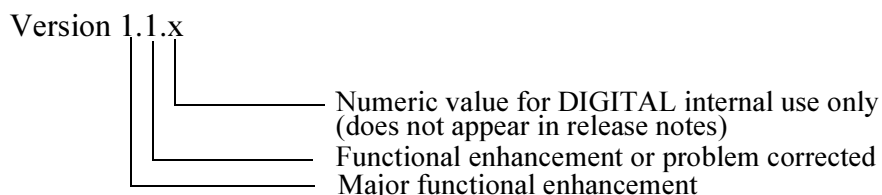




DEChub 900 MultiSwitch
Version 5.0
February 1997

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 DEChub 900 MultiSwitch.

The following example describes the firmware version number:



Contents

Table listing contents: Firmware Requirements (2), Software Requirements (3), Changes in this Release (3), New Products (3), New Features (3), Known Conditions and Restrictions (3), Updating the DEChub 900 (3), Simultaneous Downline Upgrade of Hub Modules (4), Module Removal and Insertion (4), VNbus (5), Connecting a Terminal to the Setup Port (5), Removing Operational Power Supply from DEChub 900 (5), SLIP Server on the OBM Port (5), Setup Port Redirect Mode Option (5), Addendum to the DEChub 900 MultiSwitch Owner's Manual (6), Enabling Automatic Connection of VNswitch 900 Modules to One VNbus (6), Installing or Replacing Network Modules (7), Adding a New Network Module (7), Replacing an Existing Network Module with an Identical One (8), Updating Your DEChub System (8), Updating the Hub Manager Firmware (8), The Downline Upgrade (DLU) Process (9), Stage 1 - Transferring the Firmware Image (9), Stage 2 - Verifying the Firmware Image (9), Stage 3 - Blasting the New Firmware Image (10)

Stage 4 - Booting the New Firmware Image	10
Stage 5 - Decompressing the Firmware Image.....	10
When You Update Your Hub Manager	11
Verifying the Firmware Update	12
MIB and RFC Information	12
Accessing Online Information	13
Network Product Business Web Site	13
Using Electronic Mail	13

Firmware Requirements

DEChub 900 MultiSwitch firmware version V5.0 or higher is required to manage the following versions of network modules:

Product	Version	Filename
DECbridge90, 90FL	3.9	dewgb390.sys
DECconcentrator 900MX	3.3.2	def6x332.bin
DECconcentrator 900TH	3.3.2	defhu332.bin
DECconcentrator 900FH	3.3.2	defhm332.bin
DEChub 900 MultiSwitch	5.0.0	dmhub500.bin
DECmau 900TH	1.2.1	dtmxm121.bin
DECrepeater 90FS	2.1.1	defmi211.bin
DECrepeater 90TS	2.1.1	defmi211.bin
DECrepeater 900GM	2.0.0	dettm200.bin
DECrepeater 900TM	2.0.0	detmm200.bin
DECswitch 900EE	1.7.0	desbf170.bin
DECswitch 900EF	1.7.0	defbal70.bin
DECswitch 900FO	1.7.0	defbb170.bin
PEswitch 900TX	1.7.0	desbf170.bin
PORTswitch 900CP	2.1.1	decpm211.bin
PORTswitch 900TP	2.1.1	detpj211.bin
MultiSwitch 600 Stack Director	1.0.0	dlssm100.bin
MultiSwitch 612EX	1.0.0	dlmwl100.bin
MultiSwitch Hub 624T	1.0.0	dlmr2100.bin

The Hub Manager firmware image name is dmhub500.bin. These files are located on the DEChub Consolidated Firmware Kit V5.0. See the section entitled Accessing Online Information in these release notes to obtain a firmware kit.

DIGITAL requires that you update your network modules to the latest revision.

Software Requirements

Hub Manager firmware version V5.0 can be managed by clearVISN MultiChassis Manager V6.0 or later. clearVISN MultiChassis Manager V6.0 is a component of the clearVISN V1.1 product suite.

clearVISN MultiChassis Manager replaces the older HUBwatch network management product. HUBwatch V4.1 and earlier cannot be used to manage Hub Manager V5.0 or later versions.

Changes in This Release

This section describes new products and features.

