File Within the Configurator

You can create a CMIP file in the DECNIS text-based configurator only if you requested load-host loading in the load-host configurator. If you requested nonvolatile memory loading, go to Section 10.4.4.

To create a CMIP file in the DECNIS text-based configurator, follow these steps:

1. Go to the `Create NCL Script` section.
2. Create the NCL script file.
3. After the NCL script file is created, the following menu is displayed:

```
Create a CMIP file from the NCL script
Return to Sections Menu
Return to Main Menu
Exit from the configurator
```

4. Select `Create a CMIP file`.

10.4.3 Creating a CMIP File After Exiting from the Configurator

To create a CMIP file after exiting from the configurator, follow these steps:

1. In the Create NCL Script section of the configurator, create an NCL script file.
2. On the CMIP file menu, select Exit from the configurator.
3. Edit the user NCL script files if you wish, as described in Section 10.3.
4. Enter the command to create a CMIP file:
   - On OpenVMS load hosts:

     ```
     $ @SYS$MANAGER:NIS$SCRIPT_COMPILE NIS_client-name.NCL
     ```

   - On DIGITAL UNIX load hosts:

     ```
     # /usr/lib/dnet/nis_script_compile nis_client-name
     ```

   where *client-name* is the DECNIS load client name)

10.4.4 Creating the Combined File Within the Configurator

You can create a combined file in the DECNIS text-based configurator only if you requested nonvolatile memory loading in the load-host configurator. If you requested load-host loading, go to Section 10.4.2.

To create a combined file in the DECNIS text-based configurator, follow these steps:

1. Go to the Create NCL Script section of the DECNIS text-based configurator.
2. Create the NCL script file.
3. After the NCL script file is created, the following menu is displayed:

   ```
   Create a combined image/CMIP/profile file
   Return to Sections Menu
   Return to Main Menu
   Exit from the configurator
   ```

4. Select Create a combined image/CMIP/profile file.

10.4.5 Creating a Combined File After Exiting from the Configurator

To create a combined file after exiting from the configurator, follow these steps:

1. Create a CMIP file, either within the configurator, or as described in Section 10.4.3.
2. Run the combine procedure, as described in Section 10.4.6.

10.4.6 Creating a Combined File

To combine the software image, CMIP file and profile files into a single combined file, enter the following command:

- OpenVMS load hosts:

  ```
  $ @SYS$MANAGER:NIS$COMBINE.COM NIS041 client-name
  ```

- DIGITAL UNIX load hosts:

  ```
  # /usr/lib/dnet/nis_combine nis041 client-name
  ```

where *client-name* is the load client name of the DECNIS.

10.5 DECNIS Data Files

The DECNIS text-based configurator saves each DECNIS configuration in its own DECNIS data file. When you modify a configuration, the DECNIS text-based configurator uses the data file to show the data previously entered. This data file is independent of any NCL script files or CMIP files.

The DECNIS data file name is:

NIS_*client-name*.DAT

where *client-name* is the load client name of the DECNIS.

For the full specification of this file, see Section A.1.

The DECNIS data file is also used for saving an incomplete configuration; see Section 9.4.5.

Do not delete the DECNIS data files. You must have a data file in order to use the DECNIS text-based configurator to modify a configuration or complete an incomplete configuration.

10.5.1 Saved Version of the DECNIS Data File

When the DECNIS text-based configurator creates a new DECNIS data file, it saves the old one, with a different file name extension.

Normally, the previous DECNIS data file is saved with the file name:

NIS_*client-name*.BAK

However, if you install a new version of DECNIS software, and use the DECNIS configurator to modify an existing configuration, the configurator saves the previous DECNIS data file with a different file name:

NIS_*client-name*.DAT_V*nn*

where: *client-name* is the load client name for the DECNIS.
nn is the version number of the previous version of DECNIS software.

Refer to Table A–1 and Table A–2 for the full file specifications.

11

Modifying Your Configuration in the DECNIS Text-Based Configurator

11.1 Introduction

This chapter describes how to modify a completed configuration in the DECNIS text-based configurator.

11.2 How to Modify Your Configuration

You can use the DECNIS text-based configurator to modify an existing configuration. Follow these steps:

1. Start the DECNIS text-based configurator, as described in Chapter 7.
2. Select `Modify an existing configuration` from the Main Menu.
3. The screen shows a list of load client names. Select the DECNIS you wish to reconfigure.
4. The screen shows the Sections Menu. Select a section to modify.
5. The screen shows the Options Menu for that section. You can add, delete, or modify information in that section.
6. To make changes to another section, select `Go to Sections Menu` from any Options Menu. Then select a section.
7. When you have finished making changes, create the NCL script file. You will go to the `Create NCL Script` section if you do either of the following:
   - Select `Continue to new section` from any Options Menu.
   - Select `NCL Script` from the Sections Menu.
8. When you reach the `Create NCL Script` section, follow the instructions in Section 10.2.

11.2.1 Completing an Incomplete Configuration

If you have saved an incomplete configuration, and then want to complete it, follow these steps:

1. Start the DECNIS text-based configurator, as described in Chapter 7.
2. Select `Modify an existing configuration` from the Main Menu.
3. The screen shows a list of load client names. Select the DECNIS you want. You will go to the Options Menu for the next section you need to complete.
4. Complete the section, by selecting Add, Configure or Modify, as appropriate.
5. When you have completed the section, select `Continue to new section` from the Options Menu. You will go to the next section you need to complete.
6. Repeat steps 4 and 5 until the configurator takes you to the NCL Script section.
7. Create an NCL script, as described in Section 10.2.2.

11.3 Steps to Take After Modifying a DECNIS Configuration

Sometimes, if you delete or modify information in one section, it will change or delete information in another section. To make sure that you have entered all necessary information, do the following:

1. After you have made a modification, finish the section you are in.
2. Select `Continue to new section` on the Options Menu. This will always take you to the next uncompleted or unseen section.
3. If it takes you to another Options Menu, complete the section by selecting Add, Configure or Modify, as appropriate.
4. Select `Continue to new section` on every Options Menu until you arrive at the NCL Script section.

11.4 Effects of Modifying a DECNIS Configuration

Table 11–1 lists the modifications and deletions that have an important effect on the rest of your configuration.

Table 11–1 Effect of Modifying DECNIS Information

Modification	In this section	Affects these sections:
Change type of Network Interface Card in a slot	Network Interface Cards	**Lines**, **X25 Circuits**, **OSI and IP Reachable Addresses**, **PVCs**, **Groups**, **LLC2** – Deletes all information for lines/DTEs on the previous Card
Change from Level 1 to Level 2	Routing	**Routing**—Deletes IP route propagation information **Lines**, **X25 Circuits**, **Reachable Addresses**– You may need to add information, as more functions are available to Level 2 routers
Change from Level 2 to Level 1	Routing	**Routing**—Deletes IP route propagation information and Level 2 specific information **Lines** – Deletes Level 2 specific information, such as Level 2 cost, interphase links **X25 Circuits**—Deletes DA circuits **OSI Reachable Addresses**—Deletes all information **IP Reachable Addresses**—Deletes all IP reachable addresses for DA circuits
Change routing algorithm	Routing	**Routing**—Deletes route propagation information. Changing from Phase V only to Phase IV only deletes Phase V area addresses **Lines**—Changing from Level 2, Phase V to Level 2, Phase IV deletes interphase links
Change from X.25 to another protocol	Lines	**Lines**—Deletes information about DTEs and DTE Classes for the line **X25 Circuits**—Deletes X.25 routing circuits for the line **Reachable Addresses (OSI or IP)**—Deletes reachable addresses for circuits using the line **PVCs**—Deletes PVCs using the line **CUGs**—Deletes CUGs using the line
Change to X.25 from another protocol	Lines	**Lines**—Deletes all HDLC/PPP circuit information **Reachable Addresses (OSI or IP)**—Deletes reachable addresses for the circuit using the line
Deleting a line (except X.25)	Lines	**Reachable Addresses (OSI or IP)**—Deletes all reachable addresses for the circuit using the line

(continued on next page)

Table 11–1 (Cont.) Effect of Modifying DECNIS Information

Modification	In this section	Affects these sections:
Deleting an X.25 line	Lines	**Lines** – Deletes all DTEs/DTE Classes for the line **X25 Circuits**—Deletes X.25 routing circuits using the line **Reachable Addresses**—Deletes reachable addresses for circuits using the line **PVCs** – Deletes PVCs using the line **CUGs**—Deletes CUGs using the line

11.5 Effects of Modifying Load-Host Information

If you modify information in the load-host configurator, the modifications may affect or even invalidate information entered in the DECNIS text-based configurator.

For this reason, always rerun the DECNIS text-based configurator after changing the load-host configuration for a DECNIS.

- If DECNIS information has been deleted, you will need to reenter it.
- If DECNIS information has not been deleted, you will simply need to rerun the configurator.

Follow the steps in Section 11.5.1.

11.5.1 Steps to Take After Modifying a Load-Host Configuration

This section describes how to update the DECNIS configuration after changing load-host information.

1. Exit the load-host configurator.
2. Run the DECNIS configurator.
3. Select the Modify option from the Main Menu.
4. Select the load client name for the DECNIS that you have just modified in the load-host configurator.
5. You will now see a list of sections. Select any section.
6. On the Options Menu for the section, select `Continue to new section`.

7. If the DECNIS text-based configurator has been able to update the DECNIS configuration automatically, you will go to the NCL script section. Go to step 10.
8. If the DECNIS text-based configurator cannot update the DECNIS configuration automatically, you will go to the Options Menu of a section where information has been deleted. Go to step 9.
9. Follow these steps:
   - If you are on the Routing Options Menu, select `Modify`.

     If you are on any other Options Menu, select `Add`, to set up new items, for example, event streams.
   - Enter the required information.
   - When you have finished modifying, select `Continue to new section` from the Options Menu.
   - If you go to an Options Menu for another section, repeat this step.
10. In the NCL Script section, follow the instructions on the screen.

11.5.2 How the DECNIS Configurator Uses Load-Host Information

The DECNIS text-based configurator uses the information you entered during load-host configuration to find out:

- The DECNIS hardware units set up for loading.
- The DECNIS hardware type for each hardware unit.
- The DECNIS Phase IV address (if present).
- The DECNIS system IP address (if present).
- Whether or not the DECNIS configurator will use naming service namespaces to find addressing information.

This load-host information affects the information you enter during DECNIS configuration.

11.5.3 Load-Host Modifications Affecting DECNIS Configuration

Table 11–2 lists the modifications in load-host configuration that will affect or invalidate your DECNIS configuration.

Table 11–2 Effect of Modifying Load-Host Information on DECNIS Information

Change to Load-Host Configuration	Effect on DECNIS Configuration	What You Need to Do
Changing Hardware Address and/or Phase IV address	Changes the CREATE SESSION CONTROL KNOWN TOWER command for the DECNIS in the master NCL script	Rerun the DECNIS text-based configurator, as described in Section 11.5.1
Deleting the Phase IV address	Invalidates Phase IV routing on the DECNIS	Rerun the DECNIS text-based configurator. Reenter information in the Routing section
Entering the Phase IV address (where there was none previously)	Allows selection of Phase IV routing for Level 1 routers, and of Phase IV routing at both levels for Level 2 routers	Rerun the DECNIS text-based configurator. Reenter information in the Routing section
Changing IP Address	Changes the DECNIS system IP address in the master NCL script	Rerun the DECNIS text-based configurator, as described in Section 11.5.1
Changing from BOOTP loading to MOP only loading	Deletes the system IP address previously set up in the load-host configurator	Rerun the DECNIS text-based configurator. Reenter system IP address in the Routing section
Changing from MOP only loading to BOOTP loading	The DECNIS IP address that you enter during load-host configuration replaces the system IP address previously entered during DECNIS configuration	Rerun the DECNIS text-based configurator
Changing between Use of a naming service and Nonuse of a naming service	Deletes all information in the following sections: X.25 Server Clients Event Logging Incoming Security Outgoing Security	Rerun the DECNIS text-based configurator. Reenter the information

11.6 Copying and Modifying a Configuration

You may want to use similar configurations for several DECNIS systems, for example, if they have identical hardware configurations. One way to do this by copying an existing configuration and then modifying it. This section describes how you do this.

Note that in the instructions:

- The DECNIS system from which you are copying the configuration is called the **first DECNIS**.
- The system to which you are copying is called the **second DECNIS**.

11.6.1 Before You Copy

Before you can copy a configuration, you need to do the following:

1. On a load host, install the DECNIS software, as described in the installation chapter for your load host.
2. Configure both the **first DECNIS** and the **second DECNIS** for loading. To do this, run the load-host configurator and set up downline loading details, as described in the installation chapter for your load host.
3. Configure the **first DECNIS**, as follows:
   - Run the DECNIS text-based configurator, and configure the DECNIS.
   - Create an NCL script (and a CMIP file, if you wish).
   - Select `Exit from the configurator`.

11.6.2 Copying the Configuration to Another DECNIS

To copy the configuration so that it applies to the **second DECNIS**, follow these steps:

1. Copy the DECNIS data file for the first system to a new file. In the file name of the new file, substitute the load client name of the second system for that of the first system.

   For example, the load client name is SOUTH1 for the first DECNIS and NORTH2 for the second DECNIS. On an OpenVMS system, use this command:

   ```
   $ COPY SYS$COMMON:[MOM$SYSTEM]NIS_SOUTH1.DAT -
   _$ SYS$COMMON:[MOM$SYSTEM]NIS_NORTH2.DAT
   ```

   Refer to Appendix A for the location and name of the DECNIS data file on all supported load hosts.

2. Start the DECNIS configurator.
3. Select Modify an existing configuration from the Main Menu.
4. Select the load client name of the second DECNIS. In the example above, this would be NIS_NORTH2.DAT.
5. Now, modify the configuration so that it is correct for the second DECNIS:
   - From the DECNIS Node Options Menu, select Go to Sections Menu.
   - Select the first section to be modified.

