Networks · Communications

DECnet–RSX

Release Notes

AA–J517E–TC

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DECnet–RSX

Release Notes

Order No. AA–J517E–TC

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DECnet–RSX Release Notes inform the user of updated information not
included in the manual set. This information covers software and/or doc-
umentation errors or changes made late in the development cycle, plus
installation and operation information. This manual should be read
before others in the manual set.

Supersession/Update Information: This is a new manual.

Operating System and Version: RSX–11M V4.2
                                     RSX–11S V4.2
                                     RSX–11M–PLUS V4.0
                                     Micro/RSX V4.0

Software Version: DECnet–11M V4.3
                                     DECnet–11S V4.3
                                     DECnet–11M–PLUS V4.0
                                     DECnet–Micro/RSX V4.0

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Contents

1 Release Description

These are the *DECnet-RSX Release Notes* for DECnet–11M–PLUS V4.0, DECnet-Micro/RSX V4.0, and DECnet–11M/S V4.3.

1.1 Required Operating System Software

This kit can be generated and run on the following operating system versions.

- RSX–11M–PLUS V4.0 or later

- Micro/RSX V4.0 or later

- RSX–11M and RSX–11S V4.2 or later

1.2 Restrictions

All DECnet–11M–PLUS V3.0, DECnet–11M V4.2, and DECnet–11S V4.2 nodes participating in the network must be at Update C or a more recent level.

Saved answer files from the previous versions of DECnet-RSX are not supported.

2 New Features

These are the major new features for this release:

- **LAT V5.1 application terminals.** Application terminal support allows DECnet–11M–PLUS and DECnet-Micro/RSX systems to access line printers and other application devices connected through the Ethernet. First you must specify the remote server and port (or service) that a terminal created by the LAT Control Process will access. Then the application terminal issues a request for a connection, or it issues an I/O request that triggers the connection request. This causes the LAT process on the host to solicit a session with the remote terminal server.

  For example, the RSX system can access line printers connected to terminal servers through the Ethernet. The user specifies the remote terminal server and port (or service) that the queue manager will access. At the time of a print request, the print spooler initiates the request for a connection with the remote terminal server.

  For more information, refer to Chapter 6 of the *DECnet-RSX Programmer's Reference Manual*, Chapter 5 of the *DECnet-RSX Guide to Network Management Utilities*, and Section 9 of these release notes.

- **Proxy access**. DECnet–11M–PLUS and DECnet-Micro/RSX nodes support proxy. Proxy access gives a user access to an account on another node in the network without knowing the account name or the access control of the target account. The new Proxy utility sets up a proxy database that maps remote users to local accounts. NCP and CFE commands are used to enable and disable proxy on the local node. These commands control incoming access to a proxy account on the local node and outgoing proxy requests that are sent to other systems on the network. For more information, refer to Chapter 10 of the *DECnet-RSX Guide to Network Management Utilities*.

- **Extended length of access control information fields in connect blocks**. The new implementation allows password, user name, and account lengths of up to 39 bytes each. Short connect blocks that use 8-byte passwords and 16-byte user names and accounts continue to be supported. For more information, refer to Chapters 2 and 3 of the *DECnet-RSX Programmer's Reference Manual*.

- **New device support**. Existing communication device drivers have been modified to support the new DHQ11, DELQA, and DELUA devices.

- **Line and circuit counter timer support**. Network management commands allow you to schedule and adjust the time interval at which counters for lines and circuits are logged to a file and automatically zeroed. This feature helps in network trouble shooting when hardware problems exist. For more information, refer to the *DECnet-RSX Guide to Network Management Utilities*.

- **Equal cost load splitting**. Equal cost load splitting increases router performance by using multiple paths over circuits of equal cost to route messages to a destination. CFE contains a new Executive parameter called MAXIMUM PATH SPLITS. This parameter defines the number of equal cost paths to use between a local and remote node. The default for path splits is 1, which disables path splitting. All nodes in the network must support receiving out of order segments if you want to use equal cost load splitting. For more information, refer to the *DECnet-RSX Guide to Network Management Utilities*.

- **Node identification in network management commands**. Node identification format now supports wildcards. For example, you can use commands such as NCP SHOW NODE 2.* or NCP SHOW NODE *.*.

- **802.3 support for DLX task-to-task LAN programming**. A DLX task can allocate a data link port that processes incoming and outgoing frames according to the IEEE 802.3 standard. The data link can filter data according to a Service Access Point (SAP) or Subnetwork Access Protocol (SNAP) identifier designated by the task. Refer to Chapter 4 of the *DECnet-RSX Programmer's Reference Manual* for more information.

3 Reporting and Isolating Problems

A separate Software Problem Report (SPR) should be used for each problem. The separate reports simplify record keeping for quick responses.

