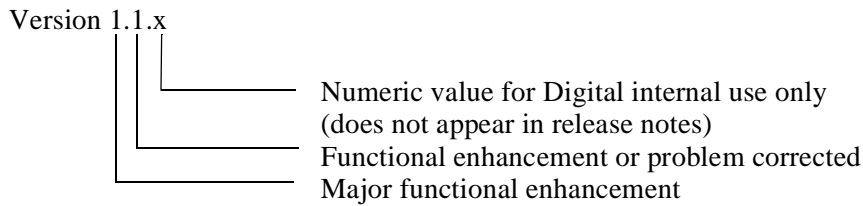**digital**™

Distributed Routing Software Release Notes
Version 2.0
December 1996

As warranted, Digital changes the firmware of this device to make functional enhancements or to correct reported problems. These release notes identify enhancements and changes to the firmware that impact end-user operations. They also contain firmware and software requirements, and list updates in this release as well as known conditions and restrictions that apply to the operation of the module.

The following example describes the firmware version number:

Version 1.1.x

Numeric value for Digital internal use only
(does not appear in release notes)
Functional enhancement or problem corrected
Major functional enhancement

Contents

Introduction

These release notes describe limitations in the operation of V2.0 of the Distributed Routing Software (DRS). V2.0 DRS can operate on the following routers:

- RouteAbout Access EI
- RouteAbout Central EW
- RouteAbout Access TW
- RouteAbout Access EW
- RouteAbout Central EI
- DECswitch 900EE
- DECswitch 900EF

Firmware Requirements

V5 of the DEChub 900 MultiSwitch firmware is required for full use of the new functionality in V2.0 of the Distributed Routing Software (DRS). However, V4 of the DEChub 900 MultiSwitch firmware can provide a somewhat limited usage of the new functionality in DRS V2.0 until the DEChub 900 V5 is available. If you are running DEChub 900 MultiSwitch V4, then Digital recommends that you upgrade to V4.2.0 or greater.

Software Requirements

If you are using clearVISN to manage the module, you must install clearVISN software version V1.1 or higher.

Readme Files on CD-ROM

The readme files on the software CD-ROM are in UNIX format and can be read on any UNIX system. On PC systems, Digital recommends using Wordpad to read these files. Please note that Notepad on Windows 3.11 and Windows 95 won't be able to read the readme files. However, Notepad on Windows NT is capable of reading UNIX format files.

Loading Software

The following sections describe software loading procedures and any considerations necessary during loading. The following topics are covered:

Topic	Page
Reloading Software from CD-ROM	page 3
Reloading Software from Diagnostics	page 3
LED Configuration During Reload	page 4
Upgrading Router Software using Digital TCP/IP Services for OpenVMS	page 4

Reloading Software from CD-ROM

Your module comes preconfigured with diagnostics and functional software. This software is pre-installed. However, in the unlikely event that the integrity of the preinstalled software image becomes compromised, you can download the software images found on your CD-ROM to the module.

The module uses **bootp/TFTP** in order to load software over the network. You must first setup your loadhost to honor bootp requests from your module. This task is operating system specific. In the case of Unix systems, this involves adding an entry into the **/etc/bootptab** file. Other operating systems may differ.

If the module router software is operational, you can use following procedure to reload the module software or diagnostic image.

Step	Action
1	Copy the module software image to your TFTP area.
2	From the module console interface, select the "Gateway user configuration" process (talk 6).
3	Enter the **boot** command to access the "TFTP Boot/dump configuration" interface. You can now perform one of the following operations: • Define a boot file location using the **add boot** command and reload using the MOS command **reload** • Reload interactively using the **load remote** command

Reloading Software from Diagnostics

This procedure applies only to RouteAbout modules. If the RouteAbout module software is not operational, you can use following procedure to reload the software from the diagnostics.

Step	Action
1	Copy the software image to the TFTP area.
2	Unplug the power cord (or remove from hub slot).
3	Reconnect power, and depress (and hold) the dump button.
4	Release dump button when Module OK LED has come on.

5	If a console is attached, the diagnostic console is enabled. Enter the **LOAD** command
	Diag_V2.12> LOAD
	This will cause a bootp load request to be transmitted
6	If there is no console attached, then a bootp load request will automatically be generated.

NOTE

1. If the upgrade is over a WAN port, you might need to set up static routes on any intermediate routers. When the module is upgrading, it is not actively routing. If routing table entries time out for the unit being upgraded, the TFTP copy of the upgrade image might fail.

