DECNIS V2.3

DECNIS® V2.3 Release Notes for DEC OSF/1® AXP

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DECNIS® V2.3 Release Notes for DEC OSF/1® AXP

This document contains information not included elsewhere in the DEC Network Integration Server (DECNIS®) documentation. This information includes information about using the DECNIS, software changes and/or documentation changes.

This document is intended for use with Version V2.3 of the DECNIS.

PLEASE READ THESE NOTES BEFORE INSTALLING OR USING THE SOFTWARE.

1 Functionality Added for This Release

The following software functions are included in this release:

1. Management of DECNIS systems from IBM® Compatible Personal Computers running MS–DOS®.
2. OSPF Routing support.
3. Fast IPX routing support for the (F621 and L601/L602) LAN line cards.
4. SNMP Get and SET support for MIB-II, BRIDGE MIB, and FDDI MIB (RFC's 1213, 1493, and 1512 respectively)
5. Bridging operation over Frame Relay networks.
6. Inter-operation with DECbrouter 90 (and Cisco AGS+ router) systems over the CHDLC datalink.

Common Trace Facility (CTF) also provides support for SNMP with the following routing trace filters:

— ''sntx'' display SNMP packets transmitted

— ''snrx'' display SNMP packets received

2 Functionality Restrictions for This Release

The following section describes known restrictions with this software release.

2.1 OSPF Network sizes supported

For this release, due to the processing overhead caused when large numbers of routes change state in an OSPF network there are restrictions on the number of ROUTES that the DECNIS can support in an OSPF network.

If running OSPF over a LAN circuit then Digital does not recommend the use of more than 1000 routes, ie. IP Maximum External Adjacencies and IP Maximum External Destinations should not be greater than 1000.

If running OSPF over a WAN circuit, or running OSPF at the same time as other processor bound protocols (such as X.25 or IPX tunnel circuits) then no more than 500 routes can be supported by the DECNIS.

If you need to extend the number of OSPF routes used beyond the above size then changing the following parameters will allow an OSPF only router to support more routes.

```
NCL>SET   {nodename}  ROUTING CONTROL PROTOCOL {cproname} LOGICAL CIRCUIT {circuit} OSPF HELLO INTERVAL 20
NCL>SET   {nodename}  ROUTING CONTROL PROTOCOL {cproname} LOGICAL CIRCUIT {circuit} OSPF DEAD INTERVAL 80

 Note: default values for these parameters are 10 and 40 respectively
```

If you need to operate with larger OSPF networks then contact Digital for details of maintenance fixes.

2.2 Serial Line Restrictions

For this release, do not reconfigure the serial data-link on a running system. If you need to change the data-link type (for example from HDLC to PPP), then you must change the configuration files and reboot the system.

2.3 IP Subnet Masks Longer than 28 Bits

IP subnet masks longer than 28 bits are not supported. Such subnet masks cannot be configured on the DECNIS. If such a subnet mask is received in an IS-IS LSP, then the DECNIS will discard the LSP and all routes in the LSP will not be learnt.

2.4 Using HDLC Links

Occasionally the DECNIS may not correctly bring up an adjacency over an HDLC circuit when the HDLC link is established. This situation can be recognised by noticing that the HDLC link is "Running" and one side has a Routing Circuit Adjacency in state "Initializing" but the other side has no Adjacency for that circuit at all.

If this occurs, the HDLC link should be disabled and then re-enabled.

2.5 Setting values for T1 over LAPB X.25 links

For operation of X.25 over LAPB links the values for the timer ‘‘T1’’ should not be set below the default values specified in the network profile, on either the DECNIS system (DTE) or the network system (DCE).

Digital recommends that this value is not set below 2 second, values below 1 second may result in datalink disconnections if the DECNIS Management processor is heavily overloaded.

2.6 Disabling X.25 security.

When running the DECNIS configurator if the X.25 security option is disabled it should not subsequently be re-enabled. Doing so will cause information on outgoing security to be lost.