User problems are often difficult to reproduce. Therefore, in the SPR, please describe the system state when the problem occurred. Keep the description simple but accurate, and illustrate a general problem with several examples. When an SPR contains concise information about a problem, the problem is more easily reproduced and corrected. Please ensure that questions are direct and simply stated so that they can be answered clearly and directly.

3.1 Severe Errors

Severe errors are errors that hang or crash your system. To investigate and correct severe errors, the following information is essential:

- A description of the events leading up to the problem

- Console dialog or output, if appropriate

- A machine-readable copy of:

  - Crash dump file

  - RSX symbol table file (RSX11M.STB); for M–PLUS only

  - CEX symbol table file (CEX.STB); for 11M/S only

  - CEX data base file (CETAB.MAC)

  - Any user task involved (source copy)

  - The task build command files or parameters used at NETGEN for the appropriate network tasks involved

  - The task build map files created during NETGEN for the appropriate network tasks involved

- If the problem is device related, the modem or type of local connection being used

- Suggestions for problem isolation

All media sent to Digital will be returned to the sender.

If the problem occurs when the network is running and involves software that does not use the network, unload the network software and see whether you can still reproduce the problem.

If the problem occurs during periods of high interrupt loading, try to reproduce the problem without the load. Examples of high interrupt loading include many active high-speed communications lines, many active terminals, and any process I/O.

If the problem involves file transfer or file access, please include a DAP trace of the situation. See the following sections on NFT, NFARs and FAL for information on creating DAP traces.

3.2 Reporting a Documentation Error

When describing a problem in a manual, specify the full title of the manual, and identify the section and page number where the error occurs. List any recommendations or solutions that you have.

4 Documentation Changes

This section lists the changes to information in the DECnet–11M–PLUS V4.0, DECnet-Micro/RSX V4.0 and DECnet–11M/S V4.3 manual set.

4.1 *DECnet-RSX Network Generation and Installation Guide*

You should note the following changes to the *DECnet-RSX Network Generation and Installation Guide*:

- In Chapter 2, Section 2.1.1 — The host system can be an RSX–11M Version 4.2 or later, an RSX–11S Version 4.2 or later, an RSX–11M–PLUS Version 4.0 or later, or a VMS system running VAX-11 RSX Version 2.0 or later.

- In Chapter 2, Section 2.1.2 — A target system must be an RSX–11M Version 4.2 or later, an RSX–11M–PLUS Version 4.0 or later, or an RSX–11S Version 4.2 or later.

- In Chapter 3, Section 3.3.6.2 — Step 1 should note that the distribution tape must be loaded onto the tape device before mounting the tape. In Step 3, the symbol *tdu* refers to the user's area.

- In Chapter 4, Section 4.2.1 — Before you run NETGEN, the logical LB: must be correctly assigned. Use the following MCR command, where *ddnn*: is the device that contains SYSLIB.OLB:

      >ASN ddnn:=LB:

- In Chapter 9 — The NOTE on page 9-1 shows the following command:

      SET /NETUIC=[x,54]

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where *x* refers to the group code of the network procedures as declared in the network generation procedure.

- In Chapter 10, Section 10.1.2 — The sample command for running the test should be:

  ```
  >@ddnn:[xxx,24]NTEST.CMD [RET]
  ```

  where *ddnn*: is the device containing the generated network.

- In Chapter 10 — The following three lines of the sample listing for the NTEST.CMD are not displayed by the command file:

  ```
  >SET /BUF=TI:80

  >SET /UIC=[1,1]

  >SET /UIC=[100,24]
  ```

- In Chapter 10 — The sample listing for the NTEST.CMD may be different than your actual listing. For example, the counters for Aged packet loss, Node out-of-range packet loss, and Partial routing update loss do not appear for end nodes. Also, NTEST.CMD may exist on a device other than SY:.

4.2 DECnet-RSX Guide to Network Management Utilities

You should note the following changes to the *DECnet-RSX Guide to Network Management Utilities*:

- In Chapter 1, the SET EXECUTOR command — the MAXIMUM BROADCAST ENDNODES parameter is not supported.

- In Chapter 1, the NCP SET KNOWN CIRCUITS command — the COUNTER TIMER parameter is not supported.

- In Chapter 1, the SET KNOWN LINES command — the COUNTER TIMER parameter is not supported.

Refer to the section of these release notes titled "Local Area Transport (LAT) Support" for new information about LAT and LCP.

4.3 DECnet-Micro/RSX Installation Guide

After you install DECnet-Micro/RSX on a Micro/PDP–11/23, you must reboot the system.

