



# **DES-3226L**

## Layer 2 Switch

# Command Line Interface Reference Manual

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First Edition (September 2003)

651S3226L015  
Printed In China



RECYCLABLE

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# 1

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## ***INTRODUCTION***

The switch can be managed through the switch's serial port, Telnet, or the Web-based management agent. The Command Line Interface (CLI) can be used to configure and manage the switch via the serial port or Telnet interfaces.

This manual provides a reference for all of the commands contained in the CLI. Configuration and management of the switch via the Web-based management agent is discussed in the User's Guide.

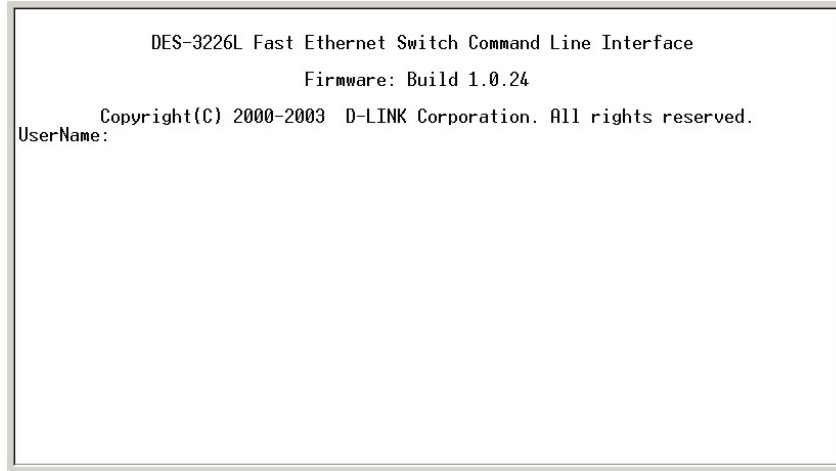
### **Accessing the Switch via the Serial Port**

The switch's serial port's default settings are as follows:

- 9600 baud
- no parity
- 8 data bits
- 1 stop bit

A computer running a terminal emulation program capable of emulating a VT-100 terminal and a serial port configured as above is then connected to the switch's serial port via an RS-232 DB-9 cable.

With the serial port properly connected to a management computer, the following screen should be visible. If this screen does not appear, try pressing Ctrl+r to refresh the console screen.



**Figure 1-1. Initial Console screen.**

There is no initial username or password. Just press the **Enter** key twice to display the CLI input cursor – **DES-3226L:4#**. This is the command line where all commands are input.

### **Setting the Switch's IP Address**

Each switch must be assigned its own IP Address, which is used for communication with an SNMP network manager or other TCP/IP application (for example BOOTP or TFTP). The switch's default IP address is 10.90.90.90. You can change the default switch IP address to meet the specification of your networking address scheme.

The switch is also assigned a unique MAC address by the factory. This MAC address cannot be changed, and can be found by entering the “show switch” command into the command line interface, as shown below.

```
DES-3226L:4#show switch
Command: show switch

Device Type       : DES-3226L Fast-Ethernet Switch
MAC Address       : 00-00-88-55-D2-C2
IP Address        : 10.53.13.188 (Manual)
VLAN Name         : default
Subnet Mask       : 255.0.0.0
Default Gateway   : 10.1.1.254
Boot PROM Version : Build 00.00.08
Firmware Version  : Build 1.0.24
Hardware Version  : 2A1
System Name       :
System Location   :
System Contact    : www.dlink.com.cn
Spanning Tree     : Disabled
GVRP              : Disabled
IGMP Snooping     : Disabled
TELNET           : Enabled (TCP 23)
SSH               : Enabled (TCP 22)
WEB               : Enabled (TCP 80)
RMON              : Disabled

DES-3226L:4#
```

**Figure 1-2. “show switch” command**

The IP address for the switch must be set before it can be managed with the web-based manager. The switch IP address can be automatically set using BOOTP or DHCP protocols, in which case the actual address assigned to the switch must be known.

By default, an IP interface named System is configured on the switch and contains all of the ports on the switch. The System interface can be used initially to assign a range of IP addresses to the switch. Later, when you configure VLANs and IP interfaces on the switch, the ports you assign to these VLANs and IP interfaces will be removed from the System interface.

The IP address may be set using the Command Line Interface (CLI) over the console serial port as follows:

1. Starting at the command line prompt **DES-3226L:4#** – enter the commands **config ipif System ipaddress xxx.xxx.xxx.xxx/yyy.yyy.yyy.yyy**. Where the **x**'s represent the IP address to be assigned to the IP interface named **System** and the **y**'s represent the corresponding subnet mask.
2. Alternatively, you can enter **DES-3226L:4#** – enter the commands **config ipif System ipaddress xxx.xxx.xxx.xxx/z**. Where the **x**'s represent the IP address to be assigned to the IP interface named **System** and the **z** represents the corresponding number of subnets in CIDR notation.

The IP interface named System on the switch can be assigned an IP address and subnet mask which can then be used to connect a management station to the switch's Telnet or Web-based management agent.

```
DES-3226L Fast Ethernet Switch Command Line Interface
Firmware: Build 1.0.24
Copyright(C) 2000-2003 D-LINK Corporation. All rights reserved.
UserName:
Password:
DES-3226L:4#config ipif System ipaddress 10.53.13.188/8
Command: config ipif System ipaddress 10.53.13.188/8
Success.
DES-3226L:4#
```

**Figure 1-3. Assigning the Switch an IP Address**



In the above example, the switch was assigned an IP address of 10.53.13.188 with a subnet mask of 255.0.0.0. The system message "Success" indicates that the command was executed successfully. The switch can now be configured and managed via Telnet and the CLI or via the Web-based management agent using the above IP address to connect to the switch.

# 2

---

## ***USING THE CONSOLE CLI***

The DES-3226L supports a console management interface that allows the user to connect to the switch's management agent via a serial port and a terminal or a computer running a terminal emulation program. The console can also be used over the network using the TCP/IP Telnet protocol. The console program can be used to configure the switch to use an SNMP-based network management software over the network.

This chapter describes how to use the console interface to access the switch, change its settings, and monitor its operation.



**Switch configuration settings are saved to non-volatile RAM using *save* command. The current configuration will then be retained in the switch's NV-RAM, and reloaded when the switch is rebooted. If the switch is rebooted without using the *save* command, the last configuration saved to NV-RAM will be loaded.**

### **Connecting to the Switch**

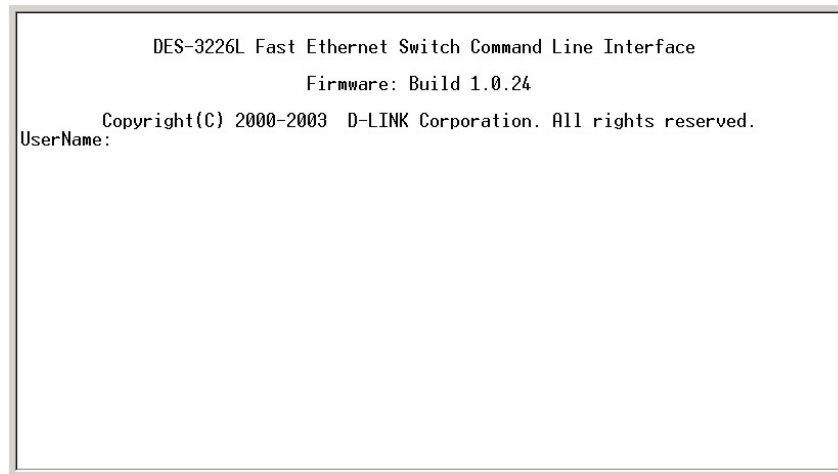
The console interface is used by connecting the switch to a VT100-compatible terminal or a computer running an ordinary

terminal emulator program (e.g., the HyperTerminal program included with the Windows operating system) using an RS-232C serial cable. Your terminal parameters will need to be set to:

- VT-100 compatible
- 9,600 baud
- 8 data bits
- No parity
- One stop bit
- No flow control

You can also access the same functions over a Telnet interface. Once you have set an IP address for your switch, you can use a Telnet program (in VT-100 compatible terminal mode) to access and control the switch. All of the screens are identical, whether accessed from the console port or from a Telnet interface.

After the switch reboots and you have logged in, the console looks like this:



**Figure 2-1. Initial Console Screen**

Commands are entered at the command prompt, **DES-3226L:4#**.

There are a number of helpful features included in the CLI. Entering the **?** command will display a list of all of the top-level commands.

```
?
clear
clear counters
clear log
config 802.1p user_priority
config 802.1x auth_parameter ports
config 802.1x auth_protocol
config 802.1x capability ports
config 802.1x init ports
config 802.1x reauth ports
config account
config bandwidth_control
config command_history
config fdb aging_time
config gvrp
config igmp_snooping
config igmp_snooping querier
config ipif
config link_aggregation group_id
config mirror port
config ports
config radius
CTRL+C ESC Q Quit SPACE N Next Page ENTER Next Entry A All
```

**Figure 2-2. The ? Command**

The **dir** command has the same function as the **?** command.

When you enter a command without its required parameters, the CLI will prompt you with a **Next possible completions:** message.

```
DES-3226L:4#config account
Command: config account
Next possible completions:
  <username>
DES-3226L:4#
```

**Figure 2-3. Example Command Parameter Help**

In this case, the command **config account** was entered with the parameter **<username>**. The CLI will then prompt you to enter the **<username>** with the message, **Next possible completions:**. Every command in the CLI has this feature, and complex commands have several layers of parameter prompting.

