

# DEChub ONE

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## **Installation**

Part Number: EK-DEHU2-IN. A01

**January 1994**

This document describes the DEChub ONE single-slot hub and how to install DEChub full-height network modules for standalone use.

**Revision/Update Information:** This is a new manual.

# Copyright

EK-DEHU2-IN. A01

January 1994

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Read the instructions for correct handling.

**CE NOTICE** – Class A Computing Device:

Warning!

This is a Class A product. In a domestic environment this product may cause radio interference, in which case the user may be required to take adequate measures.

Achtung!

Dieses ist ein Gerät der Funkstörgrenzwertklasse A. In Wohnbereichen können bei Betrieb dieses Gerätes Rundfunkstörungen auftreten, in welchen Fällen der Benutzer für entsprechende Gegenmaßnahmen verantwortlich ist.

Attention!

Ceci est un produit de Classe A. Dans un environnement domestique, ce produit risque de créer des interférences radioélectriques, il appartiendra alors à l'utilisateur de prendre les mesures spécifiques appropriées.

DEChub ONE

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Document Name

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## Introduction

The DEChub ONE is an Ethernet single-slot hub that provides standalone capability for Ethernet DEChub 900 full-height modules (also referred to as modules in this manual). The DEChub ONE provides 90 watts dc to power the attached module. An attachment unit interface (AUI) on the DEChub ONE can be used to connect the attached module to a standard Ethernet backbone. An optional medium attachment unit (MAU) can be connected to the DEChub ONE's AUI port to adapt the module to a fiber-optic, ThinWire, or twisted-pair LAN connection.

The DEChub ONE provides an out-of-band management (OBM) port with an associated LED for remote network management support. A setup port on the DEChub ONE enables you to configure the attached network module using a terminal device, personal computer, or terminal server.

The DEChub ONE supports tabletop and rack-mounting. By stacking DEChub ONE single-slot hubs in 19-inch racks, users can buy the Ethernet DEChub 900 modules to support their current needs in a small LAN and use the same products to upgrade to enterprise-wide networks as their LAN use grows.

## Features

- Enables Ethernet DEChub 900 modules to operate as standalone devices.
- Flexible mounting configuration helps network managers cope with daily moves, additions, and changes in their networks.
- Accommodates Ethernet DEChub 900 modules rated at up to 90 watts.
- Suitable for tabletop or rack-mounting.
- Rack-and-stack capability offers cost-effective access to Ethernet and flexible network growth. Stacked standalone DEChub 900 modules provide a broad range of LAN/WAN functionality for small work groups or remote sites.
- OBM port supports remote network management for attached Ethernet DEChub 900 modules.

## Introduction (Cont.)

- Setup port for easy configuration of attached Ethernet DEChub 900 modules.
- Media flexibility available using an optional MAU to adapt Ethernet DEChub 900 modules to twisted-pair, fiber-optic, or ThinWire cables.
- Supports Serial Line Internet Protocol (SLIP).
- Supports Simple Network Management Protocol (SNMP).

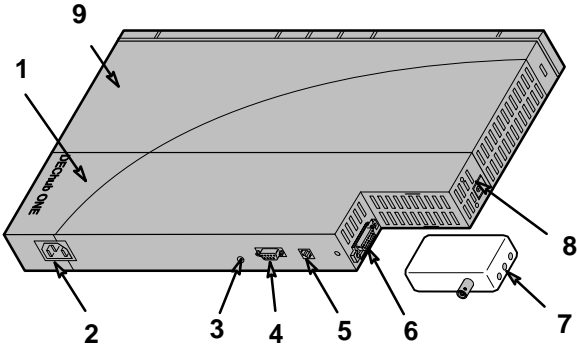
# Front Panel and Packaging

The DEChub ONE is a member of the DEChub 900 family of products. The DEChub ONE enables Ethernet, full-height, DEChub 900 modules to operate as standalone units.