2.7 FDDI links sticking in the “Off-Ready” state

If the following sequence of commands is supplied to the FDDI station LINK entity the link may remain in the ‘‘Off-Ready’’ state.

```
NCL>  disable node x fddi station f621-{n} link 1
NCL>  disable node x fddi station f621-{n} phy port 1
NCL>  disable node x fddi station f621-{n} phy port 2
NCL>  enable node x fddi station f621-{n} link 1
NCL>  enable node x fddi station f621-{n} phy port 1
NCL>  enable node x fddi station f621-{n} phy port 2
NCL>  disable node x fddi station f621-{n} link 1
NCL>  enable node x fddi station f621-{n} link 1

      (where x is the node name, and f621-{n} is the F621 FDDI card name)
```

Should this happen issue the following commands to return the link to the ‘‘On-Ring Run’’ state.

```
NCL>  disable node x fddi station f621-{n} link 1
 NCL>  disable node x fddi station f621-{n} phy port 1
 NCL>  disable node x fddi station f621-{n} phy port 2
 NCL>  enable node x fddi station f621-{n} phy port 1
 NCL>  enable node x fddi station f621-{n} phy port 2
 NCL>  enable node x fddi station f621-{n} link 1
```

2.8 Disabling MOP Load Requester & IP Load Requester

If MOP Load Requester or IP Load Requester is disabled for a particular interface then this will also disable the receipt of boot or load requests over that interface even if the target load host is on another, enabled interface.

2.9 MOP cannot initiate loopback packets on DDCMP links

Although MOP circuits can be set up for DDCMP links, the MOP LOOP directive will always fail with a datalink error. MOP LOOP directives (Phase IV via NCP or Phase V via NCL with DECnet/OSI) from the remote station will be responded to correctly.

2.10 NetWare® IPX Routing: Events

The following event is not logged by the NetWare® IPX routing software:

- State Change

2.11 AppleTalk® Routing: Events

The following event is not logged by the AppleTalk® routing software:

- State Change

2.12 CSMA-CD Events

These are not generated for either station transmit or receive errors.

2.13 Event Filtering

The following conditions apply to event filters for this release.

1. A node name must be included in the specific filter argument of Pass, Block or Ignore directives and in the Event argument of the TestEvent directive. However, the name is not checked or acted upon by the DECNIS.

   For example, in the following command, the node xyzzy is not checked or used by the DECNIS:

   NCL> PASS NODE decnis EVENT DISPATCHER OUTBOUND STREAM - stream-name SPECIFIC FILTER (NODE xyzzy ROUTING CIRCUIT - csmacd-0, CIRCUIT CHANGE)

2. The "All Events" event group is not supported in the filtering commands. For example, the following will be rejected with an invalid argument value error:

   NCL> PASS NODE decnis EVENT DISPATCHER OUTBOUND STREAM - stream-name SPECIFIC FILTER (NODE xyzzy ROUTING CIRCUIT - csmacd-0, ALL)

2.14 Disabled Netware IPX from Routing Circuits in the DECNIS configurator

In this release, once a Netware IPX routing circuit has been entered (in the lines and DTE section) it can not be disabled. Disabled IPX circuits will prevent a clean NCL script compilation and should be removed by deleting and re-adding the line.

2.15 X25 RELAY PROBLEMS

A problem has been found in the X25 relay code that will cause outgoing calls onto a LAPB 'DTE' to fail. Calls to LLC2, 'DCEs' or remote relay nodes are not affected.

The fix for this problem is not available in this release - contact Digital if an early fix image is required

3 General Information

This section provides information about using DECNIS and the V2.3 software in your network.

3.1 ACTUAL SPEED Characteristic

The value of the ACTUAL SPEED characteristic is only an estimate and at high speeds the value may be inaccurate. For example: a line running at 2Mbps may report as running at 2.5Mbps.

3.2 MAC Addresses

When transmitting frames on an 802.3 LAN (Ethernet), the DECNIS may use different source addresses for different protocols:

- OSI, DECnet Phase IV or IP traffic: SA = Logical Address
- All other frames: SA = Physical Address of NIC.

where Logical Address is the Phase IV style Ethernet address of the system if Phase IV address is enabled on the particular routing circuit; otherwise it is the Physical Address of the Network Interface Card.

3.3 W618 and W614 Connector Cable

This cable must not be unplugged (at either end) when power is applied to the Network Interface Card.

3.4 MOP node name

If you manually configure the file name for the load file in the MOP CLIENT profile it is important to use the correct syntax:-

System Image = {:.Node::mom$system:nis023.sys}

The leading colon is required for successful operation

3.5 NSP defaults may affect performance of Routing Convergence

If you operate a large network you may experience problems in the performance of Routing Convergence, and possible loss of transport connections during topology changes in the network. This is due to inappropriate NSP defaults when running Phase V routing. The following defaults are recommended:

- Delay Factor = 5
- Delay Weight = 3
- Retransmit Factor = 10

3.6 Replacement of the "Metric" attribute for IP Destination Address Entity

The "Metric" status attribute associated with the ROUTING IP DESTINATION ADDRESS entity is nolonger supported by the DECNIS software. Instead it uses the new "Path Metric" attribute which has the same meaning but allows the larger range of metric values required for OSPF.