To re-enter the previous command at the command prompt, press the up arrow cursor key. The previous command will appear at the command prompt.

```
DES-3226L:4#config account
Command: config account
Next possible completions:
  <username>
DES-3226L:4#config account
```

**Figure 2-4. Using the Up Arrow to Re-enter a Command**

In the above example, the command **config account** was entered without the required parameter **<username>**, the CLI returned the **Next possible completions: <username>** prompt. The up arrow cursor control key was pressed to re-enter the previous command (**config account**) at the command prompt. Now the appropriate User name can be entered and the **config account** command re-executed.

All commands in the CLI function in this way. In addition, the syntax of the help prompts are the same as presented in this manual – angle brackets **< >** indicate a numerical value or character string, braces **{ }** indicate optional parameters or a choice of parameters, and brackets **[ ]** indicate required parameters.

If a command is entered that is unrecognized by the CLI, the top-level commands will be displayed under the **Available commands:** prompt.

```
DES-3226L:4#help
Available commands:
.. ? clear config create delete
   dir disable download enable login logout
   ping reboot reset save show upload
DES-3226L:4#
```

**Figure 2-5. The Available Commands Prompt**

The top-level commands consist of commands like **show** or **config**. Most of these commands require one or more parameters to narrow the top-level command. This is equivalent to “**show** what?” or “**config** what?”, where the what? is the next parameter.

For example, if you enter the **show** command with no additional parameters, the CLI will then display all of the possible next parameters.



```
DES-3226L:4#show
Command: show

Next possible completions:
 802.1p 802.1x account auth_diagnostics auth_session_statistics
auth_statistics bandwidth_control command_history error fdb gvrp
igmp_snooping ipif iproute link_aggregation log mirror packet ports
radius router_ports serial_port session snmp ssh stp switch syslog
traffic trusted_host utilization vlan

DES-3226L:4#
```

**Figure 2-6. Next possible completions: Show Command**

In the above example, all of the possible next parameters for the **show** command are displayed. At the next command prompt, the up arrow was used to re-enter the **show** command, followed by the **account** parameter. The CLI then displays the user accounts configured on the Switch.

# 3

## COMMAND SYNTAX

The following symbols are used in this manual to describe how command entries are made and values and arguments are specified in this manual. The online help contained in the CLI and available through the console interface uses the same syntax.

| <b>&lt;angle brackets&gt;</b> |   |
|-------------------------------|---|
| Purpose                       | Encloses a variable or value that must be specified.  |
| Syntax                        | <b>create ipif &lt;ipif_name&gt; vlan &lt;vlan_name&gt; ipaddress &lt;network_address&gt;</b>   |
| Description                   | In the above syntax example, you must supply an IP interface name in the <ipif_name> space, a VLAN name in the <vlan_name> space, and the network address in the <network_address> space. Do not type the angle brackets. |
| Example Command               | <b>create ipif Engineering vlan Design ipaddress 10.42.73.1/255.0.0.0</b>   |

| <b>[square brackets]</b> |   |
|--------------------------|---|
| Purpose                  | Encloses a required value or set of required arguments. One or more values or arguments can be specified.   |
| Syntax                   | <b>create account [admin   user]</b>  |
| Description              | In the above syntax example, you must specify either an <b>admin</b> or a <b>user</b> level account to be created. Do not type the square brackets. |
| Example Command          | <b>create account admin</b>   |

| <b>  vertical bar</b> |   |
|-----------------------|---|
| Purpose               | Separates two or more mutually exclusive items in a list – one of which must be entered.  |
| Syntax                | <b>show snmp [community   trap receiver   detail]</b>   |
| Description           | In the above syntax example, you must specify either <b>community</b> , <b>trap receiver</b> , or <b>detail</b> . Do not type the vertical bar. |
| Example Command       | <b>show snmp community</b>  |

| <b>{braces}</b> |  |
|-----------------|--|
| Purpose         | Encloses an optional value or set of optional arguments.   |
| Syntax          | <b>config igmp [&lt;ipif_name&gt;   all] {version &lt;value&gt;   query_interval &lt;sec&gt;   max_response_time &lt;sec&gt;   robustness_variable &lt;value&gt;   last_member_query_interval &lt;value&gt;   state [enable   disable]}</b>  |
| Description     | In the above syntax example, you must choose to enter an IP interface name in the <b>&lt;ipif_name&gt;</b> space or <b>all</b> , but <b>version &lt;value&gt;</b> , <b>query_interval &lt;sec&gt;</b> , <b>max_response_time &lt;sec&gt;</b> , <b>robustness_variable &lt;value&gt;</b> , <b>last_member_query_interval &lt;value&gt;</b> , and <b>state [enable   disable]</b> are all optional arguments. You can specify any or all of the arguments contained by braces. Do not type the braces. |
| Example command | <b>config igmp all version 2</b>   |

| <b>Line Editing Key Usage</b> |  |
|-------------------------------|--|
| <b>Delete</b>                 | Deletes character under the cursor and then shifts the remaining characters in the line to the left. |
| <b>Backspace</b>              | Delete the character to the left of the cursor and shifts the remaining characters in the            |

**Line Editing Key Usage**

|                    |  |
|--------------------|--|
|                    | line to the left.  |
| <b>Insert</b>      | Can be toggled on or off. When toggled on, inserts text at the current cursor position and shifts the remainder of the line to the left. |
| <b>Left Arrow</b>  | Moves the cursor to the left.  |
| <b>Right Arrow</b> | Moves the cursor to the right.   |
| <b>Tab</b>         | Used to toggle through possible options.   |

**Multiple Page Display Control Keys**

|               |   |
|---------------|---|
| <b>Space</b>  | Displays the next page.   |
| <b>CTRL+c</b> | Stops the display of remaining pages when multiple pages are to be displayed. |
| <b>ESC</b>    | Stops the display of remaining pages when multiple pages are to be displayed. |
| <b>n</b>      | Displays the next page.   |
| <b>p</b>      | Displays the previous page.   |
| <b>q</b>      | Stops the display of remaining pages when multiple pages are to be displayed. |
| <b>r</b>      | Refreshes the pages currently displaying.                                     |
| <b>a</b>      | Displays the remaining pages without pausing between pages.                   |

|                               |  |
|-------------------------------|--|
| <b>Line Editing Key Usage</b> |  |
|-------------------------------|--|

|              |  |
|--------------|--|
| <b>Enter</b> | Displays the next line or table entry. |
|--------------|--|

## 4

## BASIC SWITCH COMMANDS

The basic switch commands in the Command Line Interface (CLI) are listed (along with the appropriate parameters) in the following table.

| <b>Command</b>            | <b>Parameters</b>  |
|---------------------------|--|
| <b>create account</b>     | [admin   user] <username 15>   |
| <b>config account</b>     | <username 15>  |
| <b>show account</b>       |  |
| <b>delete account</b>     | <username 15>  |
| <b>show session</b>       |  |
| <b>show switch</b>        |  |
| <b>show serial_port</b>   |  |
| <b>config serial_port</b> | {baud_rate [9600 19200 38400 115200]<br>auto_logout(2)<br>[never(0) 2_minutes(2) 5_minutes(5)<br> 10_minutes(10) 15_minutes(15)]}(1) |
| <b>enable clipaging</b>   |  |
| <b>disable clipaging</b>  |  |
| <b>enable telnet</b>      | {<tcp_port_number 1-65535>}  |
| <b>disable telnet</b>     |  |
| <b>enable web</b>         | {<tcp_port_number 1-65535>}  |
| <b>disable web</b>        |  |

| <b>Command</b> | <b>Parameters</b> |
|----------------|-------------------|
| save           |                   |
| reboot         |                   |
| reset          | {config   system} |
| login          |                   |
| logout         |                   |

Each command is listed, in detail, in the following sections.

### **create account**

|              |   |
|--------------|---|
| Purpose      | Used to create user accounts  |
| Syntax       | <b>create account [admin   user] &lt;username&gt;</b>   |
| Description  | The create account command is used to create user accounts that consist of a username of 1 to 15 characters and a password of 0 to 15 characters. Up to eight user accounts can be created. |
| Parameters   | Admin <username><br>User <username>   |
| Restrictions | Only Administrator-level users can issue this command.<br><br>Usernames can be between 1 and 15 characters.<br><br>Passwords can be between 0 and 15 characters.                            |



Example Usage:

To create an administrator-level user account with the username "dlink":

```
DES-3226L:4#create account admin dlink
Command: create account admin dlink

Enter a case-sensitive new password:****
Enter the new password again for confirmation:****
Success.

DES-3226L:4#
```

| <b>config account</b> |  |
|-----------------------|--|
| Purpose               | Used to configure user accounts  |
| Syntax                | <b>config account &lt;username&gt;</b>   |
| Description           | The config account command configures a user account that has been created using the <b>create account</b> command.  |
| Parameters            | <username>   |
| Restrictions          | Only Administrator-level users can issue this command.<br><br>Usernames can be between 1 and 15 characters.<br><br>Passwords can be between 0 and 15 characters. |

Example Usage:

To configure the user password of “dlink” account:

```
DES-3226L:4#config account dlink
Command: config account dlink

Enter a old password:****
Enter a case-sensitive new password:****
Enter the new password again for confirmation:****
Success.

DES-3226L:4#
```

