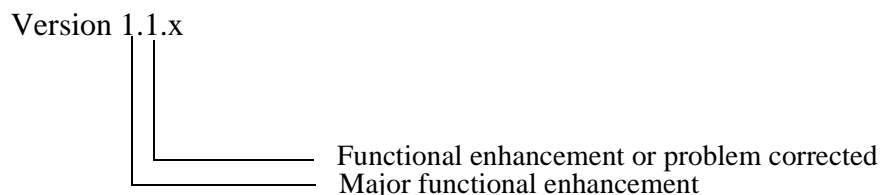**digital**™

DIGITAL VNswitch 900-Series Modules
Version 2.0.6
Release Notes
March 1998

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 900EE, DIGITAL VNswitch 900EF, DIGITAL VNswitch 900EX, DIGITAL VNswitch 900FA, DIGITAL VNswitch 900LL, DIGITAL VNswitch 900XA, DIGITAL VNswitch 900XX DIGITAL VNswitch 900FF, and the DIGITAL VNswitch 900FX modules.

The following example describes the firmware version number:

Version 1.1.x

```
Functional enhancement or problem corrected
Major functional enhancement
```

Contents

Hardware and Firmware Support

VNswitch firmware, Version 2.0.6, supports the following products:

- DVNEA (VNswitch 900EA)

- DVNEE (VNswitch 900EE)

- DVNEF-MM (VNswitch 900EF)

- DVNEF-MX (VNswitch 900EF)

- DVNEX-MX (VNswitch 900EX)

- DVNFA (VNswitch 900FA)

- DVNLL (VNswitch 900LL)

- DVNXA (VNswitch 900XA)

- DVNXX (VNswitch 900XX)

- DVNFF (VNswitch 900FF)

- DVNFX (VNswitch 900FX)

Minimum Hardware Revision for ATM BackPlane Connectivity

Minimum hardware revision required to support ATM backplane connectivity is (07). To display the hardware revision, enter the command 'LIST ALL' at the monitor prompt (Monitor>). 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:

- For the VNswitch 900EE, VNswitch 900EF, VNswitch 900EA, VNswitch 900EX, VNswitch 900XX, VNswitch 900LL, VNswitch 900FA, and the VNswitch 900XA modules, you must use DIGITAL MultiSwitch 900 Firmware V5.2 or higher.

- For the VNswitch 900FF and VNswitch 900FX modules, you must upgrade to DIGITAL MultiSwitch 900 Firmware V5.4 or higher.

clearVISN Support

To manage the VNswitch modules using the clearVISN application, DIGITAL recommends:

- For the VNswitch 900EE, VNswitch 900EF, VNswitch 900EA, VNswitch 900EX and the VNswitch 900XX modules, you must use clearVISN V2.0 or higher.

- For the VNswitch 900LL, VNswitch 900FA, and the VNswitch 900XA modules, you must use clearVISN V2.1 or higher.

- For the VNswitch 900FF and VNswitch 900FX modules, you must upgrade to clearVISN V2.2 or higher.

Features in this Release

VNswitch V2.0.5 firmware is the first release of the software that supports IP Routing, including OSPF and RIP routing protocols, for all VNswitch modules, except the DIGITAL VNswitch 900LL. VNswitch V 2.0 provided this functionality for the VNswitch 900LL module. The following features are new for this release. Refer to the *VNswitch 900 Series Switch Management* manual for further information.

- **IP Routing**
  The IP-Routing for VNswitch modules is based on the standard Comet Distributed Routing Software (DRS) code with certain changes to fit the VNswitch architecture. With the 2.0.5 release, routing is only possible over a Virtual-Interface (VI). A VI is associated with a VLAN, so indirectly, routing is only possible over VLANs. By default, all the IP-Routing functions are disabled. Once routing is enabled, the majority of IP routing configuration is dynamic, i.e., IP addresses can be added to or deleted from interfaces without having to restart the module.

  Enhanced Proxy Arp: The standard Proxy-Arp function of DRS is enhanced to work with end nodes that are configured to "ARP for everything." This allows these nodes to effectively perform IP Packet Switching to other nodes, even if those other nodes are in different IP subnets.

- **RMON Alarms and Events**
  This feature is an implementation of the Alarm and Event groups of RFC-1757. This allows the VNswitch module to monitor any of its own MIB variables, and when the value of a MIB variable crosses a threshold value, an SNMP trap message can be sent, or a log message generated, or both.

- **Mirror Port**
  This feature allows frames that are received or transmitted on one port to be replicated and sent out a Mirror Destination Port. This facilitates using a single LAN analyzer hooked up to a single Ethernet port to monitor traffic xmit/recv on another port(s).

- **Improvements to the Command Line Interface (CLI)**

  — Bridge port consistency
    Bridge ports are numbered starting at (0) instead of (1). Therefore, bridge ports as displayed via the CLI will be the same as the respective bezel port number and the respective interface. All display output and any input that is 'port based' is numbered starting from (0).

  — One-shot commands shortcuts
    This feature allows a single command to be executed for a particular sub-system, without leaving the current sub-system or top-level menu.