## DEChub ONE Connectors, LED, and Optional Equipment

The figure shows a network module attached to the DEChub ONE, forming a single-slot hub. A MAU (item 7) can be ordered separately from Digital to adapt the AUI port for use with twisted-pair, ThinWire, or fiber-optic LAN connection.

- 1) DEChub ONE
- 2) AC power connector
- 3) OBM port LED
- 4) 9-pin OBM port connector
- 5) Setup port connector
- 6) AUI port and slide latch
- 7) 15-pin MAU (not included)
- 8) Locking L-bracket
- 9) DEChub 900 full-height network module



LKG-7462-93I

## Packaging

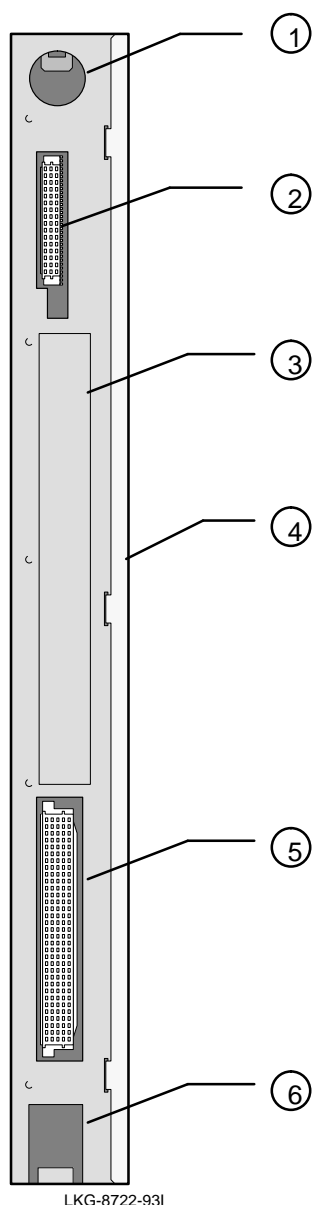
- A DEChub ONE kit contains the following items:
- DEChub ONE (Digital part number DEHU2-cx)
  - Installation manual
  - Power cord
  - Rack-mount hardware

MAUs can be ordered separately from Digital. Each MAU has its own installation manual packaged with it. The MAUs connect the DEChub ONE and its attached network module to a LAN or backbone using one of the three media connections:

- DETPM 10BaseT twisted-pair MAU
- DECXM 10Base2 ThinWire MAU
- DEFLM fiber-optic MAU

# Back Panel

- 1) Hot-swap switch receptacle
- 2) 48-pin backplane connector
- 3) Product and certification label
- 4) Grounding strip
- 5) 160-pin backplane connector
- 6) Mounting slot