### **show account**

|              |  |
|--------------|--|
| Purpose      | Used to display user accounts  |
| Syntax       | <b>show account</b>  |
| Description  | Displays all user accounts created on the switch. Up to eight user accounts can exist on the switch at one time. |
| Parameters   | none.  |
| Restrictions | none.  |

Example Usage:

To display the accounts that have been created:

```
DES-3226L:4#show account
Command: show account

Current Accounts:
Username      Access Level
-----      -
```

|  |                      |
|--|----------------------|
| <b>System</b><br>dlink<br>DES-3226L:4# | <b>user</b><br>Admin |
|--|----------------------|

## **delete account**

|              |  |
|--------------|--|
| Purpose      | Used to delete an existing user account  |
| Syntax       | <b>delete account &lt;username&gt;</b>   |
| Description  | The delete account command deletes a user account that has been created using the <b>create account</b> command. |
| Parameters   | <username>   |
| Restrictions | Only Administrator-level users can issue this command.   |

Example Usage:

To delete the user account "System":

```
DES-3226L:4#delete account System
Command: delete account System

Success.

DES-3226L:4#
```

## **show session**

|         |  |
|---------|--|
| Purpose | Used to display a list of currently logged-in users. |
|---------|--|

**show session**

|              |   |
|--------------|---|
| Syntax       | <b>show session</b>   |
| Description  | This command displays a list of all the users that are logged-in at the time the command is issued. |
| Parameters   | none  |
| Restrictions | none.   |

Example Usage:

To display the way that the users logged in:

```
DES-3226L:4#show session
```

| ID  | Live Time | From        | Level | Name      |
|-----|-----------|-------------|-------|-----------|
| --- | -----     | -----       | ----  | -----     |
| 2   | 0:17:16.2 | Serial Port | 4     | Anonymous |

**show switch**

|              |   |
|--------------|---|
| Purpose      | Used to display information about the switch.       |
| Syntax       | <b>show switch</b>                                  |
| Description  | This command displays information about the switch. |
| Parameters   | none.   |
| Restrictions | none.   |

Example Usage:

To display the switch information:

```
DES-3226L:4#show switch
Command: show switch

Device Type      : DES-3226L Fast-Ethernet Switch
MAC Address      : 00-10-00-32-26-04
IP Address       : 10.90.90.90 (Manual)
VLAN Name       : default
Subnet Mask      : 255.0.0.0
Default Gateway  : 0.0.0.0
Boot PROM Version : Build 00.00.08
Firmware Version : Build 1.0.24
Hardware Version : 2A1
System Name      : D-Link
System Location  :
System Contact   : www.dlink.com.cn
Spanning Tree    : Disabled
GVRP             : Disabled
IGMP Snooping    : Disabled
TELNET          : Enabled(TCP 23)
SSH              : Enabled(TCP 22)
WEB              : Enabled(TCP 80)
RMON             : Disabled

DES-3226L:4#
```

|                         |   |
|-------------------------|---|
| <b>show serial_port</b> |   |
| Purpose                 | Used to display the current serial port settings. |
| Syntax                  | <b>show serial_port</b>                           |

**show serial\_port**

|              |   |
|--------------|---|
| Description  | This command displays the current serial port settings. |
| Parameters   | none.   |
| Restrictions | None  |

Example Usage:

To display the serial port setting:

```
DES-3226L:4#show serial_port  
Command: show serial_port
```

```
Baud Rate   : 9600  
Data Bits   : 8  
Parity Bits  : None  
Stop Bits   : 1  
Auto-Logout : 10 mins  
DES-3226L:4#
```

**config serial\_port**

|             |   |
|-------------|---|
| Purpose     | Used to configure the serial port.  |
| Syntax      | <b>config serial_port</b><br><b>{baud_rate[9600   19200   38400   115200]   au</b><br><b>to_logout</b><br><b>[never   2_minutes   5_minutes   10_minutes  </b><br><b>15_minutes]}</b> |
| Description | This command is used to configure the serial port's baud rate and auto logout settings.   |

**config serial\_port**

|              |  |
|--------------|--|
| Parameters   | <p>[9600 19200 38400 115200] – The serial bit rate that will be used to communicate with the management host.</p> <p>never – No time limit on the length of time the console can be open with no user input.</p> <p>2_minutes – The console will log out the current user if there is no user input for 2 minutes.</p> <p>5_minutes – The console will log out the current user if there is no user input for 5 minutes.</p> <p>10_minutes – The console will log out the current user if there is no user input for 10 minutes.</p> <p>15_minutes – The console will log out the current user if there is no user input for 15 minutes.</p> |
| Restrictions | Only administrator-level users can issue this command.   |

## Example Usage:

To configure baud rate:

```
DES-3226L:4#config serial_port baud_rate 9600
Command: config serial_port baud_rate 9600

Success.

DES-3226L:4#
```

**enable clipaging**

|              |   |
|--------------|---|
| Purpose      | Used to pause the scrolling of the console screen when the show command displays more than one page.  |
| Syntax       | <b>enable clipaging</b>   |
| Description  | This command is used when issuing the show command will cause the console screen to rapidly scroll through several pages. This command will cause the console to pause at the end of each page. The default setting is enabled. |
| Parameters   | none.   |
| Restrictions | None.   |

## Example Usage:

To enable pausing of the screen display when show command output reaches the end of the page:

```
DES-3226L:4#enable clipaging
```

```
Command: enable clipaging
```

```
Success.
```

```
DES-3226L:4#
```

**disable clipaging**

|         |   |
|---------|---|
| Purpose | Used to disable the pausing of the console screen scrolling at the end of each page when the show command would display |
|---------|---|



**disable clipaging**

more than one screen of information.

Syntax **disable clipaging**

Description This command is used to disable the pausing of the console screen at the end of each page when the show command would display more than one screen of information.

Parameters none.

Restrictions None.

## Example Usage:

To disable pausing of the screen display when show command output reaches the end of the page:

```
DES-3226L:4#disable clipaging  
Command: disable clipaging
```

```
Success.
```

```
DES-3226L:4#
```

**enable telnet**

Purpose Used to enable communication with and management of the switch using the Telnet protocol.

Syntax **enable telnet <tcp\_port\_number>**

Description This command is used to enable the Telnet protocol on the switch. The user can

**enable telnet**

specify the TCP or UDP port number the switch will use to listen for Telnet requests.

Parameters <tcp\_port\_number> – the TCP port number. TCP ports are numbered between 1 and 65535. The “well-known” TCP port for the Telnet protocol is 23.

Restrictions none

## Example Usage:

To enable Telnet and configure port number:

```
DES-3226L:4#enable telnet 23  
Command: enable telnet 23
```

```
Success.
```

```
DES-3226L:4#
```

**disable telnet**

Purpose Used to disable the Telnet protocol on the switch.

Syntax **disable telnet**

Description This command is used to disable the Telnet protocol on the switch.

Parameters none.

Restrictions none

Example Usage:

To disable the Telnet protocol on the switch:

```
DES-3226L:4#disable telnet
Command: disable telnet

Success.

DES-3226L:4#
```

## **enable web**

|              |   |
|--------------|---|
| Purpose      | Used to enable the HTTP-based management software on the switch.  |
| Syntax       | <b>enable web &lt;tcp_port_number&gt;</b>   |
| Description  | This command is used to enable the Web-based management software on the switch. The user can specify the TCP port number the switch will use to listen for Telnet requests. |
| Parameters   | <tcp_port_number> – The TCP port number. TCP ports are numbered between 1 and 65,535. The “well-known” port for the Web-based management software is 80.                    |
| Restrictions | none  |

Example Usage:

To enable HTTP and configure port number:

```
DES-3226L:4#enable web 80
Command: enable web 80
```

**Success.**

**DES-3226L:4#**

## **disable web**

|              |  |
|--------------|--|
| Purpose      | Used to disable the HTTP-based management software on the switch.      |
| Syntax       | <b>disable web</b>   |
| Description  | This command disables the Web-based management software on the switch. |
| Parameters   | none.  |
| Restrictions | none   |

Example Usage:

To disable HTTP:

**DES-3226L:4#disable web**

**Command: disable web**

**Success.**

**DES-3226L:4#**

## **save**

|         |   |
|---------|---|
| Purpose | Used to save changes in the switch's configuration to non-volatile RAM. |
| Syntax  | <b>save</b>   |

**save**

|              |   |
|--------------|---|
| Description  | This command is used to enter the current switch configuration into non-volatile RAM. The saved switch configuration will be loaded into the switch's memory each time the switch is restarted. |
| Parameters   | none.   |
| Restrictions | Only administrator-level users can issue this command.  |

## Example Usage:

To save the switch's current configuration to non-volatile RAM:

```
DES-3226L:4#save  
Command: save  
Saving all settings to NV-RAM... Done  
DES-3226L:4#
```

**reboot**

|              |   |
|--------------|---|
| Purpose      | Used to restart the switch.                 |
| Syntax       | <b>reboot</b>                               |
| Description  | This command is used to restart the switch. |
| Parameters   | none.                                       |
| Restrictions | none.                                       |

## Example Usage:

To restart the switch:

```
DES-3226L:4#reboot
Command: reboot
Are you sure want to proceed with the
system reboot? (y/n)
Please wait, the switch is rebooting...
```

## reset

|              |  |
|--------------|--|
| Purpose      | Used to reset the switch to the factory default settings.  |
| Syntax       | <b>reset {config system}</b>   |
| Description  | This command is used to restore the switch's configuration to the default settings assigned from the factory.  |
| Parameters   | <p>config – If config is specified, all of the factory default settings are restored on the switch except for the IP address, user accounts, and the switch history log.</p> <p>system – If system is specified all of the factory default settings are restored on the switch.</p> <p>If no parameter is specified, the switch's current IP address, user accounts, and switch history log are retained. All other parameters are restored to their factory default settings.</p> |
| Restrictions | Only administrator-level users can issue this command.   |