2. Do not logout from the * prompt while an upgrade is in progress. If you do, the console may not be accessible again until the module is power cycled.

WARNING

Use extreme caution when reloading the diagnostic image. If power is interrupted during the reload, your module may be left in an inoperable state.

LED Configuration During Reload

If it has become necessary to reload the module software, a special LED pattern will be blinked to indicated that the software is currently being written to flash RAM (which could take up to 10 minutes). It is VERY IMPORTANT that you do not interrupt power to the module while this is in process.

Once the software image has been loaded over the network, the Network OK LEDs and Serial Line OK LEDs will begin to blink in sequence. This pattern will continue until the software has been programmed into flash RAM.

Do not logout from the * prompt while an upgrade is in progress. If you do, the console may not be accessible again until the module is power cycled.

Upgrading Router Software using Digital TCP/IP Services for OpenVMS

Upgrading the router firmware using TFTP may fail if the binary image file resides on a VMS system, due to a constraint with the VMS UCX product (V4.1 and earlier). To work around this restriction, convert the file format of the binary image from Fixed-512 to Stream_LF record format. See the Booting, Dumping, and Upgrading the System chapter of the *System Software Guide* for full details on the upgrade procedure.

Finding Updated Information Online

Check the following URL for updated information and firmware updates:

```
http://www.networks.digital.com/dr/drs
```

You can also get here by going to Digital's Network Product Business Web Site, then selecting the following links: Technical Information, Technical Information, Routers, Distributed Routing Software.

Platform Specific Release Notes

The following sections cover release notes that are platform-specific. These release notes are divided into the following topics:

Topic	Page
DEChub 900 MultiSwitch Software Release Notes	page 5
RouteAbout Access EW/EI Platform Specific Release Notes	page 5
RouteAbout Access TW Platform Specific Release Notes	page 6
DECswitch 900EF/EE Router Platform Specific Release Notes	page 7

DEChub 900 MultiSwitch Software Release Notes

The notes in this section apply only to operation in a DEChub 900 MultiSwitch.

Using Product Redirect from a DEChub 900 MultiSwitch

In V2.0 of the Distributed Routing Software, the module `Installation Menu` includes a new menu option called Go to Local Console. This option allows access to a module's Command Language Interface (CLI) through a console attached to the hub console port. Digital recommends that you **do not** use this feature until V5 of the DEChub 900 MultiSwitch Software is released. If you wish to use product redirect option to access the module's CLI in V4, you must follow these restrictions:

- Control characters are not passed to the module in use. To switch processes (e.g., from `Config` to `GWCON`), exit the CLI by pressing **control-C**, redirect to the module, and re-enter CLI and select the desired process.

- All characters that are typed in are repeated after a carriage return.

The following restriction applies to both V4 and V5 versions:

- In requests that have large amounts of output (e.g., list data dynamic in ASRT with a large number of adjacent nodes), the output will be truncated.

DEChub 900 MultiSwitch IP services

If IP services address is reassigned from one slot to another slot that contains a module with V2.0 Distributed Routing Software (DRS), you must remove (power cycle) the module in the first slot before the module with V2.0 DRS will act as the IP Services module.

RouteAbout Access EW/EI Platform Specific Release Notes

The following note applies only to the RouteAbout Access EW and RouteAbout Access EI modules.

If the side ThinWire port is in use and it is disconnected from the module, the Ethernet self test will continue to pass.

RouteAbout Access TW Platform Specific Release Notes

The following release notes apply only to the RouteAbout Access TW module.

RELOAD Command Does Not Load New Image

To load the V2.0 Distributed Routing Software image, perform either Procedure A or Procedure B.

Procedure A -- At the * prompt, perform these steps when prompted:

Step	Action
1	* **talk 6**
2	Config> **set global buffers 50**
3	type **control-P** to return to * prompt
4	* **restart** The new image will restart. Return the module to the * prompt.
5	* **talk 6**
6	Config> **reload** The new image reloads. Return the module to the * prompt.
7	* **talk 6**
8	Config> **set global buffers 0** This sets the buffers automatically.
9	Config> **restart**

Procedure B:

Step	Action
1	Connect a console device directly to the setup port of the module.
2	Power cycle the module.
3	When the PROM code (>) prompt appears type **B** or **BM** to initiate a network load.

