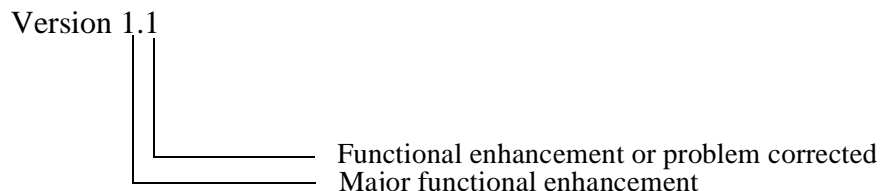**digital**™

DIGITAL VNswitch 900 Series Modules
Versions 1.6.2 and 1.6.3
Release Notes
September 1997

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 DIGITAL VNswitch 900EA, DIGITAL VNswitch 900 EE, DIGITAL VNswitch 900EF, DIGITAL VNswitch 900EX, and DIGITAL VNswitch 900XX modules.

The following example describes the firmware version number:

Version 1.1

Functional enhancement or problem corrected
Major functional enhancement

Contents

Hardware and Firmware Support

Version 1.6.2 of this VNswitch firmware release supports the following products:

- DVNEE (VNswitch 900EE)

- DVNEF-MM (VNswitch 900EF)

- DVNEF-MX (VNswitch 900EF)

- DVNEX (VNswitch 900EX)*

- DVNXX (VNswitch 900XX)

Version 1.6.3 of this VNswitch firmware release supports the following product:

- DVNEA (VNswitch 900EA)

* *See* section "Out-of-Rev" Indicator (VNswitch 900EX).

Minimum Hardware Revision for ATM LAN Hopping

Minimum hardware revision required to support ATM LAN hopping is (07). To display the hardware revision, enter the command 'CONFIGURATION' at the monitor prompt (+). The first line of the configuration display indicates the hardware revision number as the first two digits following the "HW=" string.

VNswitch Operation in the DIGITAL MultiSwitch 900

For VNswitch operation in the DIGITAL MultiSwitch 900 (formerly DEChub 900 MultiSwitch) DIGITAL recommends:

- DIGITAL MultiSwitch 900 firmware V5.2

- clearVISN V2.0

New Features in this Release

The following features are new for this release. Refer to the *VNswitch 900 Series Switch Management* manual for further information.

- New VNswitch 900EF-MX module with FDDI Modular Media Interface (Mod-FDDI) card support

- clearVISN MultiChassis Manager support for the VNswitch 900EA module for LAN interconnect and ATM interface configuration functionality in the DIGITAL MultiSwitch 900 (formerly DEChub 900 MultiSwitch)

- New MIB support for the VNswitch 900EA module:

  — LAN Emulation Client ATM MIB (ATM Forum/af-lane-0044-000, September 1995)

  — DIGITAL ATM Bridge Tunnel MIB

- Enhanced hardware self-testing for VNswitch 900 hardware components (*See* Detection of Hardware Failure During Module Power-up Sequence)

- New Bridge Monitor LIST DATABASE ATM command to display the ATM Channel ID associated with a learned MAC address

Special Considerations for this Release

Read this section for special considerations for the operation of your VNswitch 900 modules with this release.

Detection of Hardware Failure during Module Power-up Sequence

This release includes enhanced hardware self-testing features designed to provide a more comprehensive self-check of the VNswitch 900 hardware components, when the module is first powered up. As a result, although unlikely, a module running V1.6.2 or V1.6.3 could incur hardware failures where none were detected with previous firmware versions.

This release supports a new method of handling hardware failures at power-up time. In previous firmware versions, the module would freeze, leaving the "Module OK" LED in the off state. In this release, when the module detects a hardware failure, the module goes into Config-Only mode; a message on the attached management console indicates a failed diagnostic; and the module writes failure information into the Diagnostic Error Log. From the Config-Only menu, you can examine the Diagnostic Error Log to determine the type of failure.

From Config-Only mode, you can "Restart" the module (Restart performs a "warm start" and does not execute diagnostics), bring it up in normal operational mode, and perform a downline upgrade to revert to the previously loaded firmware version. When running the earlier firmware version:

- If the hardware failure is still indicated, then uninstall the module and return it for replacement under the conditions of the DIGITAL Warranty Replacement process.

- If the hardware failure is not present, then you can continue to run the module in your network. However, be aware that a potential hardware problem has been detected and you should schedule a replacement of the module at your earliest convenient time.

"Out-of-Rev" Indicator (VNswitch 900EX)

This version of the VNswitch firmware is designed to identify hardware that should be replaced. For such instances, DIGITAL has established a procedure for getting replacement hardware direct to end users using the DIGITAL warranty return process. You may elect to replace your hardware either before or after installing this firmware. DIGITAL will provide a one-for-one advance replacement module for each out-of-revision unit you have.

You can identify the Fast Ethernet hardware version in your VNswitch 900EX using one of these methods:

- Selecting the "Show Current Settings" option in the module's Installation Menu

- Using Telnet to the IP address of the module and entering the "Config>list config" command

- Installing firmware version 1.6.2

- Looking at the product label on the unit

In the first two methods, the hardware revision information is displayed as six characters following the "HW=" string. The digit following the "X" is the Fast Ethernet device Rev ID. This number must be greater than "0" to conform to the latest hardware revision. The third method is to look for the "Out-of-Rev" message on the DIGITAL MultiSwitch 900 LCD display after installing the V1.6.2 firmware. The fourth method is to remove the module from the chassis or docking station and visually inspect the product sticker. This sticker lists the product name and power requirements, as well as the revision of the product. You should replace VNswitch 900EX modules that have a revision number of D01 or earlier.