Example Usage:

To restore all of the switch's parameters to their default values:

```
DES-3226L:4#reset config
Command: reset config

Success.

DES-3226L:4#
```

| <b>login</b> |  |
|--------------|--|
| Purpose      | Used to log in a user to the switch's console.   |
| Syntax       | <b>login</b>   |
| Description  | This command is used to initiate the login procedure. The user will be prompted for his Username and Password. |
| Parameters   | none.  |
| Restrictions | none.  |

Example Usage:

To initiate the login procedure:

DES-3226L:4#login

Command: login

UserName: Trinity

Password:\*\*\*\*\*

DES-3226L:4#

## logout

|              |   |
|--------------|---|
| Purpose      | Used to log out a user from the switch's console.                           |
| Syntax       | <b>logout</b>   |
| Description  | This command terminates the current user's session on the switch's console. |
| Parameters   | none.   |
| Restrictions | none.   |

Example Usage:

To terminate the current user's console session:

```
DES-3226L:4#logout
```



# 5

## SWITCH PORT COMMANDS

The switch port commands in the Command Line Interface (CLI) are listed (along with the appropriate parameters) in the following table.

| Command             | Parameters  |
|---------------------|---|
| <b>config ports</b> | <portlist all><br>speed<br>[auto 10_half 10_full 100_half 100_full <br> 1000_full]<br>flow_control [enable  disable]<br>learning [enable   disable]<br>state [enable disable] |
| <b>show ports</b>   | <portlist>  |

Each command is listed, in detail, in the following sections.

### config ports

**Purpose** Used to configure the switch's Ethernet port settings.

**Syntax** **config ports** [<portlist | all>] {speed

**config ports**

**[auto | 10\_half | 10\_full | 100\_half | 100\_full | 1000\_full]**

**flow\_control [enabled | disabled]**

**learning [enabled | disabled]**

**state [enabled | disabled];**

**Description** This command allows for the configuration of the switch's Ethernet ports. Only the ports listed in the <portlist> will be effected.

**Parameters** all – Displays all ports on the switch.

portlist – Specifies a range of ports to be configured. The port list is specified by listing the beginning port number and the highest port number of the range. The beginning and end of the port list range are separated by a dash. For example, 3 would specify port 3. 4 specifies port 4. 3-4 specifies all of the ports between port 3 and port 4 – in numerical order.

auto – Enables auto-negotiation for the specified range of ports.

[10 | 100 | 1000] – Configures the speed in Mbps for the specified range of ports. Gigabit ports are statically set to 1000 and cannot be set to slower speeds.

[half | full] – Configures the specified range of ports as either full- or half-duplex.

## **config ports**

flowcontrol [enabled|disabled] – Enables or disables flow control for the specified range of ports.

learning [enabled|disabled] – Enables or disables the MAC address learning on the specified range of ports.

state [enabled|disabled] – Enables or disables the specified range of ports.

Restrictions Only administrator-level users can issue this command.

### Example Usage:

To configure the speed of the ports 1 to 3 to be 10 Mbps, full duplex, learning, and state enabled:

```
DES-3226L:4#config ports 1-3 speed 10_full learning enabled state enabled
```

```
Command: config ports 1-3 speed 10_full learning enabled state enabled
```

```
Success.
```

```
DES-3226L:4#
```

**show ports**

|              |   |
|--------------|---|
| Purpose      | Used to display the current configuration of a range of ports.  |
| Syntax       | <b>show ports {&lt;portlist&gt;}</b>  |
| Description  | This command is used to display the current configuration of a range of ports.  |
| Parameters   | <portlist> – specifies a range of ports to be configured. The port list is specified by listing the beginning port number and the highest port number of the range. The beginning and end of the port list range are separated by a dash. For example, 3 would specify port 3. 4 specifies port 4. 3-4 specifies all of the ports between port 3 and port 4 – in numerical order. |
| Restrictions | none.   |

**Example Usage:**

To display the configuration of the ports 1-7:

DES-3226L:4#show ports 1-7

| Port | Port State | Settings Speed Duplex FlowCtrl | Connection Speed Duplex FlowCtrl | Address Learning |
|------|------------|--------------------------------|----------------------------------|------------------|
| 1    | Enabled    | Auto Disabled                  | Link Down                        | Enabled          |
| 2    | Enabled    | Auto Disabled                  | Link Down                        | Enabled          |
| 3    | Enabled    | Auto Disabled                  | Link Down                        | Enabled          |
| 4    | Enabled    | Auto Disabled                  | 100M/Full/None                   | Enabled          |
| 5    | Enabled    | Auto Disabled                  | Link Down                        | Enabled          |
| 6    | Enabled    | Auto Disabled                  | Link Down                        | Enabled          |
| 7    | Enabled    | Auto Disabled                  | Link Down                        | Enabled          |

DES-3226L:4#

**6**

---

# ***NETWORK MANAGEMENT COMMANDS***

The network management commands in the Command Line Interface (CLI) are listed (along with the appropriate parameters) in the following table.

The DES-3226L supports the Simple Network Management Protocol (SNMP) versions 1, 2c, and 3. You can specify which version of the SNMP you want to use to monitor and control the switch. The three versions of SNMP vary in the level of security provided between the management station and the network device. The following table lists the security features of the three SNMP versions:

| SNMP Version | Authentication Method | Description  |
|--------------|-----------------------|--|
| v1           | Community String      | Community String is used for authentication - NoAuthNoPriv |
| v2c          | Community String      | Community String is used for authentication - NoAuthNoPriv |
| v3           | Username              | Username is used for authentication - NoAuthNoPriv         |
| v3           | MD5 or SHA            | Authentication is based on the HMAC-MD5 or HMAC-SHA        |

|    |                       |   |
|----|-----------------------|---|
|    |                       | algorithms – AuthNoPriv   |
| v3 | MD5 DES or SHA<br>DES | Authentication is based on the HMAC-MD5 or HMAC-SHA algorithms – AuthPriv.<br><br>DES 56-bit encryption is added based on the CBC-DES (DES-56) standard |

| Command               | Parameters  |
|-----------------------|---|
| create snmp user      | <username 32> <groupname 32> [v1   v2c   v3] {encrypted(1) [by_password(1) auth [md5(2) <auth_password 8-16 >   sha(3) <auth_password 8-20 >] priv [none(1)   des(2) <priv_password 8-16> ]   by_key(2) auth [md5(2) <auth_key 32-32>  sha(3) <auth_key 40-40>] priv [none(1)   des(2) <priv_key 32-32> ]}] |
| delete snmp user      | <username 32>   |
| show snmp user        |   |
| show snmp groups      |   |
| create snmp view      | <view_name 32> <oid> view_type [included   excluded]  |
| delete snmp view      | <view_name 32> [all   <oid>]  |
| show snmp view        | {<view_name 32>}  |
| create snmp community | <community_string 32> view <view_name 32> [readonly   readwrite]  |
| show snmp community   | <community_string 33>   |
| config snmp engineID  | <snmp_engineID>   |

| <b>Command</b>                  | <b>Parameters</b>   |
|---------------------------------|---|
| show snmp engineID              |   |
| create snmp group               | <groupname 32> [v1   v2c   v3 [noauth_nopriv   auth_nopriv   auth_priv]]{read_view <view_name 32>   write_view <view_name 32>   notify_view <view_name 32>} |
| delete snmp group               | <groupname 32>  |
| create snmp host                | <ipaddr> [v1   v2c   v3 [noauth_nopriv   auth_nopriv   auth_priv]] <auth_string 32>   |
| delete snmp host                | <ipaddr>  |
| show snmp host                  | <ipaddr>  |
| create trusted host             | <ipaddr>  |
| delete trusted host             | <ipaddr>  |
| show trusted host               | <ipaddr>  |
| config snmp system_name         | <sw_name>   |
| config snmp system_location     | <sw_location>   |
| config snmp system_contact      | <sw_contact>  |
| enable rmon                     |   |
| disable rmon                    |   |
| enable snmp traps               |   |
| disable snmp traps              |   |
| enable snmp authenticate traps  |   |
| disable snmp authenticate traps |   |



Each command is listed, in detail, in the following sections.

## **create snmp user**

|             |   |
|-------------|---|
| Purpose     | Used to create a new user to an SNMP group originated by this command.  |
| Syntax      | <pre> <b>create snmp user &lt;username 32&gt;</b> <b>&lt;groupname 32&gt; [v1   v2c   v3] {encrypted(1)</b> <b>[by_password(1) auth [md5(2)</b> <b>&lt;auth_password 8-16 &gt;   sha(3)</b> <b>&lt;auth_password 8-20 &gt;] priv [none(1)  </b> <b>des(2) &lt;priv_password 8-16&gt; ]   by_key(2)</b> <b>auth [md5(2) &lt;auth_key 32-32&gt;  sha(3)</b> <b>&lt;auth_key 40-40&gt;] priv [none(1)   des(2)</b> <b>&lt;priv_key 32-32&gt; ]}]</b></pre> |
| Description | The create snmp user command creates a new user to an SNMP group originated by this command. User can chose input authentication and privacy by password or by key.   |
| Parameters  | <p>&lt;username&gt; – The name of the user on the host that connects to the agent.The range is 1 to 32 .</p> <p>&lt;groupname&gt; – The name of the group to which the user is associated.The range is 1 to 32 .</p> <p>encrypted - Specifies whether the password appears in encrypted format.</p> <p>by_password - indicate input password for authentication and privacy</p>   |

## **create snmp user**

`by_key` - indicate input key for authentication and privacy

`auth` - Initiates an authentication level setting session. The options are `md5` and `sha` .