Note

You must modify the configuration. The addresses entered for the system you copy from will not be correct for the system you copy to.

   - When you reach the Options Menu, select the Sections Menu, and select another section to modify.
   - When you have finished modifying, select Continue to Next Section from any Options Menu. This will take you to the NCL Script section.

11.6.3 Sections to Check

Be sure to check the addressing information in the following sections:

- Routing
- Lines and DTEs
- X.25 Circuits (if configured)
- Tunnel Circuits (if configured)
- X.25 Server Clients (if configured)
- Event Logging
- Incoming Security (if configured)
- Outgoing Security (if configured)

It is safest to go through each section in turn, beginning with Network Interface Cards.

Part IV

Information Used in the Configurators

This part contains the following chapters:

- Chapter 12 summarizes the information required for load-host configuration on DECnet-Plus for OpenVMS and DECnet-Plus for DIGITAL UNIX load hosts.
- Chapter 13 lists the information required to configure the DECNIS in the DECNIS text-based configurator.

12

Information Required for Load-Host Configuration

Table 12–1 lists the information needed when running the load-host configurator.

Write down your values in the last column, headed **Your Value**.

See Chapter 3 and Chapter 5 for explanatory notes on load-host configuration.

Default Values

The column labelled **Default** in the tables shows the default value supplied by the configurators for each item of information.

If the **Default** column shows –, this means that the configurator does not provide a default. If the value is required, you need to provide it yourself. The column labelled Required/Optional shows whether the value is required or optional.

Table 12–1 Load-Host Configuration Information: DECnet-Plus Load Hosts

Information Required	Notes	R(equired)/ O(ptional)	Default	Your Value
Type of DECNIS	Select from list	R	–	
Load protocol (if both MOP and BOOTP supported)	Select one: MOP; BOOTP; Both	R	–	
Load client name	Create a name to identify the DECNIS for loading. Max. 32 characters	R	–	
Hardware address	LAN address of the DECNIS, as printed on the label on the Processor Card. Example: 08-00-2B-02-AA-20	R	–	
MOP circuit name (MOP loading only)	Name of the MOP circuit used to load the DECNIS. Max. 32 characters	R	–	
IP address (BOOTP loading only)	IP address for the DECNIS	R	–	
DECnet Phase IV address of DECNIS	*Area number.node number* Example: 2.43	O (but R to communicate with Phase IV systems)	–	
Type of loading	Select one: nonvolatile memory for both; load host for CMIP, nonvolatile memory for image; load host for both	R	Nonvolatile memory for both	
Create a dump file?	Select Yes or No	R	–	
Should configurator use naming service?	Select Yes or No	R	Yes	
Node name	Full node name of DECNIS	R if naming service chosen	–	
Node synonym	Alternative name for the DECNIS, recorded in DECdns or the local namespace. Max. 6 characters	O	–	

12.1 Dump File Names

Refer to Section 3.5.6 for the dump file name and location on OpenVMS load hosts.

Refer to Section 5.6.7 for the dump file name and location on DIGITAL UNIX load hosts.

13

Information Required for DECNIS Configuration

This chapter lists the information you need to supply when you run the DECNIS text-based configurator.

Tables 13–1 to 13–21 list this information.

Write down your values in the last column, headed **Your Value**.

Note that the tables list all the information required for all cases. The information you actually need to supply depends on your configuration. For example, you do not need to supply X.25 circuit information if you do not wish to use any X.25 routing circuits.

Default Values

The column labelled **Default** in the tables shows the default value supplied by the configurators for each item of information.

If the **Default** column shows –, this means that the configurator does not provide a default. If the value is required, you need to provide it yourself. The column labelled Required/Optional shows whether the value is required or optional.

Table 13–1 Configuration Information: DECNIS Node

Information Required	Notes	R(equired)/ O(ptional)	Default	Your Value
Load client name	Select the load client name (entered during load-host configuration) that identifies this DECNIS	R	–	

Table 13–2 Configuration Information: Network Interface Cards

Information Required	Notes	R(equired)/ O(ptional)	Default	Your Value
For each DECNIS slot listed on the screen:				
Network Interface Card	Select one of the card acronyms, or None (for an empty slot). Examples: W614, W618, W622, L601, L602, F621	R	None	

Table 13–3 Configuration Information: Configuration Options

Information Required	Notes	R(equired)/ O(ptional)	Default	Your Value
Use Internet Protocol (IP) routing?	Select Yes or No	R	–	
Use for X.25 Gateway?	Select Yes or No	R	–	
Use Bridging?	Select Yes or No	R	–	
Use NetWare IPX routing?	Select Yes or No	R	–	
Use AppleTalk routing?	Select Yes or No	R	–	
Does DECNIS have a Bridging license?	Select Yes or No	R	Yes	
Does DECNIS have a VCP license?	Select Yes or No	R	Yes	
Special X.25 options?	Select Yes or No for: Nonrouting PVCs; Closed User Groups; LLC2	R	No for each	
Root Priority number (Bridging only)	Decimal digits. Range: 0–255. Determines whether the DECNIS will be the root bridge	R for Bridging	128	
CTF user name	Protects use of Common Trace Facility (CTF). Up to 16 characters	R	–	
CTF password	Protects use of CTF. Up to 16 characters	R	–	
Network Management user name	Protects use of NCL commands. Up to 16 characters	R	–	
Network Management password	Protects use of NCL commands. Up to 16 characters	R	–	
SNMP contact name	Name of person managing the DECNIS. Max. 255 characters	O	–	
SNMP domain name	Name for the DECNIS. Max. 255 characters	O	–	
SNMP system location	Description of physical location of the DECNIS. Max. 255 characters	O	–	
Type of Access to community "public"	Enter RO (read only) or RW (read and write)	R	–	
Community name(s)	Additional community name(s). Max. 255 characters	O	–	

(continued on next page)

Table 13–3 (Cont.) Configuration Information: Configuration Options

Information Required	Notes	R(equired)/ O(ptional)	Default	Your Value
Type of access for communities	Enter RO (read only) or RW (read and write)	R if community name entered	–	
Set up SNMP traps?	Select Yes or No	R	–	
IP address(es)	IP address of system(s) to which the DECNIS will send traps	R for first address; O for the rest	–	
SNMP trap community name	Community name included in traps	R	"public"	
Set authentication failure trap?	Select Yes or No	R	–	

Table 13–4 Configuration Information: Routing

Information Required	Notes	R(equired)/ O(ptional)	Default	Your Value
Routing level	Select Level 1 or Level 2[1]	R	–	
Level 1 Router Information				
Routing algorithm	Select Phase IV or Phase V	R	Phase IV	
Address Prefix	IDP + optional preDSP of a Phase IV compatible NSAP address, in DEC format. Up to 22 digits. Example 1: 37:12345: Example 2: 49::	R if Phase IV address supplied	–	
Phase V area address (Phase V only)	The IDP, preDSP (optional) and Local Area fields of an NSAP address, in DEC format. Up to 40 digits. Example: 41:23456789:00–A5	R if no Phase IV address (up to three). Otherwise, O (up to two)	–	
IP address for DECNIS [2]	System IP address for IP circuits with no IP address. *n.n.n.n* (*n* is a decimal number)	R if not entered during load-host configuration	–	
Use the RIP protocol?[2]	Select Yes or No	R	–	
Accept Default RIP route?[2]	Select Yes or No	R	Yes	
Announce Default RIP route?[2]	Select Yes or No	R	No	
Set up RIP sources?[2]	Yes or No	R	–	
IP address of RIP source[2]	*n.n.n.n* (*n* is a decimal number)	R	–	
Type of route propagation (if RIP selected)[3]	IS–IS to RIP? RIP to IS–IS?	R	No for both	
OSPF autonomous system boundary router? (only if OSPF selected)	Select Yes or No	R	–	

[1]A Level 2 router acts also as a Level 1 router.

[2]Only asked if you selected IP.

[3]To use IS–IS, you must run Phase V routing at one or both levels.

(continued on next page)

Table 13–4 (Cont.) Configuration Information: Routing

Information Required	Notes	R(equired)/ O(ptional)	Default	Your Value
Level 2 Router Information				
Routing algorithm	Select one of: L1 Phase IV, L2 Phase IV L1 Phase IV, L2 Phase V L1 Phase V, L2 Phase IV L1 Phase V, L2 Phase V	R	–	
Address Prefix	IDP + optional preDSP of a Phase IV compatible NSAP address, in DEC format. Up to 22 digits. Example 1: 37:12345: Example 2: 49::	R if Phase IV address supplied for load-host configuration	–	
Phase V area address (if Phase V)	IDP, preDSP (optional), and local area fields of an NSAP, in DEC format. Up to 40 digits. Example: 41:23456789:00–A5	R if there is no Phase IV address. Otherwise, O	–	
IP address for DECNIS [2]	System IP address for IP circuits with no IP address. *n.n.n.n* (*n* is a decimal number)	R if not entered during load-host configuration	–	
Use RIP protocol?[2]	Select Yes or No	R	Yes	
Use EGP protocol?[2]	Select Yes or No	R	Yes	
Use OSPF protocol?[2]	Select Yes or No	R	Yes	
Use Integrated IS-IS protocol?[2]	Select Yes or No	R	Yes	
Accept Default RIP route?[2]	Select Yes or No	R	Yes	
Announce Default RIP route?[2]	Select Yes or No	R	No	
Set up RIP sources?	Yes or No[2]	R	Yes	
IP address of each RIP source[2]	*n.n.n.n* (*n* is a decimal number)	R	–	
AS number (EGP only)	Number of autonomous system to which DECNIS belongs. Range 1–65535	R	–	

[2]Only asked if you selected IP.

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Table 13–4 (Cont.) Configuration Information: Routing

Information Required	Notes	R(equired)/ O(ptional)	Default	Your Value
Level 2 Router Information				
Type of route propagation (only if more than one IP protocol selected)[3]	Choice depends on protocols selected. Any or all of: IS–IS↔RIP; IS–IS↔EGP; EGP↔RIP	R	No for all	
OSPF autonomous system boundary router? (only if OSPF selected)	Select Yes or No	R	–	

[3]To use IS–IS, you must run Phase V routing at one or both levels.

Table 13–5 Configuration Information: Lines

Information Required	Notes	R(equired)/ O(ptional)	Default	Your Value
Select line to configure	Select from list displaying all ports set up previously (see Table 13–2)	R	–	
Protocol (Lines on W622 NIC only)	Select one of: HDLC; PPP; Frame Relay; X.25; CHDLC; VCP	R	–	
Protocol (Lines on W614 or W618 NIC only)	Select one of: HDLC; PPP; DDCMP™; X.25; CHDLC	R	–	
CSMA/CD and FDDI information				
Circuit name	Max. 32 characters	R	*port name*	
Enable circuit on system startup?	Select Yes or No	R	No	
Supply DECnet routing information?	Select Yes or No	R	No	
The following information only applies if you choose to supply DECnet routing information				
Type of routing (Level 2 only)	Select Level 1 and 2 or Level 2 only	R	Level 1 and Level 2	
Level 1 cost	Decimal number from 1–63	R	20	
Level 2 cost	Decimal number from 1–63	R	20	
Level 1 priority	Decimal number from 1–127	R	64	
Level 2 priority	Decimal number from 1–127	R	64	
The following information only applies if you selected IP routing				
Run RIP on this circuit?	Select Yes or No	R	No	
Run EGP on this circuit? (Level 2 only)	Select Yes or No	R	No	
IP address	Circuit IP address. *n.n.n.n* (*n* is a decimal number)	O (but R on at least one CSMA/CD circuit)	–	

(continued on next page)

Table 13–5 (Cont.) Configuration Information: Lines

Information Required	Notes	R(equired)/ O(ptional)	Default	Your Value
	CSMA/CD and FDDI information			
Subnet mask	*n.n.n.n* (*n* is a decimal number). You can use the digits 255 to show which part of the IP address is the network address. Example 1: 255.255.255.0: First three bytes are the network address. Last byte identifies the host.	R if address supplied	Depends on subnet class	
Alternative IP address (Only if IP address supplied)	Alternative local address(es) for this circuit. *n.n.n.n* (*n* is a decimal number)	O	–	
Alternative subnet mask	*n.n.n.n* (*n* is a decimal number). See IP subnet mask for more details	O	–	
RIP options	Only receive; Only send; Send and Receive	R	–	
AS number (EGP only)	AS number of an EGP neighbor	R	–	
IP address of EGP neighbor (EGP only)	*n.n.n.n* (*n* is a decimal number)	R	–	
The following information only applies if you selected Bridging				
Use line as bridging port?	Select Yes or No	R	Yes	
Port name	Create a name. Max. 32 characters	R	Port-*n*	
Port number	Decimal number from 1–15	R	Lowest available	
Cost	The lower the cost, the more likely that the DECNIS will be the designated bridge. Decimal number from 0–255	R	10	
The following information only applies if you selected NetWare IPX				
Run NetWare IPX?	Select Yes or No	R	–	
NetWare network number	Up to 8 hexadecimal digits	R	–	
Type of encapsulation	For CSMA/CD, select: Ethernet, 802.2, SNAP or Novell®. For FDDI, select 802.2 or SNAP	R	Ethernet	

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Table 13–5 (Cont.) Configuration Information: Lines

Information Required	Notes	R(equired)/ O(ptional)	Default	Your Value
	CSMA/CD and FDDI information			
Periodic update interval	Number of seconds between periodic RIP and SAP updates on this circuit. Decimal integer in range 60–65535	R	60	
Accept NetBIOS® broadcast?	Select Yes to accept incoming NetBIOS broadcasts on this circuit	R	–	
The following information only applies if you selected AppleTalk Routing				
Run AppleTalk?	Select Yes or No	R	–	
AppleTalk manual network address for the DECNIS	Network number plus node ID. Format: *number.node-id* Range: 1–65279 for network number. 128–253 for node ID. The value 0.0 means there is no network address.	O	0.0	
AppleTalk network range	Range of contiguous AppleTalk network numbers. Format: *number.number* Range: 1–65279 for each number. Example: 225–3000	O	–	
AppleTalk default zone	Name of AppleTalk zone to be used for nodes with no preassigned zone or with an invalid zone name	O	–	
More AppleTalk zones (if default zone entered)	Name(s) of zones valid for this circuit	O	–	

(continued on next page)

Table 13–5 (Cont.) Configuration Information: Lines

Information Required	Notes	R(equired)/ O(ptional)	Default	Your Value
	HDLC information			
Circuit name	Max. 32 characters	R	Line name	
Enable circuit on system startup?	Select Yes or No	R	No	
Supply DECnet routing information?	Select Yes or No	R	No	
The following information only applies if you choose to supply DECnet routing information				
Transmit password	The characters %x followed by an even number of up to 38 hex digits	O	–	
Receive password	The characters %x followed by an even number of up to 38 hex digits	O	–	
Level 1 cost	Decimal number from 1–63	R	20	
Level 2 cost	Decimal number from 1–63	R	20	
Interphase link choice (only if Phase V routing at Level 2)	Choose one of: Phase IV Level 2 router; Phase V router running Phase IV routing protocols at Level 2; No interphase link	R	No interphase link	
Phase IV areas reachable by this circuit[1]	Enter list of area numbers. Example: 23, 30–35, 40	R	–	
Path cost for Phase IV areas reachable by circuit[1]	Decimal number from 1–63	R	20	
Other Phase IV areas reachable by DECNIS[1]	Enter list of area numbers. Example: 10, 15–22, 41–45	R	–	
Path cost for other Phase IV areas[1]	Decimal number from 1–63	R	20	
The following information only applies if you selected IP routing				
Run RIP on this circuit?	Select Yes or No	R	No	
Run EGP on this circuit? (Level 2 only)	Select Yes or No	R	No	

[1]You are only asked this if you are setting up an interphase link.