3.7 BOOTP operation with old Management Processor ROMs

There is a problem with full dumps of the DECNIS taken by BOOTP/TFTP if the MPC has ROMs prior to V7-07. The dump slows down and has excessive retransmissions after the first 8M-10M bytes.

The ROM version number can be found by using the following NCL command. Any pre-1993 DECNIS will probably require upgrading if dumps are required and this problem is found.

```
NCL> SHOW NODE node-name DEVICE UNIT MP8M-1 FIRMWARE IDENTIFIER
Show Node DEC:.node-name Device Unit MP8M-1
 at 1993-12-10-11:49:12.60000 + 00:00 I 28147497.67107

Status
 Firmware Identifier "0 2-3.6 V7-07 5.1"
                              ~~~~~
```

Setting the DECNIS to only dump the management processor will in most circumstances provide a workaround. However upgraded ROMs will be necessary where dumps are required for all other cards in the system. The NCL command to limit the size of the dump file is:

```
NCL> SET NODE node-name HARD DUMP CONTROL SYSTEM PROCESSOR DUMP
To return to a full system dump issue the following command:
NCL> SET NODE node-name HARD DUMP CONTROL FULL DUMP
```

4 Interoperability Information

This section provides information about other products that interact with the DECNIS V2.3 software.

4.1 DEC OSF/1 V2.0 use of DECNET MOP

MOP loading of DECNIS systems is not recommended with DECnet/OSF V2.0. The following known problems have been identified with the default DECnet/OSF V2.0 kit.

- ''ncl boot mop client name_of_system'' fails to cause the DECNIS system to reload.
- ''ncl load node nis192/pass/user dev unit MP8M-1'' causes the DNAMOPD image to crash on receipt of the boot request.
- Load host must be in lower case, see Section 5.1.

An interrim workaround for these problems is to use BootP as the load/dump mechanism, and the ncl ''LOAD ... device unit MP8M-1'' command to trigger the DECNIS.

4.2 DECNIS IPX interoperability with Novell NE2000T+ ethernet card

This release will not inter-work correctly with PC systems using the the Novell NE2000T+ card, or any other cards using drivers that require IPX packets to be generated with an even number of bytes within 802.3 frames.

This problem can be avoided by using alternative ethernet cards, or using ETHERNET_II IPX encapsulation formats.

Contact Digital for details of maintenance fixes.

4.3 Designated Router election against DECbrouter 90

When the DECbrouter 90 (or Cisco routers) are configured to conduct DNA Phase IV to V conversion, the DECbrouter 90 (or Cisco routers) must have equal settings for both DNA IV & V router priorities. Failure to do so may result in a designated router not being elected if the DECNIS router priority is between the two values set in the DECbrouter 90.

4.4 Network “probe” of Vitalink® Bridges

In order to use Vitalink® network ‘‘probe’’ features over VCP links the following ethernet types should be selected for forwarding.

```
DVS -> Display Vitalink Systems Type 80-80
CON -> Connect                  Type 06-00  (XNS_IDP)
```

4.5 DECmcc - SNMP ARP entry table deletion

It is not possible to to delete ARP cache entries using the address translation table of MIB II if using the DECmcc management agent. This is because DECmcc does not allow a zero length string to be entered.
The workaround is to set the ipNetToMediaType object in the ipNetToMediaTable to ’invalid’ for the entry which you wish to deleted.

4.6 DECmcc - restrictions with objects defined as type FddiTime

DECmcc incorrectly handles the type Unsigned32 are encoded incorrectly in ASN.1 as the SNMP application type ’TimeTicks’ rather than plain integer (0..2147483647).
The consequence being that it is not be possible to set from DECmcc the following variables in the FDDI MIB (RFC1285).

- snmpFddiMACTReq
- snmpFddiPORTMACLoopTime
- snmpFddiPORTTBMax

The following will not be setable from DECmcc in the BRIDGE MIB (RFC1286):

- dot1dStpBridgeMaxAge
- dot1dStpBridgeHelloTime
- dot1dStpBridgeForwardDelay

Note that if any other management station is used these variables will behave as expected.