`md5` - The HMAC-MD5-96 authentication level.

`sha` - The HMAC-SHA-96 authentication level.

`<auth_password>` - A authentication string used by MD5 or SHA1.

`<priv_password>` - A privacy string used by DES.

`<auth_key>` - A authentication key used by MD5 or SHA1, it is hex string type.

`<priv_key>` - A privacy key used by DES, it is hex string type.

**Restrictions**      Only administrator-level users can issue this command. A maximum of four community strings can be specified.

### Example Usage:

To create a SNMP user "D-Link":

```
DES-3226L:4#create snmp user dlink D-Link_group encrypted
by_password auth md5 12345678 priv des 12345678
Command: create snmp user dlink D-Link_group encrypted
by_password auth md5 12345678 priv des 12345678

Success.

DES-3226L:4#
```

## **delete snmp user**

|              |   |
|--------------|---|
| Purpose      | Used to remove a user from an SNMP group and delete the associated group in SNMP                                  |
| Syntax       | <b>delete snmp user &lt;username&gt;</b>  |
| Description  | The delete snmp user command removes a user from a SNMP group and deletes the associated group of the SNMP group. |
| Parameters   | <username> – The name of the user on the host that connects to the agent. The range is 1 to 32 .                  |
| Restrictions | Only administrator-level users can issue this command.  |

Example Usage:

To delete SNMP user “dlink”:

```
DES-3226L:4#delete snmp user dlink
Command: delete snmp user dlink

Success.

DES-3226L:4#
```

**show snmp user**

|              |  |
|--------------|--|
| Purpose      | Used to display information on each SNMP username in the group username table.                     |
| Syntax       | <b>show snmp user</b>  |
| Description  | The show snmp user command displays information on each SNMP username in the group username table. |
| Parameters   | none   |
| Restrictions | none   |

## Example Usage:

To show the snmp users currently configured on the switch.

```
DES-3226L:4#show snmp user
Command: show snmp user

Username Group Name  SNMP Version  Auth-Protocol  PrivProtocol
-----
initial    initial       V3             None           None

Total Entries : 1

DES-3226L:4#
```

## **show snmp groups**

|              |   |
|--------------|---|
| Purpose      | Used to display the names of groups on the switch and the security model, level, the status of the different views.                       |
| Syntax       | <b>show snmp groups</b>   |
| Description  | The show snmp groups command displays the names of groups on the switch and the security model, level, the status of the different views. |
| Parameters   | none  |
| Restrictions | none  |

### Example Usage:

To show the snmp groups on the switch:

**DES-3226L:4#show snmp groups**

**Command: show snmp groups**

**Vacm Access Table Settings**

**Group Name : public  
ReadView Name : CommunityView  
WriteView Name :  
Notify View Name : CommunityView  
Securiy Model : SNMPv1  
Securiy Level : NoAuthNoPriv**

**Group Name : public  
ReadView Name : CommunityView  
WriteView Name :  
Notify View Name : CommunityView  
Securiy Model : SNMPv2  
Securiy Level : NoAuthNoPriv**

**Group Name : initial  
ReadView Name : restricted  
WriteView Name :  
Notify View Name : restricted  
Securiy Model : SNMPv3  
Securiy Level : NoAuthNoPriv**

**Group Name : private  
ReadView Name : CommunityView  
WriteView Name : CommunityView  
Notify View Name : CommunityView  
Securiy Model : SNMPv1  
Securiy Level : NoAuthNoPriv**

**Group Name : private  
ReadView Name : CommunityView  
WriteView Name : CommunityView  
Notify View Name : CommunityView**

**Securiy Model : SNMPv2**  
**Securiy Level : NoAuthNoPriv**

**Group Name : ReadGroup**  
**ReadView Name : CommunityView**  
**WriteView Name :**  
**Notify View Name : CommunityView**  
**Securiy Model : SNMPv1**  
**Securiy Level : NoAuthNoPriv**

**Group Name : ReadGroup**  
**ReadView Name : CommunityView**  
**WriteView Name :**  
**Notify View Name : CommunityView**  
**Securiy Model : SNMPv1**  
**Securiy Level : NoAuthNoPriv**

**Group Name : ReadGroup**  
**ReadView Name : CommunityView**  
**WriteView Name :**  
**Notify View Name : CommunityView**  
**Securiy Model : SNMPv2**  
**Securiy Level : NoAuthNoPriv**

**Group Name : WriteGroup**  
**ReadView Name : CommunityView**  
**WriteView Name : CommunityView**  
**Notify View Name : CommunityView**  
**Securiy Model : SNMPv1**  
**Securiy Level : NoAuthNoPriv**

**Group Name : WriteGroup**  
**ReadView Name : CommunityView**  
**WriteView Name : CommunityView**  
**Notify View Name : CommunityView**  
**Securiy Model : SNMPv1**  
**Securiy Level : NoAuthNoPriv**

```

Group Name : WriteGroup
ReadView Name : CommunityView
WriteView Name : CommunityView
Notify View Name : CommunityView
Securiy Model : SNMPv2
Securiy Level : NoAuthNoPriv

```

```

Group Name : D-Link_group
ReadView Name : CommunityView
WriteView Name : CommunityView
Notify View Name : CommunityView
Securiy Model : SNMPv3
Securiy Level : authPriv

```

Total Entries: 10

DES-3226L:4#

## create snmp view

|             |  |
|-------------|--|
| Purpose     | Used to assign views to community strings to limit which MIB objects an SNMP manager can access.   |
| Syntax      | <b>create snmp view &lt;view_name 32&gt; &lt;oid&gt; view_type [included   excluded]</b>   |
| Description | The create snmp view assigns views to community strings to limit which MIB objects an SNMP manager can access.   |
| Parameters  | <p>&lt;view_name&gt; – View name to be created.</p> <p>&lt;ioid&gt; - Object-Identified tree, MIB tree.</p> <p>view_type - Specify the access type of of the MIB tree in this view .</p> |



**create snmp view**

included – included for this view

excluded – excluded for this view

Restrictions Only administrator-level users can issue this command.

Example Usage:

To create a snmp view:

**DES-3226L:4# create snmp view dlinkview 1.3.6 view\_type included**  
**Command: create snmp view dlinkview 1.3.6 view\_type included**

**Success.**

**DES-3226L:4#**

**delete snmp view**

Purpose Used to remove a view record.

Syntax **delete snmp view <view\_name> [all  
|<oid>]**

Description This command is used to remove a view record.

Parameters <view\_name> – View name of the user who will be deleted.

all – view all the names recorded.

<oid> Object-Identified tree, MIB tree.

## delete snmp view

**Restrictions** Only administrator-level users can issue this command.

Example Usage:

To delete SNMP view “dlink”:

**DES-3226L:4# delete snmp view dlinkview all**  
**Command: delete snmp view dlinkview all**

**Success.**

**DES-3226L:4#**

## show snmp view

|                     |   |
|---------------------|---|
| <b>Purpose</b>      | Used to display the SNMP view record.                     |
| <b>Syntax</b>       | <b>show snmp view {&lt;view _name 32&gt;}</b>             |
| <b>Description</b>  | The show snmp view command displays the SNMP view record. |
| <b>Parameters</b>   | <view_name> - the view name of a SNMP entry on the switch |
| <b>Restrictions</b> | none  |

Example Usage:

To show the SNMP view:

**DES-3226L:4# show snmp view**  
**Command: show snmp view**

| <b>Vacm View Table Settings</b> |                    |                  |
|---------------------------------|--------------------|------------------|
| <b>View Name</b>                | <b>Subtree</b>     | <b>View Type</b> |
| restricted                      | 1.3.6.1.2.1.1      | Included         |
| restricted                      | 1.3.6.1.2.1.11     | Included         |
| restricted                      | 1.3.6.1.6.3.10.2.1 | Included         |
| restricted                      | 1.3.6.1.6.3.11.2.1 | Included         |
| restricted                      | 1.3.6.1.6.3.15.1.1 | Included         |
| CommunityView                   | 1                  | Included         |
| CommunityView                   | 1.3.6.1.6.3        | Excluded         |
| CommunityView                   | 1.3.6.1.6.3.1      | Included         |
| <b>Total Entries: 8</b>         |                    |                  |
| <b>DES-3226L:4#</b>             |                    |                  |

## **create snmp community**

### **Purpose**

Use an SNMP community string to define the relationship between the SNMP manager and the agent. The community string acts like a password to permit access to the agent on the Switch. You can specify one or more of the following characteristics associated with the string:

An access list of IP addresses of the SNMP managers that are permitted to use the community string to gain access to the agent.

A MIB view, which defines the subset of all MIB objects accessible to the given community.

Read and write or read-only permission for

**create snmp community**

the MIB objects accessible to the community.

**Syntax**            **create snmp community <community string 33> view <view\_name 32> [read\_only|read\_write]**

**Description**        This command is used to create a SNMP community string.

**Parameters**        <community\_string> – An alphanumeric string of up to 33 characters that is used to identify members of an SNMP community. This string is used like a password to give remote SNMP managers access to MIB objects in the switch's SNMP agent.