Problem Description

The DIGITAL Fast Ethernet implementation complies with applicable IEEE standards, including IEEE 802.3, 802.3u, and 802.1d. However, in certain network configurations, the existence of over-sized packets on the network may cause the VNswitch 900EX to transmit ill-formed packets onto the network.

A newer version of the VNswitch 900 Fast Ethernet hardware sub-system resolves this problem. DIGITAL recommends that you determine the version of the Fast Ethernet hardware of your VNswitch 900EX module. If your hardware is out-of-revision, you should contact DIGITAL at one of the numbers listed below to arrange for the replacement of your VNswitch module.

Replacing Your Hardware Unit

Once you have determined that your hardware is out-of-revision, please follow the procedure below to get an advance replacement unit. You will have 10 days to return your old modules, after receipt of the new ones, to avoid getting billed for the replacement modules. The VNswitch 900EX is a *customer replaceable unit* and is *hot-swappable*. Therefore, you can easily replace the unit yourself. If you have a service contract, your service provider can do this hardware upgrade for you, if you so choose.

1 Contact DIGITAL using the warranty contact phone number for your area. If a number is not listed for your area, contact the vendor who sold you the unit(s).

2 Inform the DIGITAL office (or vendor) that you want an *advance replacement* module for your *out-of-revision* VNswitch 900EX.

3 Follow the instructions provided by your DIGITAL warranty office (or vendor) for shipping the old unit(s) back.

NOTE: Prior to removing your old VNswitch 900EX, you should review and record any configuration parameters that were changed from the default values. For information on how to do this, refer to the *DIGITAL VNswitch 900 Series Switch Management* (AA-R22D*x*-TE), where *x* is the revision of the manual denoted by A, B, C, etc. This guide is available on the DIGITAL network Web sites. Refer to the section titled "Backing Up and Restoring the Switch."

DIGITAL Phone Support

The following service numbers are provided for your use during the product warranty period:

Country	Telephone Number	Country	Telephone Number
United States	1-800-354-9000	Australia	61-1-800-252-277
Austria	0222-86630-2000	Belgium	02-7297-744
Brazil	0800-218499	Canada (Engl)	1-800-267-5251

Country	Telephone Number	Country	Telephone Number
Canada (French)	1-800-267-2603	Czech Repub	42-2-61108158
Denmark	80301005	Fiji Islands	679-315-699
Finland	9800 2878	France	33+1-6987-4123
Germany	0180-330-5353	Greece (Ath)	01-682-1980
Greece (Thes)	031-427-261	Hong Kong	852-2805-3333
Hungary	11-65-2655	India	91-80-344077
Indonesia	6221-572-1171	Israel	09-59-3300
Italy	2-1678 20062	Japan	0120-11-3035
Korea	822-3771-2955	Luxembourg	49-81771
Malaysia	603-800-3435	Mexico	91-800-00210
Netherlands	030-2832888	New Zealand	0800-801-727
N.Ireland	01232 381245	Norway	22-76-86-00
PRC Beijing	8610-68492266	PRC Guangz	8620-6665666
PRC Shanghai	86-21-6545-7460	Philippines	623-840-6383
Poland	22-640-00-00	Portugal	351-1-388-9107
Puerto Rico	800-981-4764	Rep of Ireland	01-838-1216
Russia	+7-095-974-76-38	Singapore	65-3366129
Spain (Barc)	93-401-2222	Spain (Madrid)	91-583-4257
Sweden	08-98-8835	Switzerland	155-21-61
Taiwan	8862-5797555	Thailand	662-312-0500
Turkey	0-800-261-1914	Ukraine	380-44-293-6249
United Kingdom	01-256-57122	Venezuela	58-2-263-95-11

Duplicate MAC Addresses on Separate VSDs

NOTE: This applies to all VNswitch 900 modules, except the VNswitch 900EA.

In most networks, the same MAC address is not expected to appear as a Source Address (SA) on more than one VLAN Secure Domain (VSD). Exceptions do exist, for example:

- A DECnet router can be attached to multiple VSDs to perform routing between those VSDs. DECnet routers force a phase IV-style derived MAC address on all the router's interfaces. This MAC address then appears as a duplicate on each VSD where the router has an interface.

- Sun systems with multiple interfaces use the same MAC address on all interfaces. However, you can configure these systems to use a unique MAC address on each interface.

- Any address can appear transiently as a duplicate if the address moves from one VSD to another. A VNswitch module sees this transient duplicate address when it receives packets from such an SA over the VNbus.

In these cases, the behavior of the VNswitch 900 modules, previous to this release, was to learn the SA on the VSD where it first appeared and properly forward packets with that address as a Destination Address (DA). Packets containing the same address as a DA received on other VSDs may NOT be forwarded, creating reachability problems in those VSDs.

With this release of the firmware, the VNswitch 900 module learns the 'duplicate' address on the port in the VSD where the address first appears. The module then, properly, forwards packets with the duplicate address as a DA on the VSD where it was learned and floods such packets on all other VSDs. You can avoid the flooding behavior by configuring each duplicate MAC as a static or permanent address and set its permitted port mask to just the set of ports on which that MAC address is reachable.

If protocol filtering applies for a packet with one instance of an address, another instance of that address may not be correctly filtered. Thus, DIGITAL recommends that you do not use protocol filtering for any configuration that requires the use of a duplicate MAC address.