4.4 DECnet-RSX Guide to User Utilities

Two additions have been made to the NFT switches that are discussed in Chapter 4. A new NFT switch, /CD, preserves the creation date of an output file during a transfer. If this switch is not used, the output file is given the date and time of the transfer.

The switch /CO, which forces the output file to be contiguous, can now be explicitly negated (/-CO) to force the creation of a non-contiguous output file. If neither /CO nor /-CO is specified, the output file takes the same attribute as the input file.

4.5 DECnet-RSX Network Manager's Pocket Guide

You should note the following changes to the *DECnet-RSX Network Manager's Pocket Guide*:

- In the NCP and VNP Command Summary sections, the SET EXECUTOR command does not support the MAXIMUM BROADCAST ENDNODES parameter.

- In the NCP Command Summary section, the NCP SET KNOWN CIRCUITS command does not support the COUNTER TIMER parameter.

- In the NCP Command Summary section, the SET KNOWN LINES command does not support the COUNTER TIMER parameter.

4.6 DECnet-RSX Network Management Concepts and Procedures

You should note the following changes to the *DECnet-RSX Network Management Concepts and Procedures*:

- In the NCP and VNP Command Summary sections of Appendix A, the SET EXECUTOR command does not support the MAXIMUM BROADCAST ENDNODES parameter.

- In the NCP Command Summary section of Appendix A, the NCP SET KNOWN CIRCUITS command does not support the COUNTER TIMER parameter.

- In the NCP Command Summary section of Appendix A, the SET KNOWN LINES command does not support the COUNTER TIMER parameter.

In Appendix A, the MAXIMUM BROADCAST ENDNODES parameter should not be listed for the SET EXECUTOR command in the VNP and NCP Command Summary sections.

5 NETGEN Notes

5.1 Prerequisites

This release of DECnet runs on the following systems:

- RSX–11M V4.2 or later

- RSX–11S V4.2 or later

- RSX–11M–PLUS V4.0 or later

- Micro/RSX V4.0 or later

Saved answer files from previous DECnet releases will not work with this release.

If you set the network UIC to the wrong UIC, NETINS.CMD will use that UIC and may load the wrong network.

5.2 Abnormal NETGEN Termination

If NETGEN terminates abnormally with an "AT." error message (such as ...AT.—File read error) or if it simply stops prematurely with an end-of-file (such as @<EOF>) on the command file, the indirect command file processor (AT.) most likely encountered a disk error. Restarting NETGEN from the beginning and using a different disk drive may alleviate the problem.

6 Device Notes

6.1 Powerfail Recovery

If a power failure occurred while any DMC-11 line was active, there is a possibility that the DMC can corrupt memory before the network software is aware of the recovery. This situation can cause the system to crash.

6.2 Error Counters

If a header CRC error occurs as a result of line interference, the Header Format Error counter flag and the Buffer Too Small Error counter flag may be incremented instead of the Header CRC Error counter. This happens because the device drivers check these conditions before calculating the header CRC.

6.3 Device CSRs for Down-Line Loaded Systems

It is important to have the "floating" device Controller Status Registers (CSRs) at the proper addresses on the system to be loaded. The proper addresses are determined according to the standard UNIBUS and Q-bus ranking of the devices.

The command file [200,200]FLOAT.CMD on the DECnet distribution kit will help you determine what these CSR addresses should be.

6.4 Downline Loading 11S Systems

If you downline load an 11S system to a remote node that contains a DELQA, the node database on the host node should have TERQNA.SYS specified as the tertiary loader. Refer to the *DELQA User's Guide* for the switch settings that enable downline system loading. The remote node will respond to the TRIGGER command if the processor restart logic is set up to invoke the automatic boot procedure and if the automatic boot procedure is set up to boot the QNA ROM.

7 System Notes

7.1 Tuning

When tuning your system, you should periodically check the system counters, using the command NCP SHOW SYSTEM COUNTERS.

If there are allocation failures for receive buffers, increase the minimum number of receive buffers, using the CFE command DEFINE SYSTEM MINIMUM RECEIVE BUFFERS. You may also want to use the CFE command SET SYSTEM MAXIMUM LARGE BUFFERS to increase the number of large buffers. By increasing the minimum number of receive buffers, you effectively decrease the number of large buffers that can be used for transit messages.

If there are allocation failures for large buffers, use the CFE command DEFINE SYSTEM MAXIMUM LARGE BUFFERS to increase the number of large buffers. Alternately, you can decrease the minimum number of receive buffers, using the CFE command DEFINE SYSTEM MINIMUM RECEIVE BUFFERS, because this effectively increases the number of large buffers that can be used for transit messages. If you do this, however, watch for allocation failures on receive buffers.

7.2 Powerfail Recovery

If a power failure occurs during the loading of network software, logical links may be aborted and switched lines are disconnected. They are restarted upon recovery.

