MUXserver 300
Software Installation Guide (VMS)

Order Number AA-MJ87C-TE

Digital Equipment Corporation (Australia) Pty. Limited

Third Edition, October 1990

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This document was prepared using VAX DOCUMENT, Version 1.2

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Preface

Purpose of the Manual

This document describes:

- Installing MUXserver 300 Remote Terminal Server distribution software onto a VAX/VMS system running DECnet Phase IV so that this system can then perform as a load host.
- Configuring the load host's node database.
- Verifying the installation by first down–loading the server image to the MUXserver 300 Remote Terminal Server and then testing a number of server commands.

This guide is applicable to Version 1.2 of the MUXserver 300 and all subsequent maintenance releases up to the next major product release.

This Guide is intended for system or network managers who are responsible for making server products available on their Ethernet(s). A system manager is responsible for the VAX/VMS system that is about to be established as a load host. A network manager is responsible for the Local Area Network (LAN).

Readers should be familiar with both DECnet Phase IV Network Management Concepts and the VAX/VMS Operating System.

The Guide is organized as follows:

Chapter 1	Introduces the MUXserver/DECmux 300 Network and summarizes the installation, configuration, and verification procedures.
Chapter 2	Describes preparation for installation and the actual installation of distribution software.
Chapter 3	Describes configuration of the load host's node database.
Chapter 4	Describes verification of the installation.
Appendix A	Lists the files provided in the MUXserver 300 Distribution Kit.

Appendix B	Describes the VMS Remote Console Facility (RCF).
Appendix C	Contains examples of the installation and configuration procedures and examples of verification by down–loading.
Glossary	Defines all abbreviations and special terms used in this guide.
Index	Provides a page reference to all important topics used in this guide.

Other MUXserver/DECmux 300 Publications

The following is a list of related MUXserver/DECmux 300 publications:

- *MUXserver/DECmux 300 Network Reference Manual* EK–DSRZC–RM
  Describes procedures for setting–up, managing, monitoring, and troubleshooting the MUXserver/DECmux 300 network.
- *MUXserver/DECmux 300 User's Guide* EK–DSRZC–UG
  Summarizes the terminal user's environment and non–privileged commands.
- *MUXserver/DECmux 300 Network Installation Manual* EK–DSRZC–IM
  Describes installation and maintenance of the MUXserver/DECmux 300 hardware.
- *MUXserver/DECmux 300 Network Identification Card* EK–DSRZC–ID
  A means of recording MUXserver/DECmux 300 identification information.
- *DECmux 300 Technical Manual* EK–DSRZC–TD
  Describes the technical and operational features of the DECmux 300 Remote Terminal Multiplexer.
- *MUXserver 300 Technical Manual* EK–DSRZC–TM
  Describes the technical and operational features of the MUXserver 300 Remote Terminal Server.
- *MUXserver 300 Software Product Description*
  Describes the MUXserver/DECmux 300's software and its operation.
- *MUXserver 300 System Support Addendum*
  An addendum to the *MUXserver 300 Software Product Description* which describes the various systems supported by the MUXserver/DECmux 300.

Other Relevant Publications

Reference to the following Digital publications may be required during installation of the MUXserver/DECmux 300 software:

- *VAX/VMS Networking Manual*
  Explains DECnet–VAX and VAX-PSI network software and describes network configuration, management and operation.
- *VAX/VMS Network Control Program Reference Manual*
  Describes DECnet event logging and NCP and DECnet commands.
- *VAX/VMS System Messages and Recovery Procedures Reference Manual*
  Describes NCP information and error messages.

Conventions

Throughout this guide, the following conventions apply:

Product Name

- Unless stated otherwise, *MUXserver 300* refers to *MUXserver 300* **and** *MUXserver 310*.

Numbers

- All numbers are in decimal unless otherwise noted.
- All Ethernet addresses are in hexadecimal.

Graphics

Normal	Normal type indicates an example of system output.
Bold	Bold type indicates an example of user input.
Italics	Indicates a variable.
key	Indicates a specific key to be pressed.
CTRL/*x*	Indicates that the CTRL key should be held down while the key, specified by *x*, is also pressed.
[ ]	In a command line, indicates that the enclosed values are optional. Do not type the brackets.
{ }	In a command line, indicates that you must specify one (and only one) of the enclosed values. Do not type the braces.
/	Indicates related alternative commands or options. For example, SET/DEFINE PORT refers to the SET PORT and/or DEFINE PORT commands.

Chapter 1
Introduction to the MUXserver/DECmux 300

1.1 Introduction

1.1.1 What is the MUXserver 300?

The MUXserver 300 is a remote terminal server that connects remote terminals (or other asynchronous port devices) to an Ethernet Local Area Network (LAN), via DECmux 300s, allowing each device to communicate with other LAT nodes on that LAN. The MUXserver 300 connects up to 48 active devices and the MUXserver 310 connects up to 16 active devices.

An active terminal is one that is using a LAT service or is currently at the Local> or Enter Username> prompt.

1.1.2 Overview of Software Installation

The software that you are about to install is comprised of the files in the MUXserver 300 Distribution Kit. After you install the distribution software configure the load host's node database for all new servers. Next, verify the installation by down–line loading one test server. Issue a few server commands to test the server system.

1.2 MUXserver/DECmux 300 Concepts

The MUXserver 300 is used in conjunction with one or more DECmux 300 Remote Terminal Multiplexers.

The MUXserver/DECmux 300 network gives terminals access to all services offered by the LAN to which the MUXserver 300 is connected.

1.2.1 Connections

Port devices may be connected directly to the network's DECmux 300 remote units or connected remotely by means of modems. The DECmux 300 also supports printers and connections to hosts that support EIA–232–D asynchronous connections. Terminals and printers may be connected to DECmux 300 remote units with DECconnect cables.

1.2.2 Services

The MUXserver/DECmux 300 gives terminals access to services offered on the LAN. A **service** is a resource, such as a computer. Each MUXserver/DECmux 300 user can have up to eight simultaneous connections to these various services. However, they can actively *use* only one connection at a time.

1.2.3 Service Nodes and LAT Protocol

Server users are offered services by service nodes. A **service node** is any node on the LAN that implements the Local Area Transport (LAT) protocol. The server uses the same LAT protocol to connect terminals to these services. LAT architecture uses Ethernet to make logical connections between terminals and service nodes on the same network.

When connected to a service a terminal appears to be connected directly to the service node. DECnet is not necessary for VAX/VMS Operating Systems to function as LAT service nodes.

The MUXserver/DECmux 300 itself can be configured as a service node offering printers, dial-out modems, and non–LAT host systems as services on the LAN.

1.2.4 LAT Software

LAT is implemented on a VMS node by software included in the VMS Operating System. This includes LTDRIVER which is a port driver in direct communication with the system's terminal class driver. LTDRIVER implements the protocol necessary to communicate with devices connected to the server and is used in place of a local port driver such as the DZDRIVER.

A LAT Control Program (LATCP) provides the command interface to LTDRIVER. LATCP can be used to start and stop the driver as well as to set and to display characteristics of the driver.

1.3 Performing the Software Installation

1.3.1 Introduction

As software installer you have the following responsibilities:

- Installing the MUXserver 300 distribution software.
- Configuring the load host's node database.
- Verifying the installation which includes:
  - * Verifying the load host installation by down–line loading the server image.
  - * Verifying the server system installation by testing a few server commands.

The purpose of these three activities is to establish your VMS system as a load host for one or more servers. A **load host** is a system that contains the server image and whose node database has entries for specific servers and, as a result, can down–line load the server image to servers on the local Ethernet. In addition, a load host performs maintenance activities such as receiving up–line dumps from the server.

A load host can be a single VMS system or 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 and it must be located on the same Ethernet as the server. For supported versions of DECnet software, refer to the Software Product Description for the MUXserver 300.

Digital Equipment Corporation advises the network manager to assign:

- For each server, at least two load hosts
- At least one load host for every ten servers

Alternate load hosts free the server from dependence on one particular load host. If the primary load host is unavailable, another system can down-line load the server and receive up-line dumps from it. Digital Equipment Corporation strongly suggests that the server have these load-host functions available at all times. In addition, assigning more than one load host for every ten servers reduces the demand on any single load host's resources.

When selecting alternate load hosts you can choose any Digital system that has a MUXserver 300 Distribution Kit is available. MUXserver 300 Software Distribution Kits are available for the following systems:

- VAX/VMS
- ULTRIX

For information on installing the server distribution software onto another operating system and configuring that system's node database in order to establish it as an alternate load host, refer to the *MUXserver 300 Software Installation Guide* for that system.