<view\_name> An alphanumeric string of up to 32 characters that is used to identify the group of MIB objects that a remote SNMP manager is allowed to access on the switch.

read\_only – Specifies that SNMP community members using the community string created with this command can only read the contents of the MIBs on the switch.

read\_write – Specifies that SNMP community members using the community string created with this command can read from and write to the contents of the MIBs on the switch.

**Restrictions**        Only administrator-level users can issue this command.

Example Usage:

To create the SNMP community string “dlink”:

```
DES-3226L:4# create snmp community dlink view
CommunityView read_write
Command: create snmp community dlink view
CommunityView read_write

Success.

DES-3226L:4#
```

### **delete snmp community**

|              |   |
|--------------|---|
| Purpose      | Used to remove a specific SNMP community string from the switch.  |
| Syntax       | <b>delete snmp community &lt;community_string 32&gt;</b>  |
| Description  | The delete snmp community command is used to remove a previously defined SNMP community string from the switch  |
| Parameters   | <community_string 33> – An alphanumeric string of up to 33 characters that is used to identify members of an SNMP community. This string is used like a password to give remote SNMP managers access to MIB objects in the switch’s SNMP agent. |
| Restrictions | Only administrator-level users can issue this command.  |

Example Usage:

To delete the SNMP community string “dlink”:

---

**DES-3226L:4# delete snmp community dlink**  
**Command: delete snmp community dlink**

**Success.**

**DES-3226L:4#**

## **show snmp community**

|              |   |
|--------------|---|
| Purpose      | Used to display SNMP community strings configured on the Switch.  |
| Syntax       | <b>show snmp community</b><br>{<community_string 33>}   |
| Description  | The show snmp community command is used to display SNMP community strings that are configured on the switch.  |
| Parameters   | <community_string 33> – An alphanumeric string of up to 33 characters that is used to identify members of an SNMP community. This string is used like a password to give remote SNMP managers access to MIB objects in the switch's SNMP agent. |
| Restrictions | none  |

Example Usage:

To display the currently entered SNMP community strings:

**DES-3226L:4# show snmp community**  
**Command: show snmp community**

**SNMP Community Table**

| Community Name | View Name     | Access Right |
|----------------|---------------|--------------|
| dlink          | ReadView      | read_write   |
| private        | CommunityView | read_write   |
| public         | CommunityView | read_only    |

Total Entries: 3

DES-3226L:4#

### config snmp engineID

|              |  |
|--------------|--|
| Purpose      | Used to configure a name for the SNMP engine on the switch.  |
| Syntax       | <b>config snmp engineID &lt;snmp_engineID&gt;</b>  |
| Description  | The config snmp engineID command configures a name for the SNMP engine on the switch.                            |
| Parameters   | <snmp_engineID> – An alphanumeric octet string type that will be used to identify the SNMP engine on the switch. |
| Restrictions | Only administrator-level users can issue this command.   |

#### Example Usage:

To give the SNMP agent on the switch the name “0035636666”:

```
DES-3226L:4# config snmp engineID 0035636666
Command: config snmp engineID 0035636666

Success.
```

DES-3226L:4#

### **show snmp engineID**

|              |  |
|--------------|--|
| Purpose      | Used to display the identification of the SNMP engine on the switch.   |
| Syntax       | <b>show snmp engineID</b>  |
| Description  | The show snmp engineID command displays the identification of the SNMP engine on the switch. The default value is suggested in RFC2271. The very first bit is 1, and the first four octets are set to the binary equivalent of the agent's SNMP management private enterprise number as assigned by IANA, D_Link is 171. The fifth octet is 03 to indicates the rest is the MAC address of this device. The 6 <sup>th</sup> -11 <sup>th</sup> octets is MAC address. |
| Parameters   | none   |
| Restrictions | none.  |

#### Example Usage:

To display the current name of the SNMP engine on the switch:

```
DES-3226L:4# show snmp engineID
Command: show snmp engineID

SNMP Engine ID : 0035636666

DES-3226L:4#
```



**create snmp group**

|             |   |
|-------------|---|
| Purpose     | Used to create a new SNMP group, or a table that maps SNMP users to SNMP views.   |
| Syntax      | <b>create snmp group &lt;groupname 32&gt;<br/>[v1   v2c   v3<br/>[noauth_nopriv   auth_nopriv   auth_priv]]<br/>{read_view &lt;view_name 32&gt;   notify_view<br/>&lt;view_name 32&gt;   notify_view<br/>&lt;view_name 32&gt;}</b>  |
| Description | The create snmp group command creates a new SNMP group, or a table that maps SNMP users to SNMP views.  |
| Parameters  | <p>&lt;groupname 32&gt; – An alphanumeric name of up to 32 characters that will identify the SNMP group the new SNMP user will be associated with.</p> <p>v1 – Specifies that SNMP version 1 will be used. The Simple Network Management Protocol (SNMP), version 1, is a network management protocol that provides a means to monitor and control network devices.</p> <p>v2c – Specifies that SNMP version 2c will be used. The SNMP v2c supports both centralized and distributed network management strategies. It includes improvements in the Structure of Management Information (SMI) and adds some security features.</p> <p>v3 – Specifies that the SNMP version 3 will</p> |

be used. SNMP v3 provides secure access to devices through a combination of authentication and encrypting packets over the network. SNMP v3 adds:

- Message integrity – ensures that packets have not been tampered with in transit.
- Authentication – determines that an SNMP message is from a valid source.
- Encryption – scrambles the contents of messages to prevent it being seen by an unauthorized source.

noauth\_nopriv – Specifies that there will be no authorization and no encryption of packets sent between the switch and a remote SNMP manager.

auth\_nopriv – Specifies that authorization will be required, but there will be no encryption of packets sent between the switch and a remote SNMP manager.

auth\_priv – Specifies that authorization will be required, and that packets sent between the switch and a remote SNMP manager will be encrypted.

read\_view – Specifies that the SNMP group being created can request SNMP messages.

<view\_name 32> – An alphanumeric string of up to 32 characters that is used to identify the group of MIB objects that a remote SNMP manager is allowed to access on the switch.

notify\_view – Specifies that the SNMP group being created can receive SNMP trap messages generated by the switch's SNMP agent.

Restrictions Only administrator-level users can issue this command.

Example Usage:

To display the list of trust hosts:

```
DES-3226L:4# create snmp group sg1 v3 noauth_nopriv
read_view v1 write_view v1 notify_view v1
Command: create snmp group sg1 v3 noauth_nopriv
read_view v1 write_view v1 notify_view v1
```

Success.

```
DES-3226L:4#
```

## delete snmp group

|             |  |
|-------------|--|
| Purpose     | Used to remove an SNMP group from the switch.                                  |
| Syntax      | <b>delete snmp group &lt;groupname&gt;</b>                                     |
| Description | The delete snmp group command is used to remove an SNMP group from the switch. |

**delete snmp group**

|              |   |
|--------------|---|
| Parameters   | <groupname 32> – An alphanumeric name of up to 32 characters that will identify the SNMP group the new SNMP user will be associated with. |
| Restrictions | Only administrator-level users can issue this command.  |

## Example Usage:

To delete the SNMP group named “sg1”:

```
DES-3226L:4# delete snmp group sg1
Command: delete snmp group sg1
```

```
Success.
```

```
DES-3226L:4#
```

**create snmp host**

|             |   |
|-------------|---|
| Purpose     | Used to create a recipient of SNMP traps generated by the switch's SNMP agent.  |
| Syntax      | <b>create snmp host &lt;ipaddr&gt; [v1 v2c v3<br/>[noauth_nopriv auth_nopriv auth_priv]<br/>&lt;auth_string 32&gt;]</b> |
| Description | The create snmp host command creates a recipient of SNMP traps generated by the switch's SNMP agent.                    |
| Parameters  | <ipaddr> – The IP address of the remote management station that will serve as the                                       |

## **create snmp host**

SNMP host for the switch.

v1 – Specifies that SNMP version 1 will be used. The Simple Network Management Protocol (SNMP), version 1, is a network management protocol that provides a means to monitor and control network devices.

v2c – Specifies that SNMP version 2c will be used. The SNMP v2c supports both centralized and distributed network management strategies. It includes improvements in the Structure of Management Information (SMI) and adds some security features.

v3 – Specifies that the SNMP version 3 will be used. SNMP v3 provides secure access to devices through a combination of authentication and encrypting packets over the network. SNMP v3 adds:

- Message integrity – ensures that packets have not been tampered with in transit.
- Authentication – determines that an SNMP message is from a valid source.
- Encryption – scrambles the contents of messages to prevent it being seen by an unauthorized source.

## **create snmp host**

noauth\_nopriv – Specifies that there will be no authorization and no encryption of packets sent between the switch and a remote SNMP manager.

auth\_nopriv – Specifies that authorization will be required, but there will be no encryption of packets sent between the switch and a remote SNMP manager.

auth\_priv – Specifies that authorization will be required, and that packets sent between the switch and a remote SNMP manager will be encrypted.

<auth\_string 32> – An alphanumeric string used to authorize a remote SNMP manager to access the switch's SNMP agent.