Multilink PPP

Multilink PPP bundles on the RouteAbout Access TW become active only after the Token Ring interface is in the UP state. This ensures that a valid Endpoint Discriminator is used in the PPP negotiation process.

Triggered RIP when RIP Is Disabled

Do not use the Triggered-RIP command from the Protocol IP> prompt (you reach this prompt by pressing **talk 5** at the * prompt). This command will cause a system failure when RIP is disabled.

Loading a Non-existent Image File Causes a Crash

If the filename specified in the boot configuration does not match the filename in the load host, the router will display the following message:

```
TFTP transfer complete, status: File Not Found
```

The router will then display the `RtAbt Access TW/MP INSTALLATION MENU`. If option `Go to Local Console` is selected from this menu, the router will crash with the message:

```
console_cfg_redirectProcessInput+16; Bus error
```

and attempt to dump, if dumping is enabled. When the Installation Menu is displayed again, selecting option `Go to Local Console` will return the router to the MOS Operator Control (`*`) prompt in the usual way. Take care to specify the configuration filename correctly.

Disconnecting Serial Line

If the RouteAbout Access TW is running SDLC on a serial interface, do not disconnect and then reconnect the SDLC cable or power down the modem while the router is restarting. This causes the router to crash with this error message: `"MOS - no free kernel block for timer or signal."`

RouteAbout Access TW Fails Software Upgrade When in HST Bridge-Only Mode

The RouteAbout Access TW doesn't perform the software upgrade to V2.0 of the Distributed Routing Software if it is configured in HST Bridge-only mode. In order to upgrade the router, temporarily configure it to enable routing before performing the upgrade. Or, use Procedure B listed in the section RELOAD Command Does Not Load New Image.

DECswitch 900EF/EE Router Platform Specific Release Notes

These release notes apply only to the DECswitch 900EF Router and DECswitch 900EE Router modules.

What's New in This Release

The DECswitch 900EF and 900EE V2.0 firmware includes the following new functionality. Refer to the *DECswitch 900EF Router Installation and Configuration* and *DECswitch 900EE Router Installation and Configuration* for details on these features:

- The ability to configure and operate with non-overlapping, port-based VLANs.

- The ability to route any of the supported protocols over a configured VLAN as if it were a single connection to a bridged LAN consisting of the underlying sub-interfaces that have been configured in that VLAN. Non-routed protocol frames will be bridged between all ports, regardless of the port group configuration.

- Support for the DEChub ONE-MX docking station with the FDDI connection on the back (applies to DECswitch 900EF only).

- Improved throughput performance of bridged packets.

Hardware Requirements

The minimum hardware revision level required to support this firmware release is DECswitch 900EF/EE hardware V1/2.

Known Restrictions In This Release

Filtered Packets Do Not Generate ELS Events

In bridging mode, filtered packets will not generate an ELS event indicating the packet was dropped. Version 1.0 of the firmware did generate such ELS bridge sub-system events.

Enabling VI ELS Events

Enabling ELS events for all subsystems (using the ALL argument to the DISPLAY SUBSYSTEM command) does not enable VI (Virtual Interface) events. You must explicitly enable VI events using the command **display subsystem VI** in the ELS menu.

Removed OBM RTS Configuration

Previous releases of the firmware provided an option in both the CLI and through the `900EF Installation Menu` for configuring OBM port RTS, although the option did not enable RTS since OBM RTS is not supported by the DECswitch 900EF/EE hardware. This release of the firmware has removed the option (in both the CLI and Installation Menu) for configuring OBM RTS.

Reverting to Previous Firmware Version

If after upgrading your DECswitch 900EF or DECswitch 900EE module to run V2.0 Distributed Routing Software (DRS) it is necessary to return to an earlier version of the DRS (V1.0.x), use the following procedure:

Step	Action
1	At the Setup Menu select the option to reset the module to factory default configuration.
2	Perform the software upgrade to V1.0.x of the DRS.
3	When the module restarts, running the V1.0.x DRS, return to the Setup Menu, then select the option to reset the module to factory default configuration.
4	Do not load configuration files that have been created using V2.0 DRS onto modules running V1.0.x DRS. However, you can load configuration files created using V1.0.x DRS onto modules running V2.0 DRS.

General V2.0 Distributed Routing Software Release Notes

Unless otherwise specified, the release notes in this section apply to all platforms that run V2.0 Distributed Routing Software. The following topics are included:

clearVISN Router Configurator

Refer to the clearVISN Router Configurator release notes for limitations on that product. These release notes are available on the clearVISN Router Configurator kit web page located at

```
http://www.networks.digital.com/dr/crc
```

You can also get here by going to Digital's Network Product Business Web Site, then select the Technical Information link, then select the next Technical Information link, then select the clearVISN Router Configuration link.