You are also responsible for the total software installation procedure which requires coordination with both the MUXserver/DECmux 300 hardware installer of a new installation and the server manager of an existing server. For example, the software should be installed on the load host before the MUXserver 300 hardware is powered–up for the first time. Chapter 4 details the necessary coordination efforts among you, the hardware installer, and the server manager.

1.3.2 Installing the MUXserver 300 Distribution Software

MUXserver 300 distribution software is installed onto a VMS system using an automated procedure called VMSINSTAL. The MUXserver 300 Software Distribution Kit includes a procedure file that VMSINSTAL uses to do the installation. VMSINSTAL does the following:

- Copies the files from the distribution media to the load host.
- Creates the appropriate directory for these files.
- Prints the MUXserver 300 release notes as an option.

Refer to Chapter 2 for instructions on installing the distribution software.

1.3.3 Configuring the Load Host's Node Database

Once you have installed the distribution software onto your VMS system, you must configure its node database to support new servers. You configure this database with an automated procedure called DSVCONFIG. The configuration procedure file is part of the MUXserver 300 Software Distribution Kit.

This kit will only update the DSVCONFIG.COM file if the version with the kit is newer than the version currently in the system. The old version of DSVCONFIG.COM file will be renamed to DSVCONFIG.COM_Vxx, where *xx* is the version number of the old file.

Note

Installing a DECserver 100 V1.x, a DECserver 200 V1.x or, a MUXserver 100 pre-V2.2 kit will cause the DSVCONFIG.COM file to be overwritten by one which does not support the MUXserver 300.

Configuration of the load host's node database means defining an entry for each server in a data file called DSVCONFIG.DAT. This file is automatically created by DSVCONFIG and is part of a load host's node database.

Configuration of a new server involves adding an entry to this database. The entry identifies the server type, its DECnet node name and DECnet node address, its service circuit–ID, its Ethernet address, its dump file, and the server image.

Configuration can also consist of modifying or deleting entries for existing servers. With DSVCONFIG you can configure the load host's node database in the following manner:

- Add a new unit
- Swap an old unit with a new one
- Remove a unit
- Restore the previous configuration from the local database

To configure a server 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.

When you complete the configuration procedure, you have established your VMS Operating System as a load host for each server that has an entry in the node database. Refer to Chapter 3 for instructions on configuring the load host's node database to support servers.

1.4 Verifying the Installation

After you have configured the node database, you have established your VMS system as a load host. Your final responsibility is to verify the installation. You need to perform the following two verifications:

- To verify the installation of the load host, down–line load the server image to a server and then read the DECnet event logging messages. **Verifying the installation of the load host** means checking that this load host:
  - * Has the appropriate files in the correct directory.
  - * Has a correct entry in its node database for the test server.

    * Can successfully down–line load the server image.

- To verify the total server system installation, test a number of server commands at an interactive terminal connected to a server port. **Verifying the system installation** means checking that:
    * The correct version of the software is in the server
    * The server hardware operates with the new software
    * The new software is running successfully

1.4.1 Verifying the Load Host Installation

To verify that your VMS system has been successfully established as a load host, use it to perform a down–line load. **Down–line loading** means sending the server image from an established load host to the server.

Use the NCP LOAD NODE command from your VMS load host to down–line load. Then check the DECnet event logging messages in order to verify that the load was successful.

1.4.2 Verifying the Server System Installation

Using a number of server commands at an interactive terminal attached to a server port completes your verification of the server system installation.

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Chapter 2
Installing Distribution Software

2.1 Introduction

This chapter describes preparation and installation of the MUXserver 300 distribution software onto your VMS load host. To install the software use the VMSINSTAL command which is part of the VMS operating systems.

Use VMSINSTAL.COM to install the distribution software. VMSINSTAL is an automated procedure that:

- Creates a directory called SYS$SYSROOT:[DECSERVER] on the load host.
- Copies the files from the distribution media into this directory.
- Optionally prints a copy of the release notes.

2.2 Preparing to Run the Installation Procedure

Before you run the installation procedure:

- Determine which systems are to be load hosts for the server. You must install the distribution software onto all load hosts.
- Check that there are 1000 blocks of free disk space on each load host for down–line loading the server image.
- Check that DECnet Phase IV is running and in the ON state. For information on DECnet Phase IV, see the *DECnet–VAX Network Management Concepts and Procedures* manual.

2.3 Software Prerequisites

One of the following two operating systems and DECnet VAX are required:

- VMS Operating System V4.6 or greater
- MicroVMS Operating System V4.6 or greater

2.3.1 VMS Tailoring

The MUXserver 300 can be run on a tailored VMS system.

Information on VMS Tailoring is contained in the *System Support Addendum* to the *MUXserver 300 Remote Terminal Server Software Product Description*.

2.4 VMSINSTAL Conventions

VMSINSTAL is an interactive procedure. The procedure displays a series of questions preceded by an asterisk (*). After a question the default response, if there is one, appears in brackets ([ ]). At the end of the display line either a colon (:) or a question mark (?) appears.

Type your response immediately after the colon or question mark followed by RETURN. To choose the default type only RETURN. If you enter a question mark (?) as a response, VMSINSTAL provides explanatory text about the question and the question is repeated.

Refer to the VMS documentation for a complete description of VMSINSTAL.

2.5 Running VMSINSTAL

2.5.1 Running VMSINSTAL on VMS V4.6 and Later

Run VMSINSTAL.COM from the system manager's account. The installation procedure takes approximately 15 minutes. To begin, place the server distribution medium on the appropriate device drive. Next, log in to the system account and enter the following commands:

```
$SET DEFAULT SYS$UPDATE RETURN
$@VMSINSTAL MS3 device-identifier OPTIONS N RETURN
```

Here, *device–identifier* is the device on which the distribution medium is mounted.

Note

Running the procedure with this command line is the only way to get the release notes printed automatically. If you run VMSINSTAL without these keywords—*device–identifier* OPTIONS N—the release notes will not be mentioned and you will not be asked if you would like them printed.

VMSINSTAL then displays the procedure title, the data and time, and continues with the following (the warning message appears only if DECnet is running):

```
%VMSINSTAL-W-DECNET, Your DECnet network is up and running.
* Do you want to continue anyway [NO]?
```

Type Y and then press RETURN to answer YES and proceed with the installation.

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

Press RETURN to answer YES, or take appropriate action. If you are installing from the distribution media (not from copied savesets), you are prompted to mount the first volume by:

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

Type Y and press RETURN. A confirmation message says that the medium is mounted. The procedure continues:

```
The following products will be processed:
   MS3 V1.2
Beginning installation of MS3 V1.2 at 14.08
%VMSINSTAL-I-RESTORE, Restoring product saveset A...
```

The procedure now lists the following options for printing and displaying the release notes. Digital Equipment Corporation suggests that you print the release notes.

```
Release notes included with this kit are always copied to SYS$HELP.

Additional Release Notes Options:
  1.  Display release notes
  2.  Print release notes
  3.  Both 1 and 2
  4.  None of the above

* Select option [2]
```

Select one of these options. Again, Digital recommends that you select Option 2. If you select Option 1, the following message is displayed:

```
 VMI$ROOT:[SYSUPD.MS3nnn]MS3$nnn.RELEASE_NOTES;1
```

The release notes will be immediately displayed on your terminal.

If you select Option 2, you are asked to queue the file for printing:

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

To print the release notes on the default printer press RETURN or, otherwise, specify another print queue. A message indicates that the file has been queued.

If you select Option 3, you are first asked to queue the file for printing:

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

To print the release notes on the default printer press RETURN or, otherwise, specify another print queue. A message indicates that the file has been queued. Next, the following message is displayed:

```
VMI$ROOT:[SYSUPD.MS3nnn]MS3$nnn.RELEASE_NOTES;1
```

The release notes will immediately start scrolling on your terminal.

After the system's queue message and after the release notes are displayed (if you selected one of the display options), the procedure continues. VMSINSTAL asks:

```
* Do you want to continue the installation [NO]?
```

- Digital suggests that you press RETURN to stop the procedure and read the release notes. Check for any changes that will affect this installation (VMSINSTAL also places the release notes in the file MS3$*nnn*.RELEASE_NOTES in the SYS$HELP directory).

  If you stop VMSINSTAL to read the release notes, run the procedure again when you are ready to continue. Enter:

  $**@VMSINSTAL MS3** ***device-identifier*** RETURN

Here, *device–identifier* is the device on which the distribution medium is mounted.