New Products

This release adds support for the following new products:

- VNswitch 900 family
- ATMswitch 900
- DIGITAL MultiSwitch 600 network modules

New Features

This release add support for the following new features:

- Backplane configuration support for ATM LANs.
- Backplane configuration support for the VNbus used by VNswitch 900 modules. Automatic connection of VNswitches to a VNbus can be configured.
- Backplane Auto Healing preserves the backplane connection configuration of a module when it is removed and replaced with an identical module. Backplane Auto Healing supersedes the FDDI Auto Healing feature introduced in version 4.0.
- Simultaneous downline loading of multiple hub modules.

Known Conditions and Restrictions

This section describes the following types of conditions and restrictions for DEChub 900 MultiSwitch Version V5.0 firmware:

- Software/firmware Upgrades
- Module removal and insertion conditions and restrictions
- VNbus
- Other miscellaneous

Updating the DEChub 900

When updating the DEChub 900 along with network modules, upgrade the Hub Manager to V5.x before upgrading network modules.

clearVISN MultiChassis Manager V6.0 or later manages Hub Manager V5.0. Hub Manager V5.0 cannot be managed by HUBwatch V4.1 or any previous version of HUBwatch.

When you update your DEChub 900 MultiSwitch to version V5.x from version V3.0 or higher, all nonvolatile data stored in the Hub Manager is retained.

If Backplane Auto Healing is enabled, you must disable it before upgrading any network modules. It can be disabled from the clearVISN MultiChassis Manager LAN Interconnect window. If you are running an earlier version of MultiChassis Manager or HUBwatch during the Hub Manager upgrade, the feature is called FDDI Auto Healing and must be disabled.

Wait 15 seconds after making LAN connections before doing a Hub Manager firmware upgrade. This allows the changes to be written to nonvolatile storage.

When using the DECreepeater 900TM with firmware version V1.0G as your IP services module, a Hub Manager firmware update cannot be performed in-band unless the DECreepeater 900TM has its own IP address assigned. The DECreepeater 900TM with firmware version V2.0 does not have this requirement.

Simultaneous Downline Upgrade of Hub Modules

Downline upgrades can now be performed for more than one hub module at the same time. Each upgrade is initiated as described in the DEChub 900 Owner's Manual. A downline upgrade of the hub firmware itself can not be performed at the same time as other upgrades.

If more than one downline upgrade is in progress, it is difficult to tell which modules the status messages are referring to. Thus, it is important to verify that each module upgrades correctly when all upgrades are complete. You can do this by selecting Downline Upgrade from the DEChub 900 MultiSwitch Installation Menu and pressing RETURN a second time. A display will show the name and version identification of each module in the hub.

Module Removal and Insertion

You can remove and insert network modules from the DEChub 900 MultiSwitch while the power is either on (hot-swap) or off (cold-swap).

Backplane Auto Healing, when enabled, preserves port and LAN configuration information when one network module in a hub slot is hot-swapped with an identical network module. The Hub Manager restores the previous connections to the new module.

Make sure that all modules are fully up and configured correctly before enabling auto-healing.

When Backplane Auto Healing is enabled and you are replacing network module with one that is not identical, the Hub Manager removes all backplane connections to the module and deletes its backplane configuration. When Backplane Auto Healing is enabled and you are replacing a module with configurable port groups (such as DECreepeater 900TP or DIGITAL MultiSwitch Hub 624T) with an identical module, the port group configurations are not transferred from the previous module to the current one. Instead, port group configurations are stored in the non-volatile memory of each network module and thus stick with the module, not the hub slot.

For purposes of Backplane Auto Healing, a DECswitch 900EF and a DECbridge 900MX are considered to be identical modules, as are a PortSwitch 900FP and a DECreepeater 900FP.

VNbus

Hub Manager V5.x has the ability to automatically connect every VNswitch 900 module in the hub to one VNbus. In V5.0, this feature must be enabled from the setup port console in order for it to be in effect. The section, Addendum to DEChub 900 MultiSwitch Owner's Manual, in these release notes describes how to enable this feature.

Note that if Automatic VNbus Connection is enabled, two hub backplane channels are always reserved for the VNbus. They cannot be used for other LANs, even if no VNswitch modules are present.

VNbuses can also be created in the same manner as Ethernet LANs, via the clearVISN MultiChassis Manager LAN Interconnect screen.

Connecting a Terminal to the Setup Port

When connecting a terminal to the setup port, configure the terminal for jump scroll because the Hub Manager does not support flow control.