7.3 Running SHUTUP

The Shutup procedures used under RSX–11M and RSX–11M–PLUS correctly dismount the network during the dismount phase. If you want to clear the network from memory during Shutup, include the following entry in LB:[1,2]SHUTUP.CMD:

```
NCP SET EXECUTOR STATE OFF
.WAIT NETACP
NCP CLEAR SYSTEM
```

Because the NCP command SET EXECUTOR STATE OFF completes asynchronously, issuing the CLEAR SYSTEM command immediately afterwards displays the following error message:

```
NTL -- Device NS: Still Active
```

Including .WAIT NETACP avoids this problem.

8 Utility Notes

8.1 CFE

If you have a very large CETAB.MAC you may get the "CFE—Insufficient Buffer Space" error while CFE is attempting to read in the CETAB.MAC. If this happens, run or install CFE with an increment large enough to fit your CETAB. Refer to the *RSX–11M/M–PLUS MCR Operations Manual* for details about the RUN and INS commands.

8.2 NCP

NCP allows you to change the down-line load parameters in the volatile network database. You can set or change parameters with the NCP SET NODE command or override default parameters when giving the NCP LOAD NODE, LOAD VIA, TRIGGER NODE, or TRIGGER VIA commands. You can clear parameter values with the NCP CLEAR NODE commands. For information on these parameters, refer to the *DECnet-RSX Guide to Network Management Utilities* and the *DECnet-RSX Network Management Concepts and Procedures* manual.

You can set and clear up-line dump parameters with NCP. When a satellite node requests an up-line dump, the host node looks for these parameters in its remote node database if they are not supplied in the request. For more information, refer to the *DECnet-RSX Guide to Network Management Utilities* and the *DECnet-RSX Network Management Concepts and Procedures* manual.

DECnet-RSX parses all NCP commands, except those that are system-specific to non-RSX systems. When DECnet-RSX does not support a command, NCP fails with the message *"command* failed—invalid message format". These commands are parsed so that the local node may be used as a network control center. For example, TELL *vms-node* SHOW SIGNIFICANT NODES COUNTERS will be parsed and passed to the named node. If the remote node supports the command, it will be executed there; any messages will be displayed on the originating terminal or written to the specified local file.

The Phase II node name delimiter " _ " (underscore) is no longer a valid node name delimiter. It can now be used in passwords and in the RSX-specific form: NODE/*user/password*::. Also, NCP no longer converts characters within quoted strings to upper case. This allows better communication with systems that require case-sensitive passwords.

Alias user name and password size have been extended to 39 characters.

8.3 NFT

Multiblock support has been added to both NFT and to the RMS FAL in order to improve the performance of block file transfers between RSX systems. This feature reduces both the number of disk accesses and the number of DAP Data messages that must be processed during a file transfer in block mode. Note that only single-block transfers will be done against RSX and VMS systems that are running DAP V7.0 or earlier.

NFT now supports 39-character passwords, user names, and accounts.

A new NFT switch, /CD, preserves the creation date of the output file created by a transfer. If this switch is not used, the output file is given the date and time of the transfer.

The switch /CO, which forces the output file to be contiguous, can now be explicitly negated (/-CO) to force the creation of a non-contiguous output file. If neither /CO nor /-CO is specified, the output file takes the same attribute as the input file.

When reporting problems with NFT, adding a DAP message trace of your particular problem will help us isolate the problem quickly. Please submit trace output with any NFT-related SPR. NFT must be rebuilt to enable message tracing.

To add trace support, modify [137,24]DECPRM.CMD to change $DNFTR to "true" and then rebuild NFT using the NETGEN component mode.

To activate tracing, assign the TR: logical device name to the desired trace, using the ASN *ddn*: = TR: command.

If the trace output device is a disk, the output will be placed in the file NFARS.TRC under the current UIC.

8.4 FAL

There are two versions of FAL: one supports basic sequential FCS file access and can be subsetted for use on RSX–11S nodes, and one supports RMS–11 file access.

FAL allows network file access only to or from public devices. If a device is to be accessed by a remote user, using either NFT, FTS, or any task which is linked to the NFARs, the device must be made public. To make a device public, use the SET /PUB = *ddu*: MCR command before mounting the disk. Note that magtapes can be set public but must be mounted for use by a single user. Since FAL cannot mount the tape, magtapes cannot be accessed by FAL.

FAL can provide logging of file accesses. To enable logging, you must provide the empty file LB:[1,4]FAL.LOG. If this file exists, FAL makes an entry in it for each file access request. The system manager should ensure that the file is "emptied" often enough so that it does not grow too large.

When reporting problems with FAL or NFT, a DAP message trace of your particular problem will help isolate the problem quickly. Please submit trace output with any FAL related SPR. FAL must be rebuilt to enable message tracing.