  — Other improvements
    Many minor improvements, such as configurable prompts, consistent -more prompting, and improved command output.

- **BootP Client**
  A standard BootP-client function is implemented. At power on (or restart) the BootP-client will send out broadcast packets on all active ports attempting to query any BootP-server for the IP address of the VNswitch module.

- **Digital Trace Facility (DTF)**
  This release of the firmware (V2.0.5) supports DTF. DTF allows a workstation to instruct the VNswitch module to capture certain types of control traffic (i.e. SNMP, ARP, BPDU, etc.) and send the packet to the workstation for display and analysis.

Special Considerations for this Release

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

Upgrading to VNswitch 2.0.5 and Higher

The VNswitch 2.0.6 images can only be upgraded from a V1.6.2 or higher image. If an attempt is made to upgrade a VNswitch module that is running a version earlier than V1.6.2, either via the clearVISN flashloader program or via the CLI 'load remote' or 'reload' commands, the update will fail with either a 'timeout' or 'out of memory' error message.

Interface Name Changes

Interface name is changed to reflect its interface number. For example, on an VNswitch 900EF, interface names eth/0 and fddi/0 will now be Eth/1 and FDDI/13, respectively. On an VNswitch 900EA, the first ATM interface, which was called eth/13 is now ALEC/13.

Renumbering of Bridge Ports

In firmware versions prior to V2.0.6, the VNswitch 900 modules used two different numbering schemes to reference ports and interfaces on the module. With V2.0.6, the CLI presents a consistent interface where bezel number, bridge port number, and interface number are all consistent.

The numbering scheme now starts with the Vnbus as number 0. Prior to V2.0.6 firmware, the number 0 was used to indicate no ports (or none) to the "Bridge Config> set protocol-filter" and "Bridge Config> set address" commands. Bridge port (0) did not exist. With V2.0.6 firmware, the value of (0) indicates the Vnbus, and the value "none" must be used to indicate no ports.

CLI Incompatibilities

Some improvements to the Command Line Interface (CLI) for VNswitch V2.0.6 firmware may cause minor incompatibilities. Please refer to the *DIGITAL VNswitch 900 Series Switch Management* guide for the new commands. Alternatively, enter the '?' help command at any CLI command for a display of the available commands.

For example, the 'config' command at the 'Monitor' prompt (formerly the '+' prompt), which had a shortcut of 'c,' has a new meaning. The new equivalent of the 'config' command is 'list all'.

Duplicate MAC Addresses on Separate VSDs

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

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 the previous exceptions, the behavior of the VNswitch 900 modules, previous to V1.6.2, 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 could NOT be forwarded, creating reachability problems in those VSDs.

With the V1.6.2 firmware and later, 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 only 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. With version 2.0.6, there is a new command, 'BRIDGE CONFIG> set duplicate-address', that allows MAC addresses to be identified as duplicates that will allow for the proper handling of protocol filters.

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 V 2.0.6 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 900 ATM modules 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 900 ATM 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 900 ATM module cannot be completed because that signal set is already in use on the backplane.

Protocol Filters on the VNswitch 900 Modules

VNswitch firmware V2.0.6 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.

Support for RMON cabable Etherent Daughter cards

With this software release comes support for new versions of the 12 port 10Base-T and 12 port 10Base-FL modules. These newer versions provide support for RMON Ethernet counters. To determine if your module has this new functionality you may check the product revision against the following table:

Module	Revision
DVNEA-MX	H01 or higher
DVNEE-MA	F01 or higher
DVNEF-MM	F01 or higher
DVNEF-MX	F01 or higher
DVNEX-MX	J01 or higher
DVNLL-MA	B01 or higher

If your unit has already been installed, you may issue the 'Monitor> list all' command. The hardware version of the VNswitch is displayed in the 'HW=' field. The current Ethernet daughter card has the designator 'E' while a newer RMON capable Ethernet card will have a 'e' designator. For example; the hardware field for a VNswitch 900EF might look like 'HW=70F0E1'. This same VNswitch with a RMON capable card would look like 'HW=70F0e0'. Note that the REV-id for the newer RMON capable card starts at (0).

It's important to note that the power requirements are slightly higher for this new functionality. The power ratings are listed on the serial label for the product.

The RMON Ethernet counters will be supported in a future VNswitch firmware release.

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)

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.

Configuring Two Ethernet Ports on same VNswitch to same Backplane Channel

The VNswitch has a restriction that it does not support the mapping of two or more Ethernet ports on the same VNswitch to the same MultiSwitch 900 backplane channel. In the VNswitch V2.0.5 release, if this operation is attempted, the second port remains in the DOWN state until it is configured to either a different backplane channel and manually enabled *or* a font panel port and manually enabled.

Configuring VNswitch IP addresses in a MultiSwitch 900

When IP addresses are configured for a VNswitch that resides in a Multiswitch 900 and the clearVISN MultiChassis Manager (MCM) is used to manage the module, a problem can occur. While the configuration of the IP address is dynamic with respect to VNswitch, the clearVISN MCM application will be using the previously configured IP address (which may be null). A restart of the VNswitch is required to clear the problem. Note that if the correct IP address is supplied to MCM manually, MCM will have normal connectivity with the VNswitch.

