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DIGITAL VNswitch 900-Series Modules
Version 2.0
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 900LL** module.

The following example describes the firmware version number:

Version 1.1

Functional enhancement or problem corrected
Major functional enhancement
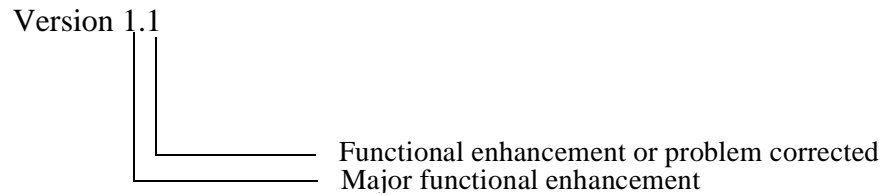
Contents

Hardware and Firmware Support

Version 2.0 of this VNswitch firmware release supports the following product:

- DVNLL (VNswitch 900LL)

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 Support

The VNswitch 900LL will have clearVISN support in the next release of the clearVISN software, Version 2.1.

Special Features in this Release

Special features in this release include:

- 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 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 being able to use 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

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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) 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 the VNswitch 900LL with the VNswitch V2.0 firmware.

Interface Name Changes

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

Renumbering of Bridge Ports

In firmware versions prior to V2.0, the VNswitch 900 family used two different numbering schemes to reference ports and interfaces on the module. With 2.0, 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 toV2.0 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 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 2.0 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

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 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, 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 V2.0 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.

Protocol Filters on the VNswitch 900 Modules

VNswitch firmware V2.0 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)

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 "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.

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.

Documentation

The following documentation supports the VNswitch Version 2.0 firmware release:

- *DIGITAL VNswitch 900 Series Technical Overview*

- *DIGITAL VNswitch 900 Series Switch Management*

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

Documentation Errata

There is no known documentation errata.

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.). Note: As of November 10, 1997, dial 978-506-5777.

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