Removing Operational Power Supply from DEChub 900

When removing more than one operational power supply from the DEChub 900, wait at least 10 seconds between removing each power supply in order to give the Hub Manager sufficient time to recalculate available power.

SLIP Server on the OBM Port

If you are using a DECserver 90TL or a DECserver 90M as a SLIP server on the OBM port, disable AUTOBAUD and enable AUTOCONNECT.

Setup Port Redirect Mode Option

Some network modules do not support the Hub Manager's setup port redirect mode option. Refer to your product documentation for further information.

To manage a DECserver 90TL, DECserver 90L+, or DECserver 90M using clearVISN MultiChassis Manager, you must add the module's IP address to the clearVISN MultiChassis Manager's Manage Table.

Addendum to the *DEChub 900 MultiSwitch Owner's Manual*

This section describes the following topics:

Enabling Automatic Connection of VNswitch 900 Modules to One VNbus

Hub Manager V5.x has the ability to automatically connect every VNswitch 900 module in the hub to one VNbus. If you desire this feature, you must manually enable it. To do this, first choose the menu option "Product-Specific Options" from the DEChub 900 MultiSwitch Installation Menu, available via the setup port.

```
DEChub 900 MultiSwitch
=====
                DEChub 900 MultiSwitch INSTALLATION MENU

                [1] Restart with Factory Defaults
                [2] Restart with Current Settings
                [3] Show Current Settings
                [4] Configure IP ...
                [5] Dump Error Log
                [6] Downline Upgrade
                [7] Configure Out-of-Band Port ...
                [8] Start Event Display Mode
                [9] Start Redirect Mode
                [10] Product-Specific Options ...

=====
                Enter selection : 10
```

A Product-Specific Options submenu is displayed. From this, choose "Enable/Disable Automatic VNbus Connection":

```
DEChub 900 MultiSwitch
=====

                PRODUCT-SPECIFIC OPTIONS

                [1] Enable/Disable Automatic VNbus Connection
                [2] Return to Main Menu

=====
                Enter selection : 1
```

The following screen is displayed:

```
DEChub 900 MultiSwitch
=====
                ENABLE / DISABLE AUTOMATIC VNbus CONNECTION

Enabling Automatic VNbus Connection means that certain backplane channels
will be reserved for a VNbus. The channels will be reserved as soon as
this feature is Enabled, and will remain reserved until this feature is
Disabled. When a VNswitch module is inserted in the hub, it will connect
automatically to the VNbus. The Enable function will return an error if
backplane channels cannot be reserved due to existing connections.

Disabling Automatic VNbus Connection means that no backplane channels
will be reserved for a VNbus. Inserting VNswitch modules will not create
connections to a VNbus. If any VNswitch modules are connected to a VNbus
when the Disable mode is selected, the VNbus will remain until the last
VNswitch module is removed from the hub.
=====

Automatic VNbus connection is Enabled.

Would you like to Disable it? [N] y

Automatic VNbus connection status changed.

Press Return for Product-Specific Options Menu ...
```

To confirm that the Automatic VNbus Connection feature is in the state you desire, choose the option Show Current Settings from the Installation Menu, and look for the Automatic VNbus Connection status on the second page. An example of that display is at the end of the section entitled Verifying the Firmware Update.

Installing or Replacing Network Modules

This section describes the following tasks:

- Adding a new network module
- Replacing an existing network module with an identical one

Adding a New Network Module

When you are adding a new network module, follow these steps:

- 1 Install the network module by following the product's installation documentation.
- 2 Make sure that the module contains the latest firmware. Update the module, if necessary.
- 3 Make sure that Backplane Auto Healing is disabled.
- 4 Configure the new backplane connections.
- 5 Enable Backplane Auto Healing, if you desire.

Replacing an Existing Network Module with an Identical One

When you are replacing an existing network module with an identical one, follow these steps:

- 1 Do not change the state of Backplane Auto Healing.
- 2 Remove the existing network module.
- 3 Replace the network module you removed with an identical module. For example, replace a VNswitch 900EF with a VNswitch 900EF.
- 4 Ensure that the module contains the latest firmware. Update the module, if necessary.
- 5 If Backplane Auto Healing was not enabled before you replaced your module or if you had to disable it in order to update the module, you must configure the replacement network module. If Backplane Auto Healing was enabled, all the backplane connections will be restored.