- If you type Y, VMSINSTAL continues with:

```
%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]?
```

Enter RETURN to allow the IVP to execute after the installation is complete.

```
%VMSINSTAL-I-RESTORE, Restoring product saveset B...
%VMSINSTAL-I-MOVEFILES, Files will now be moved to target directories...
```

If you selected to run the IVP, the following will appear on the terminal:

```
Beginning installation verification procedure for MUXserver 300 Vn.n.
Successful creation of SYS$COMMON:[DECSERVER] directory
Successful installation of SYS$COMMON:[DECSERVER]MS4801ENG.SYS
Successful installation of SYS$COMMON:[DECSERVER]DSVCONFIG.COM
Successfully located SYS$COMMON:[DECSERVER]DSVCONFIG.DAT
Successful installation of SYS$COMMON:[DECSERVER]MS3_nnn__DEFAULTS.COM
Successful installation of SYS$COMMON:[DECSERVER]TSM$MS3_V12_GET_CHAR.COM
MUXserver Vn.n Installation Verified.
```

You have finished the first part of the installation. The procedure continues:

- It tells you that the installation is complete, meaning that the distribution files have all been copied to their appropriate directories.
- It instructs you on how to continue.

This is the remainder of VMSINSTAL:

```
Your installation is now complete.  After exiting from VMSINSTAL:

1. Edit the system start-up file to define the logical MOM$LOAD as a search
   string with a value equal to the current search string, plus the added
   element SYS$SYSROOT:[DECSERVER].
   For example:
     DEFINE/SYSTEM/EXEC/NAME_ATTRIBUTE=NO_ALIAS/NOLOG -
     MOM$LOAD 'current-search-string',SYS$SYSROOT:[DECSERVER]

   If the current search string associated with MOM$LOAD in your start-up
   file is SYS$SYSROOT:[DECSERVER] or if you have already made this change
   for a previous installation, there is no need to edit this file.

   This command ensures that the location of the server image is defined
   each time the system is re-booted, which is necessary for successful
   down-line loading.

2. Configure the server into your host's database. Execute a command
   procedure called DSVCONFIG.COM. This command procedure is in the
   SYS$SYSROOT:[DECSERVER] directory. If you have already executed this
   procedure from previous installations, you need only configure any
   additional units.
   All previously defined units will still be configured.

      Installation of MS3 Vn.n completed at hh:mm

        VMSINSTAL procedure done at hh:mm
$
```

To find the current search string, enter:

```
$SHOW LOG MOM$LOAD RETURN
```

After you have edited the file, run the configuration procedure, DSVCONFIG.COM, to configure the load host's node database. Refer to Chapter 3 for information on this procedure.

2.6 Installing onto Alternate Load Hosts

Digital recommends that you establish alternate load hosts for each server. As with the original load host an alternate load host must be a DECnet Phase IV system. To serve as an alternate load host, a system must also have the distribution software installed, and it must have entries for one or more servers in its node database.

If the original load host is unavailable for down–line loading the server image, any alternate load host can load the server instead. In addition, alternate load hosts can receive up–line dumps from servers and can perform other maintenance functions.

2.6.1 Installing onto Single Systems

To install the server distribution software onto an alternate load host that is not a member of a VAXcluster, use one of the following three methods:

- Place your distribution media on the appropriate device of the new load host and repeat the installation procedure detailed in Section 2.5.1.
- Copy the distribution files from the original load host to a new load host. Note that these files require 1000 blocks of disk space.
- Execute VMSINSTAL.

2.6.2 Installing onto VAXclusters

To install the server distribution software onto an alternate load host that is a member of a VAXcluster, install the software onto one cluster member and:

- Log into a privileged (system) account on one of the other members of the cluster.
- Enter the following command:

```
$ DEFINE/SYSTEM/EXEC/NAME_ATTRIBUTE=NO_ALIAS/NOLOG MOM$LOAD -
  current-search-string, SYS$SYSROOT:[DECSERVER] RETURN
```

- Include the above command in the node's system start-up procedures.

2.6.3 Installing onto Other Operating Systems

To install the server distribution software onto another operating system follow the instructions in the *MUXserver 300 Software Installation Guide* for that system.

2.7 Installation Verification Procedure

The MUXserver 300 Installation Verification Procedure (IVP) can be executed at any time by entering the command:

```
@SYS$TEST:MS3$IVP
```

If the MUXserver 300 software is installed the output is:

```
Beginning installation verification procedure for MUXserver 300 Vn.n
Successful creation of SYS$SYSROOT:[DECSERVER] directory
Successful installation of SYS$SYSROOT:[DECSERVER]MS4801ENG.SYS
Successful installation of SYS$SYSROOT[DECSERVER]DSVCONFIG.COM
Successfully located SYS$SYSROOT:[DECSERVER]DSVCONFIG.DAT
Successful installation of SYS$SYSROOT:[DECSERVER]MS3_nnn_DEFAULTS.COM
Successful installation of SYS$COMMON:[DECSERVER]TSM$MS3_V12_GET_CHAR.COM
MUXserver 300 Vn.n Installation verified
```

Chapter 3
Configuring the Load Host's Node Database

3.1 Introduction

This chapter describes the procedures for configuring a load host's node database to support specific servers.

Use DSVCONFIG.COM, an automated, menu–driven procedure to define servers in the load host's node database. With DSVCONFIG you can define, delete, and modify entries for any server in the DECserver or MUXserver family.

The installation procedure copies this procedure file to the SYS$SYSROOT:[DECSERVER] directory for both single systems and for VAXcluster member nodes (refer to Chapter 2).

Note

DSVCONFIG.COM, supplied with the distribution kit, accommodates various terminal servers, including the DECserver 100, 200 and 500 and the MUXserver 100 and 300.

With DSVCONFIG, you can:

- List servers that are currently defined in the load host's node database.
- Add an entry for a new server in the load host's node database.

  Adding an entry supplies information that identifies the server on the Ethernet.
- Swap an existing server for a new one or redefine an existing server's identification in the load host's node database.

  Swapping retains the DECnet node address of an existing server, replacing its Ethernet address with the Ethernet address of a new unit. This option also can replace other server identifiers either for a new server or for an existing one.
- Delete an entry for an existing server from the load host's node database.

  Deleting an entry prevents the load host from recognizing the server. Thus, it is no longer a load host for that server. You can delete a database entry when you reconfigure the network or assign a server to another load host.

- Restore existing servers to your DECnet load database

  Restoring copies server entries from the load host's node database to the DECnet load database. Restoring is useful when you routinely copy your local DECnet database from a central DECnet database and that central database does not include servers.

The functions of adding, swapping and deleting entries in the DSVCONFIG.DAT file is what is meant by **configuration of the load host's node database.** In addition, the function of restoring reconfigures the DECnet load database. The DSVCONFIG procedure operates on the following two distinct databases:

- The load host's node database. This database is also the server database. It contains the information displayed when you select Option 1, List, from the DSVCONFIG menu.
- The DECnet load database. DSVCONFIG operates on both the volatile and the permanent DECnet databases.

When you run DSVCONFIG, data is sometimes transferred from the load host's node database to the DECnet database. The DSVCONFIG procedure automatically keeps these databases synchronized. Even though DSVCONFIG includes several NCP commands, do not directly execute these commands yourself in order to configure the load host's node database because NCP affects only the DECnet database.

DSVCONFIG also prepares your node as a load host by enabling SERVICE on the service circuit. SERVICE must be enabled before a down–line load can occur.

3.2 Preparing to Run the Configuration Procedure

Before beginning the configuration procedure, check that:

- DECnet Phase IV is running. For information on DECnet Phase IV, refer to the *DECnet VAX Network Management Concepts and Procedures* Manual.
- There is a unique DECnet node name and node address for each server.

  To find out the node name and the node address and to determine that they are unique, ask your network manager or the person whose responsibility it is to assign node names and node addresses. You can also determine uniqueness with the NCP SHOW NODE command as follows:

  ```
  $ MCR NCP  RETURN
  NCP> SHOW NODE node_name CHARACTERISTICS  RETURN
  ```

  or

  ```
  NCP> SHOW NODE node_number CHARACTERISTICS  RETURN
  ```

- You know the Ethernet address of each server.

  This is the unique hardware address of each server. The Ethernet address is recorded on the Control/Indicator Panel of the MUXserver 300 and on the *Identification Card* for that server that you get from the hardware installer.

- The directory SYS$COMMON:[DECSERVER] exists, for VAXcluster nodes. If not, create this directory now.

You will need the preceding information to answer prompts during DSVCONFIG.

3.3 DSVCONFIG Conventions and Requirements

DSVCONFIG is an interactive procedure. When you run DSVCONFIG a menu of options is displayed. Enter a menu number and press RETURN to activate the option you want. After each query, you can get help by pressing the question mark (?). When you finish an option the program returns you to the DSVCONFIG menu.

If you want to exit an option without making any changes enter CTRL/Z. You are returned to the DSVCONFIG menu. At the menu level type CTRL/Z to exit DSVCONFIG and return to the DCL prompt.