To add trace support, modify [137,24]DECPRM.CMD to change $DFLTR to "true" and then rebuild FAL using the NETGEN component mode.

To activate tracing, assign the FT: logical device name to the desired trace, using the ASN *ddn*: = FT:/GBL command.

If the trace output device is a disk, the output will be placed in the file [1,4]FAL.TRC.

The FCS-11 based FAL does not support random record access, relative or indexed files, stream files, and VFC files with fixed record headers whose header length is not equal to 2. It also does not support the rename, change protection, or block mode transfer features of NFT.

If the RMSRES version of FAL is improperly installed, it will abort (T-BIT TRAP or BPT EXECUTION) during file transfer. The following is a list of the correct install commands:

```
INS LB:[3,54]RMSRES.TSK/PAR=GEN/RON=YES
INS LB:[1,1]RMSLBL.TSK/PAR=GEN/RON=YES
INS LB:[1,1]RMSLBB.TSK/PAR=GEN/RON=YES
INS LB:[1,1]RMSLBC.TSK/PAR=GEN/RON=YES
INS LB:[1,1]RMSLBD.TSK/PAR=GEN/RON=YES
INS LB:[1,1]RMSLBE.TSK/PAR=GEN/RON=YES
INS LB:[1,1]RMSLBN.TSK/PAR=GEN/RON=YES
```

NOTE

RMSRES is installed from [3,54]. There is also a file [1,1]RMSRES.TSK, that is not used by the RMS based FAL.

8.5 NFARs

This release includes extended access control information size to the network file access routines (NFARs).

You may wish to use the DAP trace module to debug user programs that use the NFARs. To add trace support, explicitly include in the task image the NFATRC module from the DAPTRC object library. The reference to NFATRC must come before any references to the DAPFOR library in the task build command file. Also, you must add the following line to the options in the taskbuild file:

```
GBLDEF = $TRLUN:6
```

To activate tracing, assign the TR: logical device name to the desired trace device. If the trace output device is a disk, the output will be placed in the file NFARS.TRC under the current UIC.

8.6 CTERM

Note the following when using CTERM:

- VMS treats ESCAPE different than RSX. When a VMS system sends an ESCAPE to an RSX system, the RSX system does not recognize it as a terminator. You can prevent this by setting NOLINEEDIT on the VMS system before connecting to the RSX system.

- VMS-style command line editing and recall are not supported between VMS and RSX systems. When you SET HOST from an RSX to a VMS system, the UP ARROW, DOWN ARROW, and certain other control keys such as CTRL/A and CTRL/E cannot be used to perform VMS-style command editing. Due to the way VMS handles command line recall, one level of command line recall is available, in both directions, by using the UP ARROW and DOWN ARROW keys or by entering CTRL/B.

  RSX does not support command line editing or recall; therefore neither function can be performed when you SET HOST from RSX to RSX.

- Certain control characters may echo differently when using CTERM from a VMS system to an RSX system than on a local RSX system. For example, CTRL/Z echoes as <EXIT>.

- There may be some screen formatting differences between using NCT from an RSX system to a VMS system and using a local VMS terminal. These differences do not affect EDT or screen display programs, but may affect read-with-prompt operations.

- VMS applications using FMS or TDMS to do screen I/O are not supported using CTERM from an RSX system.

8.7 RMT

8.7.1 Use of RMT from Command Files

Avoid invoking the RMT utility from an indirect command file or batch job. The results are unpredictable and depend on the system and the timing involved.

8.7.2 Terminal Characteristics

When using RMT, the characteristics of your terminal depend on two things:

- The local node's terminal driver features

- The local device characteristics, as set by the MCR SET command prior to the RMT session.

Optional features not supported at the local node are generally not supported during the RMT session. However, certain characteristics (ANSI, DEC, AVO, EDT, BLK, RGS and SFC) can be set on a remote host, even when the local host does not support them. These characteristics are implicitly set according to the RMT user's local terminal type. The terminal type at the start of the RMT session determines these characteristics for the session; however, the user can change characteristics by changing terminal types during the session.

8.7.3 Aborting RMT

DECnet–11M–PLUS systems allow the aborting of the Remote Terminal task (RMTACP) through an Executive feature.

RSX–11M and RSX–11S systems do not include this feature, and it is possible for a privileged user to abort RMTACP while it is in use. If RMTACP or any other privileged task is aborted, the system data structures may be left corrupted. If this occurs, a user connected through RMT can enter a "garbage" line. This invokes RMTACP again and resets the user's terminal to its original state.

If RMTACP is aborted, do not remove it from the system until all terminals are reconnected to the local system. Prematurely removing RMTACP after an abort may lead to a system crash.