Compression

X.25 compression is not supported when using old style X.25 circuits over X.25. New style X.25-DA and DLM ISO circuits (Digital style) and all other protocols are supported by X.25 compression.

IBM-related protocols

Changes from Previous Release

In addition to numerous internal improvements and enhancements, this release includes the following new features for Data Link Switching (DLSw):

- Full RFC 1795 (AIW DLSw V1) compliance

- Full NetBIOS station support under DLSw

- Enhancement of the DLSw SDLC datalink to include local secondary link role (including secondary multipoint and true T2.1 role negotiation support), group poll, and improved command syntax

The *Distributed Routing Software Systems Network Architecture Guide* and *Bridging Configuration Guide* user documentation have been updated to reflect these enhancements.

No significant changes have been made to Boundary Access Node (BAN) or to SDLR Relay (SRLY) since the previous release.

Undocumented LLC List All Command

An LLC LIST ALL Console command is now available for listing LLC open SAPs and their corresponding number of sessions. The SAPs listed are grouped by interface, and all LLC-enabled interfaces are scanned. Thus, interfaces other than the one specified with the preceding Network command are listed.

Alternative interfaces listed include the virtual bridge network interface used, for example, by Data Link Switch. Virtual interfaces are numbered higher than the physical interfaces. For example, on a RouteAbout Access TW (with physical interfaces zero through two), the bridge network number is four (4).

To list the SAP or Session detail of SAPs shown on an interface other than the current interface, you must return to the Console process and re-enter the Network command specifying the network interface number displayed in the LIST ALL output.

This command is documented in chapter 6 (Configuring and Monitoring Logical Link Control) of the *Network Interface Operations Guide* in a future release.

Known Restrictions

Data Link Switching (DLSw)

The following restriction applies to the use of half-duplex and multipoint modem control when running DLSw with SDLC datalinks. Problems with premature Request to Send (RTS) de-assertion may render both point-to-point and, if the router is in a local secondary link role, secondary multidrop configurations unusable. For this reason, Digital strongly recommends that SDLC links be configured as physical point-to-point full duplex or with the router as the primary station in a multidrop configuration.

You may also run into problems running DLSw with SDLC datalinks if one router is configured as SDLC secondary and its neighbor router is not configured in passive connect mode (e.g., neighboring router is local SDLC primary with a non-null DSAP configured). DLSw circuit connections may disconnect less than a minute after the connections are first made. To work around this, configure the neighbor router as passive, or if the attached SNA device configuration permits, change the mode of the local router from secondary to negotiable.

Boundary Access Node (BAN)

Boundary Access Node, which allows RFC 1490 bridged-frame format Frame Relay attachment from remote SNA environments (LLC or SDLC) directly to an IBM mainframe, is supported only on the RouteAbout Access TW hardware platform.

SDLC Relay (SRLY)

As in previously releases, use of SRLY is restricted to full duplex, point-to-point SDLC, LAPB, or HDLC links; multipoint configurations are currently not supported.

Secondary link inactivity timer

Do not set the secondary link inactivity timer to zero because this causes the timer to expire immediately. The timer range is 0 - 7200 seconds and defaults to 30. To effectively disable the timer, set it to a sufficiently high value.

Setting Up a DECnet-PLUS for Digital UNIX System to Use Token Ring

To configure a DECnet-PLUS for Digital UNIX end-system to use Token Ring, you must set the following NCL Routing Circuit parameters:

- Set **Enable PhaseIV Address** to True. This causes the end-system to encode its DECnet Phase IV compatible address as the end-system's MAC address.

- Set **PhaseIV Prime** to True. Phase IV Prime is the Token Ring protocol used by DECnet. It must be enabled to ensure that communication is possible.

If you display the settings, the routing circuit should look similar to the following:

```
Node 0 Routing Circuit circuit-1
AT 1996-11-18-13:28:24.123-05:00I0.194
Characteristics
  Type                      = Token Ring
  Data Link Entity          = TOKEN RING Station trn-1
  Enable PhaseIV Address     = True
  Manual Data Link SDU Size   = 1492
  Manual Routers            =
         {
         }
  Inactive Area Address      =
         {
         }
   Use PhaseIV Prime             = True
```

EasyStart

If Digital Unix is used as a bootp server, use Digital UNIX V3.2C or later.