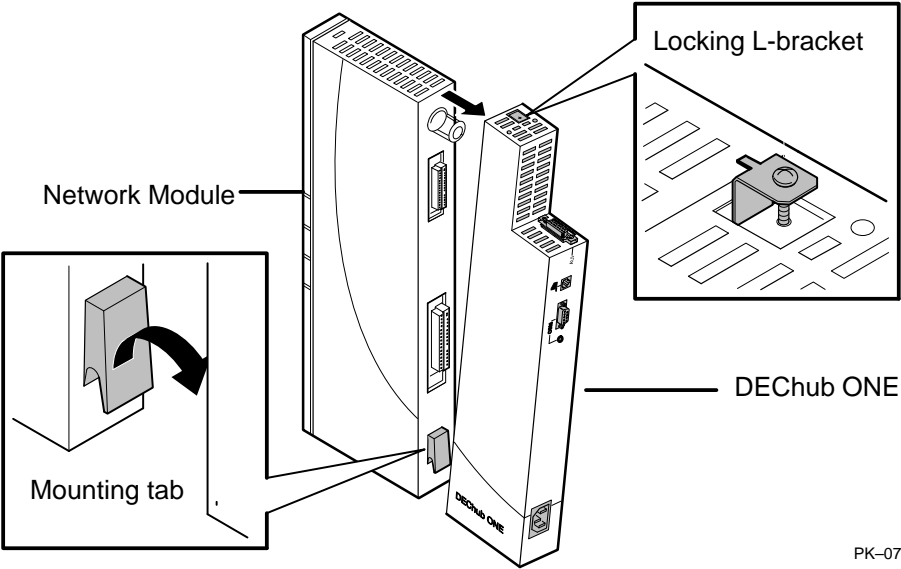


# Installing the Module

To install a network module into a DEChub ONE, perform the following steps. Do not connect the power cord until the module is secured to the DEChub ONE, mounted (tabletop or rack-mounted), and ready for self-test. Refer to the Mounting the Single-Slot Hub section and the Connecting the Cables section of this manual for additional information.

## Attach the module to the DEChub ONE

- 1) Place the mounting tab located on the bottom of the module into the mounting slot on the bottom of the DEChub ONE, as shown in the figure.
- 2) Lift the locking L-bracket screw on the DEChub ONE.
- 3) Pivot the module into place to engage both the 160- and the 48-pin connectors.
- 4) Hold the network module and DEChub ONE together and tighten the locking L-bracket screw. This secures the network module to the DEChub ONE and activates the network module's hot-swap switch.



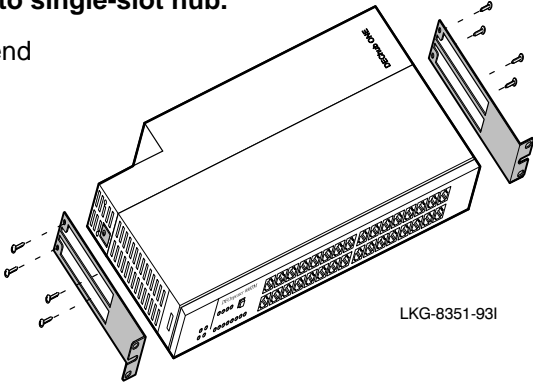
PK-07464-IL

# Mounting the Single-Slot Hub

The single-slot hub may be placed on a table top or mounted in a 19-inch equipment rack. To use it on a table top, attach four self-sticking rubber foot pads (provided) on the underside of the single-slot hub, placing two foot pads on the DEChub ONE and two foot pads on the attached network module. To rack-mount a single-slot hub, with the DEChub ONE power off, follow these steps:

**1 Connect rack-mount brackets to single-slot hub.**

Align the screw holes on each end of the rack-mount brackets with the holes on the DEChub ONE and on the network module. Attach the brackets using eight #6-32 flat-head screws.



**2 Position and secure the single-slot hub unit in the equipment rack.**

Align the screw holes on the rack-mount brackets with the equipment rack holes. Attach the rack-mount single-slot hub to the rack using four #10-32 screws and U-nuts.

**3 Connect the cables to the single-slot hub.**

Connect the AUI, OBM, and setup ports, as required. Refer to the cabling sections for information on connecting the AUI port, OBM port, and setup port.

**4 Provide strain relief for the cabling.**

Use TyRaps or other suitable means to secure the cables to the rack along the raceways. Avoid placing undue strain on the cable connectors – do not tighten the TyRaps excessively or exceed the nominal bend radius of the cables.

**5 Connect the power cord to the single-slot hub power connector and then to an outlet on the rack or to a wall outlet.**

The module begins self-testing as described in its installation manual.