9 Local Area Transport (LAT) Support

DECnet-RSX–11M–PLUS V4.0 and DECnet/Micro-RSX V4.0 support remote application devices, such as printers, connected to LAT terminal servers. Refer to Chapter 5 of the *DECnet-RSX Guide to Network Management Utilities* for information about defining remote devices.

The special LAT QIO functions (for example, IO.ORG and TC.QDP) apply only to LAT application terminals. The *DECnet-RSX Programmer's Reference Manual* contains information about LAT application terminals and a list of LAT error codes.

9.1 Printer Support

LAT terminals appear to the operating system as serial terminals, similar to YZ, YH, or other serial devices. Refer to the *RSX–11M–PLUS System Management Guide* and the *RSX–11M–PLUS Batch and Queue Operations Manual* for information on setting up a system queue for serial devices.

9.2 Additional SHOW PORT Information

This section provides information about the SHOW PORT command that is not presently covered in the documentation set.

9.2.1 SHOW PORT TT*nn*: Command

You can use the SHOW PORT TT*nn*: command (where TT*nn*: is a specific terminal) to display information about a single terminal. When an application terminal is specified, /FULL information is displayed. The following example shows a sample command and display.

```
>LCP SHO PORT TT30:

LAT Interactive Terminals:

Terminal  Local Port   User Name     Server Name    Server Port Name

TT30:     PORT_1       S. DAVIS      GROTON         PORT_7
```

9.2.2 SHOW PORT TT*nn*: Error Messages

The following error messages are defined for the SHOW PORT TT*nn*: command.

LCP — Device specified is not a valid LAT device

The specified device is not a LAT terminal or is not a valid device name.

LCP — Device not active

The device is available for an interactive session or for use as an application terminal if set up by LCP or a user program.

9.2.3 SHOW PORT /APP Display Parameters

The LCP SHOW PORT command displays detailed information about LAT application terminals, including server (Ethernet) address, last status, and last error. Individuals such as Digital Field Service Specialists and Network Managers use this detailed information for debugging and problem determination.

The following example shows a sample SHOW PORT command and display. Descriptions of the new parameters follow the example.

```
>LCP SHO PORT /APP

LAT Application Terminals:

Terminal  Local Port    Server Name        Service Name      Server Port Name

TT47:     PORT_26       SERVER1            None Provided     PORT_2
    Status: Not Connected           Flags: RSV
    Connect Requests: 532      Requests Retransmitted: 3
    Connect Request Failures: 1      Server Address: 08-00-2B-02-ED-B7
    Last Status Received: 0    Last Error Received: 0
```

- The **Server Address** parameter is the Ethernet address, and is the first parameter with which the terminal server responds to a connect request initialization. The Server Address parameter is always returned, even if the requested port or service is unavailable or does not exist.

  The Server Address parameter is set to 00-00-00-00-00-00 when a LAT terminal is initialized or when the target node (terminal server, port, or service) information is changed. The address remains at this setting until the terminal server has returned this parameter as a result of a connection solicitation.

- The **Last Status Received** parameter is used by Digital Field Service Specialists and others involved in debugging network problems. The Last Status Received parameter contains the last entry status that was received from the terminal server as the result of a connection solicitation sequence. This value is usually 0. A value of 200 indicates that an error has occurred during the connection solicitation. If the value is 200, the Last Error Received parameter should contain an error value.

- The **Last Error Received** parameter is used by Digital Field Service Specialists and others involved in debugging network problems. This parameter contains the numerical value returned by the terminal server when the Last Status Received parameter is 200. The value contained in the Last Error Received parameter is translated to one of the LAT error codes described in the *DECnet-RSX Programmer's Reference Manual*. In some cases, more than one parameter value is translated to the same LAT error code.

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The following list shows the parameter value codes that may occur when a connection solicitation is rejected (Last Status Received = 200).

Code	Meaning
0.	Reason is unknown
1.	User requested disconnect
2.	System shutdown in progress
3.	Invalid slot received
4.	Invalid service class
5.	Insufficient resources to satisfy request
6.	Service in use
7.	No such service
8.	Service is disabled
9.	Service is not offered by the requested port
10.	Port name is unknown
11.	Invalid password
12.	Entry is not in the queue
13.	Immediate access rejected
14.	Access denied
15.	Corrupted solicit request
16.	COMMAND_TYPE code is illegal/unsupported
17.	Start slot cannot be sent
18.	Queue entry deleted by local code
19.	Inconsistent or illegal request parameters

10 Cross-System File Transfer Notes

10.1 RSX–11M/M–PLUS File Transfer Capabilities

Support of the DAP Rename operation is currently limited to the RMS–11 based FAL and RSX–11M/M–PLUS NFT utilities.