Future versions of the VNswitch 900 firmware are planned to offer improved handling of the duplicate MAC address problem. In the meantime, consider the functionality provided in this release as a workaround due to its limitations and the flooding behavior. In addition, DIGITAL recommends the designing of networks that do not have the duplicate MAC address problem, if at all possible.

ATMswitch 900F Interoperability Problems

To configure the VNswitch 900EA module in a DIGITAL MultiSwitch 900 chassis (formerly DEChub 900 MultiSwitch hub) for LAN interconnect operations with the DIGITAL ATMswitch 900F, follow these special instructions:

- Use ATMswitch 900, Version 1.2, firmware

- Configure the ATMswitch 900 to operate with UNI V3.1 signalling, using the command:
  ```
  UNI -v31 -p<port #> -s<slot #>
  ```

If you have two ATMswitch 900F modules in your MultiSwitch 900 chassis and you want to use two ports from each to connect to four VNswitch 900EA modules on the backplane, you must use two different sets of ports from each ATMswitch 900F module. For example, if you want to use ports 1 and 3 in the first ATMswitch 900F module, then you must use ports 2 and 4 in the second ATMswitch 900F module.

If you choose the same port numbers in both ATMswitch 900F modules, only the first instance of that port number is available for a connection. Once you have an ATMswitch 900F port 1 connected to another module (VNswitch 900EA), that signal set is in use. The second instance of an ATMswitch 900F port 1 connection to another VNswitch 900EA module cannot be completed because that signal set is already in use on the backplane.

Protocol Filters on the VNswitch 900 Modules

This release of the VNswitch firmware allows users to configure protocol filters based on both the encapsulation and the protocol type. That is, to configure a protocol filter for a given set of ports, the user chooses the encapsulation, the protocol type, and the list of the ports to which the filter applies.

When configuring protocol filters, keep the following in mind. Forwarding of a packet from a LAN segment with one type of encapsulation to another LAN segment with a different encapsulation type requires translation. The translation of the packet takes place after the filter-forwarding decision is made. Therefore, if an Ethernet IP packet is forwarded to the FDDI port, an Ethernet IP filter needs to be set for the FDDI port for filtering to occur, even though the transmitted packet has a SNAP encapsulation.

To prevent an error in protocol filter configuration for a given set of ports, the best approach is to set protocol filters for all encapsulation types of the protocol to be filtered on each set of ports. This, typically, can be done without any side effects. If this approach interferes with other considerations, base the configuration on filter encapsulation and choose with caution.

VNswitch Firmware Conditions and Restrictions

The following known conditions and restrictions apply to this release of the VNswitch firmware.

No Frame Interval Functionality

The "No Frame Interval" functionality is not supported in this firmware release.

Out-of Band Management (OBM)

When configuring the module for Out-of-Band management, you must configure both an in-band IP address and an out-of-band IP address for the module.

When the module is in a DIGITAL MultiSwitch 900, the OBM address mask is settable in the OBM configuration menu. However, the mask is not saved in the module's configuration nor is the mask used or required for the OBM configuration.

The OBM baud rate cannot be set to 4800 when the VNswitch is in the MultiSwitch 900. However, 4800 is a valid speed when the module is in a DEChub ONE docking station.

IP Services Module Address

If you take the IP address of any module that is serving as the IP Services module for the DIGITAL MultiSwitch 900 and reassign it to the VNswitch, you must remove (power-cycle) the other module (from which the IP address was taken) before the VNswitch can assume the new address and operate as an IP Services module.

Clearing SNMP Configuration

When clearing SNMP configuration (using Clear all or Clear SNMP commands) you must restart the module for the clear to take affect.

VNswitch Configuration on the VNbus

The primary mechanism for configuring the VNbus is clearVISN LAN-Hopping. If this management tool is unavailable, you may use the VNbus-AutoConnect feature of the DIGITAL MultiSwitch 900. The VNbus-AutoConnect feature should not be enabled when the clearVISN management tool is used to configure any LAN-Hopping.

Ping Packets Greater than 1500 Bytes

The VNswitch 900 module does not reply to ping packets that are greater than 1500 bytes.

Displaying Event Log Messages

When you display events using the "*events" command or indirectly via the "Config>set output console," be aware that you can retrieve Event log messages only once. That is, once an Event Log message is displayed, it cannot be viewed again. Therefore, if you want to save Event log messages for later analysis, save the display output using an appropriate method, such as logging/saving a terminal session.

Crash Dump Capability

This release of the VNswitch firmware includes a crash dump capability. Refer to the *VNswitch 900 Series Switch Management* guide for configuring DUMP. You must configure IP Host Services for dump to work.

Loss of Dedicated Ethernet Connections

If you enable VNbus from the MultiSwitch 900 chassis console you lose any dedicated Ethernet (formerly ThinWire) connections established between VNswitch 900 modules in the chassis and the chassis' dedicated Ethernet LAN.

clearVISN MCM LAN Interconnect Not Supported for Fast Ethernet Interfaces

The clearVISN MultiChassis Manager (MCM) LAN Interconnect feature is not supported for Fast Ethernet interfaces.

Config-Only Mode Restart and Ethernet Ports

When you perform a restart from Config-Only mode, the Ethernet ports remain in testing mode. A second restart is required to bring up the Ethernet ports.

Nonsupport of FDDI Port Redirection to back of DEChub ONE-MX

This release does not support redirection of the FDDI port to the back of the DEChub ONE-MX docking station.

