

# 4DLT User's Guide

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## About this Guide

4DLT™ is a Silicon Graphics' implementation of Local Area Transport (LAT™), network protocols originally developed by Digital Equipment Corporation (DEC™) that optimize communications between terminal users and network hosts. 4DLT enables Silicon Graphics workstations to participate in a LAT network.

4DLT software performs LAT terminal server functions in a Silicon Graphics workstation, allowing a user to connect to the LAT network from his or her workstation. 4DLT software also enables a Silicon Graphics workstation to supply its resources to other LAT network users.

### Purpose of This Guide

The *4DLT User's Guide* explains how to use 4DLT software to connect to LAT network nodes and use the services they offer. The audience for the *4DLT User's Guide* are IRIS users who need to access LAT network resources from their workstations. This guide assumes readers are new to LAT but have experience with resource sharing on networked systems.

### Organization of This Guide

The *4DLT User's Guide* is organized into these chapters:

Chapter 1, "Notes to New Users,"

introduces concepts and terms that apply to LAT networks. Read this chapter to learn how a LAT network is organized and how 4DLT functions in the network.

Chapter 2, “Starting Work with 4DLT,” explains SLAT, the 4DLT utility that supports your connections to the LAT network. Use this chapter to start and stop SLAT and to prepare for using the commands described in Chapter 3.

Chapter 3, “Using SLAT Commands,” describes the commands available to you when you are running SLAT. It explains the purpose of each SLAT command and shows you how to use it. Use this chapter as a learning aid and reference guide to SLAT commands.

## Typographical Conventions

This document uses the standard UNIX® convention when referring to entries in IRIX manual pages. The entry name is followed by a section number in parentheses. For example, *cc(1)* refers to the *cc* manual entry in Section 1 of the IRIX manual pages.

In text descriptions, file and directory names, as well as commands, are shown in *italics*. Command syntax descriptions follow these conventions:

`typewriter font`

Indicates portions of the command that are required in an entry.

*italic font*

Indicates a variable argument. Substitute a valid string or value for these variables.

[*brackets*]

Indicates that the arguments shown in brackets is optional. You can omit these arguments in a command entry.

**typewriter bold**

Indicates a user entry. Type these entries, or portions of entries, exactly as shown.

<Enter>

Indicates a key legend on the workstation keyboard.

## Related Documentation

In addition to the *User's Guide*, 4DLT documentation consists of the *4DLT Release Notes*, which contain technical notes and installation instructions for 4DLT; and the *4DLT Administrator's Guide*, which contains instructions for configuring and managing 4DLT.

For additional introductory information on LAT, see *LAT Network Concepts*, published by DEC.

## Product Support

Silicon Graphics provides a comprehensive product support and maintenance program for IRIS products. For further information, contact Silicon Graphics Technical Assistance Center or your service provider.



## Notes to New Users

This chapter acquaints readers with some of the concepts and terms that apply to Local Area Transport (LAT) networks and explains the role of 4DLT in the LAT environment. It also contains introductory information on using 4DLT from a LAT terminal. This chapter includes these sections:

- “The Purpose of a LAT Network”
- “LAT Network Elements”
- “4DLT Functions”

### The Purpose of a LAT Network

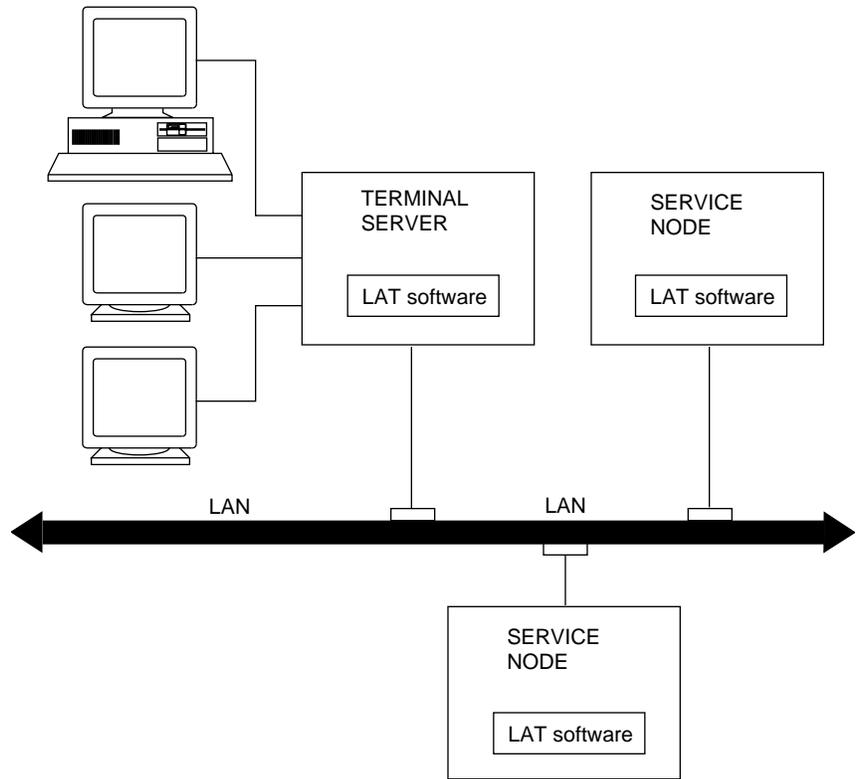
LAT is network software that specializes in communications between user terminals and host computers on an Ethernet local area network (LAN). The purpose of a LAT network is to increase the number of resources available to terminal users. LAT enables these users, usually restricted to the resources offered by their local host, to access resources on various nodes throughout the LAT network. Local Area Transport.