The EasyStart feature does not operate in 900 modules running V2.0 Distributed Routing Software (DRS) that are installed in a DEChub 900 MultiSwitch. However, EasyStart does operate on 90 modules running V2.0 DRS ina DEChub 900.

Stopping EasyStart Requests

If EasyStart is initiated and the bootp configuration file is unavailable, enter the stop command at the module's console. Control is returned to the quick configure setup.

ISDN Device Configuration

When configuring ISDN devices, the following notes apply to the DN0 attribute on the base ISDN network:

- DN0 must be a string of digits, and NOT the name of an ISDN address entry (as is used for Local Address).

- Some networks provide supplementary services that allow a Called Address to be presented. This is useful if you wish to connect more than one ISDN terminal to a Basic Rate ISDN S/T-bus to allow each device to be called separately. If the ISDN network connection supplies a Called Address in the incoming calls, DN0 must match that Called Address. If you are unsure what the Called Address is, follow these console steps:

  a Clear or leave DN0 un-set

  b Enable all ISDN events

  c Generate an incoming call to the ISDN interface

  d Record the value presented in event message ISDN.41

  e Set DN0 to match the recorded value

  f Restart

- If the ISDN network is not supplying a Called Address on incoming calls, the value of DN0 has no effect.

X.25

X.25 Switching

DCE Configuration

When configuring a pair of network interfaces for use with X.25 switching, you should configure the LLC2 interface on the router as a DCE. Otherwise, the X.25 software will reject DTE-specific facilities (for example, NUI) if they are received at a DTE interface. Similarly, DCE-specific facilities (for example, charging information) received at a DTE interface will be rejected if the outgoing interface is also a DTE.

To configure an interface as a DCE, perform the following steps when prompted:

Step	Action
1	* **talk 6**

Step	Action
2	`Config>` **net 3**
3	`X.25-LLC2 Config>` **set equipment-type dce**

Maximum Circuits Parameter

The Maximum Circuits parameter defaults to a value of 100. To modify this value, perform the following steps when prompted:

Step	Action
1	`*` **talk 6**
2	`Config>` **feature x25s**
3	`X25S Config>` **set x25-switching**
4	`Routing Priority (1-65535) [255]?`
5	`Maximum Circuits (1-65535) [100]?` **256** NOTE: two circuits are used by each switched connection.

Memory requirements for X.25 switching

Introduction

When setting up X.25 switching, you must consider the overall memory requirements of X.25. If your system must support large numbers of DTEs or large channel ranges per DTE, you must avoid over-configuring the router. You may need to make tradeoffs among the following:

- the number of global buffers required for optimal data throughput
- the memory allocated for each DTE
- the memory required to establish each switched circuit.

You should aim to have sufficient global buffers to support the data-flow across the switched connections, while leaving enough memory for the data structures associated with each DTE and each switched connection.

A switched connection can use up to (2 x window size) global buffers. Allocating more buffers only reduces the memory available for other purposes. Do not reduce the number of global buffers too much, or else data transfer problems may occur. Digital currently recommends a minimum 400 of global buffers.

The memory required per DTE depends on the number of channels defined on the DTE. This memory will be allocated whether the channel is used or not. Digital does not recommend using more than 512 channels on any DTE in the system.

As each switched connection is set up, more memory is allocated. There must be enough free memory to support the establishment of these switched connections.

Tuning the Router

Before defining X.25 switching, boot the system and issue the **memory** command at the GWCON (+) prompt, to get the statistics on current memory usage. Add together the values in the columns headed `Never Alloc` and `Prev Alloc` to find the amount of free memory (FM). Also note the total number of global buffers.

Each X.25 DTE requires 76 Kbytes and each switched connection requires 1 Kbyte. By multiplying the number of DTEs by 76 and the number of switched connections by 1, compute the memory requirements (MR) for the desired X.25 configuration. Check that MR is less than the available free memory (FM).

If MR is greater than FM, either the configuration is too complex and must be reduced in size, or there are already too many global buffers (TG) defined. For the latter case the number of global may be reduced to as few as 400, provided this will still leave sufficient to run the required number of switched connections.

Compute the amount of memory remaining for use as global buffers (GA) by subtracting MR from FM. If necessary, the number of global buffers can be increased. Dividing GA by 2332 will show how many extra buffers can be allocated.