**Restrictions**      Only administrator-level users can issue this command.

Example Usage:

To create an SNMP host to receive SNMP messages:

```
DES-3226L:4# create snmp host 10.48.74.100 v3 auth_priv
public
Command: create snmp host 10.48.74.100 v3 auth_priv public
Success.
DES-3226L:4#
```

## **delete snmp host**

|              |   |
|--------------|---|
| Purpose      | Used to remove a recipient of SNMP traps generated by the switch's SNMP agent.  |
| Syntax       | <b>delete snmp host &lt;ipaddr&gt;</b>  |
| Description  | The delete snmp host command deletes a recipient of SNMP traps generated by the switch's SNMP agent.                  |
| Parameters   | <ipaddr> – The IP address of a remote SNMP manager that will receive SNMP traps generated by the switch's SNMP agent. |
| Restrictions | Only administrator-level users can issue this command.  |

### Example Usage:

To delete an SNMP host entry:

```
DES-3226L:4# delete snmp host 10.48.74.100
Command: delete snmp host 10.48.74.100

Success.

DES-3226L:4#
```

## **show snmp host**

|         |   |
|---------|---|
| Purpose | Used to display the recipient of SNMP traps generated by the switch's SNMP agent. |
|---------|---|

**show snmp host**

|              |   |
|--------------|---|
| Syntax       | <b>show snmp host {&lt;ipaddr&gt;}</b>  |
| Description  | The show snmp host command is used to display the IP addresses and configuration information of remote SNMP managers that are designated as recipients of SNMP traps that are generated by the Switch's SNMP agent. |
| Parameters   | <ipaddr> – The IP address of a remote SNMP manager that will receive SNMP traps generated by the Switch's SNMP agent.   |
| Restrictions | none.   |

## Example Usage:

To display the currently configured SNMP hosts on the switch:

```
DES-3226L:4# show snmp host
Command: show snmp host

SNMP Host Table
Host IP Address SNMP Version  Community Name
-----
10.48.76.23      V2c private
10.48.74.100    V3  authpriv  public

Success.

DES-3226L:4#
```



**enable rmon**

|              |   |
|--------------|---|
| Purpose      | Used to enable RMON on the switch.  |
| Syntax       | <b>enable rmon</b>  |
| Description  | This command is used, in conjunction with the disable RMON command below, to enable and disable remote monitoring (RMON) on the switch. |
| Parameters   | none.   |
| Restrictions | Only administrator-level users can issue this command.  |

## Example Usage:

To enable RMON:

```
DES-3226L:4#enable rmon
Command: enable rmon

Success.

DES-3226L:4#
```

**disable rmon**

|             |  |
|-------------|--|
| Purpose     | Used to disable RMON on the switch.  |
| Syntax      | <b>disable rmon</b>  |
| Description | This command is used, in conjunction with the enable rmon command above, to enable and disable remote monitoring (RMON) on |

## **disable rmon**

the Switch.

Parameters none.

Restrictions Only administrator-level users can issue this command.

Example Usage:

To disable RMON:

```
DES-3226L:4#disable rmon  
Command: disable rmon
```

```
Success.
```

```
DES-3226L:4#
```

## **enable snmp traps**

Purpose Used to enable SNMP trap support.

Syntax **enable snmp traps**

Description This command is used to enable SNMP trap support on the Switch.

Parameters none.

Restrictions Only administrator-level users can issue this command.

Example Usage:

To enable SNMP trap support:

```
DES-3226L:4#enable snmp traps
Command: enable snmp traps
```

```
Success.
```

```
DES-3226L:4#
```

## **disable snmp traps**

|              |  |
|--------------|--|
| Purpose      | Used to disable SNMP trap support on the switch.                 |
| Syntax       | <b>enable snmp traps</b>   |
| Description  | This command is used to disable SNMP trap support on the Switch. |
| Parameters   | none.  |
| Restrictions | Only administrator-level users can issue this command.           |

Example Usage:

To prevent SNMP traps from being sent from the Switch:

```
DES-3226L:4#disable snmp traps
Command: disable snmp traps
```

```
Success.
```

```
DES-3226L:4#
```

## **enable snmp authenticate traps**

**enable snmp authenticate traps**

|              |  |
|--------------|--|
| Purpose      | Used to enable SNMP authentication trap support.                               |
| Syntax       | <b>enable snmp authenticate traps</b>  |
| Description  | This command is used to enable SNMP authentication trap support on the Switch. |
| Parameters   | none.  |
| Restrictions | Only administrator-level users can issue this command.                         |

Example Usage:

To turn on SNMP authentication trap support:

```
DES-3226L:4#enable snmp authenticate traps  
Command: enable snmp authenticate traps
```

```
Success.
```

```
DES-3226L:4#
```

**disable snmp authenticate traps**

|             |  |
|-------------|--|
| Purpose     | Used to disable SNMP authentication trap support.                          |
| Syntax      | <b>disable snmp authenticate traps</b>                                     |
| Description | This command is used to disable SNMP authentication support on the Switch. |

**disable snmp authenticate traps**

Parameters none.

Restrictions Only administrator-level users can issue this command.

Example Usage:

To turn off SNMP authentication trap support:

**DES-3226L:4#disable snmp authenticate traps**

**Command: disable snmp authenticate traps**

**Success.**

**DES-3226L:4#**

# 7

## UTILITY COMMANDS

The download/upload commands in the Command Line Interface (CLI) are listed (along with the appropriate parameters) in the following table.

| Command  | Parameters  |
|----------|---|
| download | [firmware <ipaddr> <path_filename><br>configuration <ipaddr><path_filename><br>{increment}] |
| upload   | [configuration   log] <ipaddr><br><path_filename>   |
| ping     | <ipaddr> {times <value 0-255>} {timeout<br><sec 1-99>}                                      |

Each command is listed, in detail, in the following sections.

### download

**Purpose** Used to download and install new firmware or a switch configuration file from a TFTP server.

**Syntax** **download [ firmware <ipaddr>  
<path\_filename> | configuration <ipaddr>  
<path\_filename> {increment}]**

**download**

|              |   |
|--------------|---|
| Description  | This command is used to download a new firmware or a switch configuration file from a TFTP server.  |
| Parameters   | <p>firmware – Download and install new firmware on the switch from a TFTP server.</p> <p>configuration – Download a switch configuration file from a TFTP server.</p> <p>&lt;ipaddr&gt; – The IP address of the TFTP server.</p> <p>&lt;path_filename&gt; – The DOS path and filename of the firmware or switch configuration file on the TFTP server. For example, C:\3224tgr.had.</p> <p>unit [all &lt;unitid&gt;] – All specifies all units (switches), &lt;unitid&gt; is the unit id of the switch that will receive the download.</p> <p>increment – Allows the download of a partial switch configuration file. This allows a file to be downloaded that will change only the switch parameters explicitly stated in the configuration file. All other switch parameters will remain unchanged.</p> |
| Restrictions | The TFTP server must be on the same IP subnet as the switch. Only administrator-level users can issue this command.   |

Example Usage:

```
DES-3226L:4#download configuration 10.48.74.121
c:\cfg\setting.txt
Command: download configuration 10.48.74.121
c:\cfg\setting.txt

Connecting to server..... Done.
Download configuration..... Done.
DES-3226L:4#
```

## upload

|             |  |
|-------------|--|
| Purpose     | Used to upload the current switch settings or the switch history log to a TFTP server.   |
| Syntax      | <b>upload [configuration   log] &lt;ipaddr&gt;<br/>&lt;path_filename&gt;</b>   |
| Description | This command is used to upload either the switch's current settings or the switch's history log to a TFTP server.  |
| Parameters  | <p>configuration – Specifies that the switch's current settings will be uploaded to the TFTP server.</p> <p>log – Specifies that the switch history log will be uploaded to the TFTP server.</p> <p>&lt;ipaddr&gt; – The IP address of the TFTP server. The TFTP server must be on the same IP subnet as the switch.</p> <p>&lt;path_filename&gt; – Specifies the location of the switch configuration file on the TFTP server. This file will be replaced by the uploaded file from the switch.</p> |



**upload**

**Restrictions**            The TFTP server must be on the same IP subnet as the switch. Only administrator-level users can issue this command.

Example Usage:

To upload a configuration file:

```
DES-3226L:4#upload configuration 10.48.74.121
c:\cfg\log.txt
Command: upload configuration 10.48.74.121
c:\cfg\log.txt

Connecting to server..... Done.
Upload configuration.....Done.
DES-3226L:4#
```

**ping**

|                    |  |
|--------------------|--|
| <b>Purpose</b>     | Used to test the connectivity between network devices.   |
| <b>Syntax</b>      | <b>ping &lt;ipaddr&gt; {times &lt;value&gt;} {timeout &lt;sec&gt;}</b>   |
| <b>Description</b> | This command sends Internet Control Message Protocol (ICMP) echo messages to a remote IP address. The remote IP address will then “echo” or return the message. This is used to confirm connectivity between the switch and the remote device. |
| <b>Parameters</b>  | <ipaddr> – The IP address of the remote device.  |

## ping

times <value> – The number of individual ICMP echo messages to be sent. A value of 0 will send an infinite ICMP echo messages. The maximum value is 255. The default is 0.

timeout <sec> – Defines the time-out period while waiting for a response from the remote device. A value of 1 to 99 seconds can be specified. The default is 1 second.

Restrictions      Only administrator-level users can issue this command.