LAT protocols LAT software consists of a set of *protocols* originally developed by Digital Equipment Corporation and used primarily for DEC networks. Subsequent implementations of LAT have been developed to allow non-DEC equipment to participate in a LAT network.

4DLT is Silicon Graphics' implementation of LAT protocols for IRIS systems. A Silicon Graphics workstation running 4DLT can supply resources to the LAT network, and the workstation user can access LAT resources by means of 4DLT utilities.

## LAT Network Elements

The principal elements of a LAT network are user terminals, terminal servers, and service nodes and the Ethernet LAN and LAT software that enable communication among them. The printers, modems, and other devices available to users are also considered part of the LAT network, but only components running LAT software (that is, terminal servers and service nodes) are considered *LAT nodes*. Figure 1-1 shows the elements of a LAT network.



**Figure 1-1** Elements of a LAT Network

## User Terminal Functions

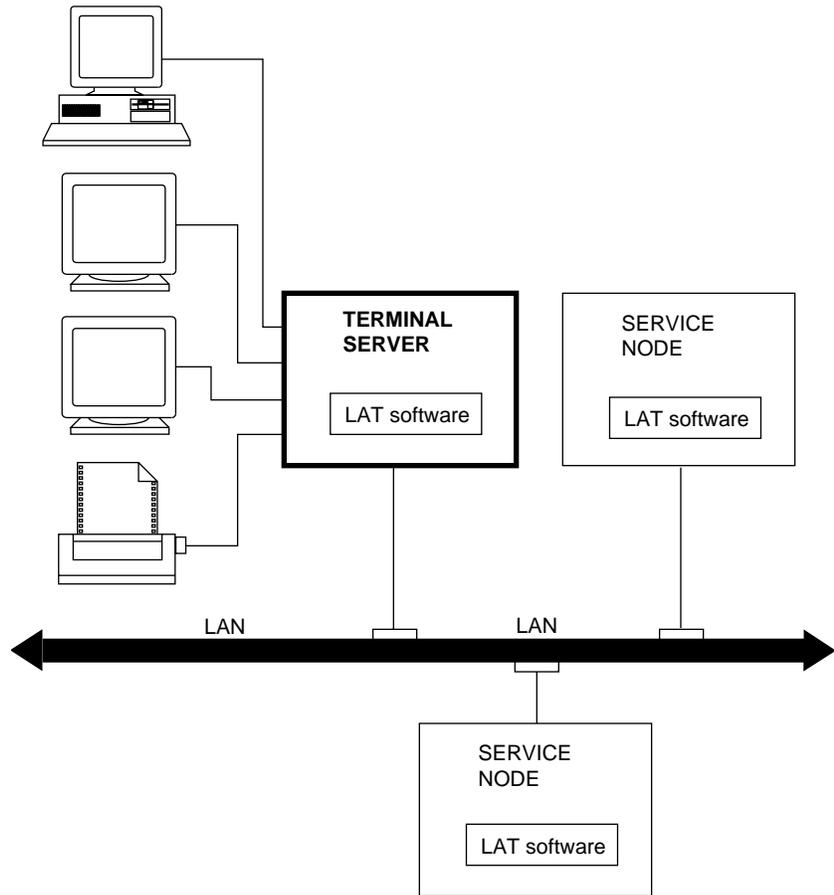
LAT terminals are keyboard devices that enable users to interface with the LAT network. Frequently these are dumb terminals, such as VT100s; however, some LAT terminals are intelligent stations running software that enables them to make terminal-type connections. An Silicon Graphics workstation running 4DLT can be used as a LAT terminal.

## Terminal Server Functions

*ALAT terminal server* is an intelligent device that accepts commands from users to establish connections to LAT services. Once the connection is established, the terminal server manages the communications between the user and the service. A terminal server is frequently a special-purpose hardware device, such as a DECserver 90L, but it can also be a network host running terminal server software. An IRIS workstation running 4DLT can function as a LAT terminal server.

In addition to managing terminal-host connections, terminal servers maintain a data base of available LAT services. Users can display the list to determine the LAT services available to them.

Figure 1-2 illustrates a terminal server in a LAT network.



**Figure 1-2** A Terminal Server on a LAT Network

printers (LAT) Notice from Figure 1-2 that LAT terminal servers can also support devices such as printers and modems. When a terminal server is providing a resource (such as a printer), the terminal server has an *inbound connection* from the network. When a terminal server is receiving a service on behalf of one of its users, the terminal server has an *outbound connection* to the network

## Service Node Functions

A LAT *service node* is a host, such as a VAX™ or Silicon Graphics workstation, that offers services to terminal users. Service nodes advertise their services to terminal servers, then wait for terminal servers to send them connection requests. A user must have an active connection to a service node to use its resources.