To change the number of global buffers that the router may use, enter the **set global nnn** command at the `Config>`; prompt, where **nnn** is the number of global buffers required.

Example

Consider an AW900 that has 1 sync DTE and 4 LLC2 DTEs, each with a channel range of 1 - 512. It must support 512 switched connections (1024 SVCs). The following memory is required:

```
 76 * 5 *1024  = 389120 bytes for the DTEs
512 * 1 * 1024  = 524288 bytes for switched connections
-----------------------------------------------------
389120 (DTEs) + 524288 (connections) = 913408 bytes total
```

Depending on which other protocols are defined to run on the system, there should be enough memory to allow for 1600 global buffers.

Event Logging System

The X.25 Network Interface section of the *Event Logging System Messages Guide* describes the ELS event X25.010. This event is never logged by the software.

X.25 Config Process Menu

The `X.25 Config>` process menu provides the user with a list of protocols for the **add/change/delete** commands. The only protocols supported by these commands are IP, DN and IPX.

ETH Config Commands

When X.25 establishes an LLC2 session, it uses the following parameter settings:

```
Received I Frames Before ACK (N3)        254
Transmit Window (Tw)                      96
Receive Window (Rw)                       32
```

These values cannot be changed through the `ETH Config>` commands.

Too Many Router Adjacencies in DECnet with X.25 Circuit

X.25 circuits in DECnet are created with Maximum Routers set to a default value of 16. This will most likely prevent DECnet from starting because it has too many router adjacencies. If your configuration has this problem, you will see this error if you restart in the `Monitr` process (get to `Monitr` by entering **talk 2** at the `*` prompt):

```
DN.072: too many router adjacencies 32, NBRA = 18
```

To work around this, set the Executor Maximum Broadcast Routers to be larger than the number reported in the DN.072 message.

The following commands are a workaround for the example above.

Step	Action
1	`*` **talk 5** (brings you to + prompt) or `*` **talk 6** (brings you to `Config>` prompt)
2	`+` **p dn** or `Config>` **p dn**
3	`NCP>` **define executor max broadcast routers 36**
4	Restart the module in order for the new setting to take effect.

WAN Restoral (WRS), WAN Reroute (WRR)

General

If you are using V.25 bis as your backup link, the modems must be fully V.25 bis compatible, and correctly configured to work with the RouteAbouts.

There are step by step RouteAbout configuration instructions in the *Installation and Configuration* and *Distributed Routing Software* guides, which need to be followed carefully. Here are some of the common pitfalls, and how to avoid them.

RouteAbouts

When configuring the dial circuits, make sure that one end is set for outgoing calls, and the other for incoming. Configuring both ends for bi-directional calling invites call collisions, as the routers at each end of the primary can see primary loss simultaneously. For WAN Restoral, do NOT configure a routing circuit on a secondary dial up network. The router will allow such a configuration, but will restart when the secondary is activated. For WAN Reroute, you must configure routing on the secondary interface as well as the primary.

If you are using ISDN, make sure that PPP MRU size is manually set on the primary interface to a value below the default of 2048. The recommended value is 1800.

Remember that, from the point of view of routing, WAN Restoral sees only the primary connection. So DECnet Phase IV, for example, will show the same circuit identifier for the routing circuit when the secondary is up as it does when the primary is up. Also, if you disable the primary net from the console, you will not be able to restore on the corresponding secondary.

Modems

Be sure to select modems that fully implements the V.25 bis recommendation (not all do so). The following is a list of compatible modems:

- Zypcom Z34-SX external. Telephone: 510-783-2501

- Microcom Deskporte FAST with V.34. Telephone: 617-551-1000

- Motorola V.3400, Motorola Codex 3266. Telephone: 205-430-8000 or 1-800-426-1212

- MultiTech Systems MT2834BA. Telephone: 1-800-328-9717 or 1-800-972-2439

- Bay Networks, Alliance V.34. (formerly Penril Datability Networks) Telephone: 1-800-252-6926 code 172

Make sure these key modem settings are correctly configured. They are NOT usually the default settings of the modem:

- DTR must be set to 108.2 operation

- DSR must follow DTR

- CTS must follow the operation of the auto-call unit

PAP/CHAP

CHAP Response Packet Name Field

The name field in a CHAP response packet should contain the name of the local machine (machine sending response packet), not the name of the remote. The name of the remote machine may prevent CHAP from finding the proper password on other vendor machines that use the name field of CHAP challenge/response packets.