## Removing the Module

The DEChub ONE can accommodate any DEChub 900 Ethernet module and can be used anywhere that an Ethernet LAN connection is available. You can easily swap modules or disconnect the DEChub ONE by following these steps:

**1 Shut off the ac power to the DEChub ONE.**

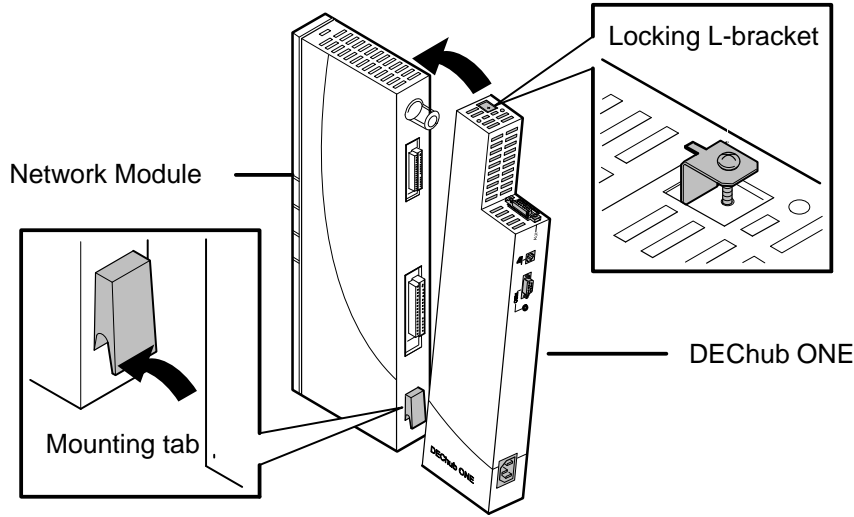
Either turn the wall receptacle switch to off or disconnect the ac power cord from the wall receptacle.

**2 Disconnect cables from the DEChub ONE as required.**

**3 Disconnect cables from the module as required.**

**4 Separate the DEChub ONE from the module.**

- a. Loosen and lift the locking L-bracket screw on the DEChub ONE.
- b. Pivot the module away from the DEChub ONE.



## Connecting the Cables

This section provides information on connecting cables to the DEChub ONE and to the attached DEChub 900 module.

### **1** Connect the AUI port to the LAN.

- a. Move the AUI port slide latch to the unlocked position (inward).
- b. Insert the appropriate MAU or AUI cable connector into the AUI port. Cables and MAUs are not supplied.
- c. Move the AUI port slide latch to the locked position (outward) using a small screwdriver, if necessary.

See the AUI Port Cabling section for recommended AUI cables and additional information.

### **2** Connect the setup and OBM ports as required.

- a. Connect the setup port (MJ-8 EIA-232 standard EIA-TIA-574) to a setup port device. See the Setup Port Cabling and Pin Assignments section for additional information.
- b. Connect the 9-pin OBM port (EIA-232 standard EIA-TIA-574 ) to the 9-pin interface connector. The OBM port LED lights to indicate that the port is in use. See the OBM Port Cabling and Pin Assignments section for additional information.

### **3** Connect the DEChub 900 module cables.

Refer to the DEChub 900 module Installation manual to connect the required cables needed for proper operation of the module.

### **4** Connect the power cord to the power connector and then to a wall outlet.

Connecting the power initiates a self-test in the DEChub 900 module. Refer to the DEChub 900 module Installation manual to configure the module and verify its operation.

# AUI Port Cabling

The AUI port can be connected to a MAU (available separately from Digital), or to an AUI cable (not provided) that connects to a MAU located on the LAN.

## Connecting a MAU to the AUI Port

- 1) Insert a MAU transceiver into the AUI connector, as illustrated, and slide the latch mechanism to lock the MAU in place.

**Note:**  
Some non-Digital MAUs may not fit into the DEChub ONE's AUI connector.

- 2) Connect the cabling (twisted-pair, ThinWire, or fiber-optic) from the MAU to the LAN. See the Front Panel and Packaging section to order a Digital MAU. The MAU documentation provides additional information.