At the end of the Add, Delete, and Swap options you may get NCP messages (information, confirmations and errors). In the case of error messages the operation may not have been successful. For the meanings of these messages, refer to the *VAX/VMS System Messages and Recovery Procedures Reference Manual*.

To run DSVCONFIG on a single system, the distribution software must already be installed on to that system. For a VAXcluster node, the distribution software can be installed on to any node of the cluster, not necessarily the node where you run the procedure.

3.4 Running DSVCONFIG

Log into the system account, or any account with OPER and SYSPRV privileges. Enter the following commands:

```
$ SET DEFAULT SYS$SYSROOT:[DECSERVER] RETURN
$ @DSVCONFIG RETURN
```

DSVCONFIG determines whether DECnet is running and NCP is installed. If DECnet is down or NCP is missing, DSVCONFIG displays a warning and halts the procedure.

If you receive a warning, exit DSVCONFIG and correct the problem. Then run the procedure again, select the option that generated the warning, and repeat the last entry.

Next, the procedure checks the existence and format of a data file called DSVCONFIG.DAT. It finds one of three situations and continues accordingly:

- SYS$SYSROOT:[DECSERVER] already has this file if DSVCONFIG was previously used to add DECserver 100 entries in this load host's node database. However, the file is not formatted to accommodate MUXserver 300s. The procedure now reformats the file.
- SYS$SYSROOT:[DECSERVER] already has this file if DSVCONFIG was previously used to add DECserver 200, MUXserver 100 or MUXserver 300 entries in this load host's node database. The file is formatted correctly so the procedure simply continues with its next task.

If DSVCONFIG.DAT file does not exist in SYS$SYSROOT:[DECSERVER], the DSVCONFIG procedure now creates DSVCONFIG.DAT.

If DSVCONFIG.DAT has to be created, the following message is displayed:

```
The database file, DSVCONFIG.DAT could not be found, a new one will be
created for you.
```

If DSVCONFIG.DAT has to be reformatted, you are asked for a service circuit_ID:

```
The database file DSVCONFIG.DAT must be reformatted for common server use.
Enter the service circuit_ID for all existing MUXservers, ? for
help or enter CTRL/Z to exit this procedure:
```

Specify one service circuit_ID for all existing DECservers/MUXservers. The default service circuit_ID depends on the default Ethernet controller type for your processor type.

After you specify the service circuit_ID for existing MUXserver 300s and press RETURN the following message is displayed:

```
Your DECserver database is being converted, please wait...
The DECserver database conversion is now complete...
```

If DSVCONFIG.DAT already exists with the correct format the procedure continues.

Once the data file you need exists in the correct format, the procedure proceeds by informing you that each server must have a unique DECnet node name (if it is intended that the host will receive software dumps from the MUXserver 300) and DECnet node address. Then, DSVCONFIG asks you either to continue or to exit:

```
Press RETURN to start or CTRL/Z to exit...
```

Press RETURN. DSVCONFIG displays:

```
DECserver Configuration Procedure

Menu of Options
   1 -- List known DECservers
   2 -- Add a DECserver
   3 -- Swap  an existing DECserver
   4 -- Delete an existing DECserver
   5 -- Restore existing DECservers
        CTRL/Z -- Exit from this procedure

Your selection?
```

Enter the number that corresponds to the option you want and press RETURN.

3.4.1 List Known Servers (Option 1)

Type 1 and press RETURN to list the DECservers in the load host's node database. The contents of the DSVCONFIG.DAT file are displayed in seven columns. With Option 1, the listing appear as:

```
DECnet   DECnet Server Service
Address  Name   Type   Circuit  Ethernet  Address  Load File      Dump File
-------------------------------------------------------------------------------
28.1001  TUNA   DS200  UNA-0   08-00-2B-02-24-2B  PRO801ENG.SYS  DS2TUNA.DMP
28.1002  SHRIMP MS100  UNA-0   08-00-2B-04-AA-2B  MS1601ENG.SYS  MS1SHRIMP.DMP
28.1003  CONCH  DS100  UNA-0   08-00-2B-02-24-F1  PS0801ENG.SYS  PSDMP24F1.SYS
28.1005  OYSTER MS300  UNA-1   08-00-2B-04-AA-55  MS4801ENG.SYS  MS3OYSTER.DMP

Total of 4 DECservers defined.
```

This information comprises the load host's node database which the load host uses for down–line loading and for receiving up–line dumps.

When a server up–line dumps its memory, which it does upon unexpected failure or upon request by the server manager, the data is dumped into the server dump file. This file can then be used for diagnostics.

If a fatal bug check generates an up–line dump, you should copy the dump file to magnetic tape and send it with a Software Performance Report (SPR) to Digital (the server manager may also ask you for a copy of the dump file).

Each server has a unique dump file name. The name for MUXserver 300s has the format:

MS3*xxxxxx*.DMP

Here, *xxxxxx* is the DECnet node name of the server. For example, a MUXserver 300 with the DECnet node name SHRIMP has the dump file name MS3SHRIMP.DMP.

3.4.2 Add a Server (Option 2)

Type 2 and press RETURN to create a new entry in the load host's node database for a new server. When defining a new entry you must supply:

- The server type
- A unique DECnet node name for the MUXserver
- A unique DECnet node address for the MUXserver
- The Ethernet address of the MUXserver
- The service circuit_ID

Five prompts ask you for this information as follows:

```
DECserver type?
```

Specify the type of server you are adding:

MS100 to add a MUXserver 100

MS300 to add a MUXserver 300

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

Specify the DECnet node name for the server. This name must begin with a letter and contain from 1 to 6 alphanumeric characters, and it must be unique to your entire DECnet network.

```
DECnet address for unit?
```

Specify the DECnet node address for the server. This number must be a decimal number from 2 to 1023 unique within the network.

Your DECnet network may be divided into areas. If this is the case, find out from your network manager your area number, because this number becomes part of each node address. With defined areas each node address takes the form *aa.nnnn*.

Here, *aa* is a decimal number from 1 to 63. The period distinguishes area from node address and *nnnn* is the node address (for example, 7.103). If you omit the area, the area of the current load host is used as a default.

```
DECserver Ethernet address of this unit?
```

Specify the Ethernet address of the server. This address is listed on the Control/Indicator Panel of the unit and on the *Network Identification Card* for that server that you get from the hardware installer. Enter the Ethernet address as six pairs of hexadecimal digits with hyphens (–) separating the pairs (for example, 08–00–01–00–AB–CB is a valid format).

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

Specify the service circuit_ID of your Ethernet controller type.

Whenever you run this procedure, you may be asked to specify the service circuit_ID several times. The first time you are asked the default will be the service circuit_ID for the processor type of your VMS load host. If you respond by specifying a different service circuit_ID, that response becomes the new default.

After you specify the service circuit_ID and press RETURN, DSVCONFIG adds the entry for the new server to the database and sets SERVICE ENABLED on the circuit supporting the Ethernet controller, both of which are necessary in order for the load host to downline load the server image to the server.

Note

If you get an error from DECnet while you are adding a server, the entry is added to the DSVCONFIG.DAT file (the load host's node database) even though it is not entered in the DECnet load database. You should immediately use Option 4 to delete the entry, fix the condition causing the DECnet error, then return to Option 2 to add the server again.

If you specify a node address that is already defined in the server database (the load host's node database), you get a DSVCONFIG error, nothing is added and the Add option is terminated.

3.4.3 Swap an Existing Server (Option 3)

Type 3 and press RETURN to swap an existing server with a new unit. Swapping retains the DECnet node address of the original unit. Swapping is useful if an existing unit malfunctions and you need to replace it. Swapping is also helpful for renaming servers. DSVCONFIG lets you specify all the following characteristics for the new unit:

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

First, you are prompted for the node name:

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

Specify the node name of the existing MUXserver that you want to replace. DSVCONFIG responds by displaying the Ethernet address of the old unit and then asks four questions:

```
DECserver at Ethernet Address nn-nn-nn-nn-nn-nn is being swapped.
Enter the new Ethernet address and any other changed characteristics.

DECserver type [default-type]?
```

Press RETURN if you are replacing a MUXserver 300 with a MUXserver 300. If you are changing MUXserver types, specify the type of the new unit and press RETURN. Valid responses are:

MS100	for a new MUXserver 100
MS300	for a new MUXserver 300

```
DECnet node name for unit [default-name]?
```

Press RETURN if you want the replacement MUXserver to have the same DECnet node name as the old unit. If you are changing node names, specify the node name of the new unit and press RETURN. A MUXserver 300's DECnet node name must begin with a letter and contain from 1 to 6 alphanumeric characters; the name must be unique to your entire DECnet network.

```
DECserver Ethernet address of this unit?
```

You must specify the Ethernet address of the new MUXserver. This address is shown on the Control/Indicator Panel of the unit and on the *Identification Card* for that server that you get from the hardware installer. Enter the Ethernet address as six pairs of hexadecimal digits, with hyphens (–) separating the pairs (for example, 08–00–01–00–AB–CD is a valid format). Press RETURN.

```
DECnet Service Circuit_ID [default_id]?
```

Press RETURN if the replacement MUXserver has the same service circuit_ID as the old unit. If the service circuits are different, specify the service circuit_ID of the new unit and press RETURN.