A single service node can offer many services, such as user logins, printers, file systems, and applications. Frequently, several service nodes may offer a service by the same name. When this is the case, the terminal server connects to the service node that is likely to give the best response in providing the service (see “LAT Service Ratings” in Chapter 2).

Figure 1-3 illustrates service nodes in a LAT network. You can see from Figure 1-3 that a service node can also function as a terminal server. In addition to functioning as terminal servers and service nodes, LAT nodes can function simultaneously as DECnet or TCP/IP nodes. DECnet nodes and LAT TCP/IP nodes and LAT

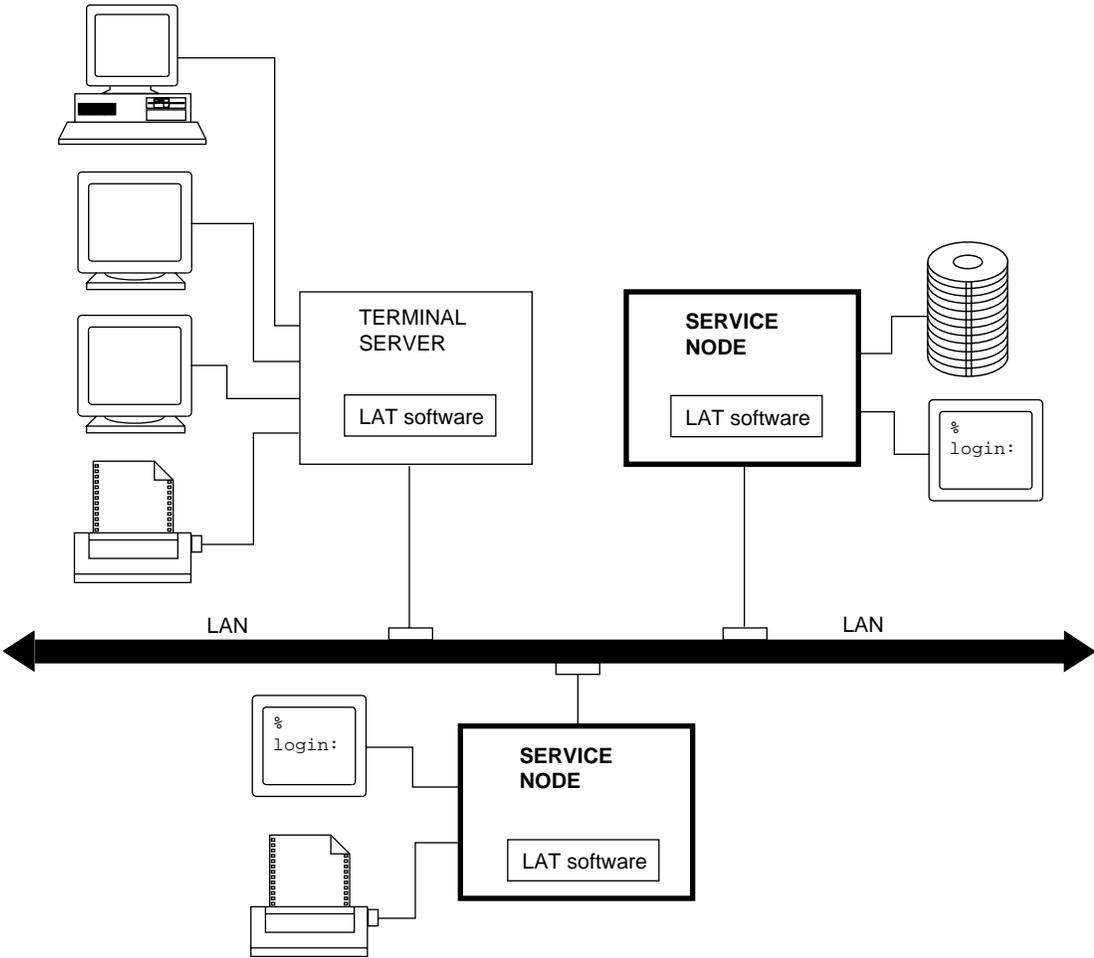
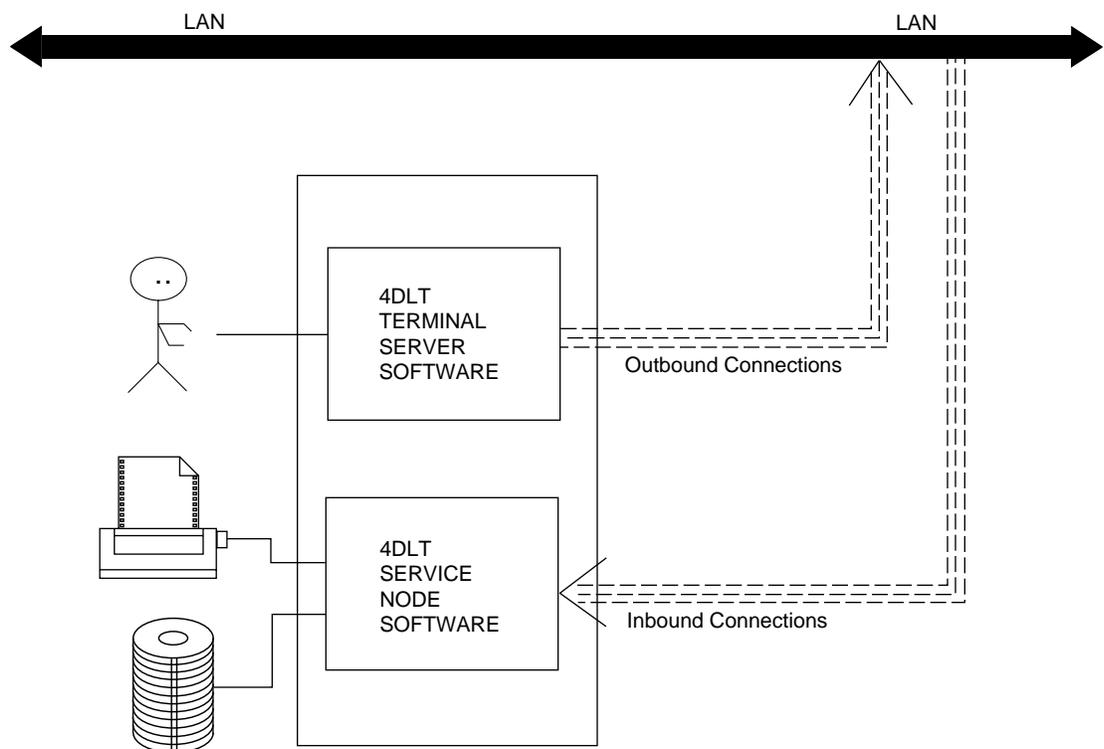