5 Configuration Information

This section provides information associated with installation and configuration of the DEC-NIS V2.3 software..

5.1 HOST Configurator MOP clients - must be lower case

OSF/1 Version 2 converts all MOP load request file names to LOWER case. IF the MOP client name contains any upper case characters, this will be passed on to the appropriate load file names on the system. The MOP load will then fail to find the load file due to the case conversion in the MOP code.

All Host Client names should therefore be created in lower case.

5.2 DECNIS configurator: COPY option for X.25 outgoing security.

Do not use the COPY outgoing security option (when copying outgoing security information from one Client to another). Instead use the ADD outgoing security for every single node.

5.3 Changing the Load Type in the Host Configurato

When changing the DECNIS load type flag from Partial-Flash load to Full Network load (and visa versa), two incorrect error messages may be generated as the DECNIS host configurator datafile is being updated.

The first message indicates that the configurator has:

```
                "FAILED to update DECNIS Management scripts.
                 DECNIS version updated BUT NCL script unmodified"
or
                "The management script for this DECNIS could not be compiled.
                 Examine the log file for further details."
```

If these messages appear then check the dates on the NCL scrip file and the compiled CMIP files.

5.4 Using the Local Naming Option in the HOST Configurator

When the host configurator asks you to enter the DNS Node Name for the router and you have set up DECnet to use Local NameSpace (LNS) (see Section 7.2) and you enter a node name of the form LOCAL:.node, then no update actually occurs at that point. The following message will appear at the bottom of the screen:

```
The name refers to a DNS Local name space. No DNS updates have
occurred. DNS name : LOCAL:.node
```

This is not an error. This message is informing you that nothing has yet happened. The local name file does not get updated by the Host Configurator. The information that you have enetered is remembered and the local name file gets updated by the Router Configurator. This is because the Router Configurator holds the setup information on tower sets (which is needed for the local name file update).

5.5 NCL script error with LLC2 on FDDI circuits

If you use the the DECNIS configurator to set up LLC2 operation over an FDDI circuit the NCL generated will be incorrect, due to the addition of the wrong LAN type.

To correctly compile the NCL script the main .NCL file must be edited to reset the LAN type back to FDDI, For example:

```
Change:      set llc2 sap sap-0 lan station    csma-cd    station f621-9-0
To:          SET LLC2 SAP SAP-0 LAN STATION    FDDI       STATION F621-9-0
                                               _________
```

5.6 DECNIS system time when loaded using BOOTP

If a DECNIS is configured and loaded using BOOTP (on PC or ULTRIX/OSF® systems), the clock on the DECNIS will not be set. Once the system has loaded the system time needs to be set after initial load using the following command.

```
NCL> UPDATE NODE {node-name} DTSS TIME yyyy-mmm-dd-hh:mm:ss  +a:b
```

Where ‘‘yyyy-mmm-dd-hh:mm:ss’’ is the current time and ‘‘a:b’’ is the differential time in Hours and Minutes

6 NCL Problems

This section describes provides information about possible problems with NCL.

6.1 On-line HELP for NCL: HDLC LINK Entity

The PREFERRED CRC TYPE characteristic attribute of the HDLC LINK entity has the following three possible values:

- 16 bit
- 32 bit
- EITHER

The NCL HELP text incorrectly includes a hyphen in the first two values.

6.2 DELETE AND DISABLE Commands

The following directives are not supported:

DELETE CSMA-CD

DELETE CSMA-CD STATION

DELETE MODEM CONNECT LINE

DISABLE CSMA-CD STATION

The following directive returns an incorrect error message:

DISABLE ROUTING

The error message returned is "No such entity". This should be "Directive not supported".

6.3 Displaying Ports

If your DECNIS system has both L601 and L602 NICs, the NCL command:

NCL> SHOW NODE name DEVICE ALL

displays all the L602/L601 port 0 information, followed by the L602 port 1 information.

6.4 Using the 50-Way Loopback Connector

You cannot use the STOPLOOP command on a MODEM CONNECT LINE, if the W622 or W614 Network Interface Card associated with that line has a 50-way loopback connector installed. Issuing the STOPLOOP command in this circumstance will have no effect.

6.5 Loopback With Assistance

MOP loopback with assistance is not supported.

6.6 NCL Abbreviation of 'Protocol' Keyword

When issuing NCL commands to a ROUTING CIRCUIT NETWORK PROTOCOL entity, you must not abbreviate the keyword PROTOCOL.