(continued on next page)

Table 13–5 (Cont.) Configuration Information: Lines

Information Required	Notes	R(equired)/ O(ptional)	Default	Your Value
	HDLC information			
Neighbor IP address	*n.n.n.n* (*n* is a decimal number). IP address of IP host to which this circuit connects.	R for RIP or EGP if no local IP address	–	
Local IP address	Local address for this circuit. *n.n.n.n* (*n* is a decimal number).	R for RIP or EGP if no neighbor IP address	–	
Local subnet mask	*n.n.n.n* (*n* is a decimal number). You can use the digits 255 to show which part of the IP address is the network address. Example: 255.255.255.0: First three bytes are the network address. Last byte identifies the host.	R if local IP address supplied	Depends on subnet class	
RIP options	Only receive; Only send; Send and Receive	R	–	
AS number (EGP only)	AS number of an EGP neighbor	R	–	
IP address of EGP neighbor (EGP only)	*n.n.n.n* (*n* is a decimal number)	R	–	
The following information only applies if you selected Bridging				
Use this line as bridging port?	Select Yes or No	R	No	
Port name	Create a name. Max. 32 characters	R	Port-*n*	
Port number	Decimal number from 1–15	R	Lowest available	
Cost	The lower the cost, the more likely the DECNIS is to be the designated bridge. Decimal number 0–255	R	10	
Enable Spanning Tree?	Select Yes or No	R	Yes	

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Table 13–5 (Cont.) Configuration Information: Lines

Information Required	Notes	R(equired)/ O(ptional)	Default	Your Value
	PPP information			
Select routing protocols	Select any or all of: OSI routing; DECnet Phase IV routing; IP routing; IPX routing (IP and IPX appear only if selected in Configuration Options)	R	Yes for each	
Circuit name	Max. 32 characters	R	Line name	
Enable circuit on system startup?	Select Yes or No	R	No	
Supply DECnet routing information?	Select Yes or No	R	No	
The following information only applies if you choose to supply DECnet routing information				
Level 1 cost	Decimal number from 1–63	R	20	
Level 2 cost	Decimal number from 1–63	R	20	
Interphase link choice (only if using Phase V routing at Level 2)	Choose one of: Phase IV Level 2 router; Phase V router running Phase IV routing protocols at Level 2; No interphase link	R	No interphase link	
Phase IV areas reachable by this circuit[1]	Enter list of area numbers. Example: 23, 30–35, 40	R	–	
Path cost for Phase IV areas reachable by circuit[1]	Decimal number from 1–63	R	20	
Other Phase IV areas reachable by DECNIS[1]	Enter list of area numbers. Example: 10, 15–22, 41–45	R	–	
Path cost for other Phase IV areas[1]	Decimal number from 1–63	R	20	
IP information is the same as for HDLC circuits				
The following information only applies if you selected NetWare IPX				
Run NetWare IPX?	Select Yes or No	R	–	
NetWare network number	Up to 8 hexadecimal digits	R	–	

[1]You are only asked this if you are setting up an interphase link.

(continued on next page)

Table 13–5 (Cont.) Configuration Information: Lines

Information Required	Notes	R(equired)/ O(ptional)	Default	Your Value
	PPP information			
Periodic update interval	Number of seconds between periodic RIP and SAP updates on this circuit. Decimal integer in range 60–65535	R	60	
Accept NetBIOS broadcast?	Select Yes to accept incoming NetBIOS broadcasts on this circuit	R	–	
The following information only applies if you selected Bridging				
Use this line as bridging port?	Select Yes or No	R	No	
Port name	Create a name. Max. 32 characters	R	Port-*n*	
Port number	Decimal number from 1–15	R	Lowest available	
Cost	The lower the cost, the more likely the DECNIS is to be the designated bridge. Decimal number 0–255	R	10	
Enable Spanning Tree?	Select Yes or No	R	Yes	
Use minimum sized frame compression?	Select Yes or No	R	–	
	DDCMP information			
Circuit name	Max. 32 characters	R	Line name	
Enable circuit on system startup?	Select Yes or No	R	No	
Communications mode	Select synchronous or asynchronous	R	–	
Line speed (only if asynchronous selected)	Select from 1200, 2400, 4800, 9600, 19200, 38400, 56K, 64K, 128K	R	–	
Type of modem control (only if asynchronous selected)	Select Full modem control or Data leads only	R	Full modem control	
Supply DECnet routing information?	Select Yes or No	R	No	
DECnet routing and Internet Protocol information are both the same as for HDLC circuits				

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Table 13–5 (Cont.) Configuration Information: Lines

Information Required	Notes	R(equired)/ O(ptional)	Default	Your Value
	Frame Relay information			
Select data link protocol	Select CHDLC or PPP	R	–	
Select management protocol	Select one of: LMI/Joint; ANSI T1.617, Annex D; CCITT Q.933, Annex A	R	–	
	X.25 information			
DTE name	Max. 32 characters	R	DTE-*slot-port*	
X.25 DTE address	DTE address. Max. 15 digits. Obtain from your PSDN	R	–	
Logical channel range	Obtain from PSDN. Numbers or range(s) of numbers. Example: 1024–1048, 30	R	–	
Profile name	Name of network profile for this DTE's PSDN. Supplied by DIGITAL. See also online Network Information (NI)	R	–	
Flow control negotiation?[2]	Select Yes or No	R	Yes	
Extended packet sequence numbering?[2]	Select Yes or No	R	–	
Default packet size	Decimal number (power of 2). See profile and PSDN subscription	R	As in profile	
Maximum packet size[3]	Decimal number (power of 2). See profile and PSDN subscription	R	As in profile	
Minimum packet size[3]	Decimal number (power of 2). See PSDN subscription	R	As in profile	
Default window size	Decimal number 1–127. See PSDN subscription	R	As in profile	
Maximum window size[3]	Decimal number 1–127. See PSDN subscription	R	As in profile	
Minimum window size[3]	Decimal number 1–127. See PSDN subscription	R	As in profile	

[2]You are only asked for this if your Profile supports it.

[3]You only need to enter values if you have chosen flow control negotiation.

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Table 13–5 (Cont.) Configuration Information: Lines

Information Required	Notes	R(equired)/ O(ptional)	Default	Your Value
	X.25 information			
Interface mode[4]	Select DTE or DCE	R	–	
Window size (frame)	Decimal number. See PSDN subscription	R	As in profile	
DTE Class	Max. 32 characters. The name of a DTE Class to which this DTE belongs	R	Profile name	
	CHDLC information			
Select routing protocols	Select any or all of: OSI routing; DECnet Phase IV routing; IP routing; IPX routing (IP and IPX appear only if selected in Configuration Options)	R	Yes for each	
Circuit name	Max. 32 characters	R	Line name	
Enable circuit on system startup?	Select Yes or No	R	No	
DECnet, IP and NetWare IPX information are all the same as for PPP Circuits				
Bridging information is the same as for HDLC circuits				
	VCP information			
Select Turbo or Non-Turbo	Select type of Network Interface Card used by the Vitalink system to which the VCP line connects	R	–	
Circuit name	Max. 32 characters	R	*port name*	
Enable circuit on system startup?	Select Yes or No	R	No	
DECnet, IP, NetWare IPX and AppleTalk information are all the same as for CSMA/CD and FDDI circuits				
Bridging information is the same as for PPP circuits				

[4]You are only asked for this if the Profile is ISO8208 or NPSI.

Table 13–6 Configuration Information: Bridge Filtering

Information Required	Notes	R(equired)/ O(ptional)	Default	Your Value
Method of entering protocol types	Choose either: Enter protocols to be forwarded or enter protocols to be blocked	R	–	
Ethernet format protocol types to be forwarded (if `forwarded` chosen)	List the protocol types the DECNIS should forward	O	–	
IEEE 802.2 format protocol types to be forwarded (if `forwarded` chosen)	List the protocol types the DECNIS should forward	O	–	
IEEE 802.2 SNAP format protocol types to be forwarded (if `forwarded` chosen)	List the protocol types the DECNIS should forward	O	–	
Ethernet format protocol types to be blocked (if `blocked` chosen)	List the protocol types the DECNIS should block	O	–	
IEEE 802.2 format protocol types to be blocked (if `blocked` chosen)	List the protocol types the DECNIS should block	O	–	
IEEE 802.2 SNAP format protocol types to be blocked (if `blocked` chosen)	List the protocol types the DECNIS should block	O	–	

Table 13–7 Configuration Information: X25 Routing Circuits

Information Required	Notes	R(equired) /O(ptional)	Default	Your Value
Circuit type	Select one of: X25 Static Outgoing, X25 Static Incoming, X25 Permanent, X25 DA	R	–	
Circuit name	Max. 32 characters	R	–	
X25 Static Outgoing Circuits				
Template name	Max. 32 characters	R	*circuit-name*-out	
DTE Class	A local DTE Class containing the DTE this circuit will use for making calls. Max. 32 characters	R	–	
Destination DTE address	DTE address of remote system to which this circuit will connect	R	–	
Call data	The characters %x followed by up to 254 hex digits	O	%xff0000004445 436e65742d444c4d	
Packet size	Decimal number (power of 2). See PSDN subscription	O	–	
Window size	1–127. See PSDN subscription	O	–	
Reverse Charging?	Select Yes or No	R	No	
Throughput Class Request	Incoming and outgoing baud rates for circuit. [*incoming..outgoing*] Example: [48..64]	O	–	
Supply DECnet routing information?	Select Yes or No	R	No	
The following information only applies if you choose to supply DECnet routing information				
Transmit password	The characters %x followed by an even number of up to 38 hex digits	O	–	
Receive password	The characters %x followed by an even number of up to 38 hex digits	O	–	
Level 1 cost	Decimal number from 1–63	R	20	
Level 2 cost	Decimal number from 1–63	R	20	

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Table 13–7 (Cont.) Configuration Information: X25 Routing Circuits

Information Required	Notes	R(equired) /O(ptional)	Default	Your Value
	X25 Static Outgoing Circuits			
Interphase link choice (only if using Phase V (link state) routing at Level 2)	Choose one of: Phase IV Level 2 router; Phase V router running Phase IV routing protocols at Level 2; No interphase link	R	No interphase link	
Phase IV areas reachable by circuit[1]	Enter list of area numbers. Example: 23, 30–35, 40	R	–	
Path cost for Phase IV areas reachable by circuit[1]	Decimal number from 1–63	R	20	
Other Phase IV areas reachable by DECNIS[1]	Enter list of area numbers. Example: 10, 15–22, 41–45	R	–	
Path cost for other Phase IV areas[1]	Decimal number from 1–63	R	20	
The following information only applies if you selected IP routing				
Run RIP on this circuit?	Select Yes or No	R	No	
Run EGP on this circuit?	Select Yes or No	R	No	
Neighbor IP address	*n.n.n.n* (*n* is a decimal number). IP address of IP host to which this circuit connects.	R for RIP or EGP if no local IP address	–	
Local IP address	Local address for this circuit. *n.n.n.n* (*n* is a decimal number).	R for RIP or EGP if no neighbor IP address	–	
Local subnet mask	*n.n.n.n* (*n* is a decimal number). You can use the digits 255 to show which part of the IP address is the network address. Example: 255.255.255.0: First three bytes are the network address. Last byte identifies the host.	R if local IP address supplied	Depends on subnet class	

[1]You are only asked this if you are setting up an interphase link.

