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DECrouter 150/250

Software Installation (VMS)

April 1991

This guide tells you how to install the DECrouter 150/250 distribution software onto VMS systems, how to establish these systems as down-line load hosts, and how to verify the installation. This guide is intended for the person responsible for managing the VMS load host or the network manager.

Supersession/Update Information:	This is an update
Operating System and Version:	VMS V5.0 – 5.4
Software Version:	DECrouter 250 V1.1

digital™

Part Number: AA–PAX6B–TE

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Preface

This installation guide explains how to:

- Install the DECrouter™ distribution software onto a VMS™ system running DECnet™ Phase IV, enabling the system to perform as a load host.
- Configure the load-host node database.
- Verify the load-host installation and the DECrouter system installation.
- Start the DECrouter Configuration Program (DRCP).

Intended Audience

This guide is for system managers or network managers who are responsible for making server products available on their Ethernets. A system manager is responsible for the VMS system that is about to be established as a load host. A network manager is responsible for the local area network (LAN).

To use this guide effectively, you should be familiar with both DECnet Phase IV network management concepts and the VMS operating system. For an overview of the DECrouter system, see the *DECrouter 150/250 Management* guide.

Terminology

The term *router* in this guide refers to the DEC WANserver 150 hardware unit running the DECrouter 150 V1.1 software, or the DECrouter 250 hardware unit running the DECrouter 250 V1.1 software. Both software packages are included in the DECrouter 250 V1.1 software kit.

Structure of This Guide

This guide has five chapters and two appendixes:

Chapter 1	Introduces the DECrouter and summarizes the installation, configuration, and verification procedures.
Chapter 2	Describes how to install the distribution software.
Chapter 3	Explains how to configure the load-host node database.
Chapter 4	Tells how to verify the load-host installation by running the Installation Verification Procedure (IVP) and down-line loading the DECrouter software image to a test unit. This chapter also discusses how to verify the DECrouter system installation by issuing Network Control Program (NCP) commands.
Chapter 5	Shows how to start DRCP on a VMS load host.
Appendix A	Lists and describes the files in the DECrouter VMS distribution kit.
Appendix B	Provides examples of the installation, configuration, and verification procedures.

Other DECrouter Documents

Additional DECrouter documentation you might find helpful includes:

- *DECrouter 150/250 Management*

  Describes all the initial and day-to-day management tasks required. The topics cover all the information needed to configure the ports and to customize the router.

- *DECrouter 150 Hardware Installation*
  DECrouter 250 Hardware Installation

  Discusses site preparation and explains how to install the DECrouter hardware unit and verify its operation.

- *DECrouter 250 Identification Card*

  Provides the space to record the serial number, Ethernet address, DECnet node address, and DECnet node name of the router.

- *Routing and Networking Overview*

  Describes the basic routing terminology and concepts, and provides guidelines for achieving optimal routing performance when configuring networks.

DECrouter On-Line Documentation

- DECrouter Release Notes

  Describes any discrepancies between the actual product and the information in the documentation set. These notes are intended for the software installer and the DECrouter manager.

- DRCP On-Line Help

  Provides reference information for all commands used to customize the router software image in the permanent database on the load host. On-Line Help is intended for the DECrouter manager.

Associated Documents

You should be familiar with the VMS documentation set. For manual titles and order numbers, refer to the documentation directory for VMS.

Conventions Used in This Guide

Convention	Meaning
`Special type`	Indicates an example of system output or user input. System output is in black type; user input is in red type.
UPPERCASE	In command lines, indicates keywords to be entered. You can type the characters in either uppercase or lowercase. Command keywords can be abbreviated to the smallest number of characters that your system accepts. For example, the following two commands are the same: `NCP> SHOW NODE` *node-name* RET and `NCP> SH N` *node-name* RET
italics	Indicates a variable.
RET	Indicates the Return key.
[ ]	Indicates that the enclosed value is the default. To specify the default, press RET . To specify another value, type it after the brackets and press RET . (Do not type the brackets).
key	Indicates that you should press the specified key.
CTRL/*x*	Represents a key sequence, where you press the CONTROL key at the same time as the key specified by *x*.

1
Overview

This chapter reviews the DECrouter features and concepts, and summarizes the software installation and verification procedures.

1.1 What Is the DECrouter

The DECrouter is a high-performance, low-cost router that connects synchronous or asynchronous devices (PCs, workstations, modems) to one another, and optionally to an Ethernet or IEEE 802.3 local area network (LAN).

The DECrouter allows the connected devices to communicate and share resources with the nodes on the LAN or within a larger DECnet network, as well as with each other. The DECrouter DECnet software supports all DECnet Phase IV features, such as path splitting.

The DECrouter supports modem control for connections to remote computer systems. With modem control, the DECrouter can connect public and dedicated lines to wide area networks (WANs). The DECrouter supports modems for dial-in connections.

1.1.1 DECrouter Software and Load Hosts

This kit contains software for both the DECrouter 150 and the DECrouter 250. The DECrouter 250 software runs on the DECrouter 250 hardware unit as a standalone system; no other software is required. Likewise, the DECrouter 150 software runs on the DEC WANserver 150 hardware unit as a standalone system. The DECrouter software image contains the permanent database of the unit. A copy of the software images and several other distribution files make up the DECrouter software distribution kit.

Your first task is to install the distribution files onto a load host. A load host is a system that has the DECrouter software image, several related files for customizing this image, and both a node database and a DECnet database. As a result, a load host system can down-line load the software image to DECrouter units. Load hosts can also receive up-line dumps from DECrouter units.

Load hosts must be DECnet Phase IV systems. It is recommended that:

- Each unit has two load hosts.
- In networks of more than 20 units, there is one load host for every 10 units.

When selecting alternative load hosts, choose the following systems for which DECrouter distribution kits are available:

- Another VMS system running DECnet-VAX
- ULTRIX running DECnet-ULTRIX
- MS-DOS or PC DOS running PATHWORKS for DOS

For information about establishing an operating system other than VMS as an alternate load host, see the DECrouter 150/250 software installation guide for that operating system.

1.2 Performing the Software Installation: A Summary

Figure 1–1 outlines the software installation and verification procedures (Chapters 2, 3, 4, and 5 provide complete instructions).

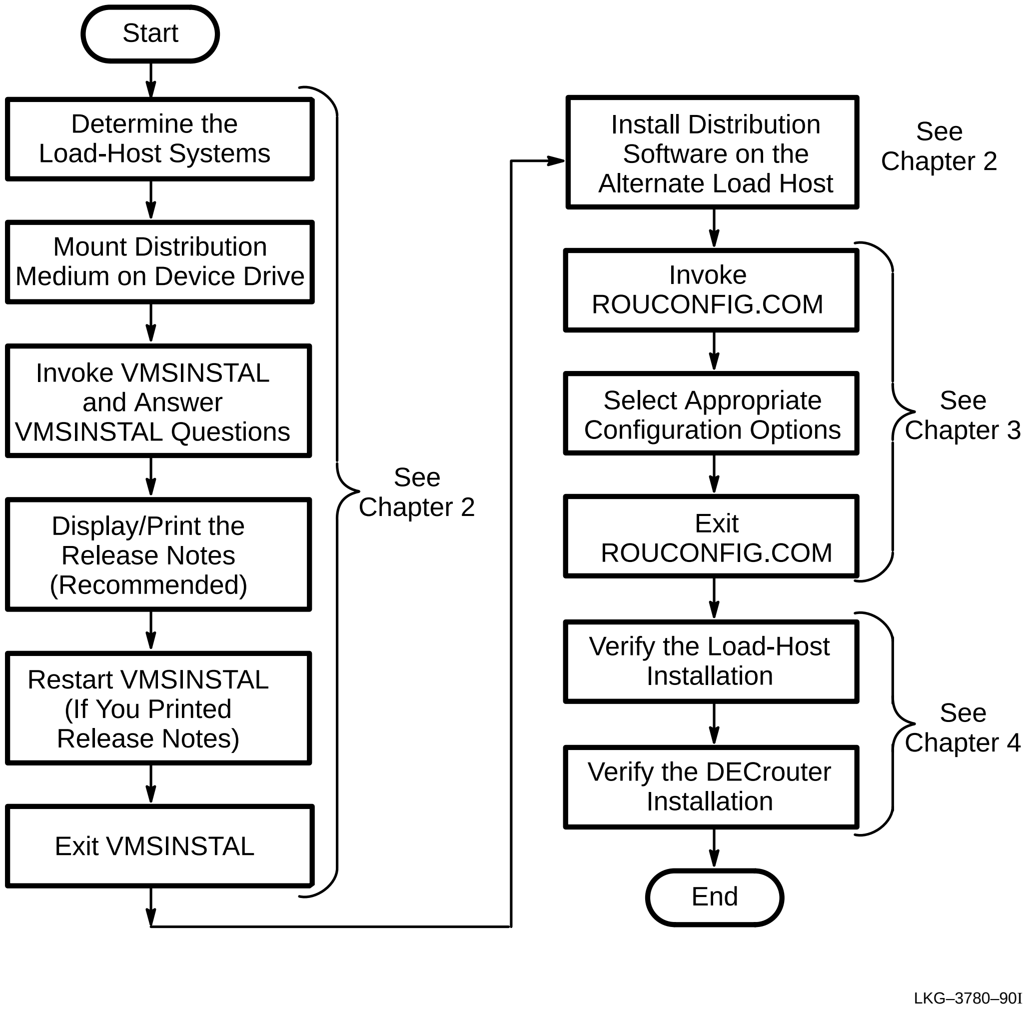

Figure 1–1: DECrouter Software Installation Flow Chart

These installation activities establish your VMS system as a load host for one or more DECrouters. A load host can be a single VMS system or it can be a member node of a VAXcluster. For a VMS system to act as a load host, it must be running DECnet Phase IV.

