DECserver 90L Owner's Manual

Order Number   EK-DSRVD-OM-001

Digital Equipment Corporation

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About This Manual

This guide gives an overview of the DECserver 90L and describes how to install, operate, manage, and troubleshoot the DECserver 90L. This guide also gives the specifications and related documentation for the DECserver 90L.

Organization

This guides has five chapters and two appendices.

Chapter	Meaning
1	Provides an overview of the DECserver 90L including the features and a quick start procedure.
2	Describes how to install the DECserver 90L.
3	Describes how to start, interrupt, resume, and end a terminal session.
4	Describes how to manage the DECserver 90L locally or from a remote device on the network.
5	Describes how to troubleshoot the DECserver 90L.
Appendix A	Describes the physical dimensions; environmental, electrical, and LAT specifications.
Appendix B	Provides a list of related documentation and how to order information.

Conventions

Convention	Meaning
italic	Indicates a new term or in command syntax examples, *italic words* represent elements of a command for which you supply a value. For example: -> *service*
Return	Key names appear in a box.
NOTE	Provides general information.
bold text	Bold text represents user input. For example: -> **Set** Return
[ ]	The characters in brackets [ ] do not need to be entered for the DECserver 90L to recognize the command. For example: D[ISCONNECT]

1
Overview

This chapter describes the features of the DECserver 90L and provides a summary of the installation procedure.

Features

The DECserver 90L contains the following features:

- Simplified human interface

- Plug-and-go installation

- Small in size

- Rack mountable in *DEChub 90 Ethernet backplane*

- Network Management through MOP and TSM (future release of TSM)

- Eight ports
  - 1.2K bits to 38.4K bits per second
  - 8-bit characters
  - One stop bit
  - No parity

- One session per port

- Printer support, including queuing

- LAT compatible, V5.0 or higher

The DECserver 90L terminal server is an eight line, single session per line, terminal server that supports terminals and printers. Each line or *port* can establish a connection to one computer or *service* at a time. DECserver 90L supports Digital's Local Area Transport (LAT) protocol and is designed to work in a ThinWire Ethernet Local Area Network (LAN), as shown in Figure 1–1.
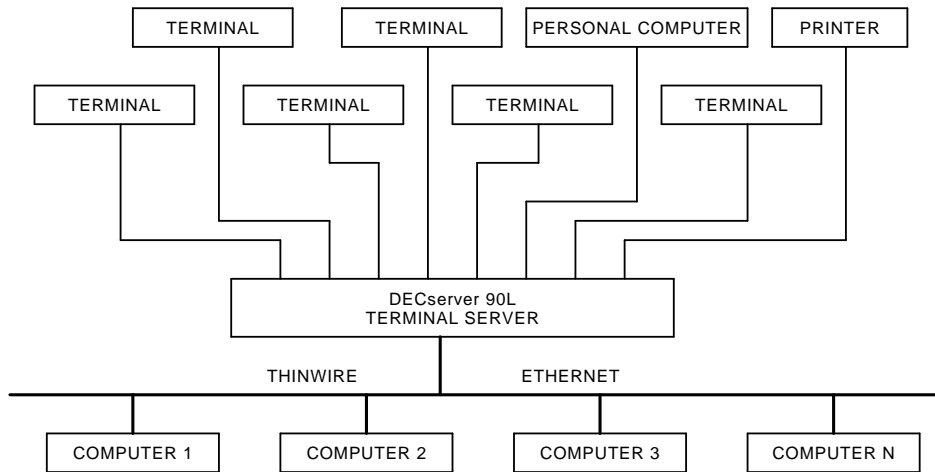
Figure 1–1   Sample DECserver 90L Connection

Quick Start

To install and begin using your DECserver 90L is simple. It does not require any programming or other assistance from system management. After unpacking the unit:

1. Plug the power supply in a working AC outlet and plug the power connector from the power supply in to your DECserver 90L.

    The green power LED turns on to indicate DC power is getting to the unit. The green self-test turns on to indicate that the unit successfully completed its internal self-test. The self-test takes approximately five seconds to complete.

2. Connect the unit to a properly terminated ThinWire Ethernet.

    The green network LED turns on to indicate a good connection.

3. Connect a working terminal to one of the terminal ports. Refer to
    Table 1–1 for supported terminal characteristics.

4. Turn the power on to the terminal and press Return twice to get the
    DECserver 90L prompt (->).

    Pressing Return twice causes the green activity LED to blink and
    automatically sets the port's baud rate.

5. Enter the name of the network node you want to connect to and press
    Return. The DECserver 90L will display a string of dots "…..", one per
    second, until the connection is made.

For more detailed information on installing and using the DECserver 90L
refer to Chapter 2, Installation and Chapter 3, Operation of this manual.

Table 1–1   Supported Terminal Characteristics

Characteristic	Setting
Transmit speed	1200 to 38.4K
Receive speed	Receive = Transmit
Flow control	XON/XOFF
Data and parity	8 Bits, No Parity
Stop bits	1

Figure 1–2 shows the DECserver 90L and calls out its features.
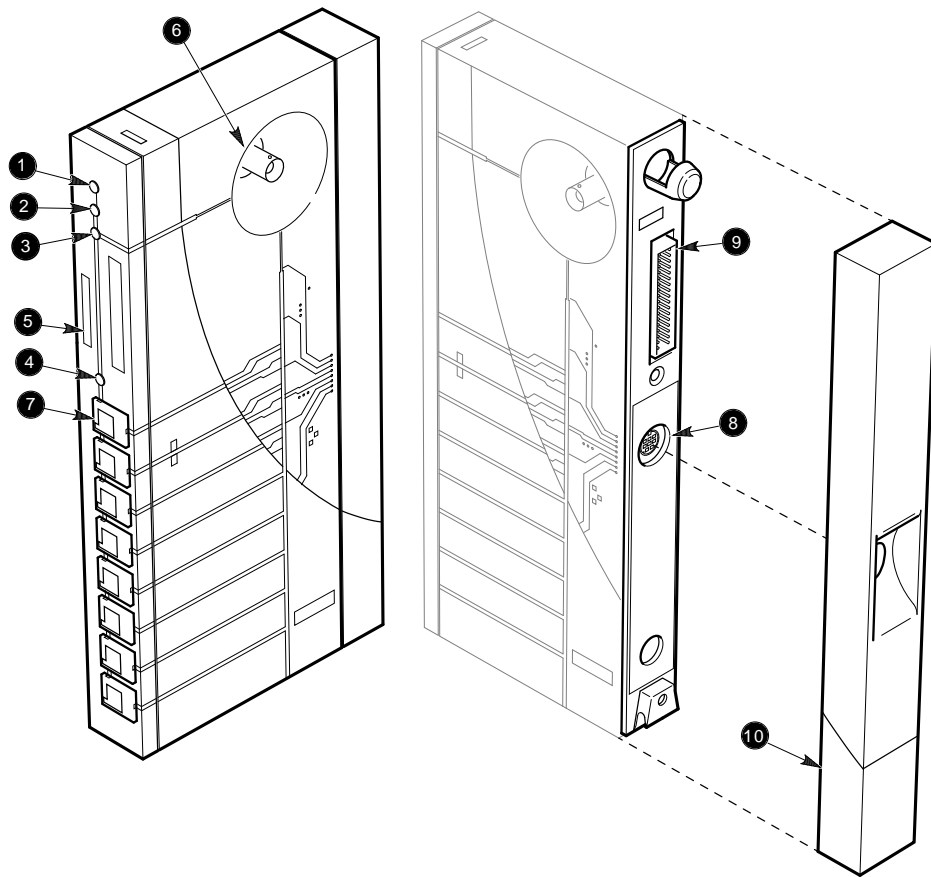
LJ-00072-TI0

Figure 1–2   DECserver 90L

❶ **Power Indicator -** Turns on when +5 volts is supplied to the unit.