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Table 13–7 (Cont.) Configuration Information: X25 Routing Circuits

Information Required	Notes	R(equired) /O(ptional)	Default	Your Value
	X25 Static Outgoing Circuits			
RIP options	Only receive; Only send; Send and Receive	R	–	
AS number (EGP only)	AS number of an EGP neighbor	R	–	
IP address of EGP neighbor (EGP only)	*n.n.n.n* (*n* is a decimal number)	R	–	
	X25 Static Incoming Circuits			
Template name	Create a name. Max. 32 characters	R	*circuit-name*-IN	
Packet size	Decimal number 16–4096 (power of 2)	O	–	
Window size	1–127. See PSDN subscription	O	–	
Throughput Class Request	Incoming and outgoing baud rates for circuit. [*incoming..outgoing*] Example: [48..64]	O	–	
Filter name	Max. 32 characters	R	*circuit-name*-IN	
Call data value	The characters %x followed by up to 254 hex digits	O	%xff0000004445 436e65742d444c4d	
Call data mask	The characters %x followed by up to 254 hex digits	O	%xffffffffffff ffffffffffff	
Subaddress range	Range of decimal numbers from 0 to 65535. Example: [[2..24]]	O	–	
Sending DTE address	Calling address field of incoming call packet. Max. 15 digits	O	–	
DTE Class	DTE Class used for receiving call. Max. 32 characters	O	–	
Incoming DTE address	Called address field of incoming call packet. Max. 15 digits	O	–	

The remaining information is the same as for X25 Static Outgoing Circuits, from the question, **Supply DECnet routing information?** onward

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Table 13–7 (Cont.) Configuration Information: X25 Routing Circuits

Information Required	Notes	R(equired) /O(ptional)	Default	Your Value
	X25 Permanent Circuits			
Local DTE to be used	Select DTE name	R	–	
PVC name	Max. 32 characters	R	–	
Packet size	Decimal number (power of 2). See PSDN subscription	R	Default for DTE	
Window size	1–127. See PSDN subscription	R	Default for DTE	
Channel	Channel assigned by PSDN	R	–	
Supply DECnet routing information?	Select Yes or No	R	No	
The following information only applies if you choose to supply DECnet routing information				
Transmit password	The characters %x followed by an even number of up to 38 hex digits	O	–	
Receive password	The characters %x followed by an even number of up to 38 hex digits	O	–	
Level 1 cost	Decimal number from 1–63	R	20	
Level 2 cost	Decimal number from 1–63	R	20	
Interphase link choice (only if using Phase V (link state) routing at Level 2)	Choose one of: Phase IV Level 2 router; Phase V router running Phase IV routing protocols at Level 2; No interphase link	R	No Interphase link	
Phase IV areas reachable by circuit[1]	Enter list of area numbers. Example: 23, 30–35, 40	R	–	
Path cost for Phase IV areas reachable by circuit[1]	Decimal number from 1–63	R	20	
Other Phase IV areas reachable by DECNIS[1]	Enter list of area numbers. Example: 10, 15–22, 41–45	R	–	
Path cost for other Phase IV areas[1]	Decimal number from 1–63	R	20	

[1]You are only asked this if you are setting up an interphase link.

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Table 13–7 (Cont.) Configuration Information: X25 Routing Circuits

Information Required	Notes	R(equired) /O(ptional)	Default	Your Value
	X25 Dynamically Assigned (DA) Circuits			
Use of circuit?	Select one of: OSI data; IP data; Both OSI and IP	R	–	
OSI Template name	Max. 32 characters	R	*circuit-name*-DA-OSI	
IP Template name	Max. 32 characters	R	*circuit-name*-DA-IP	
DTE Class	Local DTE Class containing the DTE the circuit will use for making calls. Max. 32 characters	R	–	
IP Call Data	The characters %xcc followed by an even number of up to 252 hex digits	O	%xcc	
OSI Call Data	The characters %x81 followed by an even number of up to 252 hex digits	O	%x81	
Packet size	Decimal number 16–4096 (power of 2). See PSDN subscription	O	–	
Window size	Decimal number 1–127. See PSDN subscription	O	–	
Reverse Charging?	Select Yes or No	R	No	
Throughput Class Request	Incoming and outgoing baud rates for circuit. [*incoming..outgoing*] Example: [48..64]	O	–	
OSI Filter name	Max. 32 characters	R	*circuit-name*-DA-OSI	
IP Filter name	Max. 32 characters	R	*circuit-name*-DA-IP	
OSI Call data value	The characters %x81 followed by an even number of up to 252 hex digits.	O	%x81	
IP Call data value	The characters %xcc followed by an even number of up to 252 hex digits	O	%xcc	
Call data mask	The characters %xff followed by an even number of up to 252 hex digits. Same size as call data value	O	%xff	

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Table 13–7 (Cont.) Configuration Information: X25 Routing Circuits

Information Required	Notes	R(equired) /O(ptional)	Default	Your Value
	X25 Dynamically Assigned (DA) Circuits			
DTE Class	DTE Class used for receiving call. Max. 32 characters	O	–	
Incoming DTE address	Called address field of incoming call packet. Max. 15 digits	O	–	

Table 13–8 Configuration Information: Tunnel Circuits

Information Required	Notes	R(equired)/ O(ptional)	Default	Your Value
Protocol to send on the circuit	Select Yes or No for NetWare IPX and AppleTalk	R	–	
Type of Circuit (Only asked if NetWare IPX is the only protocol)	Select Point-to-point or Broadcast	R	–	
Tunnel circuit name	Max. 32 characters	R	–	
Destination IP Address(es)	Point-to-point: one address. Broadcast (NetWare IPX only): no restriction on the number of addresses. *n.n.n.n* (*n* is a decimal number)	R	–	
NetWare network number	Up to 8 hexadecimal digits	R	–	

Table 13–9 Configuration Information: Frame Relay Connections

Information Required	Notes	R(equired) /O(ptional)	Default	Your Value
Select frame relay channel	Select from list of lines previously figured as frame relay channels	R	–	
Connection name	Max. 32 characters	R	–	
Data link connection identifier	Up to four decimal digits. Range: 16–1007	O	–	
Select routing protocols	Select any or all of: OSI routing; DECnet Phase IV routing; IP routing; IPX routing (IP and IPX appear only if selected in Configuration Options)	R	Yes for each	
Supply DECnet routing information?	Select Yes or No	R	No	
The following information only applies if you choose to supply DECnet routing information				
Level 1 cost	Decimal number from 1–63	R	20	
Level 2 cost	Decimal number from 1–63	R	20	
Interphase link choice (only if using Phase V (link state) routing at Level 2)	Choose one of: Phase IV Level 2 router; Phase V router running Phase IV routing protocols at Level 2; No interphase link	R	No interphase link	
Phase IV areas reachable by circuit[1]	Enter list of area numbers. Example: 23, 30–35, 40	R	–	
Path cost for Phase IV areas reachable by circuit[1]	Decimal number from 1–63	R	20	
Other Phase IV areas reachable by DECNIS[1]	Enter list of area numbers. Example: 10, 15–22, 41–45	R	–	
Path cost for other Phase IV areas[1]	Decimal number from 1–63	R	20	
The following information only applies if you selected IP routing				
Run RIP on this circuit?	Select Yes or No	R	No	

[1]You are only asked this if you are setting up an interphase link.

(continued on next page)

Table 13–9 (Cont.) Configuration Information: Frame Relay Connections

Information Required	Notes	R(equired) /O(ptional)	Default	Your Value
Run EGP on this circuit?	Select Yes or No	R	No	
Neighbor IP address	*n.n.n.n* (*n* is a decimal number). IP address of IP host to which this circuit connects.	R for RIP or EGP if no local IP address	–	
Local IP address	Local address for this circuit. *n.n.n.n* (*n* is a decimal number).	R for RIP or EGP if no neighbor IP address	–	
Local subnet mask	*n.n.n.n* (*n* is a decimal number). You can use the digits 255 to show which part of the IP address is the network address. Example: 255.255.255.0: First three bytes are the network address. Last byte identifies the host	R if local IP address supplied	Depends on subnet class	
RIP options	Only receive; Only send; Send and Receive	R	–	
AS number (EGP only)	AS number of an EGP neighbor	R	–	
IP address of EGP neighbor (EGP only)	*n.n.n.n* (*n* is a decimal number)	R	–	
The following information only applies if you selected Bridging				
Use this connection as bridging port?	Select Yes or No	R	No	
Port name	Create a name. Max. 32 characters	R	Port-*n*	
Port number	Decimal number from 1–15	R	Lowest available	
Cost	The lower the cost, the more likely the DECNIS is to be the designated bridge. Decimal number 0–255	R	10	
Enable Spanning Tree?	Select Yes or No	R	Yes	
Use minimum sized frame compression? (only if PPP selected as the data link)	Select Yes or No	R	–	

Table 13–10 Configuration Information: OSI Reachable Addresses

Information Required	Notes	R(equired)/ O(ptional)	Default	Your Value
Circuit name	Select from list	R	–	
Reachable Address name	Max. 32 characters	R	–	
Reachable Address Prefix of domain	All or leading digits of NSAP address, up to 40 digits. DEC, OSI or HRPF format. Examples: DEC format: 37:32655678:3214: HRPF format: /37326556783214 OSI format: 3732655678+3214	R	–	
Reachable Address cost	Cost of reaching the destination node. Decimal number, 1–63	R	20	
LAN hardware address of node connecting to foreign domain (CSMA/CD circuit only)	Six pairs of hexadecimal digits, with hyphen separating each pair. Example: 08-00-2B-65-BB-43	R	–	
DTE address of destination node (X.25 DA circuit only)	DTE address	R	–	

Table 13–11 Configuration Information: IP Reachable Addresses

Information Required	Notes	R(equired)/ O(ptional)	Default	Your Value
Circuit used to reach Reachable Address	Select from list	R	–	
Reachable Address name	Max. 32 characters	R	–	
Destination address to be reached	*n.n.n.n* (*n* is a decimal number). Address of host, subnet or network	R	–	
Destination subnet mask	*n.n.n.n* (*n* is a decimal number)	R	Depends on subnet class	
IP Address of next IP router (not for X.25 DA)	*n.n.n.n* (*n* is a decimal number)	R for CSMA /CD and FDDI; O for other protocols	–	
DTE address of next IP router (X.25 DA only)	DTE address of the next gateway on path. Up to 15 digits	R	–	
IP Reachable Address cost	Cost of reaching the destination for this reachable address. Decimal number	O	20	

Table 13–12 Configuration Information: PVCs

Information Required	Notes	R(equired)/ O(ptional)	Default	Your Value
DTE name	Select from list	R	–	
PVC name	Max. 32 characters	R	PVC-*n*	
Channel number	Decimal number. See PSDN subscription	R	–	
Packet size	Decimal number (power of 2). See PSDN subscription	R	Default packet size for DTE	
Window size	Decimal number. See PSDN subscription	R	Default window size for DTE	

Table 13–13 Configuration Information: Groups

Information Required	Notes	R(equired)/ O(ptional)	Default	Your Value
Group name	Max. 32 characters	R	GROUP-*n*	
Group type	BCUG or CUG. See PSDN subscription	R	BCUG	
For each DTE you want to place in the Group, enter:				
CUG number	Decimal number. See PSDN subscription	R	–	
Remote DTE address[1]	DTE address of other system in BCUG. Max. 15 digits	R	–	

[1]You will only be asked for this information if the Group type is BCUG.

Table 13–14 Configuration Information: LLC2

Information Required	Notes	R(equired)/ O(ptional)	Default	Your Value
For each LLC2 system you want to connect to:				
LAN device to be used	Select CSMA/CD port from list	R	–	
LLC2 DTE name	Max. 32 characters	R	DTE-*n*	
LLC2 DTE address	Max. 15 digits	R	–	
Logical channel range(s)	Number(s) or range(s) of numbers, decided in consultation with remote system. Range: From 1 to 4095. Example: 1024–1048, 30	R	–	
Local LSAP	2 hex digits	R	7E	
Remote LSAP	2 hex digits	R	7E	
Remote MAC address	LAN hardware address. Example: 08-00-2B-02-AA-23	R	–	
Flow control negotiation?	Select Yes or No	R	No	
Extended packet sequence numbering?	Select Yes or No	R	No	
Minimum packet size[1]	Decimal number. Power of 2 in range 16 to 4096	R	16	
Maximum packet size[1]	Decimal number. Power of 2 in range 16 to 4096	R	1024	
Default packet size	Decimal number. Power of 2 in range 16 to 4096	R	128	
Minimum window size (packet level)[1]	Decimal number. Range: 1 to 127	R	1	
Maximum window size (packet level)[1]	Decimal number. Range: 1 to 127	R	7	
Default window size (packet level)	Decimal number. Range: 1 to 127	R	2	
DTE class	Max. 32 characters	R	LLC2-CLASS-*n*	

[1]You only need to enter values if you have chosen flow control negotiation.

Table 13–15 Configuration Information: X.25 Server Clients

Information Required	Notes	R(equired)/ O(ptional)	Default	Your Value
If you wish the configurator to use a naming service (DECdns or local) to find X.25 server client addresses:				
Supply the following for each X.25 server client system:				
Server client name	Create a name. Max. 32 characters	R	CLIENT-*n*	
Server client node name	Node name of Client system associated with this X.25 server client. Max. 400 characters	R	–	
If the configurator will not use a naming service (DECdns or local) to find Client system addresses:				
Supply one and only one of the following for each Client system associated with an X.25 server client:				
NSAP address of Client system	NSAP address format. Example: 41:23456789:00–A5:07-CA-4B-65-BB-43	O	–	
Phase IV address	Phase IV address. Example: 34.3	O	–	

Table 13–16 Configuration Information: Filters

Information Required	Notes	R(equired)/ O(ptional)	Default	Your Value
Filter name	Max. 32 characters	R	–	
Priority	Decimal number, 0–65535	R	1	
Incoming DTE address	Called address field of incoming call packet. Max. 15 digits	O	–	
Call data value	The characters %x followed by an even number of up to 254 hex digits	O	–	
Call data mask	The characters %x followed by an even number of up to 254 hex digits	O	–	
Subaddress range	Range of decimal numbers from 0 to 65535. Example: [[2..24]]	O	–	
DTE Class	DTE Class used for receiving call. Max. 32 characters	O	–	
Sending DTE address	Max. 15 digits	O	–	
Receiving DTE address	Max. 15 digits	O	–	
Group name	Max. 32 characters	O	–	
Originally called address	Max. 15 digits	O	–	
Redirect reason	One of: Busy; Out of order; Systematic; Not specified	O	Not specified	
Called address extension value	Hex digits	O	–	
Called address extension mask	Hex digits	O	–	
Called NSAP	The characters %x, followed by an even number of up to 128 hex digits	O	–	

Table 13–17 Configuration Information: X.25 Security

Information Required	Notes	R(equired)/ O(ptional)	Default	Your Value
Set up X.25 Security?	Select Yes (to set up detailed X.25 security) or No (for open X.25 security)	R	Yes	

Table 13–18 Configuration Information: Incoming Security for X.25 Server Clients

Information Required	Notes	R(equired)/ O(ptional)	Default	Your Value
X.25 Server client on which to set up security	Select from list	R	–	
DTE address prefixes of remote systems that can call the X.25 server client's Client system only if they pay for the call (Remote Charge access)[1]	The leading digits of a DTE address, up to 15 digits	O	–	
DTE addresses of systems that can call the X.25 server client's Client system irrespective of who pays for the call (All access)[1]	The leading digits of a DTE address, up to 15 digits	O	–	
DTE addresses of systems that are not allowed to call the X.25 server client's Client system (No Access)[1]	The leading digits of a DTE address, up to 15 digits	O	Wildcard (*)[2]	

[1]Enter a Remote Address Prefix (RAP). This is either a full DTE address, or the leading digits of a DTE address to stand for all DTEs with an address beginning with these digits.