1.2.1 Installing the DECrouter Software Distribution Kit

You install the DECrouter distribution software onto a VMS system with the VMSINSTAL.COM procedure, which does the following:

- Copies the files from the distribution media to the VMS load host.
- Creates the appropriate directory for these files.
- Prints and/or displays the DECrouter 250 V1.1 release notes when you specify the OPTIONS N parameter .

Chapter 2 provides complete instructions for installing the distribution software. Appendix A lists and describes each of the DECrouter distribution files.

1.2.2 Configuring the Load-Host Node Database

After copying the distribution software to your VMS system, configure its node database to support new DECrouter units, and thus establish it as a load host for those units.

Configure the database with an automated procedure called ROUCONFIG.COM. The ROUCONFIG.COM file is part of the DECrouter software distribution kit.

Configuration of the load-host's node database means defining an entry for each router in a data file called ROUCONFIG.DAT.

ROUCONFIG.DAT is part of the load-host's node database. Configuration of a new unit involves adding an entry to this database. Each entry identifies a DECrouter unit with the following information:

- DECnet node name
- DECnet node address
- DECrouter type
- Service circuit
- Ethernet address (if a unit is to be down-line loaded over the Ethernet circuit)

- Image file name
- Dump file name

The ROUCONFIG procedure copies the distribution image file to create a unique image for each router being defined. Table 1–1 lists the distribution image file names and the unique file names ROUCONFIG creates.

Table 1–1: Image Files for the DECrouter

Router Type	Distribution Image File	Image File Created
DECrouter 150	RT1011.sys	RT1*node-name*.sys
DECrouter 250	RT2011.sys	RT2*node-name*.sys

The new image-file name is based on the type of router used. For example on a DECrouter 250 unit, the name is RT2*node-name*.sys. Where *node-name* is the node name of the router.

Configuration can also involve changing and deleting entries for existing units. With ROUCONFIG.COM, you can modify the load-host node database as follows:

- Add a new unit.
- Swap an old unit for a new one, or modify DECnet characteristics, such as the DECnet node name, for the same unit.
- Delete an existing unit.
- Restore the DECrouter configuration to the host DECnet database.

To configure a DECrouter on a VAXcluster, install the distribution software onto one member node and then configure the node databases of the members that you want to establish as load hosts.

Chapter 3 describes configuring the load-host node database.

1.2.3 Verifying the Installation

Your final responsibility is to ensure that the installation is successful as follows:

- Verify the software installation.

- Verify the load-host installation.
- Verify the total DECrouter system installation.

Chapter 4 discusses the verification procedures.

1.3 Making the DECrouter System Fully Functional

After you complete the verification, run the DECrouter Configuration Program (DRCP) on the load host to customize each DECrouter software image. For DECrouter 150 units, the file is named DRCP150.EXE. For DECrouter 250 units, the file is named DRCP250.EXE.

Customizing the DECrouter software image means defining the appropriate values for characteristics in the permanent database of the DECrouter. Chapter 5 of this manual and *DECrouter 150/250 Management* provides information about customizing DECrouter software-image files with DRCP.

Finally, down-line load all the new DECrouter software-image files so that the DECrouter systems become fully operational. Appendix B provides step-by-step examples of the software installation, configuration, and verification procedures.

2

Installing the DECrouter Distribution Software

This chapter tells you how to prepare for installation and how to install the DECrouter distribution software onto your VMS load host.

To install the software, use VMSINSTAL.COM, an automated procedure, which is part of the VMS operating system.

2.1 VMS System Requirements

You must have the following VMS system features to install the DECrouter:

- VMS tailor requirements

  The required classes are: VMS Required Saveset and Network Support. Be certain that these classes are installed onto your system before installing the router software. Refer to the *VMS Operating System Software Product Description (SPD)* for more information on VMS classes and tailoring.

- VMS version support

  Refer to the *DECrouter 250 V1.1 Software Product Description (SPD)* for the minimum VMS version required to run the router.

2.2 Overview of VMSINSTAL

VMSINSTAL is an interactive procedure that, when executed, performs the following tasks:

- Copies the release notes file from the distribution media into SYS$HELP.
- Copies the Installation Verification Procedure (IVP) into SYS$SYSROOT:[SYSTEST].
- Creates a directory called SYS$SYSROOT:[DECSERVER] on the load host.
- Copies the remaining files from the distribution media into SYS$COMMON:[DECSERVER].
- Prints and/or displays the release notes when you specify the OPTIONS N parameter at the beginning of the installation procedure.

2.3 Preparing to Run the Installation Procedure

Before you run VMSINSTAL, follow these steps:

1. Determine which systems are designated as load hosts for the DECrouter.
2. Make sure that the load hosts are running DECnet Phase IV software.
3. Back up the system disk (recommended). A system disk could accidently become corrupted during the installation, causing the need for a backup copy.
4. Check that there are 2850 blocks of free disk space on each load host for installing the distribution files (only 2780 blocks of free disk space are required to store the distribution files). Down-line loading and up-line dumping require additional space. Refer to Section 3.3 for more information about disk space requirements.

2.4 VMSINSTAL Conventions

VMSINSTAL is an interactive procedure. When you start VMSINSTAL, a series of questions is displayed. After each question, the default response, if there is one, appears in brackets ([ ]). At the end of each question, either a colon (:) or a question mark (?) appears. You can respond in the following ways:

- To answer a question, type your response immediately after the colon or question mark and press RET .
- To select the default response, press RET .
- To get help with any question, type a question mark (?) as your response. After the help display appears, the question reappears.

To abort the installation procedure at any time, press CTRL/Y. The installation procedure deletes all files it has created up to that point and returns to the Digital Command Language (DCL) level. Invoke VMSINSTAL again to restart the installation procedure.

See the VMS documentation for a complete description of VMSINSTAL.

2.5 Running VMSINSTAL

Run VMSINSTAL.COM from the privileged system manager's account on supported releases of VMS (see the *DECrouter 250 V1.1 Software Product Description* for a list of supported releases). The software installation procedure takes 20 minutes to complete.

To install the DECrouter distribution software onto your VMS load host, follow these steps:

1. Mount the DECrouter distribution medium on the appropriate device drive.
2. Log in to the system account.
3. Set the default directory to SYS$UPDATE. Enter the following command:

   ```
   $ SET DEFAULT SYS$UPDATE RET
   ```

4. Start VMSINSTAL with the following command:

   ```
   $ @VMSINSTAL RT2 device-identifier OPTIONS N RET
   ```

RT2 is the VMS facility code for layered products for the DECrouter 150/250 system.

The *device-identifier* is the device on which you mounted the distribution medium. OPTIONS N is an optional parameter that indicates you want to be prompted to display or print the *DECrouter 150/250 Release Notes*.

Read the release notes before proceeding with this installation.

NOTE

> If you omit the OPTIONS N parameter, or do not enter the keywords in exact order (RT2, *device-identifier*, OPTIONS N), the VMSINSTAL procedure does not prompt you to display or print the release notes.

In the following examples, the distribution software for a DECrouter 150/250 is being loaded onto a VMS load host. The procedure exits so that you can read the release notes.

VMSINSTAL displays the procedure title, the date, and the time, and continues with the following messages (a warning appears only if DECnet is running) and prompt:

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

%VMSINSTAL-W-DECNET, Your DECnet network is up and running.

* Do you want to continue anyway [NO]?
```

5. Type YES and press RET. The following prompt appears:

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

6. Press RET to answer YES, or take appropriate action. If you are installing from the distribution media, rather than from copied savesets, VMSINSTAL prompts you to mount the first volume:

   ```
   Please mount the first volume of the set on device-identifier:
   * Are you ready?
   ```

7. Type YES and press RET. A confirmation message indicates that the medium is mounted. The procedure continues with the following messages:

```
The following products will be processed:

RT2 V1.1

Beginning installation of RT2 V1.1 at 09:15

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

Additional Release Notes Options:

   1. Display release notes
   2. Print release notes
   3. Both 1 and 2
   4. Copy release notes to SYS$HELP
   5. Do not display, print or copy release notes

* Select option [3]:
```

8. Select one of the release notes options. Digital Equipment Corporation suggests that you print the release notes.

   – If you select option 1, the following appears:

     ```
     VMI$ROOT:[SYSUPD]RT2011.RELEASE_NOTES;1
     ```

     The release notes scroll at your terminal. To end the release note display at any time, press CTRL/C .

   – If you select option 2, VMSINSTAL asks you to queue the file for printing with the following prompt:

     ```
     * Queue name [SYS$PRINT]:
     ```

     Press RET to print the release notes on the default printer, or specify another print device. A message indicates that the system queued the file.

   – If you select option 3, VMSINSTAL first asks you to queue the file for printing:

     ```
     * Queue name [SYS$PRINT]:
     ```

     Press RET to print the release notes on the default printer, or specify another print device. A message indicates that the system queued the file.

     Next, VMSINSTAL scrolls the release notes on the terminal display.

   – Select option 4 to copy the release notes to the SYSHLP file.

– Select option 5 to not display, print, or copy the release notes.

The installation procedure continues with the following prompt:

```
* Do you want to continue the installation [N]?
          VMSINSTAL procedure done at 09:40
```

9. Press RET to stop the procedure and read the release notes. Check for any changes that can affect this installation.

10. Run the procedure again when you are ready to continue. Enter the following command to restart the procedure:

    @VMSINSTAL RT2 *device-identifier*

    VMSINSTAL displays the procedure title, the date, and the time, and continues with the following messages and query (a warning message appears if DECnet is running):

```
Enter a question mark (?) at any time for help.
%VMSINSTAL-W-DECNET, Your DECnet network is up and running.
* Do you want to continue anyway [NO]?
```

11. Type YES and press RET. The following prompt appears:

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

12. Press RET to answer YES, or take appropriate action. If you are installing from the distribution media, rather than from copied savesets, VMSINSTAL prompts you to mount the first volume:

```
Please mount the first volume of the set on device-identifier.
* Are you ready?
```

13. Type YES and press RET. A message confirms that the medium is mounted. The procedure continues with the following messages:

```
The following products will be processed:
RT2 V1.1
Beginning installation of RT2 V1.1 at 10:01
%VMSINSTAL-I-RESTORE, Restoring product save set A ...
%VMSINSTAL-I-RELMOVED, The product's release notes have been
successfully moved to SYS$HELP
* Do you want to run the IVP after the installation [YES]?
```

The installation verification procedure (IVP) verifies that the DECSERVER directory exists, that all the files from the distribution kit are in the directory, and that the release notes are in the SYS$HELP directory. Digital Equipment Corporation recommends that you run this procedure.

14. Type YES and press RET to initiate IVP. If you are on a VAXcluster member, the following message is displayed:

```
If you intend to execute this layered product on other nodes in
your VAXcluster, and you have the appropriate software license,
you must prepare the system-specific roots on the other nodes by
issuing the following command on each node (using a suitably
privileged account):

$ CREATE/DIRECTORY SYS$SPECIFIC:[DECSERVER]/PROTECTION=(S:RWED,
O:RWED)
```

VMSINSTAL continues as follows for both single nodes and VAXcluster members:

```
%VMSINSTAL-I-RESTORE, Restoring product saveset B ...

Your installation is now complete.  After exiting from
VMSINSTAL:

    1. Define the new DECrouter in your VMS system's node
       database.Execute command procedure called ROUCONFIG.COM,
       which the installation procedure just copied to the
       SYS$COMMON:[DECSERVER] directory.

    2. Verify the installation, as described in the DECrouter
       150/250 Software Installation Guide (VMS).

    3. Inform the DECrouter manager that the installation is
       complete and that it is now time (1)to customize each
       software image with DRCP and then (2) down-line load the
       new customized image files to the DECrouters.

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

Beginning installation verification procedure for DECrouter 250
V1.1.

Successfully located SYS$SYSROOT:[DECSERVER] directory

Successfully located RT2011.SYS

Successfully located RT1011.SYS

Successfully located ROUCONFIG.COM

Successfully located ROUCONFIG.DAT
```

```
Successfully located DRCP250.EXE

Successfully located DRCP150.EXE

Successfully located NODE_COMMAND_BLD.EXE

Successfully located MON250.EXE

Installation verification procedure for DECrouter 150/250 V1.1
successful.
```

The procedure looks for the existence of the ROUCONFIG.DAT file. If it is not in SYS$COMMON:[DECSERVER], the empty copy of the distribution file ROUCONFIG.DAT is installed. If you previously ran ROUCONFIG.COM, you already have ROUCONFIG.DAT with data in it. In this case, the empty distribution file is not installed. ROUCONFIG.DAT was created for a DECrouter 200, DECrouter 2000, or X.25 router installation. (Appendix A lists and describes the DECrouter VMS distribution files.)

The procedure concludes with the following messages:

```
          Installation of RT2 V1.1 completed at 10:25

          VMSINSTAL procedure done at 10:27

$
```

15. Proceed to Section 2.6 to install the distribution software onto an alternative load host or proceed to Section 2.7 for final VMSINSTAL installation information.

2.6 Installing onto Alternative Load Hosts

Alternative load hosts free the DECrouter system from depending on one particular load host. Any alternative load host can perform a down-line load if the original load host is unavailable. In addition, alternative load hosts can receive up-line dumps from DECrouter units.

Regarding the assignment of load hosts:

- Have a minimum of two load hosts for each unit.
- In networks of more than 20 units, have one load host for every 10 units.

As with the original load host, an alternative VMS load host must have the following:

- DECnet Phase IV software installed
- An Ethernet controller on the same Ethernet as the router
- The distribution software installed
- DECrouter entries in its node database

2.6.1 Installing onto Single Systems

To install the DECrouter distribution software onto an alternative VMS load host that is not a member of a VAXcluster, use one of the following methods:

- Place your distribution media on the appropriate device of the new load host and repeat the installation procedure detailed in Section 2.5.
- Copy the distribution files from the SYS$COMMON:[DECSERVER] directory of the original load host to a directory with the same name on a new load host.

2.6.2 Installing onto VAXclusters

To function as an alternative load host, a VAXcluster member fulfills all the requirements of a single VMS system. To establish a VAXcluster member as an alternative load host, follow these steps:

1. Install the distribution software onto one cluster member. Since the distribution files are in SYS$COMMON:[DECSERVER], all cluster members have access to them.
2. Create the SYS$SPECIFIC:[DECSERVER] directory at each alternative load-host cluster member as described in Section 2.5. If an alternative load host does not have the same service circuit as a primary load host, copy ROUCONFIG.DAT from SYS$COMMON:[DECSERVER] directory to SYS$SPECIFIC:[DECSERVER] directory.
3. Follow the steps detailed in Chapter 3 to keep the database of each member updated.

2.6.3 Installing onto Other Operating Systems

To install the distribution software onto an operating system other than VMS, follow the instructions in the DECrouter 150/250 software installation guide for that system.

2.7 After Exiting VMSINSTAL

After you exit VMSINSTAL, follow these steps:

1. Give the DECrouter release notes to the person responsible for managing the DECrouter.
2. Configure the load-host node database with ROUCONFIG.COM. See Chapter 3 for information about this configuration procedure.

3

Configuring the Load-Host Node Database

This chapter describes the router load-host configuration procedure called ROUCONFIG.COM. ROUCONFIG enters information about your router in the load-host node database. The entry provides information that DECnet needs for down-line loading and up-line dumping.

This chapter presents the following configuration information:

- An overview of ROUCONFIG.COM
- An examination of the ROUCONFIG.COM options
- A description of how to run the ROUCONFIG.COM procedure

3.1 Overview of ROUCONFIG.COM

ROUCONFIG.COM has five options—List, Add, Swap, Delete, Restore—all, with the exception of List, affect the load-host node database.

Use the Add option of ROUCONFIG.COM to define new DECrouter systems in the load-host node database, part of which is stored in a data file called ROUCONFIG.DAT.

If you ran the installation procedure described in Chapter 2 and are entering router entries for the first time, an empty ROUCONFIG.DAT file is now in the SYS$COMMON:[DECSERVER] directory for single systems and VAXcluster member nodes.

If you previously ran ROUCONFIG.COM, you also have ROUCONFIG.DAT. In this case, the data file already has some entries.

NOTE

ROUCONFIG.COM configures the load-host node database to support specific routers. It is backward compatible with RTRCONFIG (DR200 V1.0) and the following versions of ROUCONFIG: DR250 V1.0, DR2000 V1.0, DR200 V1.1, DR2000 V1.1 and DR2000 V1.2.

You can also use ROUCONFIG to delete and modify database entries for any DECrouter systems.

In addition to configuring the load-host node database, ROUCONFIG reconfigures the DECnet database.

3.1.1 Databases Affected by ROUCONFIG.COM

The ROUCONFIG command procedure operates on the load-host node database. This database for routers consists of the following separate databases:

- Router configuration database

  This database is stored in a data file that is created, if it does not already exist, by ROUCONFIG. This data file is called ROUCONFIG.DAT and is sometimes referred to as the down-line load database.

- Operational DECnet database
- Permanent DECnet database

When you run ROUCONFIG to add, swap, or delete entries, router information is changed in all the databases. It is important that these three databases remain synchronized.

ROUCONFIG issues Network Control Program (NCP) commands to synchronize these databases.

3.1.2 ROUCONFIG.COM Options

With ROUCONFIG, you can:

- List all routers that are currently defined in ROUCONFIG.DAT.
- Add an entry for a new router.

  Adding an entry supplies information that identifies the router in the DECnet database and, thus, establishes this system as a load host for the new router.
- Swap an existing router for a new one or redefine the DECnet characteristics of an existing router.

  Swapping retains the DECnet node address of an existing router. You can use this option to replace other DECnet characteristics, such as the DECrouter type, the service circuit-ID, and the DECnet node name, for either a new or for an existing router. You can also replace the Ethernet address if the unit is to be down-line loaded over the Ethernet circuit.
- Delete an entry for an existing router.

  Deleting an entry prevents the load host from recognizing the router. Thus, it is no longer a load host for that router.
- Restore existing routers to the DECnet databases.

  Restoring routers copies entries from the router configuration database to the DECnet databases.

  Here is the ROUCONFIG menu with its list of options:

```
         DECrouter Configuration Procedure

                  Menu of Options

              1 - List known DECrouter
              2 - Add a DECrouter
              3 - Swap an existing DECrouter
              4 - Delete an existing DECrouter
              5 - Restore existing DECrouters