Updating Your DEChub System

When you are updating your DEChub 900 MultiSwitch system, follow these steps:

- 1 Update the Hub Manager firmware to version V5.x.
- 2 Install clearVISN MultiChassis Manager V6.0 or later.
- 3 Update all the network modules to the latest firmware using clearVISN Flash Loader or the Downline Upgrade option on the Hub Manager installation menu.

NOTE

Be sure to leave Backplane Auto Healing disabled until all your network modules are updated.

Updating the Hub Manager Firmware

You can perform a firmware update to the Hub Manager in either of two ways:

- 1 By using the Flash Loader Utility supplied with clearVISN and the firmware consolidated kit. If you are running HUBwatch V4.1 while upgrading the Hub Manager firmware to V5.0, the HUBloader utility may be used.
- 2 By selecting the Downline Upgrade option on the Hub Manager installation menu and the firmware consolidated kit.

NOTE

Before performing a firmware update using either of these methods, read through the next section, titled The Downline Upgrade (DLU) Process. The section contains a detailed process description of how the Hub Manager behaves during and after a firmware update.

For instructions on using Flash Loader to perform an update, refer to the Flash Loader online help.

The Downline Upgrade (DLU) Process

The Downline Upgrade Process occurs when you initiate a downline upgrade to the Hub Manager, either via Flash Loader or the setup port installation menu. The DLU process consists of five stages:

- Stage 1 - Transferring the Firmware Image
- Stage 2 - Verifying the Firmware Image
- Stage 3 - Blasting the New Firmware Image\
- Stage 4 - Booting the New Firmware Image
- Stage 5 - Decompressing the Firmware Image

Stage 1 - Transferring the Firmware Image

This stage begins when the new firmware image is transferred across the network from the TFTP host and placed into the Hub Manager's temporary storage buffer. During this stage, the Hub Manager is functional and can respond to management requests.

Because of variances in network configurations (load path, bit rate, and traffic levels), this stage of the DLU process can take up to 10 minutes to complete. At the beginning of this stage, the Hub Status Display shows the following (example) message:

```
-----  
| Loading SW from |  
| IP:      16.20.40.155 |  
-----
```

Stage 2 - Verifying the Firmware Image

When the TFTP load transfer is complete, the DLU process verifies that the new firmware image has been transferred correctly. During this stage, the Hub Manager is functional but cannot respond to management requests.

The Hub Status Display shows the following message:

```
-----  
| SW Loaded,      |  
| Checking Image  |  
-----
```

This stage takes approximately 5 seconds to complete.

Stage 3 - Blasting the New Firmware Image

After the new firmware image is validated, the DLU process blasts the image into the Hub Manager's nonvolatile Flash memory, replacing the previous firmware image. During this stage, the Hub Manager is not functional and cannot respond to management requests. The Hub Status Display shows the following message:

```
-----  
| Image OK,           |  
| Writing Image...    |  
-----
```

CAUTION

If power is interrupted during Stage 3 of the DLU process, the firmware image can become corrupted. Do not turn off power to the unit or perform any action that can cause the unit to lose power during Stage 3 of the DLU process.

This stage takes approximately 75 seconds to complete.

Stage 4 - Booting the New Firmware Image

After the Hub Manager stores the image into flash memory, it boots the new image. Just before booting, the Hub Status Display shows the following message:

```
-----  
| Image Stored.       |  
| Booting New Image.  |  
-----
```

To boot the new firmware, the Hub Manager resets, then runs self-test.

During this stage, the Hub Manager is not functional and cannot respond to management requests. During self-test, the Hub Status Display shows the product name, version identification, and a sequence of numeric codes that identify tests.

When self-test completes the Hub Manager starts the main firmware. At this time, the Hub Status Display shows the following message:

```
-----  
|Selftest Complete   |  
|Start Main Firmware |  
-----
```

This stage takes approximately 45 seconds to complete.

Stage 5 - Decompressing the Firmware Image

The firmware image in Flash memory was transferred and stored in a compressed format. Each time the hub is reset or powered up, the firmware must be decompressed into its original form in order to operate. After decompression, the expanded image is verified for correctness. During this stage, the Hub Manager is not functional and cannot respond to management requests. The Hub Status Display shows the following messages:

```

-----
|   Decompressing   |
|   Image...       |
-----
|   Verifying      |
|   Decompression... |
-----

```

This stage takes approximately 30 seconds to complete.