[2]The wildcard character (*) means all unspecified DTEs. If you enter * to stand for DTEs with Remote Charge or All access, then all DTEs will have access except those that you specify explicitly.

Table 13–19 Configuration Information: Outgoing Security for Client Systems

Information Required	Notes	R(equired)/ O(ptional)	Default	Your Value
Client system on which to set up security	Node name. Max. 256 characters	R	–	
Address to identify Client system (only if no naming service)	Enter either a Phase IV address or an NSAP address	R	–	
Security Name for Client system	Max. 32 characters	R	–	
DTE addresses of remote systems that can be called by this Client system only if the remote systems pay for the call (Remote Charge access)[1]	The leading digits of a DTE Address, up to 15 digits	O	–	
DTE addresses of systems that can be called by this Client system irrespective of who pays for the call (All access)[1]	The leading digits of a DTE address, up to 15 digits	O	–	
Names of PVCs that can be accessed by this Client system	Max. 32 characters	O	–	
DTE addresses of systems that cannot be called by this Client system (No access)[1]	The leading digits of a DTE address, up to 15 digits	O	Wildcard (*)[2]	
Names of PVCs that cannot be accessed by this Client system[1]	Max. 32 characters	O	–	

[1]Enter a Remote Address Prefix (RAP). This is either a full DTE address or the leading digits of a DTE address, to stand for all DTEs with an address beginning with these digits.

[2]The wildcard character (*) means all unspecified DTEs. If you enter the * to stand for DTEs or PVCs with Remote Charge or All access, then all DTEs or PVCs can be accessed except those that you specify explicitly.

Table 13–20 Configuration Information: Event Logging

Information Required	Notes	R(equired)/ O(ptional)	Default	Your Value
Event stream name	Max. 32 characters	R	–	
If you wish the configurator to use a naming service (DECdns or local) to find event sink addresses:				
Supply the following for each event sink:				
Event sink name	Node name	R	–	
Type of sink name	DECdns node name or DECdns object name	R	Node name	
If the configurator will not use a naming service (DECdns or local) to find event sink addresses:				
Supply one and only one of the following for each event sink:				
NSAP address of event sink	NSAP address format. Example: 41:23456789:00–A5:07-CA-4B-65-BB-43	O	–	
Phase IV address of event sink	Phase IV address. Example: 34.3	O	–	

Table 13–21 Configuration Information: Database Sizing

Information Required	Notes	R(equired) /O(ptional)	Default	Your Value
LAN end system adjacencies	For each LAN circuit displayed, enter the number of end systems on the LAN	R	2480	
Number of router adjacencies	Number of routers directly connected to the DECNIS	R	170	
Number of end system adjacencies	Number of nonrouting systems reachable over all DECNIS circuits	R	5120	
Number of manual adjacencies	Systems in the local area that do not exchange adaptive routing information with the DECNIS	R	60	
Number of Level 1 routing destinations	Unique NSAP addresses in the local area	R	5280	
Number of Level 1 routers in local area	Number of OSI Level 1 routers	R	100	
Level 1 average connectivity	Average number of routers from which the DECNIS learns about nodes in the local area, multiplied by 10	R	20	
Number of IP local adjacencies (IP only)	Number of IP subnets to which the DECNIS is directly connected, plus neighbor IP addresses	R	50	
Number of IP reachable destination (IP only)	IP Reachable Addresses set up on the DECNIS	R	200	
Number of IP Level 1 destinations (IP only)	Number of unique IP subnet addresses in the same area as the DECNIS	R	250	
IP area connectivity (IP only)	Average number of routers from which the DECNIS learns about each IP host within the local area, multiplied by 10	R	20	
Number of IP external destinations (IP only)	Maximum number of IP destinations the DECNIS will learn from protocols other than Integrated IS–IS	R	500	
If the DECNIS is a Level 2 Router, you will also see the following:				
Number of DA adjacencies	Number of X.25 DA circuits created on the DECNIS	R	160	
Number of Level 2 routing destinations	DECnet-Plus area addresses plus OSI reachable addresses	R	456	

(continued on next page)

Table 13–21 (Cont.) Configuration Information: Database Sizing

Information Required	Notes	R(equired) /O(ptional)	Default	Your Value
Number of Level 2 routers in the domain	Number of Level 2 routers in the same routing domain as the DECNIS	R	512	
Level 2 average connectivity	Average number of routers from which the DECNIS learns about nodes in the domain, multiplied by 10	R	20	
Number of OSI reachable addresses	OSI reachable addresses set up on the DECNIS	R	200	
Number of IP Level 2 destinations (IP only)	Number of unique IP subnet addresses within the routing domain	R	890	
IP domain connectivity (IP only)	Average number of routers from which the DECNIS learns about each IP host within the routing domain, multiplied by 10	R	20	
If you selected OSPF, you will also see the following:				
OSPF maximum connected areas	Max. number of OSPF areas that the DECNIS can connect to directly	R	2	
OSPF average connected routers	Average number of OSPF routers in each area that the DECNIS is connected to directly	R	10	
OSPF maximum area interfaces	Max. number of OSPF interfaces to a single area on any OSPF router in a connected area	R	3	
OSPF average area networks	Average number of OSPF transit and stub networks in each area that the DECNIS is connected to directly	R	40	
OSPF maximum network routers	Max. number of OSPF routers in any OSPF network in a connected area	R	5	
OSPF maximum system networks	Max. number of OSPF networks in the autonomous system (AS)	R	25	
OSPF maximum boundary routers	Max. number of OSPF autonomous system boundary routers in the AS	R	4	
OSPF maximum external routes	Max. number of OSPF external routes in the AS	R	50	

(continued on next page)

Table 13–21 (Cont.) Configuration Information: Database Sizing

Information Required	Notes	R(equired) /O(ptional)	Default	Your Value
OSPF average external connectivity	Average number of discrete forwarding addresses provided by each boundary router for OSPF external routes	R	2	
OSPF maximum destinations	Max. number of destinations the OSPF protocol can have in the DECNIS routing table	R	300	
OSPF maximum adjacencies	Max. number of adjacencies the OSPF protocol can form	R	25	

Part V
Appendixes

This part contains the following appendixes:

- Appendix A lists the files created by the DECNIS text-based configurator, and the files loaded to the DECNIS.
- Appendix B lists the files installed on OpenVMS load hosts.
- Appendix C is an example log of an installation on an OpenVMS load host.
- Appendix D lists the files installed on DIGITAL UNIX load hosts.
- Appendix E is an example log of an installation on a DIGITAL UNIX load host.
- Appendix F contains information about using DECdns with the DECNIS.
- Appendix G describes how to set up DECnet Phase IV system as a MOP load host for the DECNIS.

A

Configuration and Load Files

This appendix contains tables listing the files created by the DECNIS text-based configurator, and the files loaded to the DECNIS.

In these tables, *client-name* is the load client name of the DECNIS.

A.1 Files Created by the Configurators

Table A–1 and Table A–2 give the file names and locations of the DECNIS NCL script files, configuration load files, log files, data files and dump files for OpenVMS and DIGITAL UNIX load hosts, respectively.

Table A–1 DECNIS File Names on OpenVMS Systems

File	Location	File Name
Master NCL script file	SYS$COMMON:[MOM$SYSTEM]	NIS_*client-name*.NCL
Master NCL script file for deleted DECNIS	SYS$COMMON:[MOM$SYSTEM]	NIS_*client-name*.NCL_OLD
CREATE NCL script file	SYS$COMMON:[MOM$SYSTEM]	NIS_*client-name*_EXTRA_CREATE.NCL
SET NCL script file	SYS$COMMON:[MOM$SYSTEM]	NIS_*client-name*_EXTRA_SET.NCL
ENABLE NCL script file	SYS$COMMON:[MOM$SYSTEM]	NIS_*client-name*_EXTRA_ENABLE.NCL
CMIP file	SYS$COMMON:[MOM$SYSTEM]	NIS_*client-name*.CMIP
CMIP file for deleted DECNIS	SYS$COMMON:[MOM$SYSTEM]	NIS_*client-name*.CMIP_OLD
Combined file	SYS$COMMON:[MOM$SYSTEM]	NIS041_*client-name*.SYS
Log file for CMIP conversion	MOM$SYSTEM	NIS_*client-name*.LOG
Log file for configurator errors	MOM$SYSTEM	NIS_DECNIS.LOG
DECNIS data file	SYS$COMMON:[MOM$SYSTEM]	NIS_*client-name*.DAT
DECNIS data file for deleted DECNIS	SYS$COMMON:[MOM$SYSTEM]	NIS_*client-name*.DAT_OLD
Previous DECNIS data file	SYS$COMMON:[MOM$SYSTEM]	NIS_*client-name*.BAK[1]
DECNIS data file for last software version	SYS$COMMON:[MOM$SYSTEM]	NIS_*client-name*.DAT_V*nn*[1]
Load-host data file	SYS$COMMON:[MOM$SYSTEM]	NIS_HOST_CONFIG.DAT
DECNIS dump file	SYS$COMMON:[MOM$SYSTEM]	NIS_*client-name*.DMP

[1] See Section 10.5.1 for details.

Table A–2 DECNIS File Names on DIGITAL UNIX Systems

File	Location	File Name
Master NCL script	/usr/lib/dnet	nis_*client-name*.ncl
Master NCL script for deleted DECNIS	/usr/lib/dnet	nis_*client-name*.ncl_old
CREATE NCL script file	/usr/lib/dnet	nis_*client-name*_extra_create.ncl
SET NCL script file	/usr/lib/dnet	nis_*client-name*_extra_set.ncl
ENABLE NCL script file	/usr/lib/dnet	nis_*client-name*_extra_enable.ncl
CMIP file	/usr/lib/mop	nis_*client-name*.cmip
CMIP file for deleted DECNIS	/usr/lib/mop	nis_*client-name*.cmip_old
Combined file	/usr/lib/mop	nis041_*client-name*.sys
Log file for CMIP conversion	/usr/lib/dnet	nis_*client-name*.log
Log file for NCL checking	/usr/lib/dnet	nis_*client-name*.lis
Log file for configurator errors	/usr/lib/dnet	nis_decnis.log
DECNIS data file	/usr/lib/dnet	nis_*client-name*.dat
DECNIS data file for deleted DECNIS	/usr/lib/dnet	nis_*client-name*.dat_old
Previous DECNIS data file	/usr/lib/dnet	nis_*client-name*.bak[1]
DECNIS data file for last software version	/usr/lib/dnet	nis_*client-name*.dat_v*nn*[1]
Load-host data file	/usr/lib/dnet	nis_host_config.dat
DECNIS dump file	/usr/lib/mop	nis_*client-name*.dmp

[1] See Section 10.5.1 for details.

A.2 DECNIS Load Files

Table A–3 and Table A–4 show the names and locations of the files loaded to the DECNIS on OpenVMS, and DIGITAL UNIX load hosts, respectively.

Table A–3 Files Loaded from OpenVMS Load Hosts

File Name	Description
Loading from a Load Host Selected	
SYS$COMMON:[MOM$SYSTEM]NIS041.SYS	System image
SYS$COMMON:[MOM$SYSTEM]NIS_*client-name*.CMIP	CMIP file
SYS$COMMON:[MOM$SYSTEM]FCNS$MCNM_PRF.DAT	Modem Connect profile file (only if serial lines configured)
SYS$COMMON:[MOM$SYSTEM]FCNS$X25L2_PRF.DAT SYS$COMMON:[MOM$SYSTEM]FCNS$X25L3_PRF.DAT	X.25 profile files (only if lines configured for X.25)
Loading from Nonvolatile Memory Selected	
SYS$COMMON:[MOM$SYSTEM]NIS041_*client-name*.SYS	Combined file

Table A–4 Files Loaded from DIGITAL UNIX Load Hosts

File Name	Description
Loading from a Load Host Selected	
/usr/lib/mop/nis041.sys	System image
/usr/lib/mop/nis_*client-name*.cmip	CMIP file
/usr/lib/mop/digital/fcns/mcnm_prf	Modem Connect profile file (only if serial lines configured)
/usr/lib/mop/digital/fcns/x25l2_prf /usr/lib/mop/digital/fcns/x25l3_prf	X.25 profile files (only if X.25 lines configured)
Loading from Nonvolatile Memory Selected	
/usr/lib/mop/nis041_*client-name*.sys	Combined file

A.3 Location of DECNIS Load Files on DIGITAL UNIX BOOTP Load Hosts

This section specifies the directory and filenames that need to be in the /etc/bootptab file in order for DIGITAL UNIX BOOTP load hosts to respond correctly to load and dump requests from the DECNIS.

A.3.1 Directory Used for Storing Load Files

The BOOTP client database /etc/bootptab, specifies where the BOOTP load files are stored.

On DIGITAL UNIX systems, by default, the load directory listed in /etc /bootptab is /usr/local/bootfiles.

