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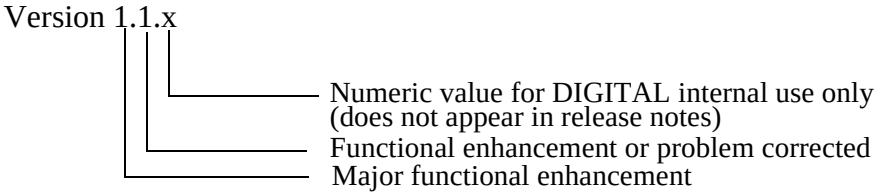
AA-PYRFM-TE

DEChub 900 MultiSwitch Version 5.2 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 DEChub 900 MultiSwitch.

The following example describes the firmware version number:



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Firmware Requirements

DEChub 900 MultiSwitch firmware version V5.2 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	5.2.0	dmhub520.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	2.0.0	desbf200.bin
DECswitch 900EF	2.0.0	defba200.bin
DECswitch 900FO	2.0.0	defbb200.bin
PEswitch 900TX	2.0.0	desbf200.bin
PORTswitch 900CP	2.1.1	decpm211.bin
PORTswitch 900TP	2.1.1	detpj211.bin
MultiSwitch 600 Stack Director	1.1.0	dlssm110.bin
MultiSwitch 612EX	1.1.0	dlmwl110.bin
MultiSwitch Hub 624T	1.0.0	dlmr2100.bin
VNswitch 900EE	1.6.2	dvnee162.bin
VNswitch 900EF	1.6.2	dvnef162.bin
VNswitch 900EA	1.6.3	dvnea163.bin
VNswitch 900EX	1.6.2	dvnex162.bin
VNswitch 900XX	1.6.2	dvnxx162.bin

The Hub Manager firmware image name is dmhub520.bin. 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 V5.2 can be managed by clearVISN MultiChassis Manager V6.1 or later. clearVISN MultiChassis Manager V6.0 is also acceptable, but should be upgraded to V6.1 as soon as feasible. clearVISN MultiChassis Manager V6.1 is a component of the clearVISN V2.0 product suite.

NOTE

The following products can NOT manage Hub Manager V5.0 or later:

- MultiChassis Manager V5.0, a component of clearVISN V1.0
- Any version of HUBwatch

Changes in This Release

After a power failure of a fully configured hub with lots of ports connected on the backplane, some ports would not be connected after the hub rebooted. These ports would still show up as being connected on the Lan Interconnect screen in ClearVISN Multichassis manager, but the front-panel LEDS would not be lit and the ports would not transfer traffic. This problem has been fixed in V5.2.

Occasionally you get "add failed" messages when trying to connect a port on the hub backplane using the Lan Interconnect screen of MultiChassis Manager, even though there should be enough backplane channels to make the connection. Retrying the connection never succeeds. This problem has been fixed in V5.2.

With a fully configured hub with many backplane port connections, adding an ethernet port connection to a new backplane LAN would cause an FDDI port to become disconnected. This problem has been fixed in V5.2.

With auto-healing enabled, removing all the modules in rapid succession and reinserting them would cause some ports to not be connected after all the modules had completed rebooting. This problem has been fixed in V5.2.

When connecting FDDI ports first and then connecting VNBUS ports, sometimes the FDDI and/or VNBUS ports would become disconnected and never reconnect. This problem has been fixed in V5.2.

When power-cycling a hub and enabling auto-healing prior to all the modules in the hub waking up, auto-healing would not operate correctly. Auto-healing is not supposed to be enabled unless all the hub modules are awake; a change has been made for V5.2 that prevents auto-healing from being enabled unless all the hub modules are running. This has always been a requirement but is now enforced.

When downline loading a MultiSwitch 600 module via Flash Loader, a successful completion status sent by the module would not be correctly passed to Flash Loader. As a result, Flash Loader would display a message indicating that the load was not successful. This has been fixed.

A problem has been fixed in which auto-healing would try to patch in multiple modules concurrently; something it was not designed for. This was caused by duplicate powershed messages being sent by the power manager firmware.