After the Hub Manager completes decompression of the new image, it may reset to clear nonvolatile memory configuration settings. This will occur if you are upgrading from a Hub Manager version prior to V3.0, if you are downgrading from a later major version to an earlier one, or if you are upgrading from a test version of firmware. If a reset occurs during this time, the Hub Status Display shows the following message, and then repeats the self-test and decompression process.

```

-----
| Software Upgraded, |
| Configuration Reset |
-----

```

After the Hub Manager completes decompression, the setup port screen displays the DEChub 900 MultiSwitch installation menu, confirming the downline load is complete.

When You Update Your Hub Manager

When you update your Hub Manager from version V3.0 or later, all nonvolatile data stored in the Hub Manager is retained. When you update your DEChub 900 from a version prior to V3.0, or when you downgrade your hub from a major version to a previous version, all nonvolatile data stored in the Hub Manager is cleared.

You can determine if nonvolatile memory was retained or cleared by selecting the Dump Error Log option from the setup port installation menu. The error log should contain a configuration entry. Two examples follow:

```

SW V4.2.0 -> V5.0.0 Config retained.
SW V5.0.0 -> V4.2.0 Config cleared.

```

If you are updating your Hub Manager from a version prior to V3.0, or downgrading your Hub Manager, record your backplane LAN configuration before beginning the procedure. When it is complete, re-enter all IP address information and other setup menu data. The clearVISN MultiChassis Manager view will show an initialized backplane. All backplane flexible channel connections are deleted and default backplane connections to the ThinWire are established. Use your recorded configuration data to restore the backplane configuration. Connections made to the front panel are unchanged.

Verifying the Firmware Update

You can verify the firmware update by selecting the Show Current Settings option from the the DEChub 900 MultiSwitch Installation Menu. This option displays the current version of firmware installed in the Hub Manager. The display shows two screens, one at a time. An example is shown below:

```
DEChub 900 MultiSwitch
=====
DEChub 900 MultiSwitch,HW=F,RO=V1.1.6,SW=V5.0.0
SysUpTime           : 11 days 18:52:25    29 resets
SNMP Read/Write Community : public
SNMP Trap Addresses  : Not Configured
Status of Last Downline Upgrade : 00:40:39    28 resets
                                Load Successful

Out-of-Band (OBM) Management RTS : Disabled
Interface      IP Address      Subnet Mask      Def. Gateway      Other Info
-----
OBM Port       16.20.156.20    255.255.0.0
Hub Slot 6     16.20.156.26    255.255.0.0      16.20.156.56     Active
Hub Slot 7     16.20.156.27    255.255.0.0      16.20.156.57     Active
Hub Slot 8     16.20.156.28    255.255.0.0      16.20.156.58     Active
=====
... Press Return Key to Continue ..
```

```
DEChub 900 MultiSwitch
=====
Hub Name           : DEChub 900 MultiSwitch
Hub Serial Number  :
Hub Location       :
Hub Contact        :
Automatic VNbus connection : Disabled
=====
Press Return for Main Menu ...
```

MIB and RFC Information

The DEChub 900 Hub Manager provides an SNMP proxy agent for DEChub 90 repeaters that do not contain their own SNMP agent. In this configuration, the following MIBs are supported:

- IETF repeater MIB, RFC 1516
- DEChub 900 IETF repeater MIB extension
- sysGroup of MIB II, RFC 1213

MIB and RFC information can be found online. Refer to the section entitled Accessing Online Information in these release notes for information about retrieving MIBs and RFCs.

Accessing Online Information

Network Product Business Web Site

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

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

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

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

Using Electronic Mail

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

To use the mail service, follow these instructions:

- 1 Send a mail message to **SERVICE@NIC.DDN.MIL**.
- 2 In the SUBJECT field, request the type of service that you want followed by any needed arguments.

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

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

HELP
RFC 822
RFC INDEX
RFC 1119.PS
FYI 1
IETF IETF-DESCRIPTION.TXT
INTERNET-DRAFTS IID-ABSTRACTS.TXT
NETINFO DOMAIN-TEMPLATE.TXT
SEND RFC: RFC-BY-AUTHOR.TXT
SEND IETF/IWG-SUMMARY.TXT
SEND INTERNET-DRAFTS/DRAFT-IETF-NETDATA-NETDATA-00.TXT
HOST DIIS

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

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