Support of the DAP Change Protection operation is currently limited to the RSX–11M/M–PLUS NFT utility, and to the RSX–11M/M–PLUS and VMS RMS based FAL utilities.

Neither the RMS–11 based nor the FCS-11 based RSX–11M/M–PLUS FAL will support the "FOP" delete-on-close option bit in combination with the spool-on-close option. The file will be spooled but not deleted.

10.2 VAX/VMS File Transfer Capabilities

VAX/VMS supports a transparent remote file access interface integrated with the RMS file system. For more information, see the VAX/VMS VAX–11 RMS manuals and Cross System Notes. The VMS FAL supports most of the capabilities of VAX–11 RMS.

Wildcard transfers from VAX/VMS to RSX–11M nodes may result in errors. These errors occur because VAX/VMS has decimal file-name version numbers while RSX–11M supports octal file-name version numbers. See the previous NFT section for details.

Many text files on VMS systems use the print file carriage control attribute (RAT = PRN). In particular VMS batch log files and files created by VMS DCL default to print file carriage control. This is now a supported record format for the RSX–11M/M–PLUS RMS–11 based FAL, but not for most RSX text editors and utilities. Users must be careful when transferring files from a VMS system to an RSX system. If the file is to be used on the RSX system, it must be converted by the RMS Convert utility.

RSX–11M/M–PLUS and VAX/VMS have differing meanings for the E protection category. On RSX, E means "extend" file access. On VMS, it means "execute" (run) file access. Files transferred to a VMS system will lose the "extend" setting and gain the "execute" setting. Files transferred from a VMS system will lose the "execute" setting and gain the "extend" setting.

Space for VAX/VMS files is always allocated according to the disk's cluster size. When the VMS COPY command transfers files from a VMS system to an RSX system, the extra blocks allocated due to cluster round-up will not be truncated. When this happens, you can truncate the file on the RSX node, using the PIP *file*/TR command. RSX task image files transferred from a VMS

system must especially be truncated, because the INSTALL command on the RSX system will not install a file whose high block is not the same as the end-of-file block.

The VAX–11 RMS file system supports a superset of the RMS–11 V2.0 capabilities. Some capabilities are suppressed or modified by the VAX–11 RMS network access code when working against an RSX system, and some are not. See the *VAX/VMS Cross System Notes* for more detail. In particular the following capabilities or attributes are not supported by the RSX RMS–11 based FAL:

- Stream-CR or Stream-LF Record Format (RFM) types.

- The Contiguous-Best-Try Allocation option (FOP or AOP = CTB). VMS suppresses this option.

- Numerous FOP options including Truncate-On-Close.

- Prologue Version 3 indexed sequential files. You must use CONVERT to change the file to Prologue Version 1 or 2.

- $RELEASE and record locking: RMS–11 V2.0 supports bucket level locking only.

10.3 RSTS DECnet/E V2.0 File Transfer Capabilities

RSTS now supports an RMS–11 based FAL and NFT. For information on the RSTS DAP utilities, consult the *RSTS DECnet/E Guide to User Utilities* and the *RSTS DECnet/E Release Notes*.

Most text files on RSTS systems are in Stream ASCII record format. This is now a supported record format for the RSX–11M/M–PLUS RMS–11 based FAL, but not for most RSX text editors and utilities. Users must be careful when transferring files from an RSTS system to an RSX system. RSTS NFT will translate stream ASCII files into variable length record format if the /VA switch is specified. RSX NFT will translate variable length record files into stream ASCII if the /AS switch is specified.

RSTS NFT cannot copy sequential files in block mode from an RSX RMS–11 based FAL that have an FFB value of other than 0 or 512. RSTS RMS–11 currently restricts block I/O writes to units of 512 bytes. Such sequential files must be transferred in record mode.

The RSTS FAL only supports block mode transfer of indexed files.

10.4 RT–11 V2.0 File Transfer Capabilities

The RT–11 FAL supports only sequential files and a basic set of file operations. For more information see the *RT–11 DECnet Guide to User Utilities* and the *RT–11 DECnet Release Notes*.

Most text files on RT–11 systems are in Stream ASCII record format. This is now a supported record format for the RSX–11M/M–PLUS RMS–11 based FAL, but not for most RSX text editors and utilities. Users must be careful when transferring files from an RT–11 system to an RSX system. RT–11 NFT will translate stream ASCII files into variable length record format if the /AS switch is specified. RSX NFT will translate variable length record files into stream ASCII if the /AS switch is specified.

The RT–11 FAL does not support the following:

- Relative and Indexed file organizations.

- Variable and VFC record formats.

- FORTRAN and Implied LF/CR record attributes.