❷ **Self-Test OK Indicator -** Turns on when the unit has successfully completed its diagnostics.

❸ **Network OK Indicator -** Turns on when the unit is connected to a properly terminated network.

❹ **Activity Indicator -** Turns on when data is being transmitted or received by any of the ports.

❺ **Ethernet Address -** Unique physical address of the unit.

❻ **Network Connector (BNC) -** Connects unit to the network. Not used when the unit is installed in the DEChub 90 Ethernet backplane.

❼ **Port Connector (MMJ) -** Connect terminals and printers to the DECserver 90L.

❽ **Power Connector -** Provides +5 volts from the DECserver 90L power supply. Not used when the unit is installed in the DEChub 90 Ethernet backplane.

❾ **Backplane Connector -** Provides network and power connections to the DECserver 90L when it is installed in the DEChub 90 Ethernet backplane.

❿ **Cover -** Present on standalone units only. Covers the backplane connector and mounting assembly.

2
Installation

The DECserver 90L can be installed on a table, mounted to a wall, or in the DEChub 90 Ethernet Backplane. Refer to Standalone Installation when installing the unit on a table or mounting it to a wall. Refer to Backplane Installation when installing the unit in the DEChub 90 Ethernet backplane.

Standalone Installation

To install the DECserver 90L as a standalone unit, perform the following procedures and refer to Figure 2–1.

Mount DECserver 90L.

Locate and mount the DECserver 90L. For wall mounting, remove the back cover on the unit and use the mounting holes on the cover as a template to locate the mounting screws.

50 OHM
Terminator

T-Connector

Terminal

LJ-00073-TI0.DG
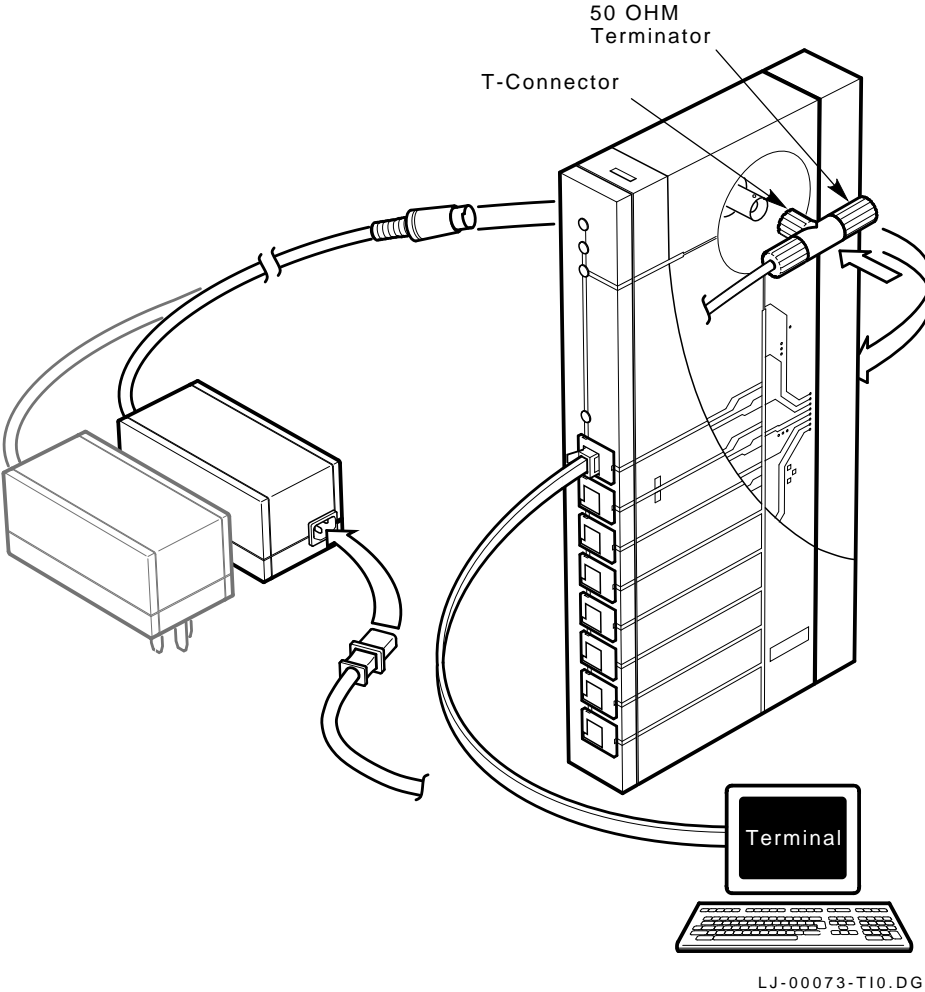
Figure 2–1   DECserver 90L Standalone Installation

Remove Cover (if necessary).

To remove the back cover of the DECserver 90L (Figure 2–2):

1. Insert a small screwdriver into the top mounting hole in the cover.

2. Lift up on the latch.

3. While lifting up on the latch, pull the top of the cover away from the unit and down.
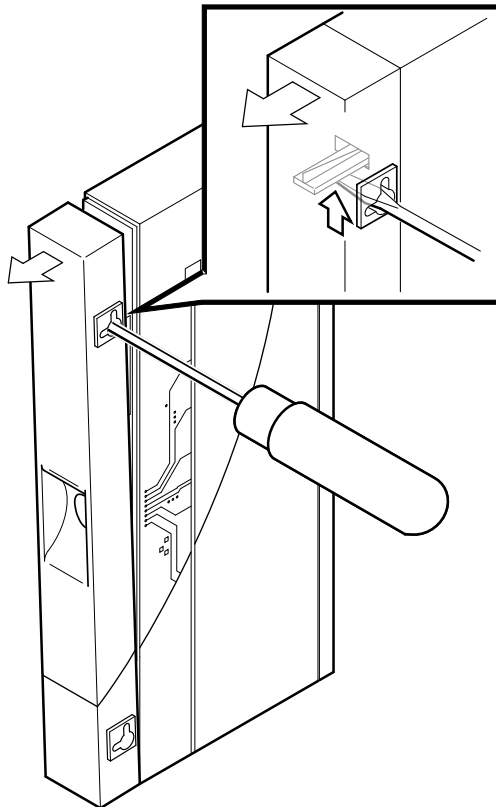
LJ-00320-TI0

Figure 2–2   Removing the Back Cover of the DECserver 90L

Make Connections.

1. Plug the power supply into the DECserver 90L.

2. Attach the Ethernet T-connector to the BNC connector on the
    DECserver 90L. Make sure the Ethernet segment is properly
    terminated at each end.

3. Attach the power cord to the power supply, if needed.

4. Plug the power supply into a working AC outlet.

5. The following indicators should be lit: Power, Self-Test OK, and
    Network. The self-test takes approximately five seconds to complete.