However, the DECNIS load files are not actually installed in the directory specified in /etc/bootptab. Instead, they are installed in the directories required for MOP loading (see Table A–2).

A.3.1.1 Softlinks Automatically Created

The load-host configurator automatically sets up softlinks from the files in the MOP directories to the file names and directory in /etc/bootptab. This allows the same files to be loaded no matter which protocol is specified.

A.3.2 Load files on Non-DIGITAL BOOTP Load Hosts

If your BOOTP load host is a non-DIGITAL UNIX system, note the following:

- If the BOOTP/TFTP implementation is compatible with that on DIGITAL UNIX load hosts, you must use the file names in Table A–5.
- If the BOOTP/TFTP implementation is not compatible with that on DIGITAL UNIX load hosts, you do not need to use these file names. Refer to the load host documentation for details of file names and directories.

A.3.3 File Names Required on DIGITAL UNIX BOOTP Load Hosts

Table A–5 lists the file names required for BOOTP loading, and the files in the MOP directories to which they are linked. Note that the load-host configurator automatically places the correct entries in /etc/bootptab.

In the table, *client-name* is the BOOTP load client name of the DECNIS. DIGITAL recommends that you make the BOOTP load client name the same as the MOP client name (the load-host configurator does this automatically).

The directory for the files listed in column 1 is the one specified in etc/bootptab.

Table A–5 File Names Required for DIGITAL UNIX BOOTP Loading

BOOTP File Name	Linked to this MOP file	Description
Loading from a Load Host Selected		
system.*client-name*	/usr/lib/mop/nis041.sys	System image
script.*client-name*	/usr/lib/mop/nis_*client-name*.cmip	CMIP file
mcnm_prf	/usr/lib/mop/digital/fcns/mcnm_prf	Modem connect profile file
x25l2_prf x25l3_prf	/usr/lib/mop/digital/fcns/x25l2_prf /usr/lib/mop/digital/fcns/x25l3_prf	X.25 profile files
Loading from Nonvolatile Memory Selected		
system.*client-name*	/usr/lib/mop/nis041_*client-name*.sys	Combined file

B

Files Installed on an OpenVMS Load Host

B.1 Introduction

This appendix lists the files installed on an OpenVMS load host by the DECNIS installation procedure.

B.2 Required Files

This section lists the files that are always installed in the DECNIS installation procedure.

B.2.1 SYS$COMMON:[DECW$BOOK] Directory

- NIS$PROBLEM_SOLVING.DECW$BOOK—Problem solving manual
- NIS$PROBLEM_SOLVING.DECW$BOOKSHELF—Problem solving bookshelf

B.2.2 SYS$COMMON:[MOM$SYSTEM] Directory

- FCNS$MCNM_PRF.DAT—Modem connect profile file
- FCNS$X25L2_PRF.DAT—X.25 level 2 profile file
- FCNS$X25L3_PRF.DAT—X.25 level 3 profile file
- NIS041.SYS – DECNIS double system image
- NIS041B.SYS—DECNIS system image (no console NCL)
- NIS$TEST_SCRIPT.NCL—Test script (Not on OpenVMS Alpha)
- NIS$IMAGES.DAT —List of supported NIS images

B.2.3 SYS$EXAMPLES Directory

- NIS$ATM_DS3.NCL—ATM on DS3 lines NCL example
- NIS$ATM_E3.NCL—ATM on E3 lines NCL example
- NIS$ATM_OC3.NCL—ATM on OC3 lines NCL example
- NIS$ATM_OC3_CLASS_IP.NCL—ATM Classical IP on OC3 lines NCL example
- NIS$BACKUP.NCL—Backup circuits NCL example
- NIS$PACK_FILT.NCL—IP packet filtering NCL example
- NIS$DNS_NAME_SERVER.NCL –IP services NCL example
- NIS$IP_MULTICAST.NCL— IP multicast NCL example
- NIS$ICMP_RD.NCL—ICMP router discovery NCL example
- NIS$IPX_WAN.NCL—IPX WAN NCL example
- NIS$IP_PRIORITY_PATT.NCL—IP pattern matching prioritization NCL example
- NIS$IP_STANDBY.NCL—IP standby NCL example
- NIS$LAT_PRIORITY_PATT.NCL—LAT pattern matching prioritization NCL example
- NIS$NCL_EXAMPLE.NCL—Simple NCL example
- NIS$OSPF_MINIMUM.NCL—OSPF NCL example
- NIS$OSPF_MULTI_AREA.NCL—OSPF NCL example
- NIS$OSPF_VIRTUAL.NCL—OSPF NCL example
- NIS$PRIORITY.NCL—Prioritization NCL example
- NIS$SMDS.NCL—SMDS NCL example
- NIS$X25_LANWAN_RELAY.NCL—LAN/WAN relay NCL example
- NIS$X25_LOCAL_RELAY.NCL—X.25 local relay NCL example
- NIS$X25_REMOTE_RELAY.NCL—X.25 remote relay NCL example
- DTF.TXT—DIGITAL Trace Facility manual
- DTFAXP.A—DTF for OpenVMS Alpha hosts
- DTFOSF.TAR—DTF for DIGITAL UNIX hosts

- DTFULTRIX.TAR—DTF for ULTRIX hosts
- DTFVMS.A—DTF for OpenVMS VAX hosts
- DTFW32.ZIP—DTF for Windows® NT hosts

B.2.4 SYS$HELP Directory

- DEC_ELAN_MIB.V27_TXT—DEC specific MIB
- NIS$DECNIS_CONFIG_HELP.BIN—DECNIS configurator help
- NIS$EVENTS.TXT—Event messages
- NIS$HOST_HELP.BIN—Load-host configurator help
- NIS041.RELEASE_NOTES—Release Notes
- NCLHELP.HLP—NCL help
- FCNS$NI.TXT—Documentation for X.25 network profiles

B.2.5 SYS$LIBRARY Directory

- CTF$*.*—To enable tracing using the Common Trace Facility

B.2.6 SYS$MANAGER Directory

- NIS$CMIP_FILE.FDL—Exchange file
- NIS$DECNIS_CONFIG.COM—DECNIS configuration procedure
- NIS$DEINSTALL.COM—Delete installation file
- NIS$HOST_CONFIG.COM—Load-host configuration procedure
- NIS$SCRIPT_COMPILE.COM—CMIP file creation procedure
- NIS$COMBINE.COM—Combined file creation procedure

B.2.7 SYS$MESSAGE Directory

- NIS$DECNIS_CONFIG.BIN—DECNIS configurator messages
- NIS$DECNIS_NCL_TEMPLATE.BIN—NCL command messages
- NIS$HOST_CONFIG.BIN—Load-host configurator messages

B.2.8 SYS$SYSTEM Directory

- DECROU$NCL.EXE—DECNIS NCL utility (not on OpenVMS VAX)
- DICTARY.DAT—Parse tables for the bridge management utility
- MOD_FLSH.EXE—Utility for editing the combined file
- NIS$NCHK.EXE—NCL checking utility (Not on OpenVMS VAX)
- NCLPRS.BIN—Parsing information for the bridge management utility
- NIS$BRIDGE_MGMT.EXE—Bridge management utility
- NIS$DECNIS_CONFIG.EXE—DECNIS configurator program
- NIS$DECNIS_SMDS_CONFIG.EXE –SMDS configurator program
- NIS$FLASH.EXE—Flash compression utility
- NIS$HOST_CONFIG.EXE—Load-host configurator
- NIS$PROVIDE_NCL.EXE—Updates the NCL parse tables available to the NCL utility
- NIS$SCRIPT_COMPILER.EXE—CMIP file creation program
- PROTOID.MAP—Protocol identifiers for the bridge management utility

B.2.9 SYS$TEST Directory

- NIS$IVP.COM—Installation verification procedure

B.3 Optional Files

The files listed will be optionally installed, based on the installation state of NCL.

B.3.1 SYS$LIBRARY Directory

- NCL$GLOBALSECTION.DAT—NCL global section (NCL dictionary)

B.3.2 MCC_COMMON Directory

- MCC_DECNIS_APPL.DAT—Customization file for DECmcc™ application menu V1.2 of DECmcc
- MCC_APPL_DECNIS.DEF—Customization file for DECmcc application menu V1.3 of DECmcc

C

Example Installation on an OpenVMS Load Host

This appendix contains an example installation of DECNIS software on OpenVMS Alpha and OpenVMS VAX load hosts.

Throughout this appendix, text you type in is indicated by a **bold** typeface.

C.1 Example Installation on OpenVMS Alpha Load Host

```
$ sys$update:vmsinstal

        OpenVMS AXP Software Product Installation Procedure V6.1

It is 27-OCT-1996 at 15:01.

Enter a question mark (?) at any time for help.

* Are you satisfied with the backup of your system disk [YES]?
* Where will the distribution volumes be mounted: VANGOF$DKA500:[DECNIS_KITS.41]

Enter the products to be processed from the first distribution volume set.
* Products: NISAXP041
* Enter installation options you wish to use (none):

The following products will be processed:

  NISAXP V4.1

        Beginning installation of NISAXP V4.1 at 15:01

%VMSINSTAL-I-RESTORE, Restoring product save set A ...
%VMSINSTAL-I-RELMOVED, Product's release notes have been moved to SYS$HELP.

INSTALLATION
============
The DECNIS version V4.1 will take approximately 45 minutes
to install, depending on hardware configuration.


     DEC Network Integration Server V4.1 Installation Procedure.

     Copyright Digital Equipment Corporation 1991, 1996.  All rights reserved.
```

```
     Restricted Rights: Use, duplication, or disclosure by the U.S. Government
     is subject to restrictions as set forth in subparagraph (c)(1)(ii) of DFARS
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     applicable.

     This software is proprietary to and embodies the confidential technology of
     Digital Equipment Corporation. Possession, use, or copying of this software
     and media is authorized only pursuant to a valid written license from
     Digital or an authorized sublicensor.


     You should read the Release Notes immediately AFTER installing
     this product.  The release notes for the DECNIS are in a file
     called NIS041.RELEASE_NOTES which is in the SYS$HELP directory.

* Do you want to purge files replaced by this installation [YES]?
* Do you want to run the IVP after the installation [YES]?

       The IVP will be placed in the directory SYS$TEST.

       You can run the IVP with the DCL command @SYS$TEST:NIS$IVP.

       No further questions will be asked until the IVP.

%VMSINSTAL-I-RESTORE, Restoring product save set B ...
%VMSINSTAL-I-RESTORE, Restoring product save set C ...
%VMSINSTAL-I-MOVEFILES, Files will now be moved to their target directories...

    Beginning the DECNIS V4.1 Installation Verification Procedure.
    Copyright Digital Equipment Corporation 1991, 1996. All rights reserved.


   You will now be asked whether you wish to execute the Configurators.
   If you answer YES, this procedure will execute the Host Configurator,
   followed by the DECNIS Configurator.

    When executing the Configurators, you should press RETURN at the
    first screen and then select EXIT.

    *** DO NOT proceed to configure your DECNIS, at this stage ***

    You should check, in each Configurator, that :-

    o  No error messages are reported.

    o  The help file is successfully read in by the Configurator.

    If the above checks are successful, the IVP has succeeded.
    Otherwise the IVP has failed.

Do you wish to execute the Configurators [Y/N <N>]? y

Running Host Configurator....

Running DECNIS Configurator....


The DECNIS V4.1 Installation Verification Procedure
has completed successfully.
```

```
        Installation of NISAXP V4.1 completed at 15:15

    Adding history entry in VMI$ROOT:[SYSUPD]VMSINSTAL.HISTORY

    Creating installation data file: VMI$ROOT:[SYSUPD]NISAXP041.VMI_DATA

Enter the products to be processed from the next distribution volume set.
* Products:

        VMSINSTAL procedure done at 15:16
```

C.2 Example Installation on OpenVMS VAX Load Host

```
$ sys$update:vmsinstal

        OpenVMS VAX Software Product Installation Procedure V6.2

It is 27-OCT-1996 at 14:49.

Enter a question mark (?) at any time for help.

* Are you satisfied with the backup of your system disk [YES]?
* Where will the distribution volumes be mounted: VELA$DUA1:[NIS_KIT.41]

Enter the products to be processed from the first distribution volume set.
* Products: *
* Enter installation options you wish to use (none):

The following products will be processed:

  NIS V4.1

        Beginning installation of NIS V4.1 at 14:49

%VMSINSTAL-I-RESTORE, Restoring product save set A ...
%VMSINSTAL-I-RELMOVED, Product's release notes have been moved to SYS$HELP.


INSTALLATION
============
The DECNIS version V4.1 will take approximately 45 minutes
to install, depending on hardware configuration.


     DEC Network Integration Server V4.1 Installation Procedure.

     Copyright Digital Equipment Corporation 1991, 1996.  All rights reserved.

     Restricted Rights: Use, duplication, or disclosure by the U.S. Government
     is subject to restrictions as set forth in subparagraph (c)(1)(ii) of DFARS
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     This software is proprietary to and embodies the confidential technology of
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     Digital or an authorized sublicensor.
```

```
     You should read the Release Notes immediately AFTER installing
     this product.  The release notes for the DECNIS are in a file
     called NIS041.RELEASE_NOTES which is in the SYS$HELP directory.

* Do you want to purge files replaced by this installation [YES]?
* Do you want to run the IVP after the installation [YES]?

       The IVP will be placed in the directory SYS$TEST.

       You can run the IVP with the DCL command @SYS$TEST:NIS$IVP.

       No further questions will be asked until the IVP.

%VMSINSTAL-I-RESTORE, Restoring product save set B ...
%VMSINSTAL-I-RESTORE, Restoring product save set C ...
%VMSINSTAL-I-MOVEFILES, Files will now be moved to their target directories...

    Beginning the DECNIS V4.1 Installation Verification Procedure.
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   You will now be asked whether you wish to execute the Configurators.
   If you answer YES, this procedure will execute the Host Configurator,
   followed by the DECNIS Configurator.

    When executing the Configurators, you should press RETURN at the
    first screen and then select EXIT.

    *** DO NOT proceed to configure your DECNIS, at this stage ***

    You should check, in each Configurator, that :-

    o  No error messages are reported.

    o  The help file is successfully read in by the Configurator.

    If the above checks are successful, the IVP has succeeded.
    Otherwise the IVP has failed.

Do you wish to execute the Configurators [Y/N <N>]? y

Running Host Configurator....


Running DECNIS Configurator....


The DECNIS V4.1 Installation Verification Procedure
has completed successfully.

        Installation of NIS V4.1 completed at 15:17

Enter the products to be processed from the next distribution volume set.
* Products:

        VMSINSTAL procedure done at 15:17
```

D

Files Installed on DIGITAL UNIX Load Hosts

D.1 Introduction

This appendix lists the files installed on a DIGITAL UNIX load host by the DECNIS installation procedure.