Figure 1-3 Service Nodes in a LAT Network

## 4DLT Functions

4DLT software provides two primary functions in a LAT network. One component of 4DLT operates as a terminal server for the Silicon Graphics workstation user, supporting outbound connections between the user and services on the network. Another 4DLT component operates as a service node, supporting inbound connections between remote LAT users and the resources available on the workstation. Inbound connections to the workstation are not noticeable to the user.

Figure 1-4 illustrates the LAT functions that 4DLT performs in a Silicon Graphics workstation.



**Figure 1-4** 4DLT's LAT Functions



## Starting Work with 4DLT

This chapter provides introductory information on using 4DLT in a LAT session and instructions for starting and stopping *SLAT*, the 4DLT utility that supports your LAT connections. It also contains general instructions for entering SLAT commands and a SLAT command summary. This chapter contains these sections:

- “Preparing Your Workstation”
- “Working in a LAT Session”
- “Starting and Stopping the SLAT Utility”
- “Entering SLAT Commands”
- “Understanding LAT Network Data”
- “Using LAT Printers”
- “Summary of 4DLT Commands”

### Preparing Your Workstation

The 4DLT application must be installed in your workstation before you can start working. To use printer services, IRIX line printer software (*ee2.sw.lp*) must also be installed. If 4DLT or *lp* software is not installed, you or your system administrator must complete the installation instructions given in the *4DLT Release Notes* and the *4DLT Administrator's Guide*. The *4DLT Administrator's Guide* also contains instructions for setting up your login account so that 4DLT commands will execute from any directory in your account.

## Working in a LAT Session

The period of time during which you have a connection to a LAT service is known as a *session*. You can establish several sessions from your terminal and switch between sessions, but you can work in only one session at a time. If the service node you are using fails during your session, the terminal server will attempt to establish another session with a duplicate service on another service node.

SLAT supports your connections to the LAT network. While you are working with SLAT, your IRIS workstation functions as a terminal server, forwarding your requests to network service nodes. The IRIS can be simultaneously functioning as a LAT service node, but this function will not be noticeable to you.

## Starting and Stopping the SLAT Utility

To use the SLAT utility, 4DLT software must be installed and running on your Silicon Graphics workstation. If it is not, you or your system administrator must complete the installation and startup procedures before you go further (see the *4DLT Administrator's Guide* for instructions).

To start SLAT, enter the *SLAT* command at the IRIX prompt. This means that an open IRIX shell must be displayed on your screen. This example illustrates the *SLAT* command and the prompt that appears after your entry:

```
% slat <Enter>
local>
```

When you no longer need to use LAT network resources, you can stop the SLAT utility by using either the *EXIT* or *QUIT* command. *EXIT* and *QUIT* perform the same function. These examples illustrate the *EXIT* and *QUIT* commands and their abbreviations:

```
local> Exit <Enter>
local> Quit <Enter>
local> E <Enter>
local> Q <Enter>
```

After you stop SLAT, you automatically return to the IRIX system prompt.

## Entering SLAT Commands

SLAT commands are similar to the commands used with conventional terminal servers. They include commands such as *CONNECT* and *DISCONNECT* to open and close connections, *SHOW SERVICES* and *SHOW NODES* to list available resources, and the break sequence and *RESUME* command to move between active sessions.

### Using Abbreviations in SLAT Commands

SLAT accepts abbreviated forms of any of its commands. Any combination of letters that uniquely identifies the command is a valid abbreviation. For example, **SHOW N** is a valid command entry for *SHOW NODES*, but **SHOW** is not valid. (Chapter 3, "Using SLAT Commands," contains numerous suggestions for abbreviating commands.)