Verify Ports.

Verify the operation of each port by connecting a terminal to the port.
Refer to Table 1–1 for supported terminal characteristics. Press Return
twice (autobaud) to set the operating speed of the port. While watching
the Activity LED type a character on the terminal. The LED should turn
on and off, indicating activity on the port. Perform this procedure for each
port.

Start Terminal Session.

1. Connect terminals to ports as needed.

2. To start a terminal session using a terminal connected to one of the
    ports:

    a. With the terminal turned on, press Return twice. This sets the
        baud rate of the port to that of the terminal.

    b. At the prompt "->", enter a node and press Return .

        The DECserver 90L responds by displaying a string of dots "......"
        while connecting to the selected node. Once the connection is
        established, your terminal will display the system dependent login
        message or prompt.

        NOTE
        **The DECserver 90L can take a maximum of one minute
        when connecting to a node for the *first* time.**

For more information on using the DECserver 90L, refer to Chapter 3 in this manual.

Backplane Installation

To install the DECserver 90L in the DEChub 90 Ethernet backplane, perform the following procedures and refer to Figure 2–3.

Remove Cover (if necessary).

1. If the unit to be installed in the backplane has a cover on the back of the unit, remove the cover (Figure 2–2).

   To remove the back cover on the DECserver 90L unit:

   a. Insert a small screwdriver into the top mounting hole in the cover.

   b. Lift up on the latch.

   c. While lifting up on the latch, pull the top of the cover away from the unit and down.

Mount DECserver 90L.

1. Place the lower mounting tab, located on the back of the DECserver 90L, in the appropriate mounting slot on the backplane.

   NOTE
   The DECserver 90L can be installed in the DEChub 90 Ethernet backplane while power is applied to the backplane (hot-swap).

2. Rock the unit into place. An audible "click" is heard when the unit is securely latched in place.

3. With the power applied to the backplane, the following indicators on the DECserver 90L should be lit: Power, Self-Test OK, and Network. The self-test takes approximately five seconds to complete.

LJ-00074-TI0

Figure 2–3   DECserver 90L Backplane Installation

Verify Ports.

Verify the operation of each port by connecting a terminal to the port. Refer to Table 1–1 for supported terminal characteristics. Press Return twice (autobaud) to set the operating speed of the port. While watching the Activity LED type a character on the terminal. The LED should turn on and off, indicating activity on the port. Perform this procedure for each port.

Start Terminal Session.

1. Connect terminals to ports as needed.

2. To start a terminal session using a terminal connected to one of the ports:

   a. With the terminal turned on, press Return twice. This sets the baud rate of the port to that of the terminal.

   b. At the prompt "->", enter a node and press Return.

      The DECserver 90L responds by displaying a string of dots "......" while connecting to the selected node. Once the connection is established, the system-dependent login message or prompt will appear.

      NOTE
      The DECserver 90L can take a maximum of one minute when connecting to a node for the *first* time.

For more information on using the DECserver 90L, refer to Chapter 3 in this manual.

3
Operation

Using the DECserver 90L terminal server is as easy as turning on your terminal, pressing Return twice, and entering the name of the service (nodename) you want to connect to at the -> prompt. You may also set a port for use by a printer.

This chapter describes how to operate the DECserver 90L. This section describes how to start, interrupt, resume, and end a terminal session.

NOTE
LAT Version 5.0 or higher must be installed and running on a host system before you can use the DECserver 90L. If you cannot connect to a selected system and you are not sure if the LAT Version 5.0 or higher is installed and running, see your system manager for help.

Using a Terminal or Personal Computer

This section explains how to use the DECserver 90L with a terminal or Personal Computer (PC) running terminal emulation software.

Establishing a Terminal Session

To establish a terminal session:

1. Turn your terminal on or start the terminal emulation software on your PC.

2. Press the Return key twice, you will see the DECserver 90L prompt:

   ->

3. At the prompt (->), type your node name and press Return. The DECserver 90L indicates that it is attempting to connect to the node by displaying a string of dots "...." on the screen.

The following shows the connection to a VMS node named MYNODE.

```
->  MYNODE    Return

...............

%DS90L-100, Connection Established

                  Welcome to MYNODE running VMS 5.4

Username:
```

NOTE
The DECserver 90L does not require the configuration of group codes. The first time it connects to a service it learns the service name. This can take up to 60 seconds.

The terminal session is established and control is passed to the specified node (assuming the node is available). If you do not know your node name(s), ask your system manager.

When a terminal session is established, most systems start some type of log in sequence, such as prompting you for username and password. Refer to the documentation for your specific system for information about starting a session.

Ending a Terminal Session

A terminal session is ended by logging off or disconnecting from the system on which your terminal session was running. Logging off a system ends your terminal session and returns you to the DECserver 90L prompt. The following example shows what happens when a user logs off the VAX/VMS node MYNODE.

```
$  LO   Return

USER logged out at 01-JAN-1991 16:55:00.00

-> %DS90L-107, Session Disconnected
->
```

"Last Number Redial"

Last number redial allows a port to connect to the last service accessed without entering the service or node name. This is done by entering the connect command ">" or C[ONNECT] at the DECserver 90L prompt and pressing Return. The following example shows how to use the *last number redial* feature to reconnect to node MYNODE.

```
$ LO  Return

USER logged out at 01-JAN-1991 16:55:00.00

->   >  Return

%DS90L-100, Connection Established

          Welcome to MYNODE running VMS 5.4

Username:
```

Interrupting a Terminal Session

You can interrupt a terminal session and return to the DECserver 90L prompt by pressing the Break key on the terminal. When you press the Break key, the session is interrupted, *not* ended, and the DECserver 90L prompt appears as follows:

```
->
```

At this point you can issue a show or set command, resume the interrupted session, or end the session.

Resuming an Interrupted Terminal Session

To resume an interrupted terminal session, type the connect command ">" or RESU[ME] at the DECserver 90L prompt. The following is an example of resuming an interrupted terminal session.

```
->   >  Return
```

When you resume an interrupted session, control is returned to the point at which the session was interrupted.

Disconnecting an Interrupted Terminal Session

After you interrupt a terminal session, you might change your mind and decide not to resume the session. In this case, you can disconnect the session by typing the disconnect symbol "<" or D[ISCONNECT] at the DECserver 90L prompt. The following is an example of disconnecting an interrupted terminal session.

```
->    <    Return
->
```

When you disconnect an interrupted session, your session is stopped and the DECserver 90L prompt appears on your terminal.

NOTE
Entering the disconnect command when there is no interrupted session to resume causes the port to enter its power-up state (non-autobaud state).

Using a Printer

Any of the ports on your DECserver 90L can be set for use with a printer. This is usually done by the person responsible for managing the DECserver 90L. Chapter 4 contains information on how to set a port for use with a printer.

DECserver 90L Commands

The commands used to establish and control a terminal session and to manage the DECserver 90L are described in Table 3–1. Chapter 4 provides a detailed description of the SET and SHOW commands and how they are used to manage the DECserver 90L.