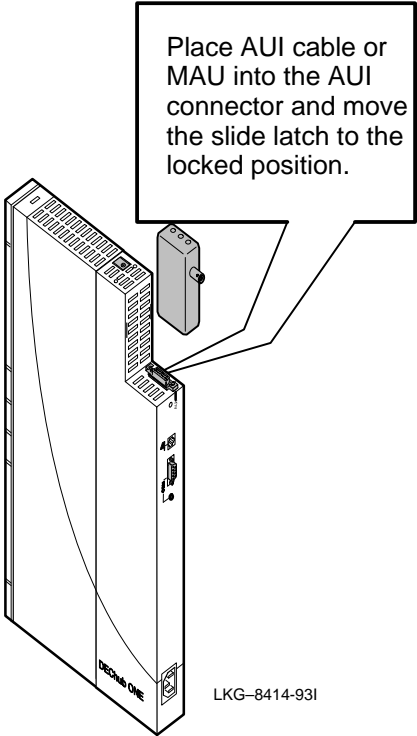
## Connecting Directly to the AUI Port

- 1) You can connect a cable from the AUI port directly to a MAU on the LAN or backbone.
- 2) Connect the AUI cable to the AUI connector and move the slide latch to lock the connection securely. Connect the other end of the AUI cable to a MAU located on the LAN.

The cables Digital recommends for use with the AUI port are listed in the following table:

Cable	Description
BNE3H-xx <sup>1</sup>	PVC-insulated with straight connector
BNE3K-xx	PVC-insulated with right-angle connector

<sup>1</sup> The xx represents the length in meters.



## Setup Port Cabling and Pin Assignments

The setup port provides access to the setup port menu for the attached network module. This menu and the setup parameters are described in the documentation for the attached network module. Not all network modules support the setup port. Refer to the *DEChub 900 MultiSwitch Owner's Manual* and the installation and configuration manual for the attached module for additional information.

You can connect a setup port device (terminal device, personal computer, or terminal server) to the setup port connector on the single-slot hub using various cables and adapters. This allows you to use the setup port to configure the attached network module's parameters. The default speed for the setup port is 9600 baud.

### Setup Port (Shielded MJ-8) Pin Assignments

The signals for the DEChub ONE setup port connector are listed in the following table:

Pin	Signal Name
1, 4, 5	No connection
2	Receive (RX)
3	Ground
6	Transmit (TX)
7	Always high (+5 V)
8	Always low

### Setup Port Cables

The setup port cable and adapters are listed in the following table:

Cable/Adapter Type	Connecting Device
BN24H-xx <sup>1</sup>	Terminal with 6-pin MMJ connector
BN24H-xx/H8871-J	Terminal with 9-pin D-sub connector
BN24H-xx/H8575-J	Terminal with 25-pin D-sub connector

<sup>1</sup> The xx represents the length in meters.

# OBM Port Cabling and Pin Assignments

When you connect the DEChub ONE out-of-band management (OBM) port to a data terminal equipment (DTE) device, the attached network module becomes manageable using the Simple Network Management Protocol (SNMP) over the Serial Line Interface Protocol (SLIP). Not all network modules support the OBM port. Refer to the *DEChub 900 MultiSwitch Owner's Manual* and the installation and configuration manual for the attached module for additional information.

The signals on the OBM port conform to standard EIA-574, which is based on EIA-232D but uses a 9-pin (DB9) connector instead of a 25-pin connector. EIA-574 is the signaling standard used by the serial ports on most personal computers. The OBM port appears as a DTE device and can be connected to a modem by using a standard AT modem cable.

## OBM Port (DB9) Pin Assignments

The signals for the OBM port DB9 connector are listed in the following table:

Pin	Signal Name
1	Data carrier detect (DCD)
2	Receive data (RXD)
3	Transmit data (TXD)
4	Data terminal ready (DTR)
5	Ground
6	Data set ready (DSR)
7	Request to send (RTS)
8	Clear to send (CTS)
9	No connection

## OBM Port Cables

The OBM port cables and adapters are listed in the following table:

Cable/Adapter Type	Connecting Device
BN24H-xx <sup>1</sup> /H8571-J1	DECserver 900TM with 8-pin MJ connector
BC29Q-10	PC with 9-pin D-sub connector
BC29P-10	Modem with 25-pin D-sub communications port

<sup>1</sup> The xx represents the length in meters.