### Using Uppercase and Lowercase in Commands

You are not required to use upper case letters in SLAT command entries; SLAT processes commands in either case; however, this guide shows all commands in upper-case to conform to the conventions of LAT networks.

## Understanding LAT Network Data

SLAT provides a number of commands that you can use to display data about the LAT network during a session. The data originate at service nodes, which broadcast information about their services to the network every 60 seconds. Terminal servers collect this information in their databases and display it to users when they enter a *SHOW SERVICES* command.

Some data that you can display with SLAT commands is not relevant to end-users. For example, you can display the Ethernet number of a service node, but this information is intended primarily for network administrators and users rarely need it; however, LAT users frequently display service names, session numbers, and service ratings, and this data is important to using the network effectively.

## LAT Service Names

Each service available on a LAT network is assigned a *service name* that identifies it to users and LAT software. Service names are listed when you enter a *SHOW SERVICES* command.

In some cases, a single service name represents a service offered by several service nodes. For example, assume a LAT network provides a graphics application with the service name *rainbows*. To avoid overburdening a single service node with all user requests for rainbows, the network manager can configure rainbows on several service nodes. Whenever a user selects the rainbows service, one node is chosen to provide it (see “LAT Service Ratings” on page 12).

## Session Numbers

When you have multiple LAT sessions running concurrently, it is important that you be able to distinguish among them. To make this possible, your terminal server assigns each of your sessions a session number. You display session numbers with the *SHOW SESSIONS* command.

Session numbers are assigned in the chronological order in which they are established: the first LAT session you establish is session 1, the next session you establish is session 2, and so on. Sessions maintain their assigned numbers until you disconnect from them.

## LAT Service Ratings

The information that a service node broadcasts to the LAT network includes its node name, the name of the services it provides, and information describing each service. The descriptive information includes a *service rating*, a measure of the availability of the node for providing services. Ratings range from zero (0) to 255; the higher the rating, the more efficient the service the node is likely to provide.

When a terminal server receives a user request for a service, it checks its database for information about the service. If the service is offered on multiple nodes, the terminal server selects the node with the highest service rating.

## Group Codes

By default, all terminal server users have access to every service on a LAT network, but a network administrator might assign group codes to manage access to services. If your network administrator chooses to assign group codes on your network, some resources on the LAT network might not be available to you. Resources that are not available to you will not be included in your *SHOW SERVICES* listings.

## Using LAT Printers

LAT network resources frequently include printers, and these devices can be included in the list of LAT services that you can display (see “The *SHOW SERVICES* Command” in Chapter 3). However, unlike LAT services such as user logins and applications, you do not connect to printers by means of the *LAT CONNECT* command.

To print to a LAT printer, you use the same command as you use for any non-LAT network printer that is accessible from your workstation. For IRIX users, this command is usually *lp(1)*.

## Summary of 4DLT Commands

Table 2-1 gives an alphabetical listing of the commands available to 4DLT users. This table summarizes command functions and tells where you can find detailed information about using each command.

**Table 2-1** 4DLT Command Summary

Command	Purpose	Detailed Description
<i>BACKWARD</i>	When multiple LAT sessions are active, reactivates the session whose number is one less than the previously active session.	“The FORWARD and BACKWARD Commands” on page 23
<i>BREAK</i>	Allows you to redefine the break key sequence.	“The BREAK Command” on page 25
break (key sequence)	Leaves a LAT session without breaking the session connection.	“The Break Sequence” on page 22

**Table 2-1** (continued) 4DLT Command Summary

<b>Command</b>	<b>Purpose</b>	<b>Detailed Description</b>
<i>CONNECT</i>	Establishes a connection to a LAT service.	"The CONNECT Command" on page 21
<i>DISCONNECT</i>	Terminates a connection to a LAT service.	"The DISCONNECT Command" on page 24
<i>EXIT</i>	Exits the LAT terminal server emulation.	"Starting and Stopping the SLAT Utility" on page 10
<i>FORWARD</i>	When multiple LAT sessions are active, reactivates the session whose number is one more than the previously active session.	"The FORWARD and BACKWARD Commands" on page 23
<i>HELP</i>	Displays a complete list of SLAT commands.	"The HELP Command" on page 16
<i>RESUME</i>	Returns to a temporarily suspended session.	"The RESUME Command" on page 23
<i>SHOW NODES</i>	Post a list of LAT nodes and their status.	"The SHOW NODES Command" on page 18
<i>SHOW SERVER</i>	Posts information about the node where SLAT is running.	"The SHOW SERVER Command" on page 19
<i>SHOW SERVICES</i>	Posts a list of LAT network services.	"The SHOW SERVICES Command" on page 17
<i>SHOW SESSIONS</i>	Posts a list of established sessions.	"The SHOW SESSION Command" on page 20
<i>SLAT</i>	Starts the LAT terminal server emulation.	"Starting and Stopping the SLAT Utility" on page 10

## Using SLAT Commands

This chapter describes all SLAT commands and gives you suggestions for using them. Commands that perform a similar functions appear in the same section. The chapter contains these sections:

- “The HELP Command”
- “Commands that Display Network Information”
- “The CONNECT Command”
- “Commands that Manage Multiple Sessions”
- “The DISCONNECT Command”
- “The BREAK Command”

**Note:** SLAT must be running on your workstation to use these commands. See “Starting and Stopping the SLAT Utility” in Chapter 2 if you need startup instructions.