Table 3–1   DECserver 90L User Commands

Symbol/Command	Function
-> *service*	At the prompt "->", enter the name of the *service* with which you want to establish a terminal session.
-> *service node port*	Establish a terminal session with the *service*, *node*, and *port* specified. The *node* and *port* are optional.
-> C[ONNECT]* *service node port*	Establish a terminal session with the *service*, *node*, and *port* specified. The *node* and *port* are optional. This command should be used to establish a terminal session when a service name conflicts with one of the DECserver 90L commands.
-> ⌷Break⌷	Interrupt a terminal session.
-> ⌷>⌷	Connect to last service used or resume an interrupted terminal session.
-> RESU[ME]*	Resume an interrupted terminal session.
-> ⌷<⌷	Disconnect an interrupted terminal session or disconnect the port. Disconnecting the port returns the port to the power-up state (non-autobaud).
-> D[ISCONNECT]*	Disconnect an interrupted terminal session or disconnect the port. Disconnecting the port returns the port to the power-up state (non-autobaud).
-> Set	Set port or server parameters.
-> Show	Show port or server parameters.
-> Reset	Reset port or server parameters to power-up state.
-> ? or Help	List DECserver 90L commands.

*The characters in brackets [ ] do not need to be entered for the DECserver 90L to recognize the command.

DECserver 90L Information and Error Codes

The DECserver 90L interface provides you with information or an error message about any commands issued to the unit. Each message is made up of a message number and the message. Table 3–2 lists each message number and its message.

Table 3–2   DECserver 90L Information and Error Codes

Message Number	Message
%DS90L–100	Parameters Have Been Changed
%DS90L–101	Parameters Have Not Been Changed
%DS90L–102	Authorized Mode Cleared
%DS90L–103	Power Down DS90L within 1 minute to Enable Authorize Mode
%DS90L–104	Power Down DS90L within 1 minute to Clear Authorize Mode
%DS90L–105	Manager Mode Enabled
%DS90L–106	Manager Mode Disabled
%DS90L–107	Session Disconnected
%DS90L–109	Password Changed
%DS90L–110	Port Has Been Reset
%DS90L–111	Server Has Been Reset
%DS90L–200	User requested halt
%DS90L–204	This Port is not in Manager Mode
%DS90L–205	Authorized Mode not Enabled
%DS90L–206	Authorized Mode is Already Enabled
%DS90L–207	Another Port is in Manager Mode
%DS90L–208	System Shutdown in Progress
%DS90L–209	Service In Use
%DS90L–210	Service Unavailable
%DS90L–211	Service Disabled
%DS90L–212	Entry is Not in the Queue

Table 3–2 (Cont.)   DECserver 90L Information and Error Codes

Message Number	Message
%DS90L–213	Immediate Access Rejected
%DS90L–214	Access Denied
%DS90L–215	No Session Active
%DS90L–300	Host Stopped Responding
%DS90L–302	Insufficient Information
%DS90L–303	Insufficient Host Resources to Satisfy Request
%DS90L–304	Reason Unknown
%DS90L–305	Maximum Session Limit Exists
%DS90L–306	Invalid Syntax
%DS90L–307	Invalid LAT Name
%DS90L–308	Invalid Ethernet Address
%DS90L–309	Invalid Password
%DS90L–310	Data Overflow
%DS90L–311	Illegal message
%DS90L–312	Protocol Error—Server Circuit Timer is Out of Range
%DS90L–313	Protocol Error—Number of Virtual Circuits Exceeded
%DS90L–314	Illegal Port Name
%DS90L–315	Port Name is Used by Another Port
%DS90L–316	Port In Use
%DS90L–317	Can Not Change Device Type While Printer is Busy
%DS90L–318	Invalid Character in Password
%DS90L–319	Password Not Verified
%DS90L–320	Can Not Perform Operation While Changing Authorize Mode
%DS90L–321	Connection Not Established—Network Not Connected
%DS90L–322	Disconnected—Network Not Connected
%DS90L–323	Protocol Error—Invalid Slot Received

Table 3–2 (Cont.)   DECserver 90L Information and Error Codes

Message Number	Message
%DS90L–324	Protocol Error—Invalid Service Class
%DS90L–326	No Such Service
%DS90L–327	Service is Not Offered by Requested Port
%DS90L–328	Port Name is Unknown
%DS90L–330	Password Length Exceeds 8 Characters
%DS90L–331	Invalid Port Speed
%DS90L–332	Illegal Server Name
%DS90L–333	Password Required
%DS90L–334	Cannot Use Default Port for Console
%DS90L–335	Cannot Put Subject Port into Test Mode

4
Managing the DECserver 90L

The DECserver 90L requires very little in the way of management. The DECserver 90L does not use or require the configuration of group codes. It requires that service ad timers be set to 60 seconds (the default) or less. Reducing the interval for service ad time improves the response of the DECserver 90L when making new connections. The DECserver 90L can work with systems whose service ad timer interval is greater than 60 seconds if:

- A LATmaster response is received.

- The systems service ad happens to be received within 60 seconds.

The time required for the DECserver 90L to establish a connection can be reduced to two seconds or less for any "service" by installing LATmaster (V5.2) on any node in your network (see your system manager).

The DECserver 90L can be managed locally or from a remote device on the network. Local management is done using a terminal connected to one of the ports on the DECserver 90L. Remote management is done using maintenance operations protocol (MOP) console carrier.

Managing the DECserver 90L includes:

- Examining port and server parameters and network counters

- Setting port parameters

- Setting server name and zeroing counters

- Security

    - Setting and clearing authorized mode

    - Enabling and disabling manager mode

    - Changing the password

Local Management

Local management of the DECserver 90L is performed with a terminal connected to one of its eight ports and using the **Set**, **Show**, and **Reset** commands of the DECserver 90L.

Remote Management

The DECserver 90L can be managed from a remote node on the network using MOP console carrier. Once the MOP console carrier session is established, the **Set** and **Show** commands are used to examine and set the various port and server parameters. The **Reset** command is used to reset ports and the server to the power-up state.

A VMS-based system can establish a console carrier session with a DECserver 90L as shown in the following example. The Ethernet address of the DECserver 90L in this example is 08-00-2B-08-32-2B and SVA-0 identifies the system's Ethernet interface.

```
$ MCR NCP
$ NCP> CONNECT VIA SVA-0 PHY ADDR 08-00-2B-08-32-2B
Console connected (press CTRL/D when finished)

-> (DECserver 90L PROMPT)
```

Security

Security for the DECserver 90L is provided by a password protected management mode. This mode of operation is called *authorized mode* and can be set and cleared as required. When authorized mode is set, the following conditions exist:

- Users can only set the parameters of their port and show the server's parameters.

- Manager mode must be enabled (password required) to set server parameters and port parameters other than the one you are connected to and to change the password.

When the DECserver 90L is first installed, authorized mode is not set and any port can be used to set any other port's parameters and the server's parameters. To set authorized mode requires physical access to the unit. When setting authorized mode a password is entered and verified. The units power must be cycled, turned off and then on, within one minute of entering the password for authorized mode to be set. The cycling of the power verifies that you have access to the unit and causes the password to be saved in the units non-volatile RAM (NVRAM).

Management Commands

The commands used to manage the DECserver 90L are the **Set**, **Show** and **Reset** commands. The set and show commands use a menu to select the parameters to show or set. A command line mode is available for use by network management software or by users that want to bypass the menu interface. Refer to the Command Line section at the end of this chapter, for more detailed information on command line mode.

The following sections show how to enter the Set, Show, and Reset commands using the menu and the command line.