Restrictions and Conditions for the VNswitch 900EA

This section lists known restrictions and conditions specific to the VNswitch 900EA in this release.

Nonsupport of nonzero VP Values in ATM

Non-zero Virtual Path (VP) values are not supported for Asynchronous Transfer Mode (ATM) in this release.

No FLOWmaster Support for ATM

This release of the VNswitch firmware does not support FLOWmaster for ATM networks.

T3/E3 and T1/TE ATM modPHYs Not Supported

This release of the VNswitch firmware does not support T3/E3 and T1/E1 ATM modPHYs.

Configuring Link Parameters

1. Auto-negotiation of link parameters sets the SONET clock to LOOP timing if the VNswitch module is attached to a GIGAswitch/ATM switch. The default setting, if no connection to an GIGAswitch/ATM switch is discovered, is LOCAL. You can ensure proper operation of the link and reduce auto-negotiation workload by setting the timing to the following when configuring the physical interface:

- LOOP – if attached to a GIGAswitch/ATM switch

- LOCAL – if attached to another VNswitch 900EA

2. If a VNswitch 900EA module is attached to an ATM switch, and the error rate is high on the link check, set the physical layer timing parameter to LOOP.

3. If two VNswitch 900EA modules are linked back-to-back, set the timing to LOCAL on one of the modules.

Nonsupport of Hot Swapping for the ATM modPHY Card

This version does not support the hot-swap feature for the ATM modPHY card. You must restart the VNswitch 900EA module after the installation of an ATM modPHY card for the card to initialize.

ATM GIGAswitch BUS Limits

The ATM GIGAswitch has a Broadcast and Unknown Services (BUS) broadcast rate limit, which, if exceeded, can cause the effective throughput of the ATM GIGAswitch to decline and connections to be lost. Thus, DIGITAL recommends that broadcast activity on the VNswitch 900EA be limited to an aggregate rate of 100 packets per second.

List Command for ATM Bridge Tunnel Ports

For an ATM Bridge Tunnel port, the ATM Monitor> "list all" command lists LEC VCCs instead of BT VCCs. To see the BT VCCs, enter a "list vc" command at the ATM Monitor> prompt.

ATM Bridge Tunnels and LECs

If the default LEC or Bridge Tunnel does not come up, one of the ATM logical interface SRAM records may already be configured. Reset to factory settings (or clear the ATM records at the Config> prompt) to use the default configuration.

ATM Link Down; Ethernet and VNbus UP

When the ATM PHY LEDS blink amber and ATM module led blinks green (Fatal ATM physical layer error), the ATM link is down, but the Ethernet and VNbus parts of the device are still functional. Make sure that the ATM daughter card is up to the ECO revision level 2.

The ATM Config Interface Command Menu

Dynamic support to disable and enable an ATM interface is available through the ATM Config interface command menu. The "disable interface," "enable interface," and "list interface" commands at the top level of the Config Process (prompt is Config>) do not affect the ATM interfaces. To reach the ATM Config interface command menu, enter the Config Process and issues the interface command for the particular ATM interface. The prompt changes from Config> to ATM Config>. From there you access the "disable-interface," "enable-interface," and "list" commands to disable, enable, or list the information for that ATM interface. Here is a sample session:

```
MOS Operator Control
*c
Config>int 27
ATM Config>?
LIST
CHANGE-INTERFACE
DISABLE-INTERFACE
ENABLE-INTERFACE
PHYSICAL
EXIT
ATM Config>list
Interface              : 27 (Bridge Port 28)
Interface Type         : Fddi Bridge Tunnel
Bridge Tunnel Status   : Down
PVC(vpi,vci)           : 0, 255

ATM Config>
```

Problems Configuring VNswitch 900EA Using clearVISN MCM

Problems and solutions configuring the VNswitch 900EA module with the clearVISN MultiChassis Manager (MCM) are as follows:

- **Problem:** MCM's 'RESET' button on the 'CONFIGURE LOGICAL INTERFACES' view, which configures bridge tunnels and LECs, does not restart the VNswitch 900EA module. Typically, a restart is needed when creating a new FDDI Bridge Tunnel. When RESET is selected, a warning message is displayed stating that it will cause loss of module communication, but this never occurs nor does the module restart.

  Solution: To restart the module use MCM's 'RESET' button in the VNswitch Switch Summary view, or use the VNswitch 900EA Command Line Interface 'Restart' command from the configuration menu.

- **Problem:** Enabling a configured LEC does not result in the LEC being moved to the enable window. No error or warning indication is given.

  Solution: Verify that no 'Lan Name' conflict exists. The VNswitch 900EA does not allow more than one LEC with the same 'Lan Name' to be enabled. This includes multiple LECs with blank (i.e. default) 'Lan Names.'

- **Problem:** Enabling a configured FDDI Bridge Tunnel does not result in the tunnel being moved to the enable window. No error or warning indication is given.

  Solution: The FDDI Bridge Tunnel may recently have been configured without performing a required restart of the VNswitch 900EA module. To restart the module use MCM's 'RESET' button in the VNswitch Switch Summary view, or use the VNswitch 900EA Command Line Interface 'Restart' command from the configuration menu.

- **Problem:** VCI=1023 can be configured on the VNswitch 900EA for an Ethernet or FDDI bridge tunnel. This is Illegal.

  Solution: Use only values between 62-1022.