A lock on updates of backplane information to non-volatile memory has been implemented to prevent a pre-scheduled update of non-volatile memory from occurring if the patch manager was rearranging the connection table.

Because of a problem in the DECrepeater 90T-16 that causes the repeater to sometimes reset while processing a Request Group Counters command, the hub proxy agent firmware will no longer issue this command. As a result, the requests for mib objects *rptrMonitorGroupTotalFrames, rptrMonitorGroupTotalOctets, rptrMonitorGroupTotalErrors* and *erptrGroupLanTotalOctets* will always return a value of zero. clearVISN MultiChassis Manager does not use these objects, but other network managers may.

While redirected from the setup console to a VNswitch, if the VNswitch were restarted, the hub would sometimes fatal trap in console_hccp. This has been fixed.

A problem has been fixed with a hub containing 3 163W power supplies in which power supplies were turned off too quickly, without waiting for the required 10 seconds between powering on or powering off each supply. This would result in the firmware powering some hub modules up and down rapidly for the next 10 seconds.

An upgrade problem concerning community strings has been fixed. Upgrading to V5.0 or V5.1 from a previous version would cause the community name to become unmodifiable until a reset to factory defaults was performed. Upgrades to V5.2 will not have this problem, whether upgrading from V5.0 or V5.1 or a previous version.

An encoding problem in requests for the mib object chasEntityAccessMethod has been fixed. This made MultiChassis Manager unable to manage some DEChub 90 modules.

A potential double-deallocation of memory during certain obscure conditions during a downline upgrade has been fixed.

An RMON history calculation of utilization problem has been fixed.

Known Conditions and Restrictions

This section describes the following types of conditions and restrictions for DEChub 900 MultiSwitch Version V5.2 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 V6.1 or later manages Hub Manager V5.2. Hub Manager V5.x cannot be managed by MultiChassis Manager V5.0 or any previous version of HUBwatch.

When you update your DEChub 900 MultiSwitch to version V5.x from version V4.0 or higher, all nonvolatile data stored in the Hub Manager is retained. When upgrading from version V3.0 or V3.1, all nonvolatile data except the hub's In-Band IP address 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 DECrepeater 900TM with firmware version V1.0G as your IP services module, a Hub Manager firmware update cannot be performed in-band unless the DECrepeater 900TM has its own IP address assigned. The DECrepeater 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, is it 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 a 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 DECrepeater 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 DECrepeater 900FP.

VNbus

Hub Manager V5.x has the ability to automatically connect every VNswitch 900 module in the hub to one VNbus. In V5.x, 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 topic:

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 AutomaticVNbus 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 want, 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.

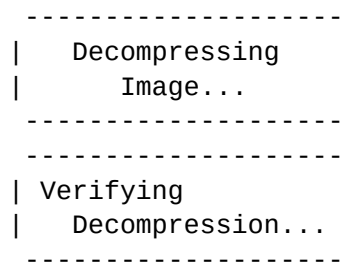
When self-test completes the Hub Manager starts the main firmware. At this time, the Hub Status Display shows the following message:

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

This stage takes approximately 45 seconds to complete.

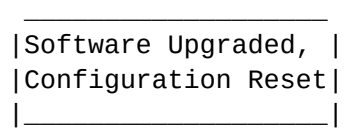
Stage 5 - Decompressing the Firmware Image

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:



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.



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 dedicated Ethernet 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                    Speed 9600 bps
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.). (This number will change to 978-486-5777 on October 1, 1997.)Set your modem to 8 bits, no parity, 1 stop bit.

Using Electronic Mail

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

To use the mail service, follow these instructions:

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

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

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

HELP

RFC 822

RFC INDEX

RFC 1119.PS

FYI 1

IETF 1IETF-DESCRIPTION.TXT

INTERNET-DRAFTS 1ID-ABSTRACTS.TXT

NETINFO DOMAIN-TEMPLATE.TXT

SEND RFC: RFC-BY-AUTHOR.TXT

SEND IETF/1WG-SUMMARY.TXT

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

HOST DIIS

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

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