Set Command

The Set command allows you to set port or server parameters, zero network counters, and enable and use the DECserver 90L security features.

Setting Port Parameters

The following port parameters can be set for each port:

- Port name
- Port speed (baud rate)
- Input flow control
- Output flow control
- Device type (terminal or printer)
- Local or remote break
- Remote modify
- Test (loopback) operation

Table 4–1 describes each of the port parameters that can be set.

Port parameters can be set from the menu or by a command line entered at the prompt. If authorized mode is set and the port parameters to be set are for a port other than the one you are connected to, you must first enable manager mode.

Table 4–1   Port Parameters

Field	Description
Port Name	Maximum of six characters. The following characters can be used: alpha, numeric, -, _, and $.
Speed	Sets the receive/transmit speed of the port. When a terminal is connected to a port, the DECserver 90L automatically sets the speed through autobaud. For use with printers or other such devices the speed can be set to one of six values. 1 = 38400 baud 2 = 19200 baud 3 = 9600 baud 4 = 4800 baud 5 = 2400 baud 6 = 1200 baud
Input Control	Enables and disables input flow control (XON/XOFF). E = Enable D = Disable C = Clear (send XON)
Output Control	Enables and disables output flow control (XON/XOFF). E = Enable D = Disable C = Clear (send XON)
Terminal /Printer	Selects the type of device connected to the port. The port that issues the set command cannot set its device type to the printer. T = Terminal P = Printer
Break	Determines if the port responds to a local or a remote break. L = Local R = Remote
Remote Modify	Enables and disables modification of the port by the host system. E = Enable D = Disable

Table 4–1 (Cont.)   Port Parameters

Field	Description
Test	Places the selected port into loopback mode. Loopback mode can be used to verify that a port is receiving and sending characters. The port that issues the set command cannot put itself in loopback mode. Y = Yes (loopback mode) N = No

Setting Port Parameters from the Menu

To set port parameters from the menu:

1. Enter **SET** at the DECserver 90L prompt. The * in the menu indicates the port you are attached to.

   The following example shows how to set port 8 for use with a printer (user entries are bolded). The following port parameters are set in this example.

   > Port name: PRINT
   > Speed: 9600
   > Input control: Remains unchanged
   > Output control: Remains unchanged
   > Terminal/Printer: Printer
   > Break: Remote
   > Remote modify: Remains unchanged
   > Test: Remains unchanged

2. Select the port (1 through 8).

3. Set the parameters in response to the prompts. The * indicates the current setting of the parameter for the selected port. The setting of each parameter is terminated with a Return . Entering a Return with no input for a parameter leaves the field unchanged. If an incorrect entry is made the DECserver 90L signals the error and waits for a correct entry.

```
-> SET  Return

|1 PORT_1*
|2 PORT_2
|3 PORT_3
|4 PORT_4
|5 PORT_5
|6 PORT_6
|7 PORT_7
|8 PORT_8
|S Server
|P Password
|A Authorized
|M Manager
|
|8  Return
```

Name	Speed	Input Control	Output Control	Terminal/ Printer	Break	Remote Modify	Test
PORT_8*	1 38400*	E Enable*	E Enable*	T Term*	L Local*	E Enable	Y Yes
	2 19200	D Disable	D Disable	P Printer	R Remote	D Disable*	N No*
	3 9600	C Clear	C Clear				
	4 4800						
	5 2400						
	6 1200						
Print	**3** 9600	E Enable	E Enable	**P** Printer	**R** Remote	D Disable	N No

```
-> %DS90L-100, Parameters Have Been Changed
->
```

Setting Port Parameters By Command Line

Command line mode allows a port's parameters to be set with a single
entry. If you do not want to change a parameter, an entry in that field is
not required.

The format for the command line is as follows:

```
-> SET <port>,<name>,<speed>,<IFC>,<OFC>,<device>,<break>,<rem_mod>,<test>
```

The following example shows how to set port 8 for use with a printer (user entries are bolded). The following port parameters are set in this example.

Port name: PRINT
Speed: 9600
Input flow: Remains unchanged
Output flow: Remains unchanged
Device type: Printer
Break: Remote
Remote modify: Remains unchanged
Test: Remains unchanged

```
-> SET 8,PRINT,9600,,,P,R,,  Return

-> %DS90L-100, Parameters Have Been Changed
->
```

Setting Server Parameters

The following server parameters can be set:

- Server name

- Zero counters

- Reset server and ports to factory default settings
  Note: Disconnects all sessions

Table 4–2 describes each of the parameters that can be set.

Server parameters can be set from a menu or by a command line entered at the prompt. The following sections describe how to set the server parameters using both methods.

If authorized mode is set, you must first enable manager mode.

Table 4–2   Server Parameters

Field	Description
Name	Maximum of 16 characters. The following characters can be used: alpha, numeric, -, _, $.
Actions	Zero the servers network counters and reset the server
	N = No action taken Z = Zero network counters F* = Reset all settable parameters to factory default settings

*All sessions are disconnected

Setting Server Parameters from the Menu

To set server parameters from the menu:

1. Enter **SET** at the DECserver 90L prompt. The * in the menu indicates the port you are attached to.

2. Select Server (S).

3. Set the parameters in response to the prompts. The * indicates the current setting of the parameter. The setting of each parameter is terminated with a Return . Entering a Return with no input for a parameter leaves the field unchanged. If an incorrect entry is made, the DECserver 90L signals the error and waits for a correct entry.

The following example shows how to set the server name to MYSERVER
and zero the counters (user entries are bolded).

```
-> Set  Return

|1 PORT_1*
|2 PORT_2
|3 PORT_3
|4 PORT_4
|5 PORT_5
|6 PORT_6
|7 PORT_7
|8 PORT_8
|S Server
|P Password
|A Authorized
|M Manager
|
| S  Return

|Name               |Actions
|                   |
|LAT_08002B08322B*  |N No Action*
|                   |Z Zero Counters
|                   |F Factory Defaults
|                   |
| MYSERVER          | Z  Zero Counters

-> %DS90L-100, Parameters Have Been Changed
->
```

Setting Server Parameters By Command Line

Command line mode allows server parameters to be set with a single entry.

The format for the command line is as follows:

```
-> SET S,<name>,<zero_counters>   Return
```

The following example shows how to set the server name to MYSERVER and zero the counters.

```
-> SET S,MYSERVER,Z   Return
-> %DS90L-100, Parameters Have Been Changed
->
```

Changing Password by Menu

The Set command is used to change the DECserver 90Ls password. The password is a maximum of eight characters. To change the password, the port you are using must be in manager mode.

To change the password interactively:

1. Enter **SET** at the DECserver 90L prompt. The * indicates the port you are attached to.

2. Select password (P).

3. Enter the old password.

   NOTE
   The old, new, and verify password entries are not echoed by the DECserver 90L.

4. Enter the new password.

5. Enter the new password again to verify it.

The following example shows how to set the password:

```
-> Set  Return
|1 PORT_1*
|2 PORT_2
|3 PORT_3
|4 PORT_4
|5 PORT_5
|6 PORT_6
|7 PORT_7
|8 PORT_8
|S Server
|P Password
|A Authorized
|M Manager
|
| P  Return

|Old            |New            |
|Password       |Password       |Verify
|               |               |
|<not echoed>|<not echoed>|<not echoed>

-> %DS90L-109, Password Changed
->
```

Changing Password by Command Line

The command line for changing the password is:

```
-> Set P,<old_password>,<new_password>  Return
```

NOTE
**The old, new, and verify passwords are echoed when using command line entry.**

Set and Clear Authorized Operation

The Set command is used to set and clear authorized operation. To set authorized operation you must have physical access to the unit because the unit's power must be cycled.