# Problem Solving Using LEDs

Table 1 provides information to help isolate problems to the DEChub ONE or the attached DEChub 900 module.

**Table 1: Problem Solving Using LEDs**

Symptom	Probable Cause	Corrective Action
Power LED on the attached network module is off.	The single-slot hub has no dc power input.	Ensure that the ac power cord is properly connected to the DEChub ONE and wall outlet.  Check the wall outlet power. Ensure that the hot-swap switch is properly engaged and reseal the connectors.
	Insufficient dc power	Verify that the DEChub ONE is a 90-watt version (Part number DEHUA-cx).
	The DEChub ONE fan runs continuously. The DEChub ONE fan is not running.	Reseat the connectors. If the fan still runs, replace the attached network module. Separate the network module from the DEChub ONE. If the fan still does not run, replace the DEChub ONE. If the fan begins running, replace the network module.
Power LED is flashing on the attached network module.	The DEChub ONE fan runs intermittently.	Separate the module from the DEChub ONE. If the fan continues to run intermittently, replace the DEChub ONE. If the fan begins to run continuously, troubleshoot or replace the network module using its problem-solving recommendations.
The MAU Power OK LED is off and the Power LED on the attached network module is on.	The MAU does not have power.	Ensure that the MAU is properly connected to the AUJ port and that the slide latch is secure. Refer to the MAU documentation for proper cabling.  If the MAU is operating and properly connected, replace the DEChub ONE.
The OBM port LED is off and the Power LED on the attached network module is on.	Either the OBM port is not in use or the OBM LED is faulty.	Ensure that the network module supports OBM (has modem capability) and that the OBM port is in use. If the DEChub ONE is not the problem, troubleshoot or replace the network module according to the module's problem-solving recommendations.



## Product Specifications

Table 2 lists the DEChub ONE physical, environmental, and certification specifications.

**Table 2: Operating Specifications**

Parameter	DEChub ONE	With Attached Module
<b>Physical</b>		
Height	44.45 cm (17.5 in)	44.45 cm (17.5 in)
Width	4.45 cm (1.75 in)	4.45 cm (1.75 in)
Depth	10.16 cm (4.0 in)	25.40 cm (10.0 in)
Weight	1.59 kg (3.5 lb)	3.4 kg (7.5 lb)
Connectors	MJ-8, DB-9, 15-pin AUI	MJ-8, DB-9, 15-pin AUI, plus module connectors
<b>Operating Environment</b>		
Operating Temperature	5° C to 50° C (41° F to 122° F)	5° C to 50° C (41° F to 122° F)
Relative Humidity	10% to 95% noncondensing	10% to 95% noncondensing
Altitude <sup>1</sup>	Sea level to 4900 m (16,000 ft)	Sea level to 4900 m (16,000 ft)
Input Power	100 Vac to 120 Vac @ 2 A 220 Vac to 240 Vac @ 1 A	N/A N/A
Output Power	90 watts maximum  50W @ +5Vdc, 1W @ +12.0Vdc 30W @ +15.0 Vdc	81 watts available to power the module. 7 watts available to support the AUI port. Maximum power consumption (DEChub ONE cooling fans, module, and AUI ) 90 watts.
<b>Certification</b>	CE, CSA, FCC, TUV, UL, VCCI	CE, CSA, FCC, TUV, UL, VCCI

<sup>1</sup> For high-altitude sites, decrease the operating temperature specification by 1.8° C (35.2°F) for each 1000 m (3200 ft).

## Product Specifications

Table 3 lists the DEChub ONE acoustical specifications.