After you specify the service circuit_ID and press RETURN, DSVCONFIG swaps the characteristics you just specified with the old ones for the server entry with the same DECnet node address (this address cannot be swapped).

3.4.4 Delete an Existing MUXserver (Option 4)

Type 4 and press RETURN to remove a server from the database. Deleting is useful if you are reconfiguring the network or changing load hosts for a server. DSVCONFIG asks for the DECnet node name:

```
DECnet node name is to be deleted? (CTRL/Z to return to menu)
```

Specify the DECnet node name of the DECserver you want to remove and press RETURN. DSVCONFIG checks that the name you specified is an entry in the load host's node database. Then it deletes this entry and tells you of the successful removal.

3.4.5 Restore Existing MUXservers (Option 5)

Type 5 and press RETURN to restore your load host's DECnet database to include the servers in its node database. The Restore option affects both the volatile and permanent DECnet databases.

If your DECnet network contains a large number of nodes you may store your DECnet database on a central, remote node and copy this database upon each system startup. However, if many servers exist on the network, Digital advises that you not define these servers in that central DECnet database.

If servers are not defined in the central database you must also reconfigure them whenever you copy your local DECnet database from this central DECnet database. Each time you copy the central DECnet database, use Option 5 to restore existing server configurations.

The following messages confirm the restoration:

```
Restoring existing DECservers from local database...
Local database successfully restored.
```

3.4.6 Restoring from a Command Procedure

There is another way, which can be automated, to restore your local DECnet database. Run DSVCONFIG.COM with the RETURN parameter:

```
$@DSVCONFIG RESTORE RETURN
```

Using the RESTORE parameter bypasses the menu and allows you to include the configuration procedure in your system start–up procedures. If you want to restore the down–line load database (the DECnet load database) for your servers at system startup, edit your system start–up file. Include the following statement after the line @SYS$MANAGER:RTLOAD:

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

3.5 Down-Line Loading the Server Image

After you have completed the configuration procedure verify the Load Host Installation by down–line loading the new server image from the load host to the server. Refer to Chapter 4 for information on this procedure.

Chapter 4
Verifying the Installation

4.1 Introduction

This chapter describes the procedures for performing two verifications. Firstly, it describes verification of the load host installation by down–line loading the server image. Secondly it describes how to verify the server as a system after it is loaded by testing a few server commands at an interactive terminal, which must be connected to the server.

To complete the software installation you need to perform the following two verifications:

- To verify the installation of the load host, down–line load the server image to one MUXserver 300 and then read the DECnet event logging messages. These steps confirm that the new load host:
  - Has the appropriate files in the correct directory.
  - Has a correct entry in its node database for the server.
  - Can successfully down–line load the server image to the server.
- To verify the total server system installation test a few server commands as illustrated later in this chapter, at an interactive terminal connected to a supervisor port. **System installation** means the installation of the complete server system—the hardware unit with the correct software loaded and running. This step confirms that:
  - The correct version of the software is in the server.
  - The server hardware operates with the new software.
  - The new software is running successfully.

4.2 Verifying the Load Host Installation

To verify that your VMS system has been successfully established as a load host, use it to perform a down–line load.

Even though there are several ways to down–line load the server image, use the NCP LOAD NODE command to verify the installation. This is the only method that tests the installation of the software from a specific load host (a discussion of all the ways to down–line load appears in the *MUXserver/DECmux 300 Network Reference Manual*).

With the LOAD NODE command you can:

- Specify a load host.

  This ensures that the load host which performs the down–line load is your VMS system.

- Read the DECnet event–logging messages.

  These messages confirm that the specified load host performed the down–line load successfully.

You may down–line load the new server image to a new server or to an existing server that is currently operating on the network. Each situation has its own requirements.

4.2.1 Loading a New Server

If a server is new it has no operating software in it until the initial down–line load, which occurs automatically upon server start–up. When the hardware installer powers up a unit, the server automatically requests a load of its image from any available load host. An established load host recognizes the request and down–line loads the server image.

The hardware installer can then verify the hardware installation with the appropriate diagnostic light emitting diodes on the MUXserver 300 hardware unit(s). However, if the server image cannot be properly down–line loaded as soon as the server is powered up, the hardware installer sees server errors. Therefore, coordination with the server hardware installer is important. You should complete the entire software installation procedure before the hardware is powered up for the first time.

Note that this automatic down–line load verifies the hardware but it is not sufficient for verifying the load host installation.

4.2.2 Loading an Existing Server

When an operating server is loaded, all sessions with service nodes are disconnected. Therefore, if an existing server is about to be loaded with a new image, coordination with the server manager is important. Digital recommends that you talk with the server manager and the system manager about the needs of their users. It may be best to delay the verification of the installation and to down–line load during off hours.

Ask the server manager of an existing server to alert the interactive users on the server of the shutdown due to reloading. The server manager should have at least 30 minutes' notice to disable connections and queuing to local services of the server if this is considered necessary. The *MUXserver/DECmux 300 Network Reference Manual* discusses the issues involved in shutting down the server.

4.2.3 Loading After Hours

You and the server manager can perform the down–line load after hours to minimize disruption to the nodes affected by the server. If so, you can put the LOAD command in a batch job and run it at night.

4.2.4 Warning Users before Loading

To reload an installed and running MUXserver during normal working hours, either you (if you know the password) or the server manager can use the server interface to issue the privileged BROADCAST ALL command to warn server users. You can also broadcast the warning on a remote console port. Appendix B contains information on using the Remote Console Facility on a VMS System.

Issue the BROADCAST ALL command at the server prompt (Local>). BROADCAST ALL sends a message to all the ports. The message can be up to 115 characters in length. Note that the reception of broadcasts can be disabled on ports even when it is enabled on the server. Some users, may not receive your message. The command also lists the ports that did not receive the broadcast message; so, you can then warn these users using another method if necessary.

The following commands send the message: "The server will be reloaded in 3 minutes," to all the ports.

```
Local> ATTACH ALL  RETURN
 Local> BROADCAST ALL "The server will be reloaded in 3 minutes." RETURN
```

4.2.5 Down–Line Loading with the LOAD Command

Down–line loading the server image for load host verification involves three steps:

- Prepare for the LOAD command by checking the DECnet node name or DECnet node address of the server, by checking if the server has a DECnet service password, and by enabling DECnet event logging. In addition, if you are reloading an existing server, warn the interactive users.
- Issue the LOAD command.
- Read the event–logging message that reports the down–line load.

4.2.5.1 Preparing for the LOAD Command

To prepare for down–line loading:

1. Check the DECnet node name or DECnet node address of the server. To execute the LOAD command you need to know one of these node identifiers. If you do not remember this information from running the DSVCONFIG procedure (refer to Chapter 3), run the procedure again, and select the LIST option from the menu. LIST displays the DECnet node name and DECnet node address of all the servers you defined in this load host's node database.
2. Find out the server's DECnet service password, if there is one, from the server manager (the manager may know it as the maintenance password). For a previously configured server you may need to specify this password on the LOAD NODE command line.

3. Enable DECnet event logging. Event–logging messages are generated by the Network Control Program (NCP). Enter the following commands:

```
$ MCR NCP [RETURN]
NCP> SET LOGGING CONSOLE EVENT 0.3,7 [RETURN]
NCP> SET LOGGING CONSOLE STATE ON [RETURN]
NCP> SET LOGGING MONITOR STATE ON [RETURN]
```

4. If you are reloading an existing server, warn the interactive users with the BROADCAST command. Refer to Section 4.2.4 for information on issuing the BROADCAST command.

Note

All the other commands needed for down–line loading, such as the ones that set the Ethernet line and identify the service circuit, are part of DSVCONFIG and are executed when you run that procedure (see Chapter 3). In addition, SERVICE must be enabled on the service circuit which is also performed by DSVCONFIG.

4.2.5.2 Issuing the LOAD Command

After warning interactive users of an operating server and after enabling event logging you are ready to load the server. Issue the LOAD NODE command at a terminal connected to your VMS load host. On the command line enter either the DECnet node name or the DECnet node number.