Setting the Authorized Operation by Menu

To set the authorized operation from the menu:

1. Enter **SET** at the DECserver 90L prompt. The * indicates the port you are attached to.

2. Select Authorized (A).

3. Select Set (S).

4. Enter New Password. The password is not echoed.

5. Enter the password again to verify. The verify password is not echoed.

```
-> Set   Return

|1 PORT_1*
|2 PORT_2
|3 PORT_3
|4 PORT_4
|5 PORT_5
|6 PORT_6
|7 PORT_7
|8 PORT_8
|S Server
|P Password
|A Authorized
|M Manager
|
| A   Return

|S Set
|C Clear
|
| S   Return

|New       |Verify
|Password  |Password
|          |
-> %DS90L-103, Power Down DS90L within 1 minute to Enable Authorized Mode

Note:  The password is not echoed.
```

Setting the Authorized Operation by Command Line

The command line for setting authorized mode operation is:

```
-> Set A,S,<password>  Return
```

NOTE
The password is echoed when using command line entry.

Clear Authorized Mode by Menu

Clearing authorized mode disables security on the DECserver 90L. To clear authorized mode your port must be in manager mode or you must have physical access to the unit. Physical access to the unit is required when the units password is not known.

To clear authorized mode from the menu:

1. Enter **SET** at the DECserver 90L prompt. The * indicates the port you are attached to.

2. Select Authorized (A).

3. Select Clear (C).

4. If the port you are connected to is not in manager mode, the unit's power will have to be cycled off and then on.

The following example shows how to clear the authorized mode.

```
-> Set   Return
|1 PORT_1*
|2 PORT_2
|3 PORT_3
|4 PORT_4
|5 PORT_5
|6 PORT_6
|7 PORT_7
|8 PORT_8
|S Server
|P Password
|A Authorized
|M Manager
|
| A   Return
|S Set
|C Clear
|
| C   Return

-> %DS90L-102, Authorized Mode Cleared

                or

-> %DS90L-104, Power Down DS90L within one minute to Clear Authorize Mode
```

Clear Authorized Mode by Command Line

The command line for clearing authorized mode is:

```
-> Set A,C   Return
```

Enable and Disable Manager Mode

The Set command is used to enable and disable manager mode. Only
one port can be in manager mode at any time. To enable manager mode
you must know the unit's password. Manager mode applies only to the
port on which it was enabled. Manager mode can be enabled for one port
at a time. Once manager mode is enabled for a port, that port remains
enabled until you disable it. Manager mode can be disabled with the
Set command, by disconnecting from the port (no session), or when the
terminal is powered down.

Enabling Manager Mode by Menu

To enable manager mode from the menu:

1. Enter **SET** at the DECserver 90L prompt. The * indicates the port you are attached to.

2. Select Manager (M).

3. Select Enable (E).

4. Enter password. The password is not echoed.

The following example shows how to enable manager mode.

```
-> Set    Return
|1 PORT_1*
|2 PORT_2
|3 PORT_3
|4 PORT_4
|5 PORT_5
|6 PORT_6
|7 PORT_7
|8 PORT_8
|S Server
|P Password
|A Authorized
|M Manager
|
| M   Return
|E Enable
|D Disable
|
| E   Return
|Password
|
|
-> %DS90L-105, Manager Mode Enabled
->

Note:  The password is not echoed.
```

Enable Manager Mode by Command Line

The command line for enabling manager mode is:

```
-> Set M,E,<password>  Return
```

NOTE

The password is echoed when using command line entry.

Disable Manager Mode by Menu

To disable manager mode operation for a port, you must be attached to the port and use the Set command.

To disable manager mode from the menu:

1. Enter **SET** at the DECserver 90L prompt. The * indicates the port you are attached to.

2. Select Manager (M).

3. Select Disable (D).

The following example shows how to disable manager mode.

```
-> Set   Return

|1 PORT_1*
|2 PORT_2
|3 PORT_3
|4 PORT_4
|5 PORT_5
|6 PORT_6
|7 PORT_7
|8 PORT_8
|S Server
|P Password
|A Authorized
|M Manager
|
| M  Return

|E Enable
|D Disable
|
| D  Return

-> %DS90L-106, Manager Mode Disabled
->
```

Disable Manager Mode by Command Line

The command line for disabling manager mode is:

-> **Set M,D** `Return`

Show Command

The Show command allows you to show port or server parameters, status, and counters.

Show Port

The Show Port command displays the status for each of the eight ports of the DECserver 90L. Table 4–3 describes each of the fields in the port status display.

Table 4–3   Port Status Description

Field	Description
Name	Shows the name of each port.
Speed	Shows the receive/transmit speed.
In Flow	Tells if the input flow control is enabled or disabled and gives its current state (on/off).
Out Flow	Tells if the output flow control is enabled or disabled and gives its current state (on/off).
Type	Tells if the device type is set for a terminal or printer.
Break	Tells if the port is set for local or remote break.
Rem Mod	Tells if remote modify is enabled or disabled.
Test	Tells if the loopback test is active.
Status	Tells if the port is connected to a service, local (the terminal is at the DECserver 90L prompt), or off.
Service	Tells the name of the service to which a port is connected.
Node	Gives the name of the node to which a port is connected.
Port	Gives the name of the port on the node the DECserver 90L to which a port is connected.
Frame Err	A counter that gives the number of framing errors for a port.
Queued	Printer ports only. Lists jobs queued to the port (maximum of seven plus one active).

The Show command allows you to examine the status of all ports or a selected port. The DECserver 90L provides additional information when examining selected ports. The Show Port command can be entered from the menu or by a command line.

Show Port by Menu

The following example shows the Show Port command used to examine the status of all the ports. The example shows the command entered interactively.

1. Enter **Show** at the DECserver 90L prompt. The * indicates the port you are attached to.

2. Select Ports (P).

```
-> Show   Return

|1 PORT_1*
|2 PORT_2
|3 PORT_3
|4 PORT_4
|5 PORT_5
|6 PORT_6
|7 PORT_7
|8 PORT_8
|P Ports
|S Server
|
| P   Return
```

Name	MYPORT	PORT_2	PRINT	PORT_4	PORT_5	PORT_6	PORT_7	PORT_8
Speed	38400	19200	4800					
In Flow	ENA/on	ENA/on	ENA/on	ENA/on	ENA/on	ENA/on	ENA/on	ENA/on
Out Flow	ENA/on	ENA/on	ENA/on	ENA/on	ENA/on	ENA/on	ENA/on	ENA/on
Type	TERM	TERM	PRINTER	TERM	TERM	TERM	TERM	TERM
Break	LOCAL	LOCAL	REMOTE	LOCAL	LOCAL	LOCAL	LOCAL	LOCAL
Rem Mod	DIS	DIS	DIS	DIS	DIS	DIS	DIS	DIS
Test	NO	NO	NO	NO	NO	NO	NO	NO
Status	CONN	LOCAL	CONN	OFF	OFF	OFF	OFF	OFF
Fram Err	0	0	0	0	0	0	0	0

Show Port by Command Line

The command line equivalent is:

```
->  Show P   Return
```

Show Status of Port by Menu

The following example shows how to examine the status of a selected port using menu mode.