10.5 IAS V3.0 File Transfer Capabilities

The IAS FAL is FCS-11 based and supports only basic FCS file transfer services. It is essentially the same as the RSX–11M DECnet V3.1 FAL.

The IAS NFT is essentially the same as the RSX–11M/M–PLUS NFT, but without the new features.

10.6 TOPS-20 File Transfer Capabilities

The TOPS-20 FAL supports only sequential files and a basic set of file operations. For more information see the *TOPS-20 DECnet Guide to User Utilities* and the *TOPS-20 DECnet Release Notes*.

Most text files on TOPS-20 systems are in Stream ASCII record format. This is now a supported record format for the RSX–11M/M–PLUS RMS–11 based FAL, but not for most RSX text editors and utilities. Users must be careful when transferring files from a TOPS-20 system to an RSX system. TOPS-20 NFT will translate stream ASCII files into variable length record format if the /AS switch is specified. RSX NFT will translate variable length record files into stream ASCII if the /AS switch is specified.

TOPS-20 does not support the following:

- Relative and Indexed file organizations.

- Fixed, Variable and VFC record formats.

- FORTRAN and Implied LF/CR record attributes.

- Random record and Block I/O access modes.

11 Installing a DECnet Router Server

During DECnet Router Server installation, the installation procedure looks for the account program (ACNT) in [1,54] when you answer YES to the question "Do you need to run the Account program?". With DECnet-RSX-11M-PLUS V4.0 systems, the account program (ACNT) resides in [3,54]. Because of the change in location, if the PLUTO account and UIC [40,40] do not exist you should run the RSX account program **before** you install the DECnet Router Server to create the correct account and directory.

12 Unsupported Software

The UFD [200,200] on the distribution media contains Unsupported Software provided by Digital as a courtesy to customers. These utilities are **not** supported by Digital.

Invoke the file [200,200]UNSGEN.CMD on the distribution disk to generate all unsupported software.

12.1 CEDUMP - Communication Executive Data Base Dump Program

The CEDUMP utility dumps the internal data structures in formatted text. This utility is **not** supported by Digital, but is provided for use by Digital Software Specialists and as a courtesy to our customers.

CEDUMP functions are controlled by switches. There are three types of switches:

- General

- Comm/Exec

- DECnet

The following sections list the switches in these categories.

12.1.1 General CEDUMP Switches

For ease of use, two switches of general use for all Comm/Exec-based communications products are provided:

/HE   List the CEDUMP switch descriptors

The switches listed by the /HE switch are the valid switches at the time the /HE switch is invoked. For instance, if DECnet is available but not currently active (Executor state = ON), the DECnet specific switches will not be listed.

/AL   Dump all available data structures

The data structures that the /AL switch will dump depend on the support built into the program at generation time and on the state of the network software when the switch is invoked. For instance, if the Comm/Exec is not loaded (through SET SYSTEM), no data structures will be dumped.

12.1.2 Comm/Exec CEDUMP Switches

The following switches dump the basic network data structures (those present for all products layered upon the Comm/Exec).

/CM   Dump the Comm/Exec Common Database

/FR   Dump the Free Resource List Status

/LT   Dump the DLC/DDM Process Line Tables and LLC Databases

/NL   Dump the Network Loader Information

/PD   Dump the Process Descriptors

/PO   Dump the Pool Statistics

/RV   Dump the Reverse Mapping Table

/SL   Dump the System Line Table

12.1.3 DECnet CEDUMP Switches

The following switches dump the DECnet specific data structures.

/DH	Dump the DECnet Home Block
/GE	Dump the DECnet General Delivery Queue
/IO	Dump the NETACP I/O Queue
/LI	Dump the Active Line Count
/LL	Dump the Logical Links
/LN	Dump the Physical Link Blocks
/MB	Dump the DECnet Mailbox Queue

13 Network Loading Hints for Systems with 512KB

If the NTL error message "Partition too fragmented" occurs during network loading, this indicates that the GEN partition does not contain enough available memory for loading the network. If this error occurs, you must tailor your system to make more memory available.

After the initial attempt to load the network fails, you should use the following series of commands (depending upon your system) to remove the AT. task and retry the loading procedure:

```
REM AT.
NCP SET EXEC STATE OFF
NCP CLEAR SYS
NCP SET SYS
NCP SET EXEC STATE ON
LCP START (for RSX-11M-PLUS and Micro/RSX systems with Ethernet support)
INS LB:[3,54]ICM (for RSX-11M-PLUS systems)
INS LB:[3,54]ICMRES (for Micro/RSX systems)
INS LB:[1,54]ICP (for RSX-11M systems)
```

If, after using the preceding commands, the network loading still fails, you must remove other tasks from GEN. Once you have successfully loaded the network, you can reinstall the tasks that you removed.

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