The following example loads an existing server named SHRIMP with a node address of 13.204.

```
$ MCR NCP [RETURN]
NCP> LOAD NODE SHRIMP [RETURN]
```

or

```
NCP> LOAD NODE 13.204 [RETURN]
```

If the server manager previously set a server maintenance password, include the SERVICE PASSWORD keywords and specify this password as the DECnet service password on the command line. For example:

```
NCP> LOAD NODE SHRIMP SERVICE PASSWORD 0F23 [RETURN]
```

To exit from NCP, type EXIT:

```
NCP> EXIT [RETURN]
$
```

4.2.6 Using DECnet Event Logging

After you have executed the LOAD command check the DECnet event–logging messages that report the load to confirm that it was successful. Read the event–logging messages at your system's operator's console. They identify your VMS system as the node that generated the event.

If no errors are reported you can assume that the down–line load was successful and you have finished the verification of the new load host. Appendix C contains an example of DECnet event logging after a successful down–line load.

If the event–logging messages report errors, contact the server hardware installer. Check that the hardware is working satisfactorily. If it is the problem is probably with the load host. Check your node database, especially the Ethernet address you entered when you defined the test server. Check that the server image is in the appropriate directory. Check that DECnet is running and enter the LOAD command again.

Note

When event logging is set up on a DECnet node, you can specify the destination (called the sink) of the messages. Digital suggests that you set up one DECnet sink node to receive all the logging events associated with down–line loading. In this way, all load request status information is available at one node.

4.3 Verifying the Server System Installation

Using a number of server commands at an interactive terminal attached to the server console port completes your verification of the server system installation.

Apply the following sequence:

1. Press RETURN a number of times
   RETURN
   RETURN
   The following message and prompt appear:

```
MUXserver 300 Terminal Server V1.2 (BL2x) - LAT V5.1

Please type HELP if you need assistance

Enter username>
```

2. Read the identification message to ensure that the correct version of the server image was down–line loaded. If you fail to receive this display, the problem could be:
   - With the load host
   - With the terminal
   - That the incorrect software was down–line loaded
3. Enter your user name (any string of 1 through 16 characters that identifies you) and press RETURN . The port should now enter local mode, where the (Local>) prompt appears:

```
Enter username> SWINSTALLER RETURN

Local>
```

4. Use the TEST PORT command which verifies whether the terminal is receiving valid character data. On the command line, specify the number of lines and the number of columns you would like displayed. For example, this command displays 5 lines of 80 characters each:

```
Local> TEST PORT COUNT 5 WIDTH 80 RETURN
```

   You can interrupt this test by pressing BREAK . Appendix C contains an example of a TEST PORT display.

5. Issue the SHOW PORT command to display the characteristics of your port and their values:

```
Local>SHOW PORT  RETURN
```

   A port–characteristics display should appear. Appendix C contains an example of a port–characteristics display.

6. Use the SHOW SERVICES command to show what services are available to you. The following server command produces a list of services and service announcements:

```
Local>SHOW SERVICES  RETURN
```

   Appendix C contains an example of a SHOW SERVICES display.

7. Select an available service that you are authorized to use. Use the CONNECT command to verify that the server can logically connect your terminal to that service. On the command line, specify the service name to which you want to connect. The following example connects your terminal to a VMS system, named VSYSTEM:

```
Local> CONNECT VSYSTEM  RETURN
```

   When the server successfully connects your terminal to the service you specified, you should no longer see the local prompt; you should be communicating with the service, in this example, your own VMS system.

8. Enter several commands to verify the ability of the server to exchange data with the service. For example, in this case, you could enter LOGIN, SHOW TIME, and SHOW USERS.

9. Press BREAK or log out from the service to return to local mode.

10. Log out from the server then log out the terminal from the server:

```
Local> LOGOUT  RETURN
```

If the server system verification encounters any problem, see the server manager.

If you complete the above steps successfully, the test server is operating correctly and you can report the successful load host installation and server system installation to the server manager. If this installation is a software upgrade, either you or the server manager must now reload all existing servers.

Appendix A
MUXserver 300 Distribution Files

The following files are included in the MUXserver 300 Distribution Kit:

File Name	Description
KITINSTAL.COM	Command file used by VMSINSTAL during installation
DSVCONFIG.DAT	Empty configuration file
DSVCONFIG.COM	Configuration procedure
MS3$*nnn*.RELEASE_NOTES	MUXserver/DECmux 300 release notes, *nnn*=version number
MS3_*nnn*_DEFAULTS.COM	TSM command file to set a MUXserver 300 to factory defaults
MS4801ENG.SYS	MUXserver/DECmux 300 software image
TSM$MS3_V12_GET_CHAR.COM	TSM command file to create a file of MUXserver 300 parameter settings (new for Version 1.2)

.

Appendix B
Using the Remote Console Facility

The MUXserver/DECmux 300 network supports the VMS Remote Console Facility (RCF). This Appendix describes its use from a VMS host. RCF could be used to issue the BROADCAST command to warn users of a planned down–line load.

To connect to the server with RCF, use the CONNECT NODE command. On the command line, specify either the DECnet node name or DECnet node address of the server.

```
$MCR NCP  RETURN
NCP> CONNECT NODE SHRIMP SERVICE PASSWORD 0F23  RETURN
Console connected (press CTRL/D when finished)
```

or

```
NCP>CONNECT NODE 13.204 SERVICE PASSWORD 0F23  RETURN
Console connected (press CTRL/D when finished)
```

Press RETURN to start the login sequence for the remote console.

You can also use the CONNECT command with the server's Ethernet address. The following example shows a connection from a VMS system with the service circuit–ID QNA–0 to a server with the Ethernet address 08–00–2B–04–AA–2B:

```
NCP>CONNECT VIA QNA-0 PHYSICAL ADD 08-00-2B-04-AA-2B  RETURN
```

You may have to specify the service password with the CONNECT command if a maintenance password is specified on the server. To do so, include the SERVICE PASSWORD keywords on your command line and specify the password.

To exit from RCF, type CTRL/D

```
Local>  CTRL/D
```

To exit from NCP, type EXIT:

```
NCP>EXIT  RETURN
$
```

If you log out from the server with a LOGOUT command, the port is logged out but the remote console session remains active. Type CTRL/D to exit the remote console session. The service node prompt appears, and control returns to NCP on your VMS system (refer to the *MUXserver/DECmux 300 Network Reference Manual*).

Appendix C
Installation, Configuration & Verification Examples

C.1 Introduction

This Appendix provides examples of installation and configuration procedures. It also illustrates the verification of a load host installation by down–line loading and reading DECnet event–logging messages. Finally, it shows the verification of a server system installation by testing server commands.

C.2 Example of an Installation

The following example illustrates a successful installation onto a VMS V5.2 system. In this example, server software version numbers are not supplied. This example assumes a type of distribution media that requires only one medium, for example, a magnetic tape. For types such as TU58 cartridges, which require more than one volume, extra prompts during the procedure instruct you to mount additional volumes.

This example also shows the procedure as DIGITAL suggests you run it:

- Use the option that prints the release notes.
- Print the release notes.
- Stop the procedure to read them.
- Re–run the procedure.

```
$ SET DEFAULT SYS$UPDATE [RETURN]
$ @VMSINSTAL MS3 $1$MUA0: OPTIONS N  [RETURN]

        VAX/VMS Software Product Installation Procedure V5.2
It is 15-JAN-1990 at 15:52.
Enter a question mark (?) at any time for help.

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

The following products will be processed:
  MS3 V1.2

        Beginning installation of MS3 V1.2 at 15:53

%VMSINSTAL_I_RESTORE, Restoring product saveset A ...
```

```
    Release notes included with this kit are always copied to SYS$HELP.

    Additional Release Notes Options:

        1.  Display release notes
        2.  Print release notes
        3.  Both 1 and 2
        4.  None of the above

* Select option [2]: RETURN
* Queue name [SYS$PRINT]: RETURN
Job MS3$012 (queue SYS$PRINT, entry 314) started on SYS$PRINT
* Do you want to continue the installation [NO]? RETURN

VMSINSTAL procedure done at 15:55

$
```