1. Enter **Show** at the DECserver 90L prompt. The * indicates the port you are attached to.

2. Select 1.

```
->  Show    Return
|1 MYPORT*
|2 PORT_2
|3 PORT_3
|4 PORT_4
|5 PORT_5
|6 PORT_6
|7 PORT_7
|8 PORT_8
|P Ports
|S Server
|
| 1   Return

Name      MYPORT
Speed     38400
In Flow   ENA/on
Out Flow  ENA/on
Type      TERM
Break     LOCAL
Rem Mod   DIS
Test      NO
Status    CONN
Service   MYNODE
Node      MYNODE
Port      LTA123
Fram Err  0
```

Show Status of Port by Command Line

The command line equivalent is:

```
-> Show 1   Return
```

Show Server

The Show Server command displays the server type, protocol it runs, Ethernet address, server name, network counters, and status of security, NVRAM, and the network connection.

Show Server by Menu

The Show Server command can be entered interactively or by a command line. The following example shows the Show Server command entered interactively.

1. Enter **Show** at the DECserver 90L prompt. The * indicates the port you are attached to.

2. Select Server (S).

```
-> Show Return
|1 MYPORT*
|2 PORT_2
|3 PORT_3
|4 PORT_4
|5 PORT_5
|6 PORT_6
|7 PORT_7
|8 PORT_8
|P Ports
|S Server
|
|S Return
```

```
DECserver 90L V1.0 BL2.0                   Address:    08-00-2B-XX-XX-XX
Protocol:  LAT V5.2                           Name:    MYSERVER

Frames Received:                    10   Seconds Since Zeroed:          394
Frames Sent:                        10   Send Failures:                   0
Multicast Frames Rcv'd:           3333   Receive Failures:                0
Multicast Frames Sent:               0   Unrecognized Destination:      504
Frames Sent, Deferred:               0   Data Overrun:                    0
Frames Sent, 1 Collision:            0   User Buffer Unavailable:         0
Frames Sent, 2+ Collisions:          0   System Buffer Unavailable:       0

Messages Received:                  10   Duplicates Received:             0
Messages Transmitted:               10   Messages Re-Transmitted:         0
Solicitations Accepted:              0   Illegal Messages Rcv'd:          0
Solicitations Rejected:             17   Illegal Slots Rcv'd:             0
Multiple Node Addresses:             0   Illegal Multicasts Rcv'd:        0

Keepalive Timer:                    20   Security:                 Disabled
Retransmit Limit:                    8   NVRAM:                          OK
                                         Network:                        OK
```

Show Server by Command Line

The command line equivalent is:

```
-> Show S   Return
```

Reset Command

The Reset command allows you to reset individual ports or server parameters to their power-up state and run the units self-test. Resetting the server sets *all* port and server parameters to their power-up state and disconnects all sessions and runs self-test. When the DECserver 90L is in authorized mode the port you are using must be in manager mode to reset another port or the server.

For ports that have not had their speed set using the set command they will be in the non-autobaud state (no speed set). After being reset, the Return key must be pressed twice to autobaud the port and set the speed.

Reset Command by Menu

The following example shows the reset command used to reset port 1. The examples show the command entered interactively.

1. Enter **Reset** at the DECserver 90L prompt. The * indicates the port you are attached to.

2. Enter 1.

```
->   RESET    Return

|1 PORT_1*
|2 PORT_2
|3 PORT_3
|4 PORT_4
|5 PORT_5
|6 PORT_6
|7 PORT_7
|8 PORT_8
|S Server
|
| 1   Return

-> %DS90L-110, Port Has Been Reset
->
```

Reset Command by Command Line

The command line equivalent is:

```
-> RESET 3   Return

-> %DS90L-110, Port Has Been Reset
->
```

Command Line

The DECserver 90L user interface provides a command line interpreter
as an alternate means to set and show port and server parameters. The
command line interpreter helps with the control of the DECserver 90L
by network management software and by users who want to bypass the
menu interface.

For command line entries, the commands and parameters are not entered
through a menu on the terminal screen. The user's input is echoed and
the complete command is processed after a ⎡Return⎤ is entered. Note that
any error in parsing a command will cause the entire command to be
ignored.

A space is required between the command (set or show) and its
parameters. The command line interpreter uses comas (,) as a delimiter
to separate the different fields in a command line. To make the command
line interpreter easier to use the current value (default) for a field will be
used when:

1. There is no entry for a field.

2. A ⎡Return⎤ is entered before all the parameters have been entered.

The following are the command lines that can be entered at the
DECserver 90L prompt (->).

Set Port Parameters:

```
->SET <port>,<name>,<speed>,<IFC>,<OFC>,<device>,<break>,<rem_mod>,<test>
      --------------------------------------------------------------------
         1            1200     E      E      T        L          E       Y
         2            2400     D      D      P        R          D       N
         3            4800     C      C
         4            9600
         5           19200
         6           38400
         7
         8
```

Set Server Parameters:

```
-> SET S,<name>,<actions>
        ------------------
                   N
                   Z
                   F
```

Set Password:

-> **SET P,<old_password>,<new_password>**

Set Authorized Mode:

-> **SET A,S,<password>**

Clear Authorized Mode:

-> **SET A,C**

Enable Manager Mode:

-> **SET M,E,<password>**

Disable Manager Mode:

-> **SET M, D**

Show Port Parameters:

-> **SHOW P**

Show Server Parameters:

-> **SHOW S**

Reset Port Parameters:

```
-> RESET <port>
          ---------------
                1
                2
                3
                4
                5
                6
                7
                8
```

Reset Server Parameters:

```
-> RESET S
```

Using a Printer

The installation requirements for printers are dependent on the system environment in which it is installed. However, there are three basic steps that need to be performed when setting a DECserver 90L port for use by a printer.

1. Choose the port to be used.

    – Set the server name if it has not already been done.

    – Set the port for use by a printer. The following port parameters should be set:

        Name = port name you want to use
        Speed = speed of printer
        Input flow = as required by printer (usually enabled)
        Output flow = as required by printer (usually enabled)
        Device type = Printer
        Break = as required by printer (usually don't care)
        Remote Modify = enabled if host needs to be able to change
        printer characteristics (usually disabled)

2. Set up the system so it can access the printer port. Refer to your system documentation for information on this procedure.

    For example on a VAX/VMS system you would use LATCP to map LTA1234: to the server name and port name on the DECserver 90L. A typical VMS setup is as follows:

```
$ MCR LATCP
LCP>CREATE PORT LTA1234

Local Port Name = LTA1234:        <application>

LCP>SET PORT LTA1234:/NODE=MYSERVER/PORT=PRINT

      Specified Remote Node Name = MYSERVER
      Specified Remote Port Name = PRINT
      Link Name = LAT$LINK

LCP>EXIT
$
```

3. Configure the print queue to point to the port (LTA1234:) defined in
    the previous step. Refer to your system documentation for information
    on this procedure.