Problems Solved by this Release

These firmware versions (V1.6.2 and V1.6.3) resolve the following problems found in V1.5 (and its subsequent maintenance releases, V1.5.x). Problems noted with an asterisk (*) were fixed for firmware version V1.6, which was released for the VNswitch 900XX module only. Nevertheless, DIGITAL recommends that you upgrade all VNswitch 900 modules, except the VNswitch 900EA, to V1.6.2, including the VNswitch 900XX. DIGITAL recommends that you upgrade VNswitch 900EA modules to V1.6.3. Several important problems were resolved in this release.

- Fast Ethernet error counters for runts, FCS errors, CRC errors, and collision errors were being indexed when they should not have been.(*)

- Module LED states during an image upgrade were not properly indicating CRC check failure or flash write failures (*see* section LED Sequences on Reload). Additonally, in this version, when these failures do occur, a corresponding error message is displayed on the attached management console (if present) and in the error log.(*)

- A CLEAR ALL command was added to the error log menus. This command clears all entries from both the crash log and the diagnostics log.(*)
  In addition, access to the error log is now available from Config-Only mode.

- The dedicated Ethernet (formerly ThinWire) port (interface 11) incorrectly displayed SQE (heartbeat) errors (MONITOR INTERFACE 11 STATISTICS command) when redirected and connected to the MultiSwitch 900 backplane.

- Disabling a port that is redirected, but not connected to the backplane would cause the module to crash.

- If a broadcast address is set for rate limiting and, subsequently, the address is deleted, rate limiting is still performed on that address.(*)

- Using the clearVISN MultiChassis Manager Configure Logical Interfaces screen to perform repeated LEC enables and disables would cause the module to crash.

- During a module's power-up self-test, Fast Ethernet ports generated CRC errors.(*)

- Disabling an interface that is in the "down" state would crash the module.

- Out-of-Band Management (OBM) modem control was not fully supported.
  Changes were made to OBM modem control to support DSR, DCD and CTS for the following fault conditions:

  — DSR DROP TEST.
     Once a connection is made (CD, DSR, and CTS on) and, subsequently, DSR is de-asserted, DTR is de-asserted immediately and remains de-asserted for 2-5 seconds.

  — CD DROP TEST.
     Once a the connection is made (CD, DSR and, CTS on) and, subsequently, CD is de-asserted and is not asserted within 2 seconds, DTR is de-asserted for 5 seconds.

  — FALSE CALL TIMER.
     If DSR comes on for more than 60 seconds without CD, then DTR is de-asserted for 5 seconds.

- The MODULE OK LED now flashes to indicate a fan failure.

- If Address and Protocol rate-limiting are enabled together, the rate-limiting process did not operate properly.

- The Fast Ethernet interface violated the .96usec IPG size standard, causing possible over-runs with other Fast Ethernet devices on the network.

- If an address was unlearned (by manual deletion or aging) and, subsequently, a filter is applied for that address and then deleted, the module crashed.)

- Redirection of an ATM port to the back PHY was not supported in the CLI, and the ATM CONFIG>PHYSICAL FRONT and PHYSICAL BACK commands were thus removed.

- Under certain circumstances, Telnet sessions over an emulated LAN incurred a startup delay.

- VNswitch 900s in a MultiSwitch 900 chassis were not reachable (via Telnet/SNMP/ping/etc) across the VNbus.

- NetBEUI protocol NETLogon broadcasts were not being forwarded in a LAN emulation environment with the VNswitch 900EA module.

- ATM_LEC_Config>LIST ALL failed to display the LEC default parameter settings.

- A packet loss problem existed for ATM FDDI Bridge Tunnel Traffic.

- When an ELAN was disabled on the GIGAswitch/ATM, not all VCCs were cleaned up.

- A problem existed with interoperability caused by GIGAswitch/ATM and UNI version synchronization. When the GIGAswitch/ATM was power-cycled causing the ATM link to go down and back up, the VNswitch 900EA came up and did not properly negotiate the UNI version.

- When the VNswitch 900EA module was connected to a GIGAswitch/ATM, and the GIGAswitch/ATM was restarted, this could cause the VNswitch 900EA to reset.

- When the VNswitch 900EA module was connected using LAN Emulation, it did not take into account the spanning tree state of the bridge ports while answering LE-ARP requests. As a result, LE-ARP resolution could occur for a port that was not in the forwarding state. This resulted in a potential loss of packets or connectivity at the time of ARP Request resolution. The VNswitch 900EA module, as a LEC proxy, now only sends LE-ARP responses if the port is in a forwarding state and the MAC address was learned inside of the VSD to which the LEC port belongs.

Firmware Upgrades

Refer to the *VNswitch 900 Series Switch Management* manual for instructions on how to perform firmware upgrades. During a firmware upgrade do not logout from the "*" prompt. Doing so renders the console inaccessible until the VNswitch is power cycled.

The VNswitch modules do not support firmware upgrades using the DIGITAL MultiSwitch 900 "Downline Upgrade" menu option. You can perform firmware upgrades for the VNswitch modules using the CLI 'load' or 'load remote' commands or using the clearVISN Flash Loader application.

Note that 'reload' and 'load remote' rely on IP Host Services being configured.

If you are using an OpenVMS system and VMS UCX (V4.0 and earlier) as the TFTP load server for the firmware upgrade, the TFTP load may fail. As a workaround, convert the firmware image file format from Fixed-512 to Stream_LF record format.