Event Logging

Event log message PPP.134 does not display CHAP value received from response packet.

Bandwidth Reservation System (BRS)

BRS uses classes only, not filters.You cannot assign a BRS filter to SNMP responses, since the destination UDP port of an SNMP response may vary depending on the port used by the requestor.

Dial Interfaces

Do not exceed a limit of 100 virtual dial interfaces.

DNA-PhaseV Routing

RAP Messages

When running the **distance vector** algorithm at level 2, inbound RAP (Reachable Address Prefix) messages will not be supported.

DECnet Phase V Area Addresses

If you are using DECnet Phase V, do not set an area address that ends with 00-40. This LOC-AREA has a special meaning in Phase V of 'default area', to be used by endsystems in the absence of a router.

TRACEROUTE in the OSI subsystem

There is a restriction on using the TRACEROUTE function in the OPCOM OSI Subsystem. If your OSI algorithm is set for DISTANCE_VECTOR, the function will not work. The function only works when the router is in the LINK_STATE algorithm.

Running LINK_STATE Algorithm at Level 1

If the router is configured to run the LINK_STATE algorithm at level 1, do not disable the IS-IS protocol on any broadcast subnets (such as Ethernet).

Ethernet Connections

Ethernet connections can take from 5 to 150 seconds to transition to the UP state after being connected to the ThinWire or to an IMB connection (drag and drop in the MultiChassis Manager LAN Interconnect window). If bridging is enabled, another minute will pass before the circuit enters the FORWARDING state. This condition applies to both Ethernet backplane and front panel connections on the DECswitch 900EE and 900EF Routers, and only to the Ethernet front panel connections on the RouteAbout Central EW and EI modules.

IP

IP Configuration Command

Use extreme caution when using the IP configuration command to set routing table size. If too large a table size value is entered, the router could crash when it is restarted due to memory allocation failure. The value at which this will be a problem depends on memory usage from other configuration setups.

Illegal IP Address/Mask Pairs

The CLI allows you to enter illegal IP address/mask pairs. (e.g., 192.1.1.1/255.0.0.0). The resulting address will not be advertised by the routing protocols, however. Be sure that your address mask is not less restrictive than the default for its class (Class A = 255.0.0.0, B = 255.255.0.0, C = 255.255.255.0).

Monitoring HST

If you have configured IP routing and IP host services (HST), you cannot monitor HST from the GWCON process (**talk 5** or + prompt). HST is only used in the absence of IP routing and with bridging enabled, so the HST configuration information is ignored and monitoring of HST disabled. If IP is configured you can use the information in your IP routing configuration to remotely access the router.

Bridging

Defined Bridge Ports

When Transparent Bridging (i.e. **prot asrt**) is enabled, ensure that DNA IV routing is not configured on any LAN circuits.

Setting MAC Addresses

When operating in IP Host Only mode, Digital recommends that the bridge ID be set to an unused MAC address (i.e., a MAC address that is **not** assigned to one of the module's interfaces). On a DECswitch 900EE or 900EF Router, the best choice for this MAC address is the eighth MAC address assigned to the module, i.e.: [module's base MAC address+7] modulo 256.

Static MAC Addresses

If you statically define a MAC address on a certain port, the bridge will not learn dynamic information about the address. For instance, if you move the station to a new port, the bridge will continue to send frames destined to it on the old port.

Aging Out MAC Addresses

If the bridging MAC address database fills, the bridge will prematurely age MAC addresses in order to make more room in the database. It will first age out any entries that are within 85% of their maximum age. If that does not free enough space, then all entries within 65% of maximum are aged out. This can result in a large number of entries being aged out at the same time, in excess of the space required for new entries.

MAC Filtering

Do not use MAC filtering on an IP tunnel port.

IPX

IPX Tunneling

If you are using IPX tunneling via IP, IP routers on the tunnel will be entered into the IPX routing table in hexadecimal. For example, an IP router with address 125.125.125.20 on a tunnel with IPX network number 210 will appear as 210/00007d7d7d14.

Keepalive Time-out

The IPX Keepalive time-out value is ignored and will continue to spoof IPX Keepalive packets indefinitely or until the connection is terminated.