**Table 3: Acoustical Specifications**

<b>Acoustics:</b>	<b>Idle/Operate</b>		<b>Idle/Operate</b>	
	Sound Power Level L <sub>WAd</sub> , B	Sound Pressure Level L <sub>pAm</sub> , dBA	Sound Power Level L <sub>WAd</sub> , B	Sound Pressure Level L <sub>pAm</sub> , dBA
Declared values per ISO 9296 and ISO 7779 <sup>1</sup>				
DEHUA	5.1	5.1	37	37

<b>Schallemissionwerte:</b>	<b>Leerlauf/Betrieb</b>		<b>Leerlauf/Betrieb</b>	
	Schalleis- tungspegal L <sub>WAd</sub> , B	Schalldruck- pegal L <sub>pAm</sub> , dBA	Schalleis- tungspegal L <sub>WAd</sub> , B	Schalldruck- pegal L <sub>pAm</sub> , dBA
Werteangaben nach ISO 9296 und ISO 7779/DIN EN27779 <sup>2</sup>				
DEHUA	5,1	5,1	37	37

<sup>1</sup> Current values for specific configurations are available from Digital Equipment Corporation representatives. 1 B = 10 dBA.

<sup>2</sup> Aktuelle Werte für spezielle Ausrüstungsstufen sind über die Digital Equipment GmbH Vertretungen erhältlich. 1 B = 10 dBA.

## Associated Documents

*DEChub 900 MultiSwitch Owner's Manual*

*Open DECconnect Building Wiring Components and Application*

DEChub 900 full-height network module installation manuals

MAU transceiver installation manuals:

- EK-DECXM-IC for ThinWire connection to the LAN
- EK-DEFLM-IC for fiber-optic connection to the LAN
- EK-DETPM-IC for twisted-pair connection to the LAN

## Accessing MIBs, RFCs, and Release Notes

This section provides information on accessing online MIBs, RFCs, and release notes on the Internet. Public MIBs, Digital private (DEChub) MIBs, RFCs, and release notes that support the attached module are available over the Internet network by using any of the following methods:

- Anonymous ftp
- Electronic mail
- `ftpmail`
- Diskette (MIBs for some Digital products)

### Using Anonymous ftp

Digital offers anonymous ftp access to online RFCs, up-to-date DEChub MIBs, and product release notes, in ASCII text form, at `GATEKEEPER.DEC.COM`. You will find these up-to-date documents stored in the directory `/pub/DEC/hub900`. Check the `README` file for the current contents of the directory.

To use anonymous ftp to copy files, follow these instructions:

1. Use the Internet application `ftp` to connect to `gatekeeper.dec.com` (the Internet address is 16.1.0.2).
2. Log in as user `anonymous`.
3. Use your electronic mail address as the password.
4. Use the `cd` command to get to the directory `/pub/DEC/hub900`.

## Accessing MIBs, RFCs, and Release Notes (Cont.)

5. Use the `ascii` command to specify that you are retrieving ASCII text files.
6. Use the `get` command to retrieve the file or files that you require.
7. When you are finished, use the `quit` command to log out.

The following example shows how to copy the `README` file from the repository. Note that user input is case sensitive; you must type it as shown. User input is shown in **bold**.

```
% ftp gatekeeper.dec.com
Connected to gatekeeper.dec.com
220 GATEKEEPER.DEC.COM FTP Service Process
Name: anonymous
331 ANONYMOUS user ok, send real ident as password.
Password: milano@netman.stateu.edu
230 User ANONYMOUS logged in at Tue 10-Aug-1993 10:24-EST, job
54.
ftp> cd /pub/DEC/hub900
331 Default name accepted. Send password to connect to it.
ftp> ascii
220 Type A ok.
ftp> get README
200 Port 19.54 at host nnn.nn.nn.nn accepted.
150 ASCII retrieve of /pub/DEC/hub900/README started.
226 Transfer completed. 40239 (8) bytes transferred.
40239 bytes received in 23.65 seconds (5.8 Kbytes/s)
ftp> quit
```

## Accessing MIBs, RFCs, and Release Notes (Cont.)

### 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 people 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 example at the end of this section lists some of the services available.

Requests are processed automatically once a day. Large files are broken down into separate messages. However, a few files are too large to be mailed.