Pathname and File	Description
/etc/bootptab.default	Default bootptab
/usr/bin/ncl.nis410	NCL image
/usr/lib/dnet/dec_elan_mib.v27_txt	DEC Vendor MIB
/usr/lib/dnet/decrou_ncl/ncl/dictary.dat	Work file used for NCL checking
usr/lib/dnet/dtf/dtf.txt	DIGITAL Trace Facility (DTF) manual
usr/lib/dnet/dtf/dtfaxp.a	DTF for OpenVMS Alpha hosts
usr/lib/dnet/dtf/dtfosf.tar	DTF for DIGITAL UNIX hosts
usr/lib/dnet/dtf/dtfultrix.tar	DTF for ULTRIX hosts
/usr/lib/dnet/dtf/dtfvms.a	DTF for OpenVMS VAX hosts
usr/lib/dnet/dtf/dtfw32.zip	DTF for Windows NT hosts
/usr/lib/dnet/fcns_ni.txt	X.25 Network information
/usr/lib/dnet/mcc_add_applications.sh_new	Shell script to add the new application menu
/usr/lib/dnet/mcc_decnis_appl.dat	Customization file for DECmcc application menu DECmcc V1.2
/usr/lib/dnet/nia410_ivp	Installation verification procedure
/usr/lib/dnet/nis041.release_notes	Release notes
/usr/lib/dnet/nisfix041.release_notes	Release notes
/usr/lib/dnet/nis_decnis_config	DECNIS configurator

Pathname and File	Description
/usr/lib/dnet/nis_decnis_config.bin	DECNIS configurator messages
/usr/lib/dnet/nis_decnis_config_help.bin	DECNIS configurator help
/usr/lib/dnet/nis_decnis_ncl_template.bin	NCL template
/usr/lib/dnet/decnis_smds_config	SMDS configurator
/usr/lib/dnet/nis_combine	Shell script for combine utility
/usr/lib/dnet/nis_events.txt	Event messages text
/usr/lib/dnet/nis_example.ncl	Example NCL Script
/usr/lib/dnet/mod_flsh	Edit combined file utility
/usr/lib/dnet/nis_flash	Flash compression utility
/usr/lib/dnet/nis_host_config	Load-host configurator
/usr/lib/dnet/nis_host_config.bin	Load-host configurator messages
/usr/lib/dnet/nis_host_help.bin	Load-host configurator help
/usr/lib/dnet/nis_images.dat	System image
usr/lib/dnet/nis_nchk	NCL checking utility
usr/lib/dnet/nis_atm_ds3.ncl	ATM on DS3 lines NCL example
usr/lib/dnet/nis_atm_e3.ncl	ATM on E3 lines NCL example
usr/lib/dnet/nis_atm_oc3.ncl	ATM on OC3 lines NCL example
usr/lib/dnet/nis_atm_oc3_class_ip.ncl	ATM Classical IP on OC3 lines NCL example
/usr/lib/dnet/nis_backup.ncl	Backup circuit NCL example
/usr/lib/dnet/nis_dns_name_server.ncl	IP services NCL example
/usr/lib/dnet/nis_icmp_rd.ncl	ICMP router discovery NCL example
usr/lib/dnet/nis_ip_multicast.ncl	IP multicast NCL example
/usr/lib/dnet/nis_ip_priory_patt.ncl	IP pattern matching prioritization NCL example
/usr/lib/dnet/nis_ip_standby.ncl	IP standby MAC mode NCL example
/usr/lib/dnet/nis_ipx_wan.ncl	IPX WAN link NCL example
/usr/lib/dnet/nis_lat_priority_patt.ncl	LAT pattern matching prioritization NCL example
usr/lib/dnet/nis_pack_filt.ncl	IP packet filtering NCL example
/usr/lib/dnet/nis_ospf_minimum.ncl	OSPF NCL example
/usr/lib/dnet/nis_ospf_multi_area.ncl	OSPF NCL example

s

Pathname and File	Description
/usr/lib/dnet/nis_ospf_virtual.ncl	OSPF NCL example
/usr/lib/dnet/nis_priority.ncl	Prioritization NCL example
/usr/lib/dnet/nis_smds.ncl	SMDS NCL example
/usr/lib/dnet/nis_x25_lanwan_relay.ncl	LAN/WAN relay NCL example
/usr/lib/dnet/nis_x25_local_relay.ncl	X.25 local relay NCL example
/usr/lib/dnet/nis_x25_remote_relay.ncl	X.25 remote relay NCL example
/usr/lib/dnet/nis_script_compile	NCL script compiler
/usr/lib/dxbook/decnispsg.decw_book	Bookreader file for DECNIS Problem Solving manual
/usr/lib/dxbook/decnispsg.decw_bookshelf	Bookshelf for DECNIS Problem Solving manual
/usr/lib/mop/digital/fcns/mcnm_prf	Modem connect profile file
/usr/lib/mop/digital/fcns/x25l2_prf	X.25 Level 2 profile file
/usr/lib/mop/digital/fcns/x25l3_prf	X.25 Level 3 profile file
/usr/lib/mop/nis041.sys	DECNIS double system image
/usr/lib/mop/nis041b.sys	DECNIS system image (no console NCL)
/usr/man/man8/nis_decnis_config.8	DECNIS configurator manpages
/usr/man/man8/nis_host_config.8	Load-host configurator manpages
/usr/man/man8/nis_combine.8	Combine utility manpages
/usr/man/man8/nis_script_compile.8	NCL script compiler manpages
/usr/mcc/mcc_system/mcc_appl_decnis.def	Customization file for DECmcc application menu DECmcc V1.3
/usr/share/dna/dict/ncl_dna5_atm_ connection_management.ms	ATM connection management module text file
/usr/share/dna/dict/ ncl_dna5_atm_ multiprotocol_encap.ms	ATM multiprotocol encapsulation module text file
/usr/share/dna/dict/ncl_dna5_bridge.ms	Bridge module text file
/usr/share/dna/dict/ncl_dna5_chdlc.ms	CHDLC module text file
/usr/share/dna/dict/ncl_dna5_csmacd.ms	CSMA-CD module text file
/usr/share/dna/dict/ncl_dna5_fddi.ms	FDDI module text file
/usr/share/dna/dict/ncl_dna5_frbs.ms	Frame relay module text file
/usr/share/dna/dict/ncl_dna5_hardware.ms	Hardware module text file
/usr/share/dna/dict/ncl_dna5_hdlc.ms	HDLC module text file

Pathname and File	Description
/usr/share/dna/dict/ncl_dna5_ips.ms	IP Services module text file
/usr/share/dna/dict/ncl_dna5_lapb.ms	LAPB module text file
/usr/share/dna/dict/ncl_dna5_mop.ms	MOP module text file
/usr/share/dna/dict/ncl_dna5_multiplexed_ interface.ms	Multiplexed Interface module text file
/usr/share/dna/dict/ncl_dna5_nsp.ms	NSP module text file
/usr/share/dna/dict/ncl_dna5_ppp.ms	PPP module text file
/usr/share/dna/dict/ncl_dna5_priority.ms	Priority module text file
/usr/share/dna/dict/ncl_dna5_routing.ms	Routing module text file
/usr/share/dna/dict/ncl_dna5_session.ms	Session module text file
/usr/share/dna/dict/ncl_dna5_smds.ms	SMDS module text file
/usr/share/dna/dict/ncl_dna5_snmp.ms	SNMP module text file
/usr/share/dna/dict/ncl_dna5_supervisor.ms	Supervisor module text file
/usr/share/dna/dict/ncl_dna5_tcp.ms	TCP module text file
/usr/share/dna/dict/ncl_dna5_x25_ access.ms	X25 Access module text file
/usr/share/dna/dict/ncl_dna5_x25_ protocol.ms	X25 Protocol module text file
/usr/share/dna/dict/ncl_dna5_x25_ relay.ms	X.25 Relay module text file
/usr/share/dna/dict/ncl_help.hlp	NCL help

E

Example Installation on a DIGITAL UNIX Load Host

This appendix contains an example installation of DECNIS software on an DIGITAL UNIX load host.

Throughout this appendix, text you type in is indicated by a **bold** typeface.

```
# setld -l . NIANIS410

The subsets listed below are optional:

     There may be more optional subsets than can be presented on a single
     screen. If this is the case, you can choose subsets screen by screen
     or all at once on the last screen. All of the choices you make will
     be collected for your confirmation before any subsets are installed.

     1) DECNIS V4.1 for Digital UNIX

Or you may choose one of the following options:

     2) ALL of the above
     3) CANCEL selections and redisplay menus
     4) EXIT without installing any subsets

Enter your choices or press RETURN to redisplay menus.

Choices (for example, 1 2 4-6): 1

You are installing the following optional subsets:

        DECNIS V4.1 for for Digital UNIX

Is this correct? (y/n): y

Checking file system space required to install selected subsets:

File system space checked OK.

INSTALLATION
============
The DECNIS version 4.1 SSB Kit will take approximately 20 minutes
to install, depending on hardware configuration.
```

```
*************************************************************************
*  DEC Network Integration Server V4.1 Installation Procedure           *
*                                                                       *
*  Copyright Digital Equipment Corporation. 1994. All rights reserved.  *
*                                                                       *
*  Restricted Rights:  Use, duplication, or disclosure by the U.S.      *
*  Government is subject to restrictions as set forth in subparagraph   *
*  (c)(1)(ii) of DFARS 252.227-7013, or in FAR 52.227-19, or in FAR     *
*  52.227-14 Alt. III, as applicable.                                   *
*                                                                       *
*  This software is proprietary to and embodies the confidential        *
*  technology of Digital Equipment Corporation.  Possession, use, or    *
*  copying of this software and media is authorized only pursuant to a  *
*  valid written license from Digital or an authorized sublicensor.     *
*                                                                       *
*                                                                       *
*  An example installation log for this product is included in the      *
*  Installation and Configuration manual. This log contains all the     *
*  messages displayed by this installation procedure.                   *
*                                                                       *
*  You should read these notes and this log immediately AFTER installing *
*  this product, because it contains important information about how to  *
*  use the DECNIS software.                                             *
*                                                                       *
*                                                                       *
*  NIANIS410 Installation started at Thu 27 Oct 1997, 15:33:57         *
*                                                                       *
*************************************************************************

Installing DECNIS Digital UNIX kit onto a OSF1 alpha system

Saving DECNIS specific files...
Saving original etc/bootptab file.

DECNIS V4.1 for Digital UNIX
   Copying from . (disk)
        Working....Thu Oct 27 15:34:14 BST 1997
   Verifying

Do you want to run the IVP after the installation? (y/n) [y]:

**** Checking dates of profile files ****
'usr/lib/mop/digital/fcns/mcnm_prf' is up to date.
'usr/lib/mop/digital/fcns/x25l2_prf' is up to date.
'usr/lib/mop/digital/fcns/x25l3_prf' is up to date.
'usr/lib/dnet/fcns_ni.txt' is up to date.
'usr/lib/dnet/dec_elan_mib.v27_txt' is up to date.

*** Updating with new DECNIS NCL modules...
```

```
Saving old dictionary....
Updating dictionary....
Successfully updated ncl_dna5_bridge.ms
Successfully updated ncl_dna5_chdlc.ms
Successfully updated ncl_dna5_csmacd.ms
Successfully updated ncl_dna5_fddi.ms
Successfully updated ncl_dna5_frbs.ms
Successfully updated ncl_dna5_hardware.ms
Successfully updated ncl_dna5_hdlc.ms
Successfully updated ncl_dna5_lapb.ms
Successfully updated ncl_dna5_mop.ms
Successfully updated ncl_dna5_ppp.ms
Successfully updated ncl_dna5_routing.ms
Successfully updated ncl_dna5_x25_relay.ms
Successfully updated ncl_dna5_snmp.ms
Successfully updated ncl_dna5_smds.ms
Successfully updated ncl_dna5_supervisor.ms
Successfully updated ncl_dna5_tcp.ms
Successfully updated ncl_dna5_priority.ms

*** DECNIS NCL help updated into usr/share/dna/ncl_help.txt

                ----------------------------

    Beginning DECNIS V4.1 Installation Verification Procedure (IVP)
    Copyright Digital Equipment Corporation 1994. All rights reserved.


   ...all component files for the DECNIS subset verified present.

                ----------------------------

Checking version numbers of installed software...

        Software Image.............DECNIS V4.1
        HOST Configurator..........DECNIS Host Configurator Version V4.1
        DECNIS Configurator........DECNIS Configurator Version V4.1

    As a final check, the IVP now executes the Host Configurator,
    and then DECNIS Configurator.

    In each, press RETURN at the first screen, then select EXIT.

    *DO NOT* proceed to configure your DECNIS at this stage.
     ------

    In each Configurator, check that:
        o  No error messages are reported
        o  The help file is successfully read in by the Configurator.

    ************************ NOTE ***************************
    If the above checks are successful, the IVP has succeeded.
    Otherwise, the IVP has failed.
    ************************************************************

    Press return when ready..
```

```
                          LOAD HOST CONFIGURATION

                             DECNIS CONFIGURATION

   Checking the image combine utility

Creating a sample ncl script
Creating a cmip file from the ncl script

 Generating CMIP file from /usr/lib/dnet/nis_tmptmp.ncl...
 - Logfile: /usr/lib/dnet/nis_tmptmp.log

Combining script, profiles and compressed image

Combine Done - Image version 4.1

                       Successfully created the combined image...

 DECNIS V4.1 SSB Kit Verification Procedure Completed Succesfully.

Providing DECNIS problem solving guide for Bookreader

Old library retained as usr/lib/dxbook/library.decw_bookshelf_old

Decnis Problem Solving Guide available for Bookreader.

                ----------------------------

                          Notes
                          -----

     1.  If you have configured DECNIS servers using previous versions
         of the DECNIS software, you may wish to upgrade them to use the
         latest version of the DECNIS software:

           - to do this for an individual DECNIS server, use the
             UPDATE option in the DECNIS Host Configurator.

           - to do this for all your previously configured DECNIS servers,
             use the following command :-

                # usr/lib/dnet/nis_host_config -u update_type

           - the valid update types are flash_full, flash_part and
             network.

         Any DECNIS servers which are updated will need to be rebooted to
         load the new software image into the server.

     2.  The installation may be verified at any time by typing:

                # setld -v NIANIS410

         Note: this also gives you the image reference number of your kit;
               from this, you can determine the relative ages of different
               images, and hence whether to update your subset.
```

```
                  DECNIS On-Line Documentation
                  ----------------------------

  This subset places files called:

     1.  decnispsg.decw_book in usr/lib/dxbook

         This is the DECwindows Bookreader version of the DECNIS
         Problem Solving Guide.

     2.  nis040.release_notes in usr/lib/dnet

         These are the release notes for the DECNIS kit and may be printed
         or displayed on the screen.

    ***********************************************************************
    *                                                                     *
    *    NIANIS410 Installation Completed at Thu 27 Oct 1997, 15:40:06    *
    *                                                                     *
    ***********************************************************************

Configuring "DECNIS V4.1 for Digital UNIX" (NIANIS410)
```