## The *HELP* Command

The *HELP* command displays the complete list of SLAT commands:

```
local> HELP <Enter>
```

SLAT responds by displaying the command list shown below. You can enter any command in this list whenever the `local>` prompt appears. Your entries can contain command abbreviations and lowercase letters (see “Entering SLAT Commands” in Chapter 2 for details).

```
-- Commands are:  
BACKWARD  
BREAK character  
CONNECT service-name [NODE node-name] [DESTINATION  
port-name]  
DISCONNECT [SESSION] [session-number]  
EXIT (or QUIT)  
FORWARD  
HELP  
RESUME [SESSION] [session-number]  
SHOW NODES [node-name]  
SHOW SERVER  
SHOW SERVICES [service-name]  
SHOW SESSIONS
```

## Commands that Display Network Information

SLAT provides a group of commands that allow you to display different types of information about the LAT network and your network sessions. These commands are described in detail in the remainder of this section:

- *SHOW SERVICES* lists the names of all available services on the LAT network.
- *SHOW NODES* displays information about the nodes on the LAT network.
- *SHOW SERVER* displays information about your local node.
- *SHOW SESSIONS* lists status information about your current sessions.

## The *SHOW SERVICES* Command

The *SHOW SERVICES* command posts a list of available LAT services. If you enter *SHOW SERVICES* with no arguments, it lists the names of all services available on the LAT network, the current status of the service, and a brief description identifying the service. If you enter a *service\_name* argument with the *SHOW SERVICES* command, it displays information about the service you specified.

### Syntax for *SHOW SERVICES*

The *SHOW SERVICES* command has this syntax:

```
local> SHOW SERVICES <Enter>
local> SHOW SERVICES service_name <Enter>
local> S SER service_name <Enter>
```

### Sample Entries of *SHOW SERVICES*

In this example, a user enters the *SHOW SERVICES* command with no argument to display a list of all available LAT services:

```
local> S SER <Enter>
```

SLAT displays this information in response to the command:

Service name	Status	Identification
Aims	Available	AIMS - Project dev system
HDWLAB	Available	Hardware Lab Server Node
Gorgo	Available	Corporate MIS machine
Alpha	Available	IRIS graphics applications

In this example, a user wants information about Alpha, a service listed in the previous example:

```
local> SHOW SERVICE alpha <Enter>
```

SLAT displays this information in response to the command:

Node name	Status	Rating	Identification
Alpha	Available	90	IRIS graphics applications

Notice that the service rating for Alpha is given in this listing.

## The *SHOW NODES* Command

The *SHOW NODES* command displays information about nodes on the LAT network. In some cases, items listed by *SHOW NODES* also appear in *SHOW SERVICES* listings, and in other cases they do not. This is because a node name may or may not be the same as the name of a service it provides.

If you enter the *SHOW NODES* command by itself, it displays the name and status of all operating nodes in the LAT network. If you specify the name of a node as an argument to the *SHOW NODES* command, *SHOW NODES* displays information about the service node you specified.

### Syntax of *SHOW NODES*

The *SHOW NODES* command has this syntax:

```
local> SHOW NODES <Enter>
local> SHOW NODES node_name <Enter>
local> S N <Enter>
```

### Sample Entries for *SHOW NODES*

In this example, a user wants to display a complete list of all service nodes on the LAT network:

```
local> SHOW NODES <Enter>
```

SLAT displays this information in response to the command:

Node	Name	Status	Identification
Zeus	Available	Corporate	Word Processor
DevOne	Available	Engineering	Development Machine

In the next example, a user wishes to display information specific to a node named Bonzo. Notice that Bonzo is not shown in the previous listing.

```
local> SHOW NODES bonzo <Enter>
```

SLAT returns the following information about node Alpha:

```
Node name: Bonzo           LAT protocol: V5.1
Address: aa-00-04-00-28-fc Data link frame size: 1482
```

```
Identification: VAPTRO - Corporate Cluster Alias
```

```
Node groups: 0
```

Service name	Rating	Identification
Alpha	73	Alpha - the new beginning
VAPTRO	79	VAPTRO - cluster alias

## The *SHOW SERVER* Command

The *SHOW SERVER* command allows you to display the following information about the node where you are currently running SLAT:

- the node name
- a description of the node
- the name of the Ethernet device that connects the node to the LAT network
- the Ethernet address of the node
- the number of active sessions on the node
- the ACL group
- the IDL group

### Syntax of *SHOW SERVER*

The *SHOW SERVER* command has this syntax:

```
local> SHOW SERVER <Enter>
local> S SERVE <Enter>
```

### Sample Entries for *SHOW SERVER*

In this example, a user wants to display server information about the host where SLAT is running:

```
local> SHOW SERVER
```

SLAT displays this information in response to the command:

```
Node name           : Malta
Node description    : SessionNET
Ethernet device     : /dev/isc
Ethernet address    : aa-00-04-00-fc-ff

Active sessions: 2
Break character: ^k

ACL groups: 0
IDL groups: 0
```

### The **SHOW SESSION** Command

The *SHOW SESSION* command displays a summary of all your sessions with LAT service nodes. The summary includes the session number, the current status of each session, and the name of the service to which you are connected.