Read the release notes and run VMSINSTAL again:

```
$ @VMSINSTAL MS3 $1$MUA0: OPTIONS N RETURN

        VAX/VMS Software Product Installation Procedure V5.2

It is 15_JAN_1990 AT 16:05.
Enter a question mark (?) at any time for help.

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

The following products will be processed:
  MS3 V1.2

        Beginning installation of MS3 V1.2 at 16:03

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

    Release notes included with this kit are always copied to SYS$HELP.

    Additional Release Notes Options:

        1.  Display release notes
        2.  Print release notes
        3.  Both 1 and 2
        4.  None of the above

* Select option [2]: 4 RETURN
* Do you want to continue the installation [NO]? Y RETURN
%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]? RETURN
%VMSINSTAL-I-RESTORE, Restoring product saveset B ...

%VMSINSTAL_W_MOVEFILES, Superseded version of DSVCONFIG.COM exists, file
copied as SYS$COMMON[DECSERVER]DSVCONFIG.COM_V12

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

Beginning installation verification procedure for MUXserver 300 V1.2.

Successful creation of SYS$COMMON:[DECSERVER] directory

Successful installation of SYS$COMMON:[DECSERVER]MS4801ENG.SYS

Successful installation of SYS$COMMON:[DECSERVER]DSVCONFIG.COM

Successfully located SYS$COMMON:[DECSERVER]DSVCONFIG.DAT

Successful installation of SYS$COMMON:[DECSERVER]MS3_010_DEFAULTS.COM
```

```
Successful installation of SYS$COMMON:[DECSERVER]TSM$MS3_V12_GET_CHAR.COM

MUXserver 300 V1.2 Installation Verified

Your installation is now complete. After exiting from VMSINSTAL:

1. Edit your system start-up file so that it defines the logical
   MOM$LOAD as a search string with a value equal to the current search
   string, plus the added element SYS$SYSROOT:[DECSERVER]. For example:

   DEFINE/SYSTEM/EXEC/NAME_ATTRIBUTE=NO_ALIAS/NOLOG -
   MOM$LOAD 'current-search-string',SYS$SYSROOT:[DECSERVER]

   If the current search string associated with MOM$LOAD in your
   start-up file is SYS$SYSROOT:[DECSERVER] or if you have
   already made this change for a previous installation, there
   is no need to edit this file.
   This command ensures that the location of the server image
   is defined each time the system is rebooted, necessary for
   successful down-line loading.

2. Configure the server into your host's database.
   Execute a command procedure called DSVCONFIG.COM. This
   command procedure is in the SYS$SYSROOT;{DECSERVER] directory.
   If you have already executed this procedure from previous
   installations, you need to configure only any additional units.
   All previously defined units will still be configured.
        Installation of MS3 V1.2 completed at 16:08

        VMSINSTAL procedure done at 16:08

$
```

C.3 Configuration Examples

Note

DSVCONFIG.COM is a command procedure used with all DIGITAL terminal servers. All references to DECservers include the MUXserver 100 and the MUXserver 300.

C.3.1 Starting DSVCONFIG.COM

The following example shows the beginning of the configuration procedure. This example assumes that the latest version of DSVCONFIG has already been run so that the DSVCONFIG.DAT file exists in the correct format. (Refer to Chapter 3 for the prompts that are displayed if the procedure has either to create DSVCONFIG.DAT or be reformatted.)

```
$ SET DEFAULT SYS$SYSROOT:[DECSERVER] RETURN
$ @DSVCONFIG RETURN

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

Press RETURN to start, or CTRL/Z to exit... RETURN

           DECserver Configuration Procedure

                  Menu of Options
```

C.3.2 The DSVCONFIG.COM Menu

This example illustrates the DSVCONFIG Menu.

```
DECserver Configuration Procedure

Menu of Options

 1 - List known DECservers
 2 - Add a DECserver
 3 - Swap an existing DECserver
 4 - Delete an existing DECserver
 5 - Restore existing DECservers
 CTRL/Z - Exit from this procedure

Your selection?
```

C.3.3 Listing Known Servers (Option 1)

The following sections show how the configuration procedure continues for each option. With the exception of List, each option ends by automatically returning to the menu.

```
  Your selection? 1 RETURN

DECnet   DECnet Server  Service
Address  Name   Type    Circuit Ethernet Address  Load File      Dump File
-------------------------------------------------------------------------

28.1001  TUNA    DS200   UNA-0  08-00-2B-02-24-AA PRO801ENG.SYS  DS2TUNA.DMP
28.1003  CONCH   MS100   UNA-0  08-00-2B-02-24-F1 MS1601ENG.SYS  MSDMP24F1.SYS
28.1005  OYSTER  MS300   UNA-1  08-00-2B-04-AA-2B MS4801ENG.SYS  MS3OYSTER.DMP

Total of 3 DECservers defined.
```

C.3.4 Adding a Server (Option 2)

This example adds a new MUXserver 300 named SHRIMP.

```
Your selection? 2 RETURN

Type a ? at any time for help on a question.
Type CTRL/Z for any question to return to the menu without adding the unit.

DECserver type? MS300 RETURN
DECnet node name for unit? SHRIMP RETURN
DECnet address for unit? 28.1002 RETURN
DECserver Ethernet address of this unit? 08-00-2B-04-AA-2B RETURN
DECnet Service Circuit-ID? [UNA-0] RETURN

If you get an error message now, the new unit won't be added, and you
should delete it from the directory.
```

If you use the List option to get a listing of servers, you see that SHRIMP appears on the listing of entries.

C.3.5 Swapping a MUXserver 300 for a New Unit (Option 3)

In this example an existing MUXserver 300 named CONCH is swapped for a new MUXserver 300, which is given the same DECnet node name. The DECnet node address always stays the same with Swap. The new server also has the same service circuit–ID as the old server. Note that if you use Swap a MUXserver 300, you will have to specify the new MUXserver 300's Ethernet address.

```
Your selection? 3 RETURN

Type a ? at any time for help on question.
Type  CTRL/Z for any question to return to the menu without changing the
unit.

What is the DECnet node name you want to swap? CONCH RETURN
DECserver at Ethernet address 08-00-2B-02-24-F1 is being swapped.
Enter the new Ethernet address, and any other changed characteristics.

DECserver type? [DS100] MS300 RETURN
DECnet node name for unit? [CONCH] RETURN
DECserver Ethernet address of this unit? 08-00-2B-03-AA-AB RETURN
DECnet Service Circuit-ID? [UNA-0] RETURN
```

C.3.6 Deleting a Server from the Database (Option 4)

This example shows the deletion from the load host's node database of the existing server with the DECnet node name TUNA.

```
Your selection? 4 RETURN

Which DECnet node name is to be deleted? (CTRL/Z returns to menu)
                                                                TUNA RETURN

%NCP-I-NMLRSP, listener response - Success
Remote node = 28.1001 (TUNA)
%NML-I-RECDELET, Database entry deleted
```

If you use the List option to get a listing of servers, you see that TUNA no longer appears.

C.3.7 Restoring Existing Servers to the Database (Option 5)

This example shows the restoration of the local down–line load database.

```
Your selection? 5 RETURN

Restoring existing DECservers from local database...
Local database successfully restored.
```

C.4 Verification Examples

C.4.1 Verifying a Load Host Installation

The following example, presented in five parts, shows the installation verification for a VMS load host. This procedure tests that your VMS system can perform successfully as a down–line load host for a particular server.

In this example the VMS system is named VSYSTEM. The server that is loaded is a MUXserver 300 with DECnet node name SHRIMP. SHRIMP is an existing server, currently operating on the network. This example assumes that the down–line load is performed during normal working hours and that server users are warned of the upcoming down–line load by way of RCF.

C.4.2 Using RCF and Warning Server Users

This example uses the server's default login password, ACCESS.

```
$ MCR NCP CONNECT NODE SHRIMP SERVICE PASSWORD OF23 RETURN
Console connected (press CTRL/D when finished) RETURN
# ACCESS RETURN (not echoed)
MUXserver 300 Terminal Server Vn.n (BL2x) - LAT V5.1

Please type HELP if you need assistance

Enter username> SWINSTALLER RETURN

Local> BROADCAST ALL "The server will be reloaded in 3 minutes." RETURN
Local> CTRL/D
$
```

C.4.3 Enabling DECnet Event Logging and Checking Server Names

```
NCP> SET LOGGING CONSOLE EVENT  0.3,7 RETURN
NCP> SET LOGGING CONSOLE STATE ON RETURN
NCP> SET LOGGING MONITOR STATE ON RETURN
NCP> EXIT RETURN

$ SET DEFAULT SYS$SYSROOT:[DECSERVER] RETURN
$ @DSVCONFIG RETURN

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

Press RETURN to start, or  CTRL/Z to exit... RETURN

DECserver Configuration Procedure

Menu of Options

   1 - List known DECservers
   2 - Add a DECserver
   3 - Swap an existing DECserver
   4 - Delete an existing DECserver
   5 - Restore existing DECservers
   CTRL/Z - Exit from this procedure

   Your selection? 1 RETURN

DECnet   DECnet Server  Service
Address  Name   Type    Circuit Ethernet Address  Load File      Dump File
-------------------------------------------------------------------------------

28.1002  SHRIMP MS300   UNA-0   08-00-2B-04-AA-2B MS4801ENG.SYS  MS3SHRIMP.DMP

   Total of 1 DECserver defined.

   DECserver Configuration Procedure

   Menu of Options
```

```
   1 - List known DECservers
   2 - Add a DECserver
   3 - Swap an existing DECserver
   4 - Delete an existing DECserver
   5 - Restore existing DECservers
   CTRL/Z - Exit from this procedure

Your selection?  CTRL/Z
$
```