Upgrading from V1.1 to V1.6

In the V1.1 firmware, the VNbus is disabled by default. In V1.6 firmware, the VNbus is enabled by default. If you are upgrading from V1.1 to V1.6, the saved V1.1 configuration record for the disabled VNbus still exists after the upgrade. Therefore, after performing the upgrade you should manually enable the VNbus using this command:

```
config>enable int 0
```

This command brings up the VNbus, removes the saved configuration record for the disabled VNbus, and changes the default to VNbus enabled.

LED Sequences on Reload

During firmware upgrade, the module LEDs provide information regarding progress of the upgrade. The upgrade process begins when the user enters one of these commands:

- reload at the * prompt, assuming the boot information is pre-configured

- load remote at the Boot config> prompt

After the user confirms, the module restarts in Host-only mode and issues a TFTP GET request using the image file location the user provided. Once the connection with the TFTP server is established, the TFTP image file transfer begins. If a console is connected to the module or if you establish a Telnet session to the module at this point, a message indicates that the upgrade is proceeding. If the TFTP transfer completes successfully, a status ok message is displayed. If a TFTP error occurs, an error status is displayed and the module restarts with the original image. Assuming that the TFTP file transfer is successful, a CRC check of the image received at the module is performed. During the CRC check the VNbus LEDs display as:

- VNbus Traffic (upper): Green

- VNbus Status (lower): Yellow

In the case of an error on the CRC check, the VNbus LEDs display as:

- VNbus Traffic (upper): Yellow

- VNbus Status (lower): Green

If the CRC check succeeds, the new image is written into flash program memory. During the flash write sequence the VNbus LEDs display as:

- VNbus Traffic (upper): Green

- VNbus Status (lower): Green

Upon completion of the flash write sequence (which may take several minutes) the VNbus traffic and status LED pairs flash alternating green and yellow, for approximately 10 seconds. Then, for another 10 seconds, the VNbus traffic and status LED pairs remain lit (either green or yellow) after which the module restarts, running the new firmware.

Port Numbering in the VNswitch 900 Series Modules

The VNswitch 900 family uses two different numbering schemes to reference "ports" and "interfaces" on the module.

The "Interface number" is used to configure and monitor the module's network interfaces (Ethernet, FDDI, Fast Ethernet, VNbus and ATM). Interface numbers start at "0" (the VNBus interface number is 0). The numbers on the module's front bezel correspond to the interface number.

The "Bridge Port" number is used to configure and monitor bridging features such as bridge protocol filters, bridge address filters and VLANs. Many displays will include both the "Bridge Port" number and the "Interface" number. Bridge Port numbers are +1 higher than interface numbers and start at "1" (the VNBus).

Keep this relationship between "Interface Number" and "Bridge Port" number in mind when using the command line interface. As a help, the following table provide the association for the VNswitch 900 modules supported in this release

	Bezel	Interface #	Bridge Port #
VNswitch 900EA			1
VNbus	0	0	
12 Ethernets	1 - 12	1 - 12	2 - 13
1 Physical. 16 logical ATM	13	13-28	14- 29
VNswitch 900EE			
VNbus	0	0	1
24 Ethernets	1 - 24	1 - 24	2 - 25

	Bezel	Interface #	Bridge Port #
VNswitch 900EF			
VNbus	0	0	1
12 Ethernets	1 - 12	1 - 12	2 - 13
1 FDDI	13	13	14
VNswitch 900EX			
VNbus	0	0	1
12 Ethernets	1 - 12	1 - 12	2 - 13
2 Fast Ethernet	13, 14	13, 14	14, 15
VNswitch 900XX			
VNbus	0	0	1
4 Fast Ethernet	1 - 4	1 - 4	2 - 5

VNswitch MIB Support

The VNswitch supports the following MIBs. If a MIB is defined in more than one RFC, the supported RFC is listed first and the other RFCs are listed on a separate line.The MIB handlers do not support SNMP set requests unless otherwise noted.

MIB	RFC/GROUP	
mib-2	iso(1).org(3).dod(6).internet(1).mgmt(2).mib-2(1)	
	rfc-1213	
	rfc-1158 -> rfc-1213	
	system(1)	(set)
	interfaces(2)	
	ifAdminStatus(7)	(set)
	at(3)	
	ip(4)	
	ipDefaultTTL(2)	(set)
	icmp(5)	
	tcp(6)	
	udp(7)	
	egp(8)	
	transmission(10)	(interface mibs)
	snmp(11)	
ethernet	.mib-2(1).transmission(10).dot3(7)	
	rfc-1643	
	rfc-1284 -> rfc-1398 -> rfc-1623 -> rfc-1643	
	dot3StatsTable(2)	
	dot3CollEntry(5)	
	dot3Tests(6)	<oid pointers>
	dot3Errors(7)	<oid pointers>
	dot3ChipSets(8)	<oid pointers>
fddi	.mib-2(1).transmission(10).fddi(15).fddimib(73)	
	rfc-1512	
	rfc-1285 -> rfc-1512	
	fddimibSMT(1)	
	fddimibMAC(2)	
	fddimibPATH(3)	
	ddimibPORT(4)	
ds3	.mib-2(1).transmission(10).ds3(30)	
	rfc-1407	
	dsx3ConfigTable(5)	(set)
	dsx3CurrentTable(6)	
	dsx3IntervalTable(7)	
	dsx3TotalTable(8)	
	dsx3FarEndConfigTable(9)	Not supported
	dsx3FracTable(13)	Not supported