#### Syntax of **SHOW SESSIONS**

The *SHOW SESSIONS* command has this syntax:

```
local> SHOW SESSIONS <Enter>
local> S SES <Enter>
```

#### Usage Example for **SHOW SESSIONS**

In this example, a user running SLAT on a host node named Malta has established a number of sessions and wants to determine their status. To obtain session information, the user enters this command at the SLAT prompt: `local> SHOW SESSIONS <Enter>`

SLAT displays this information in response to the command:

```
Session 1 connected to Alpha (Alpha::LAT V.5)
Session 2 connected to Gorgo (Gorgo::LAT V.5)
Session 3 connected to Malta (Malta::LATS01)
Session 4 disconnected
```

From this information, you can see that the user has established four sessions, three of which are still connected. One of the active sessions is being provided by the user's local node.

## The *CONNECT* Command

The *CONNECT* command establishes a connection to a LAT service. It takes these arguments:

- the service name only
- the service name and a specific service node
- the service name, a specific service node, and a destination port

### Syntax of *CONNECT*

The *CONNECT* command has this syntax:

```
local> CONNECT service_name <Enter>
local> CONNECT service_name service_node <Enter>
local> CONNECT service_name service_node destination_port_id <Enter>
local> C service_name <Enter>
```

The *CONNECT* command takes these arguments:

*service\_name*     name of the advertised service that you want to use  
*service\_node*     name of the service node offering the service  
*destination port\_id*  
                    port number on a particular service node that offers the  
                    service to which you want to connect

### Sample Entries for *CONNECT*

In this example, a user wants to establish a connection to a service named *finance*:

```
local>C finance <Enter>
```

Once the connection is established, the user might be required to log into the system offering the finance service. A login is not required for all services, however.

If the service you want is on a service node that requires a user password, you are allowed three attempts to correctly log into the service node. At the third incorrect attempt, an error message displays and the SLAT prompt reappears.

## Commands that Manage Multiple Sessions

SLAT allows you to connect to multiple service sessions, but only one session can be active at a time. To establish multiple sessions, you must first suspend the active session. Suspending a session keeps your connection to the service open. When you are ready, you can return to the suspended session without reconnecting to it.

These SLAT commands manage multiple sessions:

- The break sequence suspends an active session temporarily.
- The *RESUME* command returns you to a suspended session.
- The *FORWARD* command returns you to the session whose number is one greater than the session you last worked on.
- The *BACKWARD* command returns you to the session whose number is one less than the session you last worked on.

### The Break Sequence

You can leave a LAT session without disconnecting from it by entering the break sequence. When you enter the break sequence, it suspends the connection you are working on and automatically returns you to the SLAT prompt. Once the SLAT prompt appears, you can connect to another service or enter any other SLAT command. To return to the session you left, enter the *RESUME* command (see “The RESUME Command” on page 23 for details).

### Example Break Sequences

To suspend the finance session that was established in the previous example, enter the break sequence by pressing the **k** key while holding down the **<Ctrl>** key. After your entry, the SLAT prompt is displayed:

```
$ <Ctrl-k>  
local>
```

The default break sequence is **<Ctrl> k**, but you can redefine the sequence to use different keys.

## The *RESUME* Command

The *RESUME* command allows you to return to a session that you previously left by using the break sequence. If you enter *RESUME* by itself, SLAT returns you to the last session you worked on. If you enter a session number argument with the *RESUME* command, SLAT returns you to the session that you specified.

### Syntax of *RESUME*

The *RESUME* command has this syntax:

```
local> RESUME SESSION session_number <Enter>
local> R SESSION session_number <Enter>
local> R session_number <Enter>
```

### Sample Entries for *RESUME*

In this example, the user has four sessions established, sessions 1, 2, 3, and 4. The break sequence allows the user to leave session 1. To return to session 4, she enters this command at the SLAT prompt:

```
local> RESUME 4 <Enter>
```

## The *FORWARD* and *BACKWARD* Commands

The *FORWARD* and *BACKWARD* commands allow you to move between established sessions without specifying a session number. The *FORWARD* command returns you to the session whose number is one more than the last session you worked on. The *BACKWARD* command returns you to the session whose number is one less than the last session you worked on.

### Syntax of *FORWARD*

The *FORWARD* command has this syntax:

```
local> FORWARD <Enter>
local> F <Enter>
```

### Sample Entries for *FORWARD*

In this example, a user has three established sessions, sessions 1, 2, and 3 and is working in session 2. To leave session 2 and move to session 3, the user enters these commands:

```
% <Ctrl-k>  
local> FORWARD <Enter>
```

### Syntax of *BACKWARD*

The *BACKWARD* command has this syntax:

```
local> BACKWARD <Enter>  
local> B <Enter>
```

### Sample Entries for *BACKWARD*

In this example the user has three established three outbound sessions; session 1, session 2, and session 3. While working in session 2, the user decided to leave it to return to session 1. To accomplish this, th user enters the break sequence and is returned to the SLAT prompt. At the SLAT prompt, the user enters the abbreviation for the *BACKWARD* command. Upon issuing the *BACKWARD* command, the user was automatically placed within session 1.

```
% <Ctrl-k>  
local> B <Enter>  
$
```

## The *DISCONNECT* Command

The *DISCONNECT* command ends your session with a LAT service. If you enter the *DISCONNECT* command alone, the session you most recently worked in is disconnected. If you enter the *DISCONNECT* command with a session number, only the session whose number you specified is disconnected. If you enter the *DISCONNECT* command with the *all* argument, all of your LAT sessions are disconnected.