The following are example SUBJECT lines to obtain DDN NIC documents:

```
HELP
RFC 822
FYI 1
RFC 1119.PS
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
```

## Accessing MIBs, RFCs, and Release Notes (Cont.)

### Using ftpmail

Digital offers Internet `ftpmail` access to private MIB information, in ASCII text form, at `GATEKEEPER.DEC.COM`, with up-to-date documents stored in the directory `/pub/DEC/hub900/mibs`. Check the `INDEX` file and the `README` file for the current contents.

To use `ftpmail`, follow these instructions:

1. Send a mail message to `ftpmail@gatekeeper.dec.com`.
2. Ignore the subject line.
3. Include the word "connect" in the first line of the body.
4. Include `get` commands for each document required, for example:
5. `get/pub/DEC/hub900/mibs/README`

Requests are acknowledged, then queued and processed every 30 minutes. Because of the number of requests, it may take a day or two before you receive a reply.

### Obtaining a Diskette

You can obtain a free diskette containing the latest DEChub Digital private MIBs and RFCs. To request a diskette, call 800-DIGITAL, press 2, and ask for presales technical support. Request the RFCs and MIBs for the appropriate DEChub module.

## HOW TO ORDER ADDITIONAL DOCUMENTATION

### DIRECT TELEPHONE ORDERS

In Continental USA  
call 1-800-DIGITAL  
(1-800-344-4825)

In Canada  
call 800-267-6215

In New Hampshire,  
Alaska or Hawaii  
call 603-884-6660

### ELECTRONIC ORDERS (U.S. ONLY)

Dial 800-dec-demo with any VT100  
or VT200 compatible terminal and a  
4206 baud modem.  
If you need a terminal call 1-800-DIGITAL (1-800-344-4825)

### DIRECT MAIL ORDERS (U.S. and Puerto Rico\*)

DIGITAL EQUIPMENT CORPORATION  
P.O. Box CS2008  
Nashua, New Hampshire 03061

### DIRECT MAIL ORDERS (Canada)

DIGITAL EQUIPMENT OF CANADA LTD.  
940 Belfast Road  
Ottawa, Ontario, Canada K1G 4C2  
Attn: A&SG Business Manager

### INTERNATIONAL

DIGITAL EQUIPMENT CORPORATION  
A&SG Business Manager  
c/o Digital's local subsidiary  
or approved distributor

Internal orders should be placed through Publishing and Circulation Services (P&CS),  
Digital Equipment Corporation, 444 Whitney Street, NRO2, Northboro, Massachusetts 01532-2597

\*Any prepaid order from Puerto Rico must be placed  
with the Local Digital Subsidiary:  
809-754-7575



**DEChub ONE Installation  
EK-DEHU2-IN. A01**

**Please return this card.**

Your comments and suggestions will help us improve the quality and usefulness of our documentation.

Did you use the manual as a reference or as a step-by-step procedure to install the device?

\_\_\_\_\_

Were the instructions easy to follow? \_\_\_\_\_

Were the instructions complete? \_\_\_\_\_

Were they in the proper sequence? \_\_\_\_\_

Which chapters or sections were most helpful?

\_\_\_\_\_  
\_\_\_\_\_

Did you use the appendixes? Which ones?

\_\_\_\_\_  
\_\_\_\_\_

Were the illustrations helpful? \_\_\_\_\_ All? \_\_\_\_\_ Some? \_\_\_\_\_ Which ones? \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

Were some illustrations unnecessary? \_\_\_\_\_ Which ones? \_\_\_\_\_

\_\_\_\_\_

Do you think the manual needs more illustrations? \_\_\_\_\_ Please give an example.

\_\_\_\_\_  
\_\_\_\_\_

Thank you.

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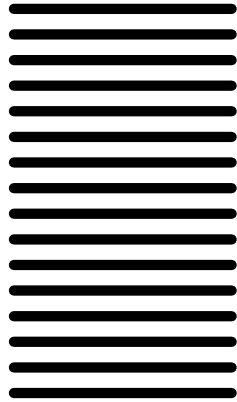
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