      <CTRL/Z> - Exit from this procedure
```

3.1.3 Other ROUCONFIG.COM Functions

ROUCONFIG.COM also prepares the node as a load host by setting SERVICE on the service circuits. SERVICE must be ENABLED for down-line loading.

3.2 Specifying DECnet Characteristics During ROUCONFIG.COM

Several DECnet characteristics identify DECrouter units. DECnet uses these characteristics for down-line loading and up-line dumping. For each new unit, you must specify some of the following characteristics, while ROUCONFIG creates the others. Table 3–1 lists these DECnet characteristics.

Table 3–1: DECrouter DECnet Characteristics

DECnet Characteristic	You Specify	ROUCONFIG Creates and Names
DECnet node address	X	
DECnet node name	X	
DECrouter type	X	
Service circuit	X	
Ethernet address*	X	
Load file		X
Dump file (when router fails)		X

*If the unit is to be down-line loaded over the Ethernet circuit

The information that you specify is recorded on the Identification Card for each unit. The DEC WANserver 150 kit comes with the DEC WANserver 150 Identification Card. The DECrouter 250 kit includes a DECrouter 250 Identification Card. Throughout this guide, these cards are referred to as the Identification Card. Ask the hardware installer or the network manager for this card.

3.2.1 DECnet Node Name

Each DECrouter has a unique DECnet node name containing from 1 to 6 alphanumeric characters, the first being alphabetic. For example, RTR250, ROU77, and ROBIN are valid DECnet node names.

During the hardware installation, the person responsible for managing the network records the DECnet node name on the Identification Card for each unit.

3.2.2 DECnet Node Address

Each DECrouter has a unique DECnet node address, which is a decimal number from 1 to 1023. Your DECnet network can be divided into areas. If so, the area designation becomes part of each node address. With defined areas, each DECnet node address takes the form *aa.nnnn*. Here, *aa* is a decimal area number from 1 to 63 and *nnnn* is the node address. (The period separates the area designation from the address.) For example, 17.1003 is a valid node address. If you omit the area, the area of the current load host is the default.

The network manager assigns DECnet node addresses. During the hardware installation, the person responsible for installing the DECrouter asks the network manager for the new DECrouter DECnet node address and records this DECnet node address on the Identification Card for each unit.

3.2.3 Service Circuit-ID

For each DECrouter it is necessary to define a service circuit-ID. The service circuit-ID identifies a controller type on the circuit over which the router is to be down-line loaded.

To add or swap more than one unit, specify the service circuit-ID for each unit. The controller type service circuit-ID for the processor type of your VMS load host is the default response. If you specify a different service circuit-ID, ROUCONFIG attempts to match this ID to any of the Ethernet controller types. When a match occurs, ROUCONFIG prompts you for the Ethernet address of the unit. This response becomes the default until you specify another service circuit-ID or exit the procedure.

To learn the service circuit-ID for down-line loading your router, issue the following NCP command:

```
$ MCR NCP SHOW KNOWN CIRCUIT CHARACTERISTICS RET
```

If your CPU supports more than one controller, the service circuit-ID number can be something other than zero.

For a complete list of all the processor types that support the DECrouter 150/250 V1.1, see the *DECrouter 250 Software Product Description*.

3.2.4 Ethernet Hardware Address

Each DECrouter is delivered with a unique Ethernet hardware address. This address is six pairs of hexadecimal characters, with a hyphen (-) separating each pair. For example, 08-00-01-00-AB-CD.

The Ethernet address is on the control/indicator panel of the DECrouter. During installation, the person responsible for installing the hardware records the Ethernet address on the Identification Card for each unit.

3.2.5 DECrouter Type

Your router is a DECrouter 250 (DR250) or DECrouter 150 (DR150). When you specify type, ROUCONFIG.COM uses the information to create a unique image file for your unit.

3.2.6 Load File (DECrouter Software-Image File)

Your DECrouter has a unique image file, named RT2*node-name*.SYS or RT1*node-name*.SYS. Here, *node-name* is the DECnet node name of your router. For example, a DECrouter 250 with the DECnet node name ROBIN has the image file name RT2ROBIN.SYS. Table 3–2 lists the image file names associated with each type of DECrouter.

Table 3–2: DECrouter Image File Names

If you are installing:	Image file name	DECrouter type
DECrouter 150	RT1*node-name*.SYS	DR150
DECrouter 250	RT2*node-name*.SYS	DR250

If you use the Add option to define a new DECrouter , ROUCONFIG creates the software-image file by copying the appropriate distribution software image. For RT2011.SYS, for example, RT2 specifies that the image is for a DECrouter 250 and 011 is the version of the software release. This distribution software image is copied to a new file named RT2*node-name*.SYS. This is the software image that the person responsible for managing the DECrouter can customize before down-line loading. The Swap option also creates RT2*node-name*.SYS if you change a DECrouter type. If you keep the DECrouter type but change a DECnet node name, the Swap option renames the old load file.

NOTE

When you use the Delete option to delete a DECrouter entry, the software-image file of that unit—which the DECrouter manager customized with DRCP—is also deleted. If you delete an entry, inform the router manager.

3.2.7 DECrouter Dump File

Each DECrouter has a unique dump file named RT2*node-name*.DMP or RT1*node-name*.DMP. Here, *node-name* is the DECnet node name of the unit. For example, a DECrouter 250 with the DECnet node name DOVE has the dump file name RT2DOVE.DMP. When you use the Add option to define a new unit, ROUCONFIG names the dump file.

If a router dumps its memory, which it does when unexpected fatal errors occur, the data is up-line dumped into the dump file on the load host. This dump file can then be used for diagnostics. If a fatal bugcheck generates an up-line dump, copy the dump file to a supported medium and send it to Digital Equipment Corporation.

3.3 Preparing to Run ROUCONFIG.COM

Follow these steps before beginning the configuration procedure:

1. Check that there is enough diskspace on each load host for each new DECrouter you define. Table 3–3 lists the diskspace amounts needed by both types of DECrouters. This space is in addition to the space required for copying the distribution files, as discussed in Section 2.3.

Table 3–3: Load Host Diskspace Required

DECrouter Type	Total Blocks	Software Image	Dump File
DECrouter 150	4796	700	4096
DECrouter 250	8892	700	8192

2. Check that DECnet Phase IV is running. For information about DECnet Phase IV, see the *Guide to DECnet-VAX Networking* manual.

3. Check that this distribution software is installed in the SYS$COMMON:[DECSERVER] directory:
   - RT1011.SYS and RT2011.SYS
   - ROUCONFIG.COM
   - ROUCONFIG.DAT
   - DRCP150.EXE and DRCP250.EXE
   - NODE_COMMAND_BLD.EXE
   - MON250.EXE

   See Appendix A for a list and description of the distribution files.

4. Ask the person responsible for installing the hardware for the Identification Card for each new unit. The following information should be recorded on this card:
   - DECnet node name
   - DECnet node address
   - Ethernet address
   - Service circuit-ID

   You need this information to answer prompts during the ROUCONFIG.COM procedure.

   You can check the uniqueness of a name or address with the following NCP SHOW NODE command:

   ```
   $ NCP == "$NCP"
   ```

   `$ NCP SHOW NODE` *`node-name`* `CHARACTERISTICS` RET

   or

   `$ NCP` RET

   `NCP> SHOW NODE` *`node-number`* `CHARACTERISTICS` RET

5. Check that the directory SYS$SPECIFIC:[DECSERVER] exists for VAXcluster nodes. If not, create this directory now (if the DECrouter software distribution kit was installed on another VAXcluster member).

3.4 ROUCONFIG.COM Conventions and Requirements

ROUCONFIG is an interactive, menu-driven procedure. Within some of the menu options, you get a series of questions. After each question, the default response, if there is one, is shown in brackets ([ ]). At the end of each question, either a colon (:) or a question mark (?) appears. The following list tells you how to use ROUCONFIG:

- To select an option, type a menu number and press RET.
- To answer a question, type your response immediately after the colon or question mark, followed by RET.
- To respond to a question with the default answer, press RET.
- To get help with any question, type a question mark (?) as your response. After the help display, the question reappears.
- To exit an option without making any changes, type CTRL/Z. You are returned to the ROUCONFIG menu.
- To exit ROUCONFIG at the menu level, type CTRL/Z. You are returned to the DCL prompt.

ROUCONFIG has the following additional conventions and requirements:

- When you finish an option, ROUCONFIG returns you to the ROUCONFIG menu.
- At the end of the Add, Delete, Swap, and Restore options, you can get NCP messages (warning or error messages). For the meanings of these messages, see the *VAX/VMS System Messages and Recovery Procedures Reference Manual*.
- To run ROUCONFIG on a single system, the distribution software must already be installed onto that system. For a VAXcluster node, the distribution software can be installed onto any node of the cluster, not necessarily the node where you run the procedure.

3.5 Running ROUCONFIG.COM

To run ROUCONFIG.COM, you need OPER and SYSPRV privileges. To start ROUCONFIG:

1. Log in to the SYSTEM account (or any other suitably privileged account).
2. Enter the following commands:

   ```
   $ SET DEFAULT SYS$SYSROOT:[DECSERVER] RET
   $ @ROUCONFIG RET
   ```

   ROUCONFIG starts with these actions:

   a. It determines whether DECnet is running and whether NCP is installed. If DECnet is down or NCP is missing, a warning message appears. If you receive a warning, exit ROUCONFIG immediately and correct the problem. You must have DECnet and NCP to continue this procedure.

   b. It informs you that each DECrouter must have a unique DECnet node name and DECnet node address.

   c. It asks you to begin or to exit:

      ```
      Press <RET> to start, or <CTRL/Z> to exit ...
      ```

3. Press RET if you have the following information for each DECrouter:

   – DECnet node name for Add, Swap, and Delete options

   – DECnet node address for Add option

   – Service circuit-ID for Add and Swap options

   – Ethernet address for Add and Swap options (if the unit is to be down-line loaded over the Ethernet circuit)

ROUCONFIG displays:

```
              DECrouter Configuration Procedure

                       Menu of Options

                   1 - List known DECrouters
                   2 - Add a DECrouter
                   3 - Swap an existing DECrouter
                   4 - Delete an existing DECrouter
                   5 - Restore existing DECrouters

            <CTRL/Z> - Exit from this procedure

                 Your selection?
```

4. Type the number that corresponds to the option and press RET.

3.5.1 List Known DECrouters (Option 1)

Type 1 (List known DECrouters) and press RET to list the routers in the node database. The contents of the ROUCONFIG.DAT file appear in a seven column listing that looks like the following:

DECNET ADDRESS	DECNET NAME	ROUTER TYPE	SERVICE CIRCUIT	ETHERNET ADDRESS	LOAD FILE	DUMP FILE
28.1019	ROBIN	DR200	UNA-0	08-00-CC-DD-EE-FF	RTRROBIN.SYS	RTRROBIN.DMP
55.1011	DOVE	DR150	UNA-0	08-00-BB-CC-DD-EE	RT1DOVE.SYS	RT1DOVE.DMP
55.1022	JAY	DR250	QNA-1	08-00-23-45-E1-F1	RT2JAY.SYS	RT2JAY.DMP

```
Total of 3 DECrouters defined.

(Press <RET> for menu)
```

This information comprises the router configuration database for DECrouter units. The load host uses this information for performing down-line loads to DECrouters and for receiving up-line dumps from them.

3.5.2 Add a DECrouter (Option 2)

Select option 2 to add an entry for a new DECrouter unit in the node database. To create an entry, you must supply the following information:

- The DECrouter type
- A unique DECnet node name for the unit

- A unique DECnet node address for the unit
- The service circuit-ID
- The Ethernet address of the unit (if the unit is to be down-line loaded over the Ethernet circuit)

To add a unit, follow these steps:

1. Type 2 (Add a DECrouter) and press RET.

   ```
   Enter ? if you require help, enter CTRL/Z to return to menu
   without adding a unit to the database.
   ```

   ```
   DECrouter type (DR150, DR200, DR250, DR2000, X25ROU):
   ```

2. Enter the DECrouter type and press RET.

   ```
   DECnet node name for unit?
   ```

3. Specify the DECnet node name for the new unit and press RET.

   ```
   DECnet node address for unit?
   ```

4. Specify the DECnet node address for the new unit and press RET.

   ```
   DECnet Service Circuit-ID [default-id]?
   ```

5. Press RET if the displayed service circuit-ID is going to be used to down-line load the new unit. If not, specify the service circuit-ID of the controller type over which the new unit is to be down-line loaded. If this is an Ethernet controller type, ROUCONFIG prompts:

   ```
   Ethernet address of unit?
   ```

6. Specify the Ethernet address of the new unit and press RET.
7. If you specify a non-Ethernet controller type, ROUCONFIG prompts:

   ```
   Are you going to down-line load this unit over a serial line
   [Y/N]?
   ```

8. Respond appropriately and press RET.

ROUCONFIG adds the entry for the new DECrouter to the three databases and sets SERVICE ENABLED on the circuit supporting the controller that corresponds to the specified service circuit-ID. Both these activities are necessary for the load host to down-line load the software image to the DECrouter.

If you get an error or warning message from NCP and/or ROUCONFIG while adding a router, the entry is not added to any database. To correct this problem, fix the condition causing the error and then select option 2 of the configuration procedure to add the router again.

3.5.3 Swap an Existing DECrouter (Option 3)

Select option 3 to swap an existing unit with a new one. Swapping is useful if you need to replace a unit that malfunctions. When you replace units, the Swap option retains the DECnet node address of the original unit.

Swapping is helpful for renaming units and changing other DECnet characteristics. Option 3 lets you modify the DECnet characteristics listed in Table 3–4 for both new and existing units:

Table 3–4: DECnet Characteristics Modified with the Swap Option

DECnet Characteristic	Default
DECnet node name	The name of the unit you are replacing.
DECrouter type	The type of unit you are replacing.
DECnet service circuit	The service circuit for the unit you are replacing.
Ethernet address*	There is no default. You must specify the Ethernet address.

*If the unit is to be down-line loaded over the Ethernet circuit

To swap an existing unit, or to modify any DECnet characteristics, follow these steps:

1. Type 3 (Swap an existing DECrouter) and press RET.

```
Enter ? if you require help, enter CTRL/Z to return to menu
without changing the unit's entry in the database.

If you use this option, and you have more than one load host for
the DECrouter, you must modify the database for each load host.
To do this, execute ROUCONFIG on each load host, and select the
SWAP option.

What is the DECnet node name of the DECrouter you want to swap?
```

2. Specify the DECnet node name of the existing router to replace or modify. For example, if you type the router name JAY, ROUCONFIG responds as follows:

```
DECrouter JAY is being modified.

Enter the new DECnet characteristics you want to modify.

DECrouter type [DR250]?
```

3. Press RET if you are swapping for the same type of router. If not, specify the type of the new unit and press RET. ROUCONFIG prompts for the new DECnet node name.

```
DECnet node name for unit [JAY]?
```

4. Press RET for the replacement unit to have the same DECnet node name as the original one. If you are changing node names, specify the name of the new unit and press RET.

```
DECnet Service Circuit-ID [QNA-1]?
```

5. Press RET if the replacement unit has to be down-line loaded over the same controller as the old unit. If the controller types are different, specify the service circuit-id for the new one and press RET. If you assign a service circuit-ID for the Ethernet controller type, ROUCONFIG asks:

```
Ethernet address of unit?
```

6. Specify the Ethernet address for the new unit you are adding or for the existing unit you are modifying and press RET.

7. If you specify a non-Ethernet controller type, ROUCONFIG prompts:

```
Are you going to down-line load this unit over a serial line
[Y/N]?
```

8. Respond appropriately and press RET.

ROUCONFIG swaps the DECnet characteristics you specify with the old ones for the unit with the same DECnet node address (this address cannot be swapped). ROUCONFIG sets SERVICE ENABLED on the circuit supporting the Ethernet controller.

NOTE

If you keep the DECrouter type but change the node name, a new load file is not created and the old load file is renamed.

3.5.4 Delete an Existing DECrouter (Option 4)

Select option 4 to remove an entry from the database. Deleting a DECrouter unit is useful if you are reconfiguring the network or changing load hosts for a unit. After you delete a router from a load-host node database, the system is no longer a load host for that unit.

To delete units from the database, follow these steps:

1. Type 4 (Delete an existing DECrouter) and press RET.

   ```
   What is the DECnet node name of the unit you want to delete?
   (<CTRL/Z> to return to menu)
   ```

2. Specify the DECnet node name of the unit to remove and press RET.

ROUCONFIG checks that the name you specified is an entry in the load-host node database. If the entry does not exist, ROUCONFIG informs you, terminates the Delete option, and returns to the menu.

3.5.5 Restore Existing DECrouters (Option 5)

Select option 5 to restore the load-host DECnet database to include the DECrouter systems in its node database. The Restore option affects both the operational and permanent DECnet databases.

If your DECnet network contains a large number of nodes, you can store your DECnet database on a central, remote node and copy this database upon each system startup. Since the DECrouter down-line load characteristics are not contained in the central database, you must restore them whenever you copy your local DECnet database from the central DECnet database. Each time you copy the central DECnet database, use option 5 to restore existing DECrouter configurations.

Type 5 (Restore existing DECrouters) and press RET. The following messages confirm the restoration:

```
Restoring existing DECrouters to host DECnet database...
Host DECnet database successfully restored.
```

If you get an error or warning message from NCP and/or ROUCONFIG while you are restoring the load-host DECnet databases, not all entries from the router configuration database are restored. To correct this problem, fix the condition causing the error and then select option 5 (Restore existing DECrouters) of the configuration procedure to restore all the existing routers.

3.6 Using the RESTORE Parameter

To restore your local DECnet database, run ROUCONFIG with the RESTORE parameter:

```
$ @ROUCONFIG RESTORE RET
```

RESTORE bypasses the menu and lets you include this restoration in your system start-up procedures. To restore units to the DECnet database at system startup, edit your system start-up file. Include the following statement in the appropriate place:

```
@SYS$SYSROOT:[DECSERVER]ROUCONFIG RESTORE
```

The order of events is important. Edit your start-up procedure so that it follows this sequence:

1. Start DECnet.
2. Define all DECnet node names.
3. Restore DECrouter units with:

```
@SYS$SYSROOT:[DECSERVER]ROUCONFIG RESTORE
```

NOTE

With the RESTORE parameter, ROUCONFIG does not display a completion message after a restoration.

For VAXcluster members that are alternative load hosts, you must keep each node database up to date. This is necessary for each member to continue to perform down-line loads and receive up-line dumps. Every time you make database changes at a cluster member, follow this procedure:

1. Make database changes at *one* VAXcluster member with ROUCONFIG.
2. Issue @SYS$SYSROOT:[DECSERVER]ROUCONFIG RESTORE for each cluster member that is an alternative load host and has the same service circuit. For each cluster member that is an alternative load host and has a different service circuit, make the same database changes with ROUCONFIG and specify the different service circuits.

3.7 Exiting ROUCONFIG.COM

When you exit ROUCONFIG:

1. Give the *DECrouter Identification Card* for the defined units to the person responsible for managing the DECrouter.
2. Ask the person responsible for managing the DECrouter to store the card in the documentation binder.
3. Proceed to Chapter 4 to verify the load host and router system installation.

4

Verifying the Installations

This chapter explains the procedures for verifying the load-host installation and the DECrouter system installation.

4.1 Verifying the Software Installation

After you install the router software, VMSINSTAL (if requested) verifies that the files were installed. VMSINSTAL places a copy of the Installation Verification Procedure (IVP) command file in the SYS$TEST directory. To run IVP in this directory, follow these steps:

1. Set the default directory to SYS$TEST.
2. Enter the following command:

```
$ @RT2$IVP RET
```

IVP checks that the distribution files from the installation kit are now located in SYS$COMMON:[DECSERVER]. Appendix A lists and describes these distribution files.

If any file is missing, IVP alerts you with appropriate error messages. If you receive such error messages, run VMSINSTAL again to reinstall the distribution files.

4.2 Verifying the Load-Host Installation

Use the Network Control Program (NCP) LOAD NODE command to verify the installation. This is the only method that tests the installation of software from a specific load host. (A discussion of all the ways to down-line load appears in the *DECrouter 150/250 Management* guide). With the NCP LOAD NODE command, you can:

- Specify a load host. This ensures that your VMS system is the load host that performs the down-line load.
- Read the DECnet event-logging messages. They confirm that the specified load host performed the down-line load.

To verify the load-host installation, ensure that the load host can down-line load to the router. Follow these steps:

1. Check that the person responsible for installing the hardware has completed the installation.
2. Make sure that you have completed the software installation steps described in Chapters 2 and 3 of this guide.
3. Check that DECnet Phase IV is running. DECnet must be turned on and the service circuit enabled before you can down-line load.
4. Verify that the software image is in the load-host node database for DECrouter units. Also, check the DECnet node name or DECnet node address of the test unit.

   Run ROUCONFIG (discussed in Chapter 3) and select the List option from the menu. This option displays the DECnet node name and DECnet node address of all the units you defined in the node database.

5. Identify the DECnet service password of the unit, if it exists.

   – New unit

     If you are loading a new unit with the default software image, there is no service password.

   – Existing unit

     If you are loading an existing unit, ask the person responsible for managing the DECrouter for the service password.

6. Enable DECnet event logging. Event-logging messages are generated by NCP. Enter the following commands to enable DECnet event logging:

   ```
   $ NCP == "$NCP" RET
   $ NCP RET
   NCP> SET LOGGING MONITOR EVENT 0.3 RET
   NCP> SET LOGGING MONITOR EVENT 0.7 RET
   NCP> SET LOGGING MONITOR STATE ON RET
   ```

   Event code 0.3 refers to automatic service events, including down-line loads. Event code 0.7 refers to aborted service events. Event logging is detailed in the *VMS Network Control Program Manual*.

7. Issue the NCP LOAD NODE command. If the person responsible for managing the DECrouter set a DECnet service password, include the keywords SERVICE PASSWORD and specify the password on the command line. For example, to load a unit named ROBIN with a service password of FF44 enter the following command:

   ```
   NCP> LOAD NODE ROBIN SERVICE PASSWORD FF44 RET
   ```

8. Read the DECnet event-logging messages to confirm that the load was successful. These messages identify your VMS system as the node that generated the event.

If no errors are reported, the load was successful, and you finished the verification of the load host. See Appendix B for an example of DECnet event logging after a successful down-line load.

If errors are displayed in the event-logging messages, follow these steps:

1. Ask the person responsible for installing the hardware to check that the hardware is working satisfactorily. If it is, the problem is probably with the load host.
2. Check your node database, especially the Ethernet address you entered when you defined the test unit.
3. Check that the DECrouter software image is in the appropriate directory.
4. Check that DECnet Phase IV is running.
5. Try the NCP LOAD NODE command again.

4.3 Verifying the DECrouter System Installation

Issuing NCP status commands allows you to verify that the DECrouter system (hardware and software) is up and running. To verify that the router is running, go to any DECnet management node and follow these steps:

1. Invoke NCP.
2. Issue the SET EXECUTOR NODE *node-name* command to specify the test unit as the default executor.
3. Check that the DECrouter software is loaded and running properly:
   a. Issue the SHOW EXECUTOR SUMMARY command to check that the test unit is running the DECrouter software. Appendix B shows an example of a SHOW EXECUTOR SUMMARY display.
   b. Issue the SHOW EXECUTOR CHARACTERISTICS command to check the management version, the network services protocol (NSP) version, Routing version, and Type. Appendix B shows an example of a SHOW EXECUTOR CHARACTERISTICS display.

   If these two commands fail with a “node unreachable” message, refer to the troubleshooting section of *DECrouter 150/250 Management*
4. Execute the NCP CLEAR EXECUTOR NODE command to return your system to the default executor.
5. Exit NCP.

4.4 The Next Steps

After completing the software installation, take the following steps:

1. Customize the software-image file for each DECrouter, as appropriate. (See Chapter 5 of this guide and *DECrouter 150/250 Management*.)
2. Load the software onto all the DECrouter units on your system to make them fully functional.

5

DECrouter Configuration Program

This chapter explains how to start the DECrouter Configuration Program (DRCP) on a VMS system.

5.1 Running DRCP

Normally, the person responsible for managing the DECrouter uses DRCP. However, since running DRCP requires system privileges on the VMS load host, Digital Equipment Corporation suggests that the person responsible for managing the router and the person responsible for managing the VMS system coordinate their efforts.

As a result of running VMSINSTAL, the executable DRCP programs (DRCP250.EXE and DRCP150.EXE) are now in SYS$COMMON:[DECSERVER]. To start DRCP, follow these steps:

1. Log in to the system account (you must be a privileged user and have write-access to the software image).
2. Set the default directory with the following command:

```
$ SET DEFAULT SYS$COMMON:[DECSERVER] RET
```

3. Execute DRCP. Table 5–1 shows how to start DRCP for both types of DECrouters.

Table 5–1: Starting DRCP

To run DRCP on a:	Use this command:	The system displays:
DECrouter 150	`$ RUN DRCP150.EXE` RET	`DECrouter 150 Configuration Program V1.1`
DECrouter 250	`$ RUN DRCP250.EXE` RET	`DECrouter 250 Configuration Program V1.1`

4. Issue DRCP commands to customize the image file, as appropriate.

   The *DECrouter 150/250 Management* guide gives complete information about using the DRCP commands.

   Instead of customizing the software image with individual commands, create a command file with the needed DRCP commands, and then run the file. This approach makes customizing easier and protects your efforts in case the software image file is mistakenly deleted and you need to reissue the same DRCP commands.

5.2 Post, Telephone, and Telegraph (PTT) Environment

The Post, Telephone, and Telegraph (PTT) Authority is a regulatory body that exists in most countries outside of North America. The PTT regulates how telephone lines are used and sets performance standards for equipment attached to the telephone network. The DECrouter 150 and the DECrouter 250 operate in both PTT and non-PTT environments. There are legal constraints on the operation of the DECrouter in PTT environments. To accommodate this, the DECrouter modifies autodialing (network addressing) to conform to national legal requirements. Therefore, if you are in a country outside of North America, select the PTT environment.

The following example illustrates the use of DRCP to open and initialize a software-image file named RT2RAVEN.SYS:

```
DRCP> OPEN RT2RAVEN.SYS RET
%DRCP-I-OPEN, software image RT2RAVEN.SYS opened successfully

Choose operating environment - Most countries outside of North
America operate in a PTT environment.  (PTT,NONPTT):
```

Answer the operating environment question carefully. You will **not** be able to change the selected environment.

WARNING

Failure to answer this question correctly results in degraded performance and/or illegal connections to public networks.

After you choose the proper operating environment, DRCP displays one of the following messages:

```
%DRCP-I-OPEN, software image RT2RAVEN.SYS opened successfully
            for NONPTT environment

DRCP>
```

or

```
%DRCP-I-OPEN, software image RT2RAVEN.SYS opened successfully
           for PTT environment

DRCP>
```

The *DECrouter 150/250 Management* guide has a complete description of the OPEN command.

5.3 DRCP Problems with Opening Files

If DRCP cannot open a software-image file, error messages are displayed. The *DECrouter 150/250 Management* manual has an appendix of DRCP error messages.

Look for the following problems:

- The image file is not in the correct directory, SYS$COMMON:[DECSERVER].

- DRCP is not running from SYS$COMMON:[DECSERVER].
- The image file is not write accessible.
- The image file is currently being accessed by another user.
- Another image file is open.
- The image file you specified does not exist on this load host. This can indicate a typing error or that the VMS system is not a load host for the DECrouter unit.

  To check supported units and software-image file names, exit DRCP and run ROUCONFIG. Select option 1, List known DECrouters, from the ROUCONFIG menu to display a listing of supported units and software-image file names.

A

DECrouter VMS Distribution Files

The DECrouter distribution files for VMS kits are as follows:

File Name	Description
KITINSTAL.COM*	Command file that VMSINSTAL uses to do part of the installation procedure (not installed)
RT2011.SYS	DECrouter 250 software image (default)
RT1011.SYS	DECrouter 150 software image (default)
ROUCONFIG.COM	Configuration procedure for DECrouter entries in the node databases of the load host
ROUCONFIG.DAT	Data file used by ROUCONFIG.COM
DRCP250.EXE	Configuration utility that customizes DECrouter 250 software-image files
DRCP150.EXE	Configuration utility that customizes DECrouter 150 software-image files
NODE_COMMAND_BLD.EXE	DCL utility, called the Node List Builder, that builds a command file of DECnet nodes for DRCP
MON250.EXE	DCL utility, called the Remote Monitor, that displays real-time information about the operation and status of the DECrouter 250
RT2011.RELEASE_NOTES	*DECrouter 150/250 Release Notes* for V1.1
RT2$IVP.COM	DECrouter 250 Installation Verification Procedure (IVP)

B

Examples: Installation, Configuration, and Verification

This appendix shows sample installation and configuration procedures. It also illustrates the verification of a software installation, a load-host installation, and a DECrouter system installation.

B.1 Installing the Software Kit

The following example shows the installation of a DECrouter 150/250 software kit onto a VMS system. This example assumes the following:

- You are logged in to the privileged system account.
- The distribution medium requires only one volume; for example, a magnetic tape. For media that require more than one volume, prompts during the procedure instruct you on how to mount the additional volumes.
- The disk drive is named MTA2.
- The default print queue is SYS$PRINT.

The example shows the procedure that Digital Equipment Corporation recommends:

1. Use the command line with the parameter OPTIONS N. This parameter provides the options to display, print, or copy the release notes.
2. Print the release notes.

3. Stop the procedure to read them.

4. Rerun the procedure.