C.4.4 Down–Line Loading with the LOAD Command

```
$ MCR NCP LOAD NODE SHRIMP PASSWORD OF23  RETURN
```

C.4.5 DECnet Event–Logging Display after Issuing LOAD

```
NCP> LOAD NODE SHRIMP SERVICE PASSWORD OF23  RETURN
DECnet event 0.3, automatic line service
From node 4.205 (VSYSTEM), 18-JUN-1988 01:35:20.47
Circuit UNA-0, Load, Requested, Node = 28.1002 (SHRIMP)
File = MOM$SYSTEM_SOFTID:MS4801ENG, Operating system
Ethernet address= 08-00-2B-04-AA-2B

DECnet event 0.3, automatic line service
From node 4.205 (VSYSTEM), 18-JUN-1988 01:43:21.14
Circuit UNA-0, Load, Successful, Node = 28.1002 (SHRIMP)
FILE = MOM$SYSTEM_SOFTID:MS4801ENG, Operating system
Ethernet address= 08-00-2B-04-AA-2B
```

C.4.6 Conclusion of a Load Host Installation Verification

```
NCP> CLEAR LOGGING CONSOLE EVENT 0.3,7  RETURN
NCP> EXIT  RETURN
$
```

C.4.7 Verifying the Server System Installation

This example illustrates the verification of a server system installation. This procedure tests the hardware, the correctness of the software version, and the ability of the new software to run successfully.

It assumes that you are at a terminal connected to the server's console port, that your username is SWINSTALLER, that your user password is SQUIDS, that you will test the server by connecting to your own VMS system, VSYSTEM, and that the new MUXserver 300 software is Version 1.2.

```
 RETURN
 RETURN
MUXserver 300 Terminal Server Vn.n (BL2x) - LAT V5.1

Please type HELP if you need assistance

Enter username> SWINSTALLER  RETURN

Local> TEST PORT COUNT 5 WIDTH 65  RETURN
```

```
 !"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^__`
!"#S%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^__`a
"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^__`ab
#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^__`abc
$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^__`abcd

Local> SHOW PORT [RETURN]
```

The display at the port of a new MUXserver 300 should match the following example, which contains the factory–set values, except for the port number and user name:

```
Port 1:  SWINSTALLER

Character Size:         8        Input Speed:          9600
Flow control :        XON        Output Speed:         9600
Parity:              None        Modem Control:    Disabled

Access:             Local       Local Switch:          None
Backward Switch:     None       Name:                PORT_1
Break:              Local       Session Limit:            4
Forward Switch:      None       Type:                  Soft

Preferred Service:   None

Authorized Groups:      0
(Current)  Groups:      0

Enabled Characteristics:

Autobaud, Autoprompt, Broadcast, Input Flow Control, Loss Notification,
Message Codes, Output Flow Control, Verification

Local> SHOW SERVICES ALL SUMMARY [RETURN]

Service Name        Status          Identification

DEVELOP           2 Connected       Hardware Timesharing Service Ident
DOCUMENT            Available       Documentation Timesharing
TEST                Unavailable     As usual
TIMESHARING         Unknown         Server Software Development
VSYSTEM             Connected       VAX/VMS 8600

Local> CONNECT VSYSTEM [RETURN]
Local -010- Session 1 to VSYSTEM established

   VSYSTEM -- VAX 8600, the Best for down-line loading

Username: SWINSTALLER [RETURN]
Password: SQUIDS [RETURN] (not echoed)

        Welcome to VAX/VMS version 5.2 on node VSYSTEM
    Last interactive login on Monday, 15-JAN-1990 15:50
    Last non-interactive login on Friday, 15-DEC-1989 09:18

SYS$MANAGER:NOTICE.TXT - VSYSTEM System Notices

18-Jun-1988  All Users, please purge your files!

$ SHOW TIME [RETURN]
  16-JAN-1990 13:55:27
$ SHOW USERS [RETURN]
      VAX/VMS User Processes at 16-JAN-1990 13:55:36.33
    Total number of users = 4,  number of processes = 5
```

```
 Username        Interactive  Subprocess   Batch
 IVY                  1
 ROSE                 1
 SRV$SYSTEM           -        1           1
 SWINSTALLER          1
$ LO RETURN
  SWINSTALLER logged out at 16-JAN-1990 13:57:30.05
```

.

Glossary

This glossary defines terms used in the MUXserver/DECmux 300 Software Installation Guide for the VMS and MicroVMS operating systems.

Asynchronous
Pertaining to a communication method in which each event occurs in with no relation to a timing signal. See also *synchronous*.

CCITT
International Telephone and Telegraph Consultative Committee, an international standardization body of the Postal, Telephone and Telegraph departments and their equivalents.

CRC
Cyclic Redundancy Check, an error detection scheme in which the receiver checks each block of data for errors. A check character is generated by taking the remainder after dividing all serialized bits in the block by a predetermined number. This check character is compared with a transmitted check character and, if the two do not match, the block is retransmitted.

DEBNA
An Ethernet communications controller for computers with VAX BI bus hardware.

DEC423
DEC423 is an interface standard developed by Digital. It is electrically compatible with EIA Standard RS–423–A.

DELNI
A local network interconnect product that provides eight separate network interfaces from a single Ethernet transceiver.

DELQA
A communications controller that connects Q-bus MicroPDP11 and MicroVAX systems to an Ethernet or IEEE 802.3 local area network.

DELUA

A high performance Ethernet communications controller for computers based on the UNIBUS hardware.

DEQNA

An Ethernet communications controller for computers based on the Q-bus hardware.

DESQA

A communications controller that connects Q-bus MicroPDP11 and MicroVAX systems in BA200-series enclosures to an Ethernet or IEEE 802.3 local area network.

DEUNA

An Ethernet communications controller for computers based on UNIBUS.

EIA

Electrical Industries Association. A USA organization with the same function as CCITT.

EIA–232–D

EIA Recommended Standard No 232 Issue D (formerly RS–232–C).

It defines the connectors, cables and electrical characteristics for an asynchronous serial communications interface between a computer and a modem. It is also widely applied to interfaces between computers and other terminal equipment.

EEPROM

Electrically Erasable Programmable Read–Only Memory.

EPROM

Erasable Programmable Read–Only Memory.

Ethernet

A Xerox trade mark for a type of local area network based on carrier–sense multiple access /collision detection (CSMA/CD).

Ethernet Transceiver

A device which attaches to a standard Ethernet coaxial cable.

FCC

Federal Communication Commission.

IEC

International Electrotechnical Commission.

LAT

Local Area Transport - Digital's name for the Ethernet protocol used by the MUXserver 300 for terminal connections.

LED

Light Emitting Diode

Local Area Network

A network spanning a limited geographic area, such as a building or group of buildings, and using high speed data bus(es).

Logging On

The identification of a user to the (VAX/VMS) operating system. The user types an account name and password in response to prompts from the system.

MMJ

Modified Modular Jack, an offset-keyed modular jack used for data cables.

MODEM

The word is a contraction of MOdulator DEModulator. A modem interfaces a terminal to a transmission line. A modem is sometimes called a dataset.

Network Manager

The person responsible for all components of a network in a particular geographic area. Note that this does not include the MUXserver/DECmux 300 network (see *Server Manager*).

Node

An intelligent device on a network.

Port

The actual physical connection between equipment and, for example, a serial communications line.

Repeater

A non–intelligent device on a network. Used to extend the length of a medium by restoring signal amplitude, waveform and timing.

SER

Satellite Equipment Room.

Service

A resource, such as a computer.

Server

A hardware and/or software device which provides many users with access to a system.

Server Manager

The person responsible for a particular server. This includes a person responsible for a MUXserver/DECmux 300 network which, in this context, is seen as a server.

STATMUX

Statistical Multiplexing.

Supervisor Port

A DEC423 port used to connect a test terminal.

Synchronous

Pertaining to a communication method in which each event occurs in relation to a timing signal. See also *Asynchronous*.

System Manager

The person responsible for the policies, procedures and the daily operation of a computer system.

TDM

Time Division Multiplexing.

Terminal

An input/output computer peripheral device that has a keyboard and video screen or printer.

Terminal Server

An active device, such as a MUXserver/DECmux 300 network, used to attach terminals to a host system through a network.

ThinWire Ethernet

An IEEE 802.3 compliant Ethernet network composed of thin Ethernet cable as opposed to standard Ethernet cable.

ThinWire Segment

A length of coaxial cable made up of one or more cable sections connected together with BNC barrel connectors and BNC TEE connectors.

Transceiver

See *Ethernet Transceiver*.

VMS

Digital's VAX computers' main operating system.

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