MIB	RFC/GROUP
sonet	.mib-2(1).transmission(10).sonetMIB(39)

rfc-1595

sonetObjects(1)

     sonetMedium(1)
     sonetSection(2)
       sonetSectionIntervalTable(2)
     sonetLine(3)
       sonetLineIntervalTable(2)
     sonetFarEndLine(4)   Not supported
     sonetObjectsPath(2)
      sonetPath(1)
        sonetPathCurrentTable
        sonetPathIntervalTable
      sonetFarEndPath(2)   Not supported
     sonetObjectsVT(3)   Not supported
      sonetVT(1)   Not supported
       sonetFarEndVT(2)   Not supported

| **mau** | .mib-2(1).snmpDot3MauMgt(26) |

 draft-ietf-hubmib-mau-mib-03.txt

dot3RpMauBasicGroup(1)   Not applicable
dot3IfMauBasicGroup(2)
dot3BroadMauBasicGroup(3)   Not applicable
dot3IfMauAutoNegGroup(5)

| **bridge** | .mib-2(1).dot1dBridge(17) |

(multiple spanning tree support)

     rfc-1493
   rfc-1286 -> rfc-1493 & rfc-1525

    dot1dBase(1)
    dot1dStp(2)   (set)
    dot1dSr(3)   Not applicable
     dot1dTp(4)   (set)

not implemented:

    dot1dStatic   destination address filtering
    dot1dStaticTable(1)

     traps

| **interfaces** | .mib-2(1).ifMIB(31).ifMIBObjects(1) |

rfc-1573

  ifStackTable(2)

| **digital** | .private(4).enterprises(1).dec(36).ema(2) |

mib-extensions-1(18)

MIB	RFC/GROUP	
elan	elanext(1).efddi(1)	(set)
	elanext(1).ebridge(4)	(set)
	ebrIfSpanTable	Not supported
	ebrTwoPortStatic	Not supported
	ebrTwoProtoFilt	Not supported
	ebrNTP	Not supported
hub	dec_elan_vendor_mib_v30.mib	
	decHub900(11).pubCommon(2)	
	pcomHub(2)	
	pcomLed(3)	(set)
	pcomLoad(4)	(set)
atm	.mib-2(1).atmMIB(37)	
	rfc-1695	
	atmInterfaceConfTable(2) (set) atmInterfaceDs3PlcpTable(3)	
	atmInterfaceTCTable(4)	
	atmTrafficDescrParamTable(5)	
	atmVplTable(6)	
	atmVclTable(7)	
	atmVpCrossConnectIndexNext(8)	Not supported
	atmVpCrossConnectTable(9)	Not supported
	atmVcCrossConnectTable	Not supported
	aal5VccTable	
comet	comet-mib(2)	
	cinterface(1)	
vlan	vlan_v1.mib	
	pe2000(33).bridgeGroup(1) (set)	
	bridgeGroupPortTable(4)	
	bridgeGroupNameTable(5)	
	bridgeGroupPeBusTagTable(7)	
	bridgeGroup atomics	
proteon	.private(4).enterprises(1).dec(36).ema(2). mib-extensions-1(18).cometBROUTERS(20).proteon-mib(1)	
	no rfc - proteon mib text	
	fully supported including sets	
	admin(1).oid(1)	
	admin(1).status(2)	
	admin(1).els(3)	
	admin(1).xface(4)	
	admin(1).private(5) (no documentation)	
	nvram(1)	
	reset(2)	
	xface(2)	
	proto(3)	

MIB	RFC/GROUP
atm	dec_atm.mib
	atmExpand(17)
	ad(1)
	dxatm(2) Not supported
atm bridge tunnel	decAtmBridgeTunnel.mib
	decAtmBridgeTunnel(28)
atm lec	.private(4).enterprises(1).atmForum(353). atmForumNetworkManagement(5).atmfLanEmulation(3) leClientMIB(1).leClientMIBObjects
	atmLecClient.mib
	lecConfigTable(1) (set)
	lecStatusTable(2) Not supported in v1.0
	lecMappingTable(3) Not supported in v1.0
	lecStatisticsTable(4) Not supported in v1.0
	lecServerVccTable(5) Not supported in v1.0
	lecAtmAddressTable(6) Not supported in v1.0
	lecMacAddressTable(7) Not supported in v1.0
	lecRouteDescrTable(8) Not supported in v1.0
	leArpTable(9) Not supported in v1.0
	leRDArpTable(10) Not supported in v1.0
icom	internal(0).intCommon(1)
	int-common.mib
	The icom MIB objects are normally only visible to the MAM on the chassis backplane serial line
	icomHlap(1)
	icomRoot(2) Table not populated
	icomHub(3)
	icomStatus(4)
	icomTrap(5) Not supported
	icomIps(6)
	icomEnviron(7)
	icomPower(8)
	icomIntProtInstrumentation(9) Not supported
	icomBp(10)
	icomBpTotalConfigChanges(1)
	icomBpIfNumEntries(2)
	icomBpIfTable(3)
	icomBpPortDescrTable(4) Missing in walk
	icomBpIfSubtypeNumEntries(5)
	icomBpIfSubtypeTable(6)
	icomBpSignalSetNumEntries(7)
	icomBpSignalSetTable(8)
	icomBpConnNumEntries(9)
	icomBpConnTable(10)
	icomSlot(11)
	icomEntity(12)
	icomRemotePoll(14) Not supported
	icomLigo(15)
	icomLast Not supported

Documentation Errata

Document: VNswitch 900EF Installation and Configuration

Please note the following corrections to the *VNswitch 900EF Installation and Configuration*:

- In the "Hot Swap" section on page 1-3, please note that the DVNEF-MX modules support the hot-swap feature.