```
$ SET DEFAULT SYS$UPDATE RET

$ @VMSINSTAL RT2 MTA2 OPTIONS N RET

          VAX/VMS Software Product Installation Procedure V5.0

It is 25-JAN-1991 at 14:08.
Enter a question mark (?) at any time for help.

%VMSINSTAL-W-DECNET, Your DECnet network is up and running.
* Do you want to continue anyway [NO]? Y RET
*Are you satisfied with the backup of your system disk [YES]? RET
Please mount the first volume of the set on MTA2:.
* Are you ready? Y RET
%MOUNT-I-MOUNTED, RT2 mounted on_MTA2:

The following products will be processed:

          RT2 V1.1

          Beginning installation of RT2 V1.1 at 14:08

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

Additional Release Notes Options:

          1. Display release notes
          2. Print release notes
          3. Both 1 and 2
          4. Copy release notes to SYS$HELP
          5. Do not display, print or copy release notes

* Select option [3]: 2 RET
* Queue name [SYS$PRINT]: RET
Job RT2011.RELEASE NOTES (queue SYS$PRINT, entry 314) started on
SYS$PRINT
* Do you want to continue the installation [N]? RET

          VMSINSTAL procedure done at 14:09

$
```

Read the release notes. Run VMSINSTAL again:

```
$ @VMSINSTAL RT2 MTA2 RET

   VAX/VMS Software Product Installation Procedure V5.0

It is 25-JAN-1991 at 14:25.
Enter a question mark (?) at any time for help.
```

```
%VMSINSTAL-W-DECNET, Your DECnet network is up and running.
* Do you want to continue anyway [NO]? Y [RET]
*Are you satisfied with the backup of your system disk [YES]? [RET]
Please mount the first volume of the set on MTA2:.
* Are you ready? Y [RET]
%MOUNT-I-MOUNTED, RT2 mounted on _MTA2:

The following products will be processed:

   RT2 V1.1

      Beginning installation of RT2 V1.1 at 14:25

%VMSINSTAL-I-RESTORE, Restoring product saveset A...
%VMSINSTAL-I-RELMOVED, the product's release notes have been
successfully moved to SYS$HELP.

* Do you want to run the IVP after the Installation [YES]? [RET]

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

Your installation is now complete. After exiting from VMSINSTAL:

1. Define the new DECrouter in your VMS system's node database.
Execute a command procedure called ROUCONFIG.COM,which the
installation procedure just copied to the SYS$COMMON:[DECSERVER]
directory

2. Verify the installation, as described in the DECrouter 150/250
   Software Installation Guide (VMS).

3. Inform the DECrouter manager that the installation is complete
   and that it is now time (1) to customize each software image
   with DRCP and then (2) down-line load the new customized image
   files to the DECrouters.

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

Beginning installation verification procedure for
DECrouter 150/250 V1.1

Successfully located directory SYS$SYSCOMMON:[DECSERVER]

Successfully located RT2011.SYS

Successfully located RT1011.SYS

Successfully located ROUCONFIG.COM

Successfully located ROUCONFIG.DAT

Successfully located DRCP250.EXE

Successfully located DRCP150.EXE

Successfully located NODE_COMMAND_BLD.EXE
```

```
Successfully located MON250.EXE

Installation verification procedure for DECrouter 150/250 V1.1
successful

    Installation of RT2 V1.1 completed at 14:38

    VMSINSTAL procedure done at 14:38

$
```

B.2 Configuring with ROUCONFIG.COM

The following examples illustrate the ROUCONFIG.COM options for listing and modifying DECrouter entries in the node database. With the exception of List known DECrouters, each option ends by returning to the menu.

The example assumes (1) that you are logged in to the privileged system account and (2) that you have previously installed DECrouter 200 entries. As a result, you have the data file called RTRCONFIG.DAT with entries for DECrouter 200 units. ROUCONFIG.COM converts the existing RTRCONFIG.DAT file into ROUCONFIG.DAT.

```
$ SET DEFAULT SYS$SYSROOT:[DECSERVER] RET
$ @ROUCONFIG RET

      Your DECrouter database information from RTRCONFIG.DAT is
      being converted and placed into ROUCONFIG.DAT, please
      wait...

      RTRCONFIG.DAT is renamed to RTRCONFIG_OLD.DAT.

   ...The DECrouter database conversion is now complete.
```

```
You must assign a unique DECnet node name and DECnet node address
for each new DECrouter.

Press <RET> to start, or <CTRL/Z> to exit... RET

                     DECrouter Configuration Procedure

                              Menu of Options

                          1 - List known DECrouters
                          2 - Add a DECrouter
                          3 - Swap an existing DECrouter
                          4 - Delete an existing DECrouter
                          5 - Restore existing DECrouters

                    <CTRL/Z> - Exit from this procedure

              Your selection?
```

The following subsections show the configuration procedure for each option.

B.2.1 Listing DECrouter Entries (Option 1)

This example shows what is displayed when you select option 1, List known DECrouters.

```
           Your selection? 1 RET
```

DECNET ADDRESS	DECNET NAME	ROUTER TYPE	SERVICE CIRCUIT	ETHERNET ADDRESS	LOAD FILE	DUMP FILE
55.2	DUCKY	DR200	UNA-1	08-11-23-45-E1-F1	RTRDUCKY.SYS	RTRDUCKY.DMP
55.1011	DOVE	DR200	UNA-0	08-00-BB-CC-DD-EE	RTRDOVE.SYS	RTRDOVE.DMP
55.1019	ROBIN	DR200	UNA-0	08-00-CC-DD-EE-FF	RTRROBIN.SYS	RTRROBIN.DMP
55.1022	JAY	DR200	QNA-1	08-00-23-45-E1-F1	RTRJAY.SYS	RTRJAY.DMP

```
Total of 4 DECrouters defined.

(Press <RET> for menu)
```

B.2.2 Adding a DECrouter Unit (Option 2)

This example adds a new DECrouter 250 named FINCH to the node database of the load host.

```
         Your selection? 2 RET

Enter ? if you require help, enter CTRL/Z to return to menu without
adding a unit to the database.

DECrouter type (DR150, DR200, DR250, DR2000, X25ROU)? DR250 RET
DECnet node name for unit? FINCH RET
DECnet node address for unit? 55.1023 RET
DECnet Service Circuit-ID [UNA-0]? RET
Ethernet address of unit? 08-00-2B-66-44-F4 RET
```

Select option 1, List known DECrouters, to display all the units. FINCH has been added to the list.

DECNET ADDRESS	DECNET NAME	ROUTER TYPE	SERVICE CIRCUIT	ETHERNET ADDRESS	LOAD FILE	DUMP FILE
55.2	DUCKY	DR2000	UNA-1	08-11-23-45-E1-F1	ROU010.SYS	ROUDUCKY.DMP
55.1011	DOVE	DR200	UNA-0	08-00-BB-CC-DD-EE	RTRDOVE.SYS	RTRDOVE.DMP
55.1019	ROBIN	DR200	UNA-0	08-00-CC-DD-EE-FF	RTRROBIN.SYS	RTRROBIN.DMP
55.1022	JAY	DR200	QNA-1	08-00-23-45-E1-F1	RTRJAY.SYS	RTRJAY.DMP
55.1023	FINCH	DR250	UNA-0	08-00-2B-66-44-F4	RT2FINCH.SYS	RT2FINCH.DMP

```
Total of 5 DECrouters defined.

(Press <RET> for menu)
```

B.2.3 Swapping a DECrouter Unit for a New Unit (Option 3)

In this example, the DECrouter 250 named FINCH needs repair. It is swapped with a new DECrouter 150, which is given the same DECnet node name and same service circuit as the old unit.

```
          Your selection? 3 RET

Enter ? if you require help, enter CTRL/Z to return to menu without
changing the unit's entry in the database.

If you use this option, and you have more than one load host for
the DECrouter, you must modify the database for each load host. To
do this, execute ROUCONFIG on each load host, and select the SWAP
option.

What is the DECnet node name of the DECrouter you want to swap?
FINCH RET
DECrouter FINCH is being swapped.

Enter the new DECnet characteristics you want to modify.