Diagnostic failures

If a hardware problem is detected during diagnostics, a entry is made in the diag log. This log can be view from either the Command Line Interface (CLI) using the "Monitor> err-log list diag" or using "Option 7" from the VNswitch 900 INSTALLATION MENU. If any diag entries are present, this should be considered as a hardware failure and the module should be replaced.

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 "Main> 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.

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 900 ATM Modules

This section lists known restrictions and conditions specific to the VNswitch 900EA, VNswitch 900FA, and the VNswitch 900XA in the V2.0.6 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

VNswitch V2.0.6 firmware does not support FLOWmaster for ATM networks.

T3/E3 and T1/TE ATM modPHYs Not Supported

VNswitch V2.0.6 firmware does not support T3/E3 and T1/E1 ATM modPHYs.

Configuring Link Parameters

- 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

- If a VNswitch 900 ATM 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.

- If two VNswitch 900 ATM 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. ATM modPHY cards should be swapped only when the VNswitch module is powered down.

ATM GIGAswitch and ATMswitch 900 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 900 ATM modules be limited to an aggregate rate of 100 packets per second.

If you are using LAN Emulation Services provided by GIGAswitch/ATM V2.4 or earlier, DIGITAL recommends that you limit broadcast activity to an aggregate rate of 300 packets per second. For example, if the same GIGAswitch/ATM provides BUS for six VNswitch 900 ATM modules, each module should limit their broadcast activity to 50 packets per second.

The ATM Config Interface Command Menu

With VNswitch V2.0.6 firmware, 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>) have the same effect as the corresponding commands at the ATM/xx Config> subsystem. To reach the ATM Config interface command menu, enter the Config Process and issue the interface command for the particular ATM interface. The prompt changes from Config> to ATM/xx 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/27 Config>?
LIST
CHANGE-INTERFACE
DISABLE-INTERFACE
```

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```
        ENABLE-INTERFACE
        PHYSICAL
        EXIT
        ATM/27 Config>list
        Interface              : 27 (Bridge Port 28)
        Interface Type         : Fddi Bridge Tunnel
        Bridge Tunnel Status   : Down
        PVC(vpi,vci)           : 0, 255

        ATM/27 Config>
```

ATM Bridge Tunnels and LECs

If the default LEC or Bridge Tunnel does not come up, one of the ATM logical interfaces may already be configured. Reset to factory settings (or clear all 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.

Problems Configuring VNswitch 900 ATM Modules Using clearVISN MCM

Problems and solutions configuring the VNswitch 900 ATM modules 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 900 ATM 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 900 ATM 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.

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- **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.

ATM FDDI Bridge Tunnel to ATM Ethernet Bridge Tunnel Connection Not Recommended

You can manually configuration an ATM FDDI Bridge Tunnel on one VNswitch module to connect to an ATM Ethernet Bridge Tunnel on another VNswitch module. While this configuration does allow the bridge tunnel to come up, the mismatch in Tunnel types causes unwanted and unpredictable results. For this reason, DIGITAL recommends that you do not attempt this configuration.

VNswitch 900FA Defaults to ATM Ethernet Bridge Tunnel

The plug-and-play values for the VNswitch 900FA module default to an ATM Ethernet Bridge Tunnel, even if two VNswitch 900FA modules are connected together. If an ATM FDDI Bridge Tunnel is desired, this must be manually configured.

Firmware Upgrades

Refer to the *DIGITAL VNswitch 900 Series Switch Management* manual for instructions on how to perform firmware upgrades. During a firmware upgrade do not logout from the "Main" 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 'reload' 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/V1.5 to V2.0.6

As noted above, to upgrade from V1.1 or V1.5 to V2.0.6, you must upgrade to V1.6.2 first, otherwise the upgrade may fail. When upgrading to V1.6.2, please review the V1.6.2 release notes as they contain important information with respect to the upgrade process.

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 Main> 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.

Documentation

The following documentation supports the VNswitch Version 2.0.6 firmware release:

- *DIGITAL VNswitch 900 Series Technical Overview*
- *DIGITAL VNswitch 900 Series Switch Management*
- *DIGITAL VNswitch 900 Series Router Management*

These documents exists in Adobe Acrobat online readable and printable (PDF) format on the documentation CD-ROM that ships with the module.

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
rmon	.mib-2(1).rmon(16)
	rfc-1757
	alarm(3) (set)
	event(9) (set)
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)

MIB	RFC/GROUP
digital	.private(4).enterprises(1).dec(36).ema(2) mib-extensions-1(18)

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

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 (NPB) Web Site. The Web Site maintains 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:

Americas Network Product Business Home Page	http://www.networks.digital.com
Europe Network Product Business Home Page	http://www.networks.europe.digital.com
Asia Pacific Network Product Business Home Page	http://www.networks.digital.com.au
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

Using Electronic Mail

The 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.

Usually, 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