- In the "FDDI" section on page 1-4, please remove the number 1 so that:

    — FDDI port 1 A/M reads FDDI port A/M

    — FDDI port 1 B/S reads FDDI port B/S

- Remove the NOTE from page 2-1 that recommends that cards be installed into modules that have been powered down.

- On page 2-4, "Installing the Card:"

    — Remove Step 2 which reads, "Remove the dust caps from the card, if necessary."

    — Change the Note in Step 4 to read, "To prevent the screws from interfering with the card insertion, make sure that the captive screws on the bezel are partially threaded into the bezel threads."

- The tables in "Acoustical Specifications" on page C-3 should read as follows:

    Table C-2 on page C-3 should list the acoustical specifications for the module in English as follows:

    Table C-2: Declared Values per ISO 9296 and ISO 7779[1]

Product	Sound Power Level L_{WAd}, B	Sound Pressure Level L_{pAm}, dBA (bystander positions)
	Idle/Operate	Idle/Operate
DVNEF	5.1	37
DVNEF + DEHUA	5.4	40
DVNEF + DEF1H	5.3	40

[1] Current values for specific configurations are available from Digital Equipment Corporation representatives. 1 B = 10 dBA.

Table C-3 on page C-3 should list the acoustical specifications for the module in German as follows

Table C-3: Schallemissionswerte Werteangaben nach ISO 9296 und ISO 7779/DIN EN27779[2]

Produkt	Schalleistungspegel L_{WAd}, B	Schalldruckpegel L_{pAm}, dBA (Zuschauerpositionen)
	Leerlauf/Betrieb	Leerlauf/Betrieb
DVNEF	5, 1	37
DVNEF + DEHUA	5, 4	40
DVNEF + DEF1H	5, 3	40

[2] Aktuelle Werte für spezielle Ausrüstungsstufen sind über die Digital Equipment Vertretungen erhältlich. 1 B = 10 dBA.

Document: VNswitch 900 Series Switch Management

Please note the following corrections to the *VNswitch 900 Series Switch Management* manual in Chapter 10:

- In "Configuring Installation File Locations," Task 1 specifies the address of the interface through which the firmware upgrade occurs using the "Add address" command. This command is not supported in this release of the firmware. Instead, 'Reload' and 'Load Remote' use the IP-HST address for the upgrade operation.

- In "Displaying Interface Information," the "List Addresses" command described in the Boot-config menu is no longer supported.

- In the section on configuring the module for dumping. the description does not explain how the IP address for the dump interface is specified. Please read the following note and paragraph when configuring the module for dumping.

  NOTE: You need to configure the module with an in-band IP address and enable TCP/IP Host Services for dump to work.

  The IP address of the LDM port defaults to the in-band IP address already configured for the module. To specify an IP address for the LDM port that is different from the host IP address, use the "add address" command at the boot-config prompt. This command prompts you for the IP address and net mask to assign to the LDM port.

Document: 100 Mb/s Fast Ethernet Modular Media Interface Cards Installation (EK-MBITM-IM. A01)

In Appendix C, the wrong connector is shown in Figure A-2: Multimode Fiber-Optic Loopback Connector. The correct figure follows:

NPB-0697-96F
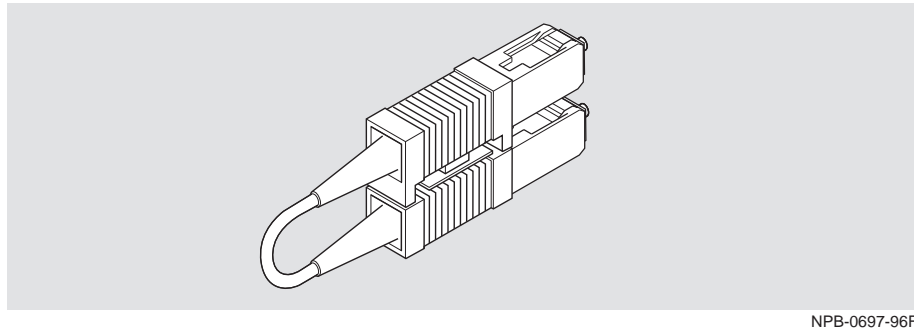
In Appendix C, in the UTP Cable and Connector Information section, the table describing the card's cable and connectors with their order numbers should read:

The following UTP cables and loopback connector are available from DIGITAL:

Cable/Connector Description	Order Number
UTP high-performance data grade building cables (TIA/EIA Category 5)	H8245-C and H8246-C series
UTP Category 5 patch cord (straight)	BN25G-xx[1]
UTP Category 5 patch cord (cross over)	BN24Q-xx
Loopback connector	H4082-AA

[1] The symbol xx represents the cable length. The available cable lengths are described in the *Open DECconnect Applications Guide.*

Accessing On-line Information

Network Product Business Web Site

Further information on this network product or topic is available on the DIGITAL 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/
Japan Network Product Business Home Page	http://www.dec-j.co.jp/ic/network/
Digital Equipment Corporation Home Page	http://www.digital.com/

To get firmware and management information base (MIB) information, please choose the "Technical Information" link, and from there choose the "Technical Information (Drivers, Manuals, Tech Tips, etc.)" link. You will see a listing of all the products available on the NPB Web Site

To connect to the NPB Bulletin Board System, you need a PC and a modem. Set your modem to 8 bits, no parity, 1 stop bit. Dial 978-486-5777 (U.S.A.)

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

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