### Syntax of *DISCONNECT*

The *DISCONNECT* command has this syntax:

```
local> DISCONNECT session_number <Enter>
local> DISCONNECT all <Enter>
local> D <Enter>
```

### Sample Entries for *DISCONNECT*

In this example, a user is working in session 4 and decides to disconnect from it. The user enters the break sequence and is returned to the SLAT prompt. At the SLAT prompt, the user disconnects from the session.

```
% <Ctrl-k>
local> D 4 <Enter>
local>
```

SLAT responds by disconnecting session number 4 and returning the user to the SLAT prompt. At this point the user can enter another SLAT command.

## The *BREAK* Command

The *BREAK* command allows you to redefine the sequence of keys that you use to break from a LAT session. As shipped, 4DLT software uses the break sequence **<Ctrl-k>** (press the **k** key while holding down the **<Ctrl>** key). However, you can define the break sequence to be any of these key combinations:

- any single alphanumeric key, followed by **<Enter>**
- **<Ctrl>** with any alphanumeric key, except 1, 2, 9, or 0
- **<Ctrl>** with any of the following non-alphanumeric keys: **<Backspace>**, forward slash (/), backward slash (\), left parenthesis ((), right parenthesis ()), or single quote (')
- **<Shift>** with any alphanumeric key, or with **<Backspace>**

The break sequence you define remains active until you exit the SLAT utility. When you exit SLAT, the break sequence reverts to the default, **<Ctrl-k>**.

### Examples Break Key Combinations

Use key combinations like these to define a break sequence:

```
local> B <Enter>
local> <Ctrl-6>
local> <Ctrl> <Backspace>
local> <Shift-5>
```

### Sample Entries for *BREAK*

In this example, the user wishes to change the break sequence from the default, <Ctrl-k> to <Shift> <Backspace>:

```
local> BREAK <Shift> <<Backspace key> <Enter>
```

When you press the <Shift> and <Backspace> keys, you see this message:

```
local> break ^X
```

To view the current break sequence, enter the *SHOW SERVER* command.

---

## Glossary

### **bandwidth**

The amount of data that can be transmitted in a specific period of time over an Ethernet.

### **datagrams**

Discrete data units, or packets, into which the terminal server gathers into slots characters for each session destined for the same port. The characters are then placed into a single Ethernet message packet called a datagram.

### **host**

A node on the Ethernet that offers services.

### **LAT groups**

Groups are logical subnetworks set by the System Administrator through the terminal server's interface. They are defined by decimal integers from 0 to 255. Groups are used to control communications between service nodes and their services and terminal server ports.

### **LAT node**

In a LAT network, nodes, or the network communication points, consist of terminal servers and service nodes.

### **LAT software**

The software that implements the LAT protocol. Its presence is the only feature that defines a LAT node. LAT server software, downloaded from a VAX, runs on the terminal server. LAT host software runs on the host. 4DLT is LAT software that runs on the IRIS host.

**load balancing**

Directing new connections to the node with the most available resources. New connection requests are automatically routed to the service with the highest rating. A service node's rating drops as its resources are used up. If multiple service nodes offer the same service, new connection requests are automatically directed to the node with the most available resources. 4DLT does not dynamically change its service rating.

**latd daemon**

The *latd* daemon implements the LAT protocol and creates the remote terminal processes upon request by the terminal server.

**multicasting**

The process by which a message is addressed and sent to a set of logically related nodes, which, for the LAT network, are terminal servers.

**multiplexing**

The ability to combine accumulated user data from simultaneous sessions into a single packet or datagram. Multiplexing is performed by the terminal server and host LAT software.

**service**

A service is a named resource that LAT hosts provide to network users.

**service announcement**

An Ethernet multicast message from a service node that announces the services offered by the node.

**service name**

Each service is identified by a service name of from 1 to 16 characters. The 4DLT System Administrator creates service names, which are displayed on the user's terminal in response to the terminal server's *show services* command. Service names are the names that network users specify when issuing the terminal server's *connect* command.

**service node**

A host or server on the network that offers one or more services that are accessible to users on terminal servers. Any IRIS system running 4DLT is a service node.

---

**session**

A LAT session is an asynchronous, two-way logical connection between a service node and a terminal server. This connection enables a terminal server user (or device) to exchange data with the host over a shared virtual circuit. The terminal display for the user who logs in to a host via a terminal server is the same as if the terminal were connected directly to the host.

**slot**

A message segment within the virtual circuit that manages and exchanges data with the session.

**terminal server**

A dedicated Ethernet communications device that provides LAT connections between its ports and the LAT nodes. A terminal server is a special-purpose computer that at a minimum runs LAT terminal server software.

**virtual circuit**

A logical communication path between a terminal server and a host. The LAT transport mechanism is a virtual circuit.



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