SNMP

The router does not have a default community string for SNMP. Many management tools assume that the default community string of "public" will be present. If the router is configured through the **qconfig** process described in the module's installation and configuration guide, a community string of "public" will be created. The community string may also be set from the Installation Menu or from the DEChub 900 setup port, or by using the **add community** command at the SNMP Config> prompt (to get here, type **protocol snmp** at the Config> prompt). You can check the SNMP configuration by typing **list all** at the SNMP Config> prompt. See the module's installation and configuration guide for more information.

HUB Management

OBM Access of Module

If you are using the DEChub 900's OBM port to manage the hub and its modules, be aware that from the MultiChassis Manager, you can use only the LAN Interconnect screen to manage these modules. To Telnet to the module from the MultiChassis Manager front panel window, select TELNET from the APPLICATION pull down on the tool bar and enter the module's OBM address. You can also use PING to get to the module. The TELNET icon in the Brouter Summary Window does not work. **An OBM IP address for the module must be defined.**

Installation Menu

The installation menu of a module configured with Host IP looks the same as the installation menu of an unconfigured module. Select option `[3] Show Current Settings` to display the Host IP address. If IP routing is configured, the menu options `Show Current Settings` and `Configure IP` are not shown and the defined IP addresses, not the associated interfaces, will be displayed.

Accessing RouteAbout Central EI/EW Through DEChub OBM Port

If a RouteAbout Central is placed in a DEChub 900 MultiSwitch and is accessed through the DEChub's OBM port, the following limitations apply: The RouteAbout Central will be initially accessible, via PING or TELNET, but if the module is restarted, then the DEChub 900 must also be restarted before access to the module is available. Restart the DEChub 900 by selecting option `[2] Reset with Current Settings` in the `DEChub 900 MultiSwitch INSTALLATION MENU`. This applies only to the RouteAbout Central EI/EW modules.

Bandwidth on Demand (BOD) with Multilink PPP

The current BOD algorithm for incremental links uses a simple round robin approach to traffic distribution, assuming all lines are running at 64k. Therefore, using Bandwidth on Demand with Multilink PPP is currently only useful if the leased line is 64k.

DECNIS FDDI interoperability with RouteAbouts

When configuring a DECNIS to interoperate with a RouteAbout (which cannot process FDDI format packets on PPP links) you must add the following lines to the DECNIS extra_set NCL file.

```
remove bridge port  MAC types {FDDI}
set    bridge port  Manual Data Link SDU Size 1536
set    ppp    link  Minimum SDU Size 1536
set    ppp    link  Preferred Maximum Receive SDU Size 1536
```

Accessing Online Information

Network Product Business Web Site

Further information on this network product or topic is available on Digital's Network Product Business Web Site as well as its Bulletin Board System. Both systems maintain a common, rich set of up-to-date information on NPB's products, technologies, and programs.

The Web Site can be reached at geographic locations via the following URLs:

Americas Network Product Business Home Page	http://www.networks.digital.com/
Europe Network Product Business Home Page	http://www.networks.europe.digital.com/
Australia Network Product Business Home Page	http://www.digital.com.au/networks/
Digital Equipment Corporation Home Page	http://www.digital.com/

To get firmware and MIB information, please choose the Products and Technology link, and from there choose the Technical Data link.

To connect to the Network Product Business Bulletin Board System, you need a PC and a modem. Dial 508-486-5777 (U.S.A.). Set your modem to 8 bits, no parity, 1 stop bit.

Using Electronic Mail

The DDN Network Information Center (NIC) of SRI International provides automated access to NIC documents and information through electronic mail. This is especially useful for users who do not have access to the NIC from a direct Internet link, such as BITNET, CSNET, or UUCP sites.

To use the mail service, follow these instructions:

1 Send a mail message to **SERVICE@NIC.DDN.MIL**.

2 In the SUBJECT field, request the type of service that you want followed by any needed arguments.

Normally the message body is ignored, but if the SUBJECT field is empty, the first line of the message body is taken as the request.

The following example shows the SUBJECT lines you use to obtain DDN NIC documents:

HELP

RFC 822

RFC INDEX

RFC 1119.PS

FYI 1

IETF 1IETF-DESCRIPTION.TXT

INTERNET-DRAFTS 1ID-ABSTRACTS.TXT

NETINFO DOMAIN-TEMPLATE.TXT

SEND RFC: RFC-BY-AUTHOR.TXT

SEND IETF/1WG-SUMMARY.TXT

SEND INTERNET-DRAFTS/DRAFT-IETF-NETDATA-NETDATA-00.TXT

HOST DIIS

Requests are processed automatically once a day. Large files are broken into separate messages.