NOTE
**If you want to set all eight ports for use by printers, the eighth
port's parameters must be set using a MOP console carrier
session.**

5
Troubleshooting

This chapter describes how to troubleshoot the DECserver 90L. Before you begin you should:

1. Verify that the unit is properly installed.

2. Note the fault condition.

3. Isolate the problem. Use Table 5–1 as a guide to determine the probable cause and the suggested solution.

Table 5–1   DECserver 90L Troubleshooting

If...	Then...	Do this...
The power LED is not "on"	The DECserver 90L is not receiving +5V.	Check the AC power connection and verify that the AC outlet is working. Check the power connection on the DECserver 90L. If the problem still exists, replace the power supply.
The self-test LED is not "on"	The unit did not pass self-test.	Replace the unit.
The network LED is not "on"	It is a network problem.	Check network connection. Check if the segment is properly terminated.
		Disconnect unit from network. Connect T-connector with two 50 ohm terminators. If the LED turns "on", then it is a network problem. If the LED stays "off", then replace the unit.

Table 5–1 (Cont.)   DECserver 90L Troubleshooting

If...	Then...	Do this...
There is no response at the prompt (->)	The port and terminal baud rates are not compatible.	Shutoff and turn on terminal. Press Return twice to set the port baud rate (autobaud).
		Terminal transmit and receive speeds must be the same.
	The terminal flow control is disabled.	Reset the terminals flow control.
	The port type is set to the printer.	Set port to term.
	There is faulty wiring between the terminal and the DECserver 90L.	While watching the activity LED on the DECserver 90L, the LED should blink when characters are typed at the terminal. If not, check that the activity LED blinks when characters are typed on terminals connected to other ports. If the activity LED blinks the wiring between the terminal and the DECserver 90L or the terminal is faulty.
You cannot connect to the service	The service is not available.	Check for service availability.
	The LAT is not installed on the host system.	Verify that the LAT Version 5.0 or higher is running on the host system.
	It is a Network Problem.	Check the network LED, it should be on. If not, check the network connection. If the LED is on, you can check network connectivity by running MOP loopback or a MOP console carrier session.

Table 5–1 (Cont.)   DECserver 90L Troubleshooting

If...	Then...	Do this...
The printer does not work	The port is not set for a printer.	Set the port for the printer.
	The baud rates are incompatible.	Check printer and port baud rates.
	The flow control is not set as required by the application.	Check flow control.
	The port and or server name does not match with the host.	Verify that the names match.

A
Specifications

Specifications for the DECserver 90L are divided into the following categories:

- Physical dimensions

- Environmental specifications

- Electrical specifications

- LAT specifications

Physical Dimensions

The physical dimensions of the DECserver 90L are as follows:

Dimension	Value
Height	3.18 cm (1.25 in)
Width	27.31 cm (10.75 in)
Depth	12.70 cm (5.0 in)
Weight	.77 kg (1.7 lb)

Environmental Specifications

The DECserver 90L is designed to operate in an office environment
or equipment room environment such as, telephone closets or satellite
equipment rooms. It is not intended to operate in an air plenum.

Operating Environment

The operating environment for the DECserver 90L is as follows:

Item	Value
Temperature	5° C to 50° C (41° F to 122 ° F)
Maximum rate of change	20° C/hr (36° F/hr)
Relative humidity	10 % to 95 % (non-condensing)
Wet-bulb temperature	32° C (90° F) maximum
Dew point	2° C (36° F) minimum
Altitude	Sea level to 2.4 km (8000 ft)
Air flow	Convectively cooled. A minimum of 10 cm(4 in) of space must be provided on both ends of the unit for adequate air flow.

Shipping Environment

The shipping environment for the DECserver 90L is as follows:

Item	Value
Temperature	-40° C to 66° C (-40 ° F to 151 °F)
Relative humidity	10 % to 95 % (non-condensing)
Altitude	Sea level to 4.9 km (16000 ft)

Power Specifications

The following sections describe the power specifications for the DECserver 90L.

Power Supply

Item	Value
Voltage (Domestic)	104 Vac to 128 Vac (nominal 120 Vac)
Voltage (International)	208 Vac to 256 Vac (nominal 240 Vac)
Current at 120 volts	.25 amps
Current at 240 volts	.125 amps
Frequency	50 Hz to 60 Hz
Power consumption	16 watts
Output voltage	5.1 Vdc
Output current	1.8 A

DECserver 90L

Item	Value
Input voltage	4.75 to 5.25 Vdc
Input current	1.0 A

Connector Pin Out

Table A–1 describes the pin out of the MMJ connectors on the DECserver 90L.

NOTE
The DECserver 90L does not provide modem control signals.

Table A–1   MMJ Pin Out

Pin	Signal Name
1	Ready-Out or DSR[1]
2	Transmit (TXA)
3	Transmit return (RC)
4	Receive return (RXB)
5	Receive (RXA)
6	Ready-In or DTR[2]

[1]This signal is pulled high when power is applied to the DECserver 90L.

[2]This signal is tied to ground through a 3K ohm resistor.

Figure A–1 shows the circuit connections for each port.
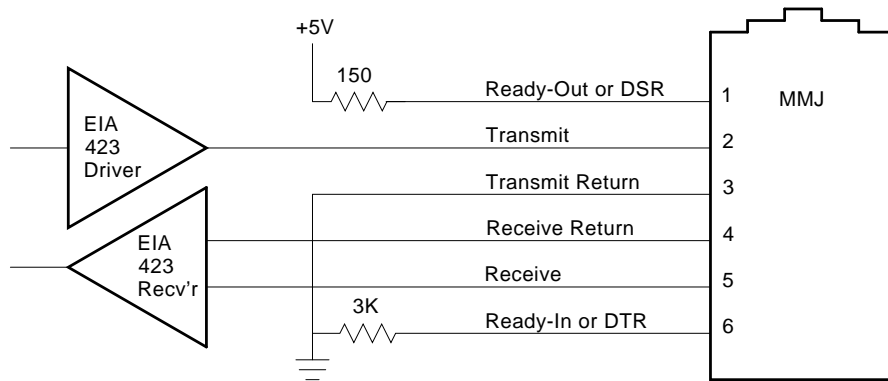
LJ-00562-TI0.DG

Figure A–1   Port Circuit

LAT Specifications

This section provides a description of the LAT implemented by the DECserver 90L. Table A–2 lists the server characteristics.

Table A–2   LAT Server Characteristics

Characteristic	Setting
High protocol	x5.2.0
Low protocol	x5.0.0
Product type code	28
Node type	Master
Keepalive timer	20s
Master circuit timer	80ms
Local cache node limit	16
Password	8 characters maximum
Prompt	->
Queue limit	7 per port
Retransmit limit	8
Session limit	8 (1 per port)
Server name	16 characters (settable)

Table A–3 lists the port characteristics.

Table A–3   LAT Port Characteristics

Characteristic	Setting
Character size	8
Flow control	XON/XOFF or disabled
Parity	None
Speed (Input = Output)	1200 to 38.4K
Name	6 characters (settable)
Break	Local, remote (settable)
Session limit	1

B
Related Documentation

Document Title	Order Number
DECbridge 90 Owner's Manual	EK-DEWGB-OM
DEChub 90 Owner's Manual	EK-DEHUB-OM
VMS LAT Control Program (LATCP) Manual	AA-LA32B-TE
Open DECconnect Building Wiring Components Applications Catalog	EB-K2407-42
DECconnect System Planning and Configuration Guide	EK-DECSY-CG

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