DECrouter type [DR250]? DR150 RET
DECnet node name for unit [FINCH]? RET
DECnet Service Circuit-ID [UNA-0]? RET
Ethernet address of unit? 08-00-2B-33-AA-44 RET
```

Select option 1, List known DECrouters, to display all the router entries. FINCH still has the same DECnet node address, service circuit-ID, load file name, and dump file name. However, the unit has the new Ethernet address you specified:

DECNET ADDRESS	DECNET NAME	ROUTER TYPE	SERVICE CIRCUIT	ETHERNET ADDRESS	LOAD FILE	DUMP FILE
55.2	DUCKY	DR2000	UNA-1	08-11-23-45-E1-F1	ROU010.SYS	ROUDUCKY.DMP
55.1011	DOVE	DR200	UNA-0	08-00-BB-CC-DD-EE	RTRDOVE.SYS	RTRDOVE.DMP
55.1019	ROBIN	DR200	UNA-0	08-00-CC-DD-EE-FF	RTRROBIN.SYS	RTRROBIN.DMP
55.1022	JAY	DR200	QNA-1	08-00-23-45-E1-F1	RTRJAY.SYS	RTRJAY.DMP
55.1023	FINCH	DR150	UNA-0	08-00-2B-33-AA-44	RT1FINCH.SYS	RT1FINCH.DMP

```
Total of 5 DECrouters defined.

(Press <RET> for menu)
```

B.2.4 Deleting a DECrouter Unit (Option 4)

This example shows the deletion of a DECrouter 150 named FINCH from the node database of the load host.

```
          Your selection? 4 RET

Enter the DECnet node name of the DECrouter entry you want to
delete,or press <CTRL/Z> to return to menu ? FINCH RET
```

If you select the List option to display the router entries, you see that the DECrouter 150 named FINCH no longer appears:

DECNET ADDRESS	DECNET NAME	ROUTER TYPE	SERVICE CIRCUIT	ETHERNET ADDRESS	LOAD FILE	DUMP FILE
55.2	DUCKY	DR2000	UNA-1	08-11-23-45-E1-F1	ROU010.SYS	ROUDUCKY.DMP
55.1011	DOVE	DR200	UNA-0	08-00-BB-CC-DD-EE	RTRDOVE.SYS	RTRDOVE.DMP
55.1019	ROBIN	DR200	UNA-0	08-00-CC-DD-EE-FF	RTRROBIN.SYS	RTRROBIN.DMP
55.1022	JAY	DR200	QNA-1	08-00-23-45-E1-F1	RTRJAY.SYS	RTRJAY.DMP

```
Total of 4 DECrouters defined.

(Press <RET> for menu)
```

B.2.5 Restoring Existing DECrouter Units (Option 5)

This example shows the restoration of DECrouter units to the host DECnet database.

```
          Your selection? 5 RET

Restoring existing DECrouters to host DECnet database...
Host DECnet database successfully restored.
```

B.3 Verifying a Load-Host Installation

The following examples show the installation verification for a VMS load host. This procedure verifies that these distribution files are now located in the SYS$SYSROOT:[DECSERVER] directory:

- RT1011.SYS
- RT2011.SYS
- ROUCONFIG.COM
- ROUCONFIG.DAT
- DRCP150.EXE
- DRCP250.EXE
- NODE_COMMAND_BLD.EXE
- MON250.EXE

It also verifies that the VMS system can perform as a down-line load host.

In this example, the VMS system is named EAGLET. The unit that is loaded is a new DECrouter 250 with DECnet node name FINCH.

B.3.1 Running the Installation Verification Procedure (IVP)

The following example shows the output from the IVP:

```
$ SET DEFAULT SYS$COMMON:[SYSTEST] RET
$ @RT2$IVP RET

   Successfully located SYS$SYSROOT:[DECSERVER] directory

   Successfully located RT2011.SYS

   Successfully located RT1011.sys

   Successfully located ROUCONFIG.COM

   Successfully located ROUCONFIG.DAT

   Successfully located DRCP250.EXE

   Successfully located DRCP150.EXE
```

```
Successfully located NODE_COMMAND_BLD.EXE

Successfully located MON250.EXE

Installation verification procedure for DECrouter 150/250 V1.1
successful.
```

B.3.2 Enabling DECnet Event Logging

The following are example NCP commands that enable DECnet event logging. Event logging messages confirm that a specific load host performed a down-line load.

```
NCP> SET LOGGING MONITOR EVENT 0.3 RET
NCP> SET LOGGING MONITOR EVENT 0.7 RET
NCP> SET LOGGING MONITOR STATE ON RET
NCP> EXIT RET
$
```

B.3.3 Checking DECrouter Names

The following is an example of starting ROUCONFIG and listing the known network devices in the load-host node database.

```
$ @ROUCONFIG RET

You must assign a unique DECnet node name and DECnet node address
for each DECrouter.

Press <RET> to start, or <CTRL/Z> to exit... RET

                  DECrouter Configuration Procedure

                           Menu of Options

                       1 - List known DECrouters
                       2 - Add a DECrouter
                       3 - Swap an existing DECrouter
                       4 - Delete an existing DECrouter
                       5 - Restore existing DECrouters

                 <CTRL/Z> - Exit from this procedure
```

```
                Your selection? 1 RET
```

DECNET ADDRESS	DECNET NAME	ROUTER TYPE	SERVICE CIRCUIT	ETHERNET ADDRESS	LOAD FILE	DUMP FILE
55.2	DUCKY	DR2000	UNA-1	08-11-23-45-E1-F1	ROU010.SYS	ROUDUCKY.DMP
55.1019	ROBIN	DR200	UNA-0	08-00-CC-DD-EE-FF	RTRROBIN.SYS	RTRROBIN.DMP
55.1022	JAY	DR200	QNA-1	08-00-2B-33-AA-44	RTRJAY.SYS	RTRJAY.DMP
55.1023	FINCH	DR250	UNA-0	08-00-2B-66-44-F4	RT2FINCH.SYS	RT2FINCH.DMP

```
    Total of 4 DECrouters defined.

    (Press <RET> for menu) RET

                       DECrouter Configuration Procedure

                            Menu of Options

                         1 - List known DECrouters
                         2 - Add a DECrouter
                         3 - Swap an existing DECrouter
                         4 - Delete an existing DECrouter
                         5 - Restore existing DECrouters

                      <CTRL/Z> - Exit from this procedure

                  Your selection? CTRL/Z
      $
```

B.3.4 Down-Line Loading with the LOAD Command

The following NCP command example assumes that the DECrouter about to be loaded is named FINCH and that its manager has not set a service password.

```
$ NCP LOAD NODE FINCH RET
```

B.3.5 DECnet Event-Logging Display After Issuing LOAD

After the NCP LOAD NODE FINCH command, an event-logging message appears.

```
DECnet event 0.3, automatic line service
From node 55.900 (EAGLET), 18-JAN-1991 01:43:21.14
Circuit UNA-0, Load, Successful, Node = 55.1023 (FINCH)
File = SYS$COMMON:[DECSERVER]RT2FINCH.SYS,Operating system
Ethernet address = 08-00-2B-66-44-F4

DECnet event 0.3, automatic line service
From node 55.900 (EAGLET), 18-JAN-1991 01:35:20.47
Circuit UNA-0, Load, Requested, Node = 55.1023 (FINCH)
File = SYS$COMMON:[DECSERVER]RT2FINCH.SYS,Operating system
Ethernet address = 08-00-2B-66-44-F4
```

B.4 Verifying the DECrouter System Installation

The following example illustrates the verification of a DECrouter system installation. This example assumes that you are at a terminal connected to your own VMS system, named EAGLET, and that the test unit is FINCH. This procedure tests the hardware and the new software to run successfully. For a new router, the display should match the following example, which assumes that the person responsible for managing the router has not yet made changes to DECrouter parameters with DRCP.

```
NCP> SHOW EXECUTOR SUMMARY RET

Node Volatile Summary as of 11-JAN-1991 17:25:56

Executor node = 55.900 (EAGLET)

State                = on
Identification       = DECnet-VAX V5.0, VMS V5.1

NCP> SHOW NODE FINCH RET

Node Volatile Summary as of 11-JAN-1991 17:26:00

Node      State     Active    Delay     Circuit   Next Node
                    Links
55.1023 (FINCH)                         UNA-0   55.42 (RTR2)
NCP> SET EXECUTOR NODE FINCH RET
NCP> SHOW EXECUTOR SUMMARY RET

Node Volatile Summary as of 11-JAN-1991 17:26:56
Executor node = 55.1023 (FINCH)
State                = on
Identification       = DECROUTER 250 V1.1
```

```
NCP> SHOW EXECUTOR CHARACTERISTICS [RET]

Node Volatile Characteristics as of 11-JAN-1991 17:27:07
Executor node = 55.1023 (FINCH)

Identification              = DECrouter 250 V1.1
Management version          = V4.2.0
Host                        = 55.900 (EAGLET)
Loop count                  = 1
Loop length                 = 40
Loop data type              = mixed
Loop help type              = full
Incoming timer              = 60
Outgoing timer              = 45
NSP version                 = V4.1.0
Maximum links               = 11
Delay factor                = 64
Delay weight                = 3
Inactivity timer            = 30
Retransmit factor           = 5
Routing version             = V2.0.0
Type                        = routing IV
Routing timer               = 300
Broadcast routing timer     = 30
Maximum address             = 1023
Maximum cost                = 1022
Maximum hops                = 30
Maximum visits              = 45
Max broadcast nonrouters    = 1022
Max broadcast routers       = 32
Buffer size                 = 576
Path splits                 = 1

NCP> CLEAR EXECUTOR NODE

NCP> EXIT [RET]
```

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Software Installation (VMS)
AA-PAX6B-TE

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