F

Using DECdns and the Local Namespace with the DECNIS

Use this appendix if the DECnet-Plus naming services, DECdns and/or the local namespace, are used on your network.

F.1 Introduction

The DECNIS router does not use the DECnet-Plus naming services to find the location of the DECnet systems to which it sends messages (for example, event sinks). Instead, it uses node specifications contained in the master NCL script file generated by the DECNIS configurator.

However, the load-host configurator and the DECNIS text-based configurator do make use of the naming services. If you specify in the load-host configurator that you want to use a naming service, then the configurators will do the following:

- Register the DECNIS node in the local or DECdns namespace.
- Use the local or DECdns namespace to find the node specifications of the systems to which the DECNIS sends messages. It then uses those specifications to write NCL SESSION CONTROL KNOWN TOWERS commands for these systems in the DECNIS NCL script.

F.2 Specifying the Use of a Naming Service

In the load-host configurator, you are asked whether or not you want to use a naming service to generate node specifications.

If you select Yes, then you are asked for the following:

- The node name of the DECNIS.
- The node synonym of the DECNIS. This is optional.

If you select No, you are not asked for a node name or synonym, as the configurator will not then register the DECNIS in a namespace.

Refer to the manual *DECNIS Installation and Configuration for OpenVMS and DIGITAL UNIX* for details.

F.3 DECdns or Local Namespace?

When you request the use of a naming service, the load-host configurator needs to decide whether to use the local namespace or the DECdns namespace.

By default, the local namespace is used.

However, you can override the default so that the configurators use the DECdns namespace. To do this, insert the following command in the decnet_register initialization command file:

```
SET DEFAULT DIRECTORY_SERVICE DECdns
```

You must do this **before** you run the load-host and DECNIS configurators.

See the manual *DECNIS Installation and Configuration for OpenVMS and DIGITAL UNIX* for more information.

F.4 Registering the DECNIS in a Namespace

The configurators use the DECnet-Plus utility **decnet_register** as follows:

- The load-host configurator uses the utility to register the DECNIS in a namespace.
- The DECNIS text-based configurator uses the utility to update the DECNIS node object in the namespace with the DECNIS address towers.

See the manual *DECnet/OSI Network Management* for more information about decnet_register.

F.4.1 Requirements for Successful Registration

In order for the load-host and DECNIS configurators to successfully create and update the DECNIS object in a namespace, writeable access to the parent directory where the object is going to reside must be available.

F.4.2 Errors When Registering the DECNIS in the Namespace

If there are any errors when the load-host configurator is trying to register the DECNIS, the following will be displayed:

```
The node name listed below could not be registered in the namespace,
press RETURN.

Node name : namespace_name:.nodename
```

where: *namespace_name* is the name of the namespace and .*nodename* is the fullname of the DECNIS.

F.4.3 Adding Tower Sets to the DECNIS Entry

You are asked in the DECNIS text-based configurator if you want addressing information for the DECNIS to be added to the namespace. If you select Yes, the configurator will try to add the DECNIS tower set(s) to its namespace entry.

However, if you know that writeable copies of the relevant DECdns directories will not be available when the DECNIS text-based configurator is run, you should answer No to this question. The naming service commands will not then be issued, and the DECNIS configurator will go on to create the NCL script file.

When the directories become available, rerun the DECNIS text-based configurator and select Yes to the question.

F.4.4 Errors When Adding Tower Sets to the DECNIS Entry

If the configurator cannot update the DECNIS namespace entry with tower sets for any reason, the following will be displayed:

```
Cannot add tower sets for this DECNIS.
Look in the log file log-file-name for details.
```

where *log-file-name* is the name of the log file; see Table F–1 for details.

If this error is displayed, the rest of the configuration process should complete, but there will be no address information for the DECNIS in the namespace.

F.5 Naming Service Error Log File

If the load-host configurator cannot register the DECNIS, or the DECNIS text-based configurator cannot update the DECNIS namespace entry, any errors will be written to the log file shown in Table F–1.

Table F–1 Naming Service Error Log Files

Load Host	Log File Name
OpenVMS	MOM$SYSTEM:NIS_*client-name*_DNS.LOG
DIGITAL UNIX	usr/lib/dnet/nis_*client-name*_dns.log

where *client-name* is the load client name of the DECNIS.

F.6 Completing Name Service Registration

If the naming service registration of node name and address information fails, then you can do one of the following:

- Rerun the configurators when the master copy of the naming service directories are available. If the path to these directories is through the DECNIS that is being configured, then it may be necessary to boot the DECNIS and manage it as described in Section F.6.1 before the registration can be completed.
- Use the decnet_register utility to register the DECNIS, as described in the manual *DECnet/OSI Network Management*.

F.6.1 Managing the DECNIS Before Registration Is Complete

It is not possible to manage a DECNIS using its node name if you are using a naming service to store node information and the naming service registration is not complete. In these circumstances, you need to specify the address of the DECNIS in NCL commands until the DECNIS has been registered.

For example:

- To manage a DECNIS with a Phase IV compatible address 1.3, you could issue the following command:

  ```
  ncl> show node 1.3 all attributes
  ```

- To manage a DECNIS with only extended NSAP addresses, one of which was 49::98-76:08-00-2b-00-12-34:20, then you could issue the following command:

  ```
  ncl> SHOW NODE %x49987608002B00123420 ALL ATTRIBUTES
  ```

F.7 Swapping the DECNIS Hardware

If you replace the DECNIS hardware unit with another unit, and the DECNIS is using any extended NSAP addresses, you must do the following before you attempt to downline load:

- Run the load-host configurator and change the hardware address for the DECNIS.
- Run the DECNIS text-based configurator, and create a new NCL script and CMIP or combined file. The configurator will update the namespace entry with a new NSAP address which contains an ID field based on the new hardware address.

G

Loading from a DECnet–VAX Phase IV Load Host

G.1 Introduction

This chapter describes how to set up a DECnet–VAX Phase IV system as a MOP load host for a DECNIS.

Definition of DECnet–VAX Phase IV

The term DECnet–VAX Phase IV refers to the version of DECnet–VAX that preceded DECnet–VAX Extensions.

G.2 Procedure

To set up a DECnet–VAX Phase IV system for MOP loading, follow these steps:

1. Install the DECNIS software on a DECnet-Plus system.
2. Run the configurators. In the NCL Script section of the DECNIS text-based configurator, create a CMIP file or a combined image/CMIP/profile file.
3. Copy the load files (either the combined file or the software image, CMIP file and profile files) to the DECnet–VAX Phase IV system.

   See Table A–3 for the file locations.

Now, on the DECnet–VAX Phase IV system, follow these steps:

1. Run NCP by entering the following:

   ```
   $ RUN SYS$SYSTEM:NCP
   ```

2. Enter these commands:

   ```
   NCP> CLEAR NODE client-name ALL
   NCP> PURGE NODE client-name ALL
   ```

3. Enter the DECnet address of the DECNIS:

   ```
   NCP> DEFINE NODE client-name ADDRESS decnet-address
   ```

4. Enter the hardware address of the DECNIS. Section G.2.1 explains how to find the correct hardware address.

   ```
   NCP> DEFINE NODE client-name HARDWARE ADDRESS hardware-address
   ```

5. Enter the name of the Ethernet circuit to be used for downline loading:

   ```
   NCP> DEFINE NODE client-name SERVICE CIRCUIT circuit-id
   ```

6. Check that the service circuit is enabled. If it is disabled, do the following:

   a. Turn the circuit off by entering:

      ```
      NCP> SET CIRCUIT circuit-id STATE OFF
      ```

   b. Enable the service by entering:

      ```
      NCP> DEFINE CIRCUIT circuit-id SERVICE ENABLED
      NCP> SET CIRCUIT circuit-id SERVICE ENABLED
      ```

   c. Now turn the circuit on again by entering:

      ```
      NCP> SET CIRCUIT circuit-id STATE ON
      ```

7. To specify the software image, CMIP file and profile files, enter the following commands. To specify the combined file, go to Step 8.

   ```
   NCP> DEFINE NODE client-name LOAD FILE -
   _NCP> sys$common:[mom$system]nis041.SYS)
   NCP> DEFINE NODE client-name MANAGEMENT FILE -
   _NCP> sys$common:[mom$system]nis_client-name.cmip
   ```

8. To specify a combined file, enter the following:

   ```
   NCP> DEFINE NODE client-name LOAD FILE -
   _NCP> sys$common:[mom$system]nis041_client-name.sys
   ```

9. To define the DECNIS dump file, enter:

   ```
   NCP> DEFINE NODE client-name DUMP FILE -
   _NCP> sys$common:[mom$system]nis_client-name.dmp
   ```

10. Enter the following:

    ```
    NCP> SET NODE client-name ALL
    NCP> EXIT
    ```

In these commands, *client-name* is the load client name of the DECNIS.

G.2.1 Hardware Address

The DECNIS has 16 hardware addresses available. It assigns one hardware address to each port on its CSMA/CD and FDDI Network Interface Cards. It uses a standard scheme to do this.

When installing from a DECnet–VAX Phase IV system, you must specify the hardware address of the port on the DECNIS which will receive the downline load. Section G.2.1.1 to Section G.2.1.3 describe how to do this.

G.2.1.1 Finding the Hardware Address

The first 11 digits of the DECNIS hardware addresses are the same. The last digit depends on the type of Network Interface Card, its slot number, and the port number. Table G–1 shows how the last digit is assigned.

Table G–1 Hardware Address Assignment

Card	Last Digit							
L601	The number of the slot in which the card is inserted							
L602	Assigned as follows:							
	If slot number is:	**3**	**4**	**5**	**6**	**7**	**8**	**9**
	The last digit for Port 0 is:	3	4	5	6	7	8	9
	The last digit for Port 1 is:	A	B	C	D	E	F	2
F621	DECNIS 600: the higher number of the two slots DECNIS 500: the lower number of the two slots							

G.2.1.2 Procedure

To find the correct hardware address, follow these steps:

1. Take the first 11 digits of the hardware address from the hardware address on the label on the DECNIS Processor Card. Ignore the last digit (which is always zero on the label).
2. Decide which port on which card will be used to receive the downline load.
3. Use Table G–1 to find the correct last digit for the port.

G.2.1.3 Example

Table G–2 shows examples of hardware address assignment on a DECNIS 600.

Table G–2 Examples of Hardware Address Assignment

Address on Processor Card Label	Card	Slot	Port	Hardware Address
08-00-2B-C3-66-12-50	L601	5	0	08-00-2B-C3-66-12-55
08-00-2B-C3-66-12-50	L602	5	1	08-00-2B-C3-66-12-5C
08-00-2B-D4-76-22-80	F621	6 and 7	0	08-00-2B-D4-76-22-87

G.2.2 Example

This section gives example commands to configure a DECnet–VAX Phase IV system as a DECNIS load host. In this example, the following information is available:

DECNIS load client name	SOUTH1
DECnet address	44.6
Hardware address	08-00-2B-0A-11-33
Service circuit	SVA-0
Combined file	SYS$COMMON:[MOM$SYSTEM]NIS041_SOUTH1.SYS
Dump file	SYS$COMMON:[MOM$SYSTEM]NIS041_SOUTH1.DMP

Example Commands

```
$ RUN SYS$SYSTEM:NCP
CLEAR NODE south1 ALL
PURGE NODE south1 ALL
DEFINE NODE south1 ADDRESS 44.6
DEFINE NODE south1 HARDWARE ADDRESS 08-00-2B-0A-11-33
DEFINE NODE south1 SERVICE CIRCUIT sva-0
SET CIRCUIT sva-0 STATE OFF
DEFINE CIRCUIT sva-0 SERVICE ENABLED
SET CIRCUIT sva-0 SERVICE ENABLED
SET CIRCUIT sva-0 STATE ON
DEFINE NODE south1 LOAD FILE sys$common:[mom$system]nis041_south1.sys
DEFINE NODE south1 DUMP FILE sys$common:[mom$system]nis041_south1.dmp
SET NODE south1 ALL
EXIT
```

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