7 Documentation Information

The following sections describe documentation changes.

7.1 Error in Installation Guide

The Installation and configuration manual for OpenVMS, ULTRIX and DEC OSF/1 contains the following errors.

Ultrix Prerequisite software - Section 5.1

The reference to OSF/1 in the first sentance of Prerequisite software is incorrect in this section.

section 5.1 ULTRIX Background Information

The correct pre-requisite opertating system software is ‘‘ULTRIX V4.3 (or later)’’. references to DEC OSF/1 in this section should be ignored.

DEC OSF/1 Background Kit - Section 5.2

The DEC OSF/1 kits are supplied on CD-ROM only, not TK50 or mag tape.

Online Docs - Section 5.4

In table 5-1 the event message file name is

```
/usr/lib/dnet/nis_events.txt
```

7.2 LNS (Local Namespace) definition and LNO

The DECnis Configurator documentation, the screens and the Help text all use the terminology Local Namespace (LNS). This means exactly the same as Local Naming Option (LNO) used in the DECnet/OSI documentation.

7.3 Configuring OSPF over X25-DA Circuits

To configure OSPF to run over an X25-DA circuit requires some additional setup by the user which is not currently documented in the Management Guide and is not performed by the Configurator. The following steps describe the actions necessary to configure an OSPF NBMA network over X25-DA circuits.

1. Use the Configurator to create an X.25-DA routing circuit, specifying any security options you require and the DTE information. Note that the router must be configured as a ISIS L2 router in order to create an X.25-DA circuit (although you can still disable IP information from being propagated by the ISIS routing protocol if necessary).
2. Also in the Configurator, create an IP Reachable Address for every OSPF Neighbor which is accessible over the X.25-DA Routing circuit. You must specify 255.255.255.255 as the mask for the reachable address (i.e. a host mask) and the address of the Neighbor’s interface.

3. In the NIS_name_EXTRA_SET.NCL file you must setup a subnet address and mask for the X.25-DA Routing Circuit (this is not done by the Configurator). The subnet address is the subnet of the OSPF NBMA network, i.e.

```
SET ROUTING CIRCUIT x25-da-1 -
     SUBNET ADDRESS [ADDRESS=92.1.1.0, MASK=55.255.255.0 ]
```

4. Now create and setup the OSPF entities (CONTROL PROTOCOL, LOGICAL CIRCUIT and ADJACENCY) in the NIS_name_EXTRA_.NCL files as described in section 8.8.7 in the DECNIS Management Guide. Specifically you must create a manual adjacency for every OSPF Neighbor on the X.25-DA network e.g.

```
CREATE ROUTING CONTROL PROTOCOL ospf-area-0 LOGICAL CIRCUIT rx25-da-1 -
     ADJACENCY node OSPF NEIGHBOR ADDRESS 192.1.1.5, OSPF PRIORITY 1
```

   Note you should have an adjacency for every IP Reachable Address you created in the Configurator).

7.4 LOOP MOP Command

The DECNIS Problem Solving manual describes using the following command to test HDLC, DDCMP and LAPB circuits:

NCL> LOOP MOP CIRCUIT circuit-name

In this release, this command is not supported for DDCMP and LAPB circuits, see Section 2.9.

7.5 Missing Information in DECNIS 500 Manual

The following information applies to the 7-segment display as described in the DECNIS 500 Installation and Service Manual.

7-Segment displays for DECNIS systems while loading/dumping:

0

No Load Circuits. The system cannot issue a load request since all the possible load circuits are either broken or have been disabled.

1

Load Request. The system is requesting a load from a specific load host. This would normally be the first display since the load is always tried from the last load host first.

2

Loading. The system has located a load host and is loading the image. This display remains until the load completes or is aborted.

3

Load Request Backoff. The system has backed off the load request to avoid congestion on any load hosts. The load request will be re-issued when the backoff timer expires (a few seconds).

4

Load Complete, flash update or decompression in progress.

5

Dump Request. The system is requesting a dump to a specific dump host. This would normally be the first display since the dump is always tried from the last load host first.

6

Dumping. The system has located a dump host and is dumping the system context. This display remains until the dump completes or is aborted.

7

Broadcast Load Request. The system is requesting a load on all circuits (using the dump /load assistance multicast address on LAN circuits).

8

not-used

9

Broadcast Dump Request. The system is looping around all the circuits sending a dump request on each in turn trying to locate a dump host (using the dump/load assistance multicast address on LAN circuits).