### Example Usage:

To send ICMP echo message to “10.48.74.121” for four times:

```
DES-3226L:4#ping 10.48.74.121 times 4
Command: ping 10.48.74.121
Reply from 10.48.74.121, time<10ms
Reply from 10.48.74.121, time<10ms
Reply from 10.48.74.121, time<10ms
Reply from 10.48.74.121, time<10ms
Ping Statistics for 10.48.74.121
Packets: Sent =4, Received =4, Lost =0
DES-3226L:4#
```

## 8

---

## *NETWORK MONITORING COMMANDS*

The network monitoring commands in the Command Line Interface (CLI) are listed (along with the appropriate parameters) in the following table.

| <b>Command</b>            | <b>Parameters</b>   |
|---------------------------|---|
| <b>show packet ports</b>  | <portlist>  |
| <b>show error ports</b>   | <portlist>  |
| <b>show utilization</b>   |   |
| <b>clear counters</b>     | ports <portlist>  |
| <b>clear log</b>          |   |
| <b>show log</b>           | index <value>   |
| <b>enable syslog</b>      |   |
| <b>disable syslog</b>     |   |
| <b>show syslog</b>        |   |
| <b>config syslog host</b> | config syslog host [all <index 1-4>] {severity [informational warning all]<br>facility[local0 local1 local2 local3 local4 local5 local6 local7] udp_port<int> ipaddress <ipaddr> state[enable disable]} |

| Command            | Parameters  |
|--------------------|---|
| create syslog host | config syslog host [all <index 1-4>] {severity [informational warning all]  facility[local0 local1 local2 local3 local4 local5 local6 local7] udp_port<int>  ipaddress <ipaddr>  state[enable disable]} |
| delete syslog host | [<index 1-4>  all]  |
| show syslog host   | [index 1-4]   |

Each command is listed, in detail, in the following sections.

### show packet ports

|              |   |
|--------------|---|
| Purpose      | Used to display statistics about the packets sent and received by the switch.   |
| Syntax       | <b>show packet ports &lt;portlist&gt;</b>   |
| Description  | This command is used to display statistics about packets sent and received by ports specified in the port list.   |
| Parameters   | <portlist> – specifies a range of ports to be configured. The port list is specified by listing the beginning port number and the highest port number of the range. The beginning and end of the port list range are separated by a dash. For example, 3 would specify port 3. 4 specifies port 4. 3-4 specifies all of the ports between port 3 and port 4 – in numerical order. |
| Restrictions | none.   |

Example Usage:

To display the packets analysis for port 7:

```
DES-3226L:4# show packet port 7
```

Port number : 7

| Frame Size   | Frame Counts | Frames sec | Frame Type | Total  | Total sec |
|--------------|--------------|------------|------------|--------|-----------|
| 64           | 3275         | 10         | RX Bytes   | 408973 | 1657      |
| 65-127       | 755          | 10         | RX Frames  | 4395   | 19        |
| 128-255      | 316          | 1          |            |        |           |
| 256-511      | 145          | 0          | TX Bytes   | 7918   | 178       |
| 512-1023     | 15           | 0          | TX Frames  | 111    | 2         |
| 1024-1518    | 0            | 0          |            |        |           |
| Unicast RX   | 152          | 1          |            |        |           |
| Multicast RX | 557          | 2          |            |        |           |
| Broadcast RX | 3686         | 16         |            |        |           |

### show error ports

|             |  |
|-------------|--|
| Purpose     | Used to display the error statistics for a range of ports.   |
| Syntax      | show error ports <portlist>  |
| Description | This command will display all of the packet error statistics collected and logged by the switch for a given port list.   |
| Parameters  | <portlist> - Specifies a range of ports to be configured. The port list is specified by listing the beginning port number and the highest port number of the range. The beginning and end of the port list range are |

**show error ports**

separated by a dash. For example, 3 would specify port 3. 4 specifies port 4. 3-4 specifies all of the ports between port 3 and port 4 – in numerical order.

Restrictions none.

Example Usage:

To display the errors of the port 3:

**DES-3226L:4# show errors port 3**

|                  | RX Frames<br>----- |                            | TX Frames<br>----- |
|------------------|--------------------|----------------------------|--------------------|
| <b>CRC Error</b> | <b>0</b>           | <b>Excessive Deferral</b>  | <b>0</b>           |
| <b>Undersize</b> | <b>0</b>           | <b>CRC Error</b>           | <b>0</b>           |
| <b>Oversize</b>  | <b>0</b>           | <b>Late Collision</b>      | <b>0</b>           |
| <b>Fragment</b>  | <b>0</b>           | <b>Excessive Collision</b> | <b>0</b>           |
| <b>Jabber</b>    | <b>0</b>           | <b>Single Collission</b>   | <b>0</b>           |
| <b>Drop Pkts</b> | <b>0</b>           | <b>Collision</b>           | <b>0</b>           |

**show utilization**

Purpose Used to display real-time port utilization statistics.

Syntax **show utilization**

Description This command will display the real-time port utilization statistics for the switch.

Parameters none.

**show utilization**

Restrictions none.

Example Usage:

To display the port utilization statistics:

DES-3226L:4# show utilization

| Port | TX sec | RX sec | Util | Port | TX sec | RX sec | Util |
|------|--------|--------|------|------|--------|--------|------|
| ---  | -----  | -----  | ---  | ---  | -----  | -----  | ---  |
| 1    | 0      | 0      | 0    | 22   | 0      | 0      | 0    |
| 2    | 0      | 0      | 0    | 23   | 0      | 0      | 0    |
| 3    | 0      | 0      | 0    | 24   | 0      | 0      | 0    |
| 4    | 0      | 0      | 0    |      |        |        |      |
| 5    | 0      | 0      | 0    |      |        |        |      |
| 6    | 0      | 0      | 0    |      |        |        |      |
| 7    | 0      | 0      | 0    |      |        |        |      |
| 8    | 0      | 0      | 0    |      |        |        |      |
| 9    | 0      | 0      | 0    |      |        |        |      |
| 10   | 0      | 0      | 0    |      |        |        |      |
| 11   | 0      | 0      | 0    |      |        |        |      |
| 12   | 0      | 0      | 0    |      |        |        |      |
| 13   | 0      | 0      | 0    |      |        |        |      |
| 14   | 0      | 0      | 0    |      |        |        |      |
| 15   | 0      | 0      | 0    |      |        |        |      |
| 16   | 0      | 0      | 0    |      |        |        |      |
| 17   | 0      | 0      | 0    |      |        |        |      |
| 18   | 0      | 0      | 0    |      |        |        |      |
| 19   | 0      | 0      | 0    |      |        |        |      |
| 20   | 0      | 0      | 0    |      |        |        |      |
| 21   | 0      | 0      | 0    |      |        |        |      |

**clear counters**

|              |   |
|--------------|---|
| Purpose      | Used to clear the switch's statistics counters.   |
| Syntax       | <b>clear counters {ports &lt;portlist&gt;}</b>  |
| Description  | This command will clear the counters used by the switch to compile statistics.  |
| Parameters   | <portlist> – Specifies a range of ports to be configured. The port list is specified by listing the beginning port number and the highest port number of the range. The beginning and end of the port list range are separated by a dash. For example, 3 would specify port 3. 4 specifies port 4. 3-4 specifies all of the ports between port 3 and port 4 – in numerical order. |
| Restrictions | Only administrator-level users can issue this command.  |

## Example Usage:

To clear the counters:

```
DES-3226L:4#clear counters ports 7-9  
Command: clear counters ports 7-9
```

```
Success.
```

```
DES-3226L:4#
```

**clear log**



**clear log**

|              |  |
|--------------|--|
| Purpose      | Used to clear the switch's history log.                |
| Syntax       | <b>clear log</b>                                       |
| Description  | This command will clear the switch's history log.      |
| Parameters   | none.  |
| Restrictions | Only administrator-level users can issue this command. |

## Example Usage:

To clear the log information:

```
DES-3226L:4#clear log
Command: clear log

Success.

DES-3226L:4#
```

**show log**

|             |   |
|-------------|---|
| Purpose     | Used to display the switch history log.   |
| Syntax      | <b>show log {index &lt;value&gt;}</b>   |
| Description | This command will display the contents of the switch's history log.             |
| Parameters  | index <value> – The show log command will display the history log until the log |

**show log**

number reaches this value.

Restrictions none.

Example Usage:

To display the switch history log:

```
DES-3226L:4# show log
```

| Index | Time                | Log Text  |
|-------|---------------------|---|
| 8     | 2003/09/18 09:03:45 | Successful login through Console<br>(Username: Anonymous) |
| 7     | 2003/09/18 09:03:30 | Logout through Console<br>(Username: Anonymous)           |
| 6     | 2003/09/18 09:03:28 | Successful login through Console<br>(Username: Anonymous) |
| 5     | 2003/09/18 09:03:26 | System started up   |
| 4     | 2003/09/18 16:13:39 | Port 1 link down  |
| 3     | 2003/09/18 16:13:38 | System started up   |
| 2     | 2003/09/18 16:13:36 | Spanning Tree Protocol is disabled                        |
| 1     | 2003/09/18 16:13:35 | Port 9 link up, 100Mbps FULL duplex                       |

```
DES-3226L:4#
```

## **enable syslog**

|              |  |
|--------------|--|
| Purpose      | Used to enable the system log to be sent to a remote host.                           |
| Syntax       | <b>enable syslog</b>   |
| Description  | The <b>enable syslog</b> command enables the system log to be sent to a remote host. |
| Parameters   | None.  |
| Restrictions | Only administrator-level users can issue this command.                               |

Example usage:

To enable the syslog function on the switch:

```
DES-3226L:4#enable syslog
```

```
Command: enable syslog
```

```
Success.
```

```
DES-3226L:4#
```

## **disable syslog**

|              |   |
|--------------|---|
| Purpose      | Used to enable the system log to be sent to a remote host.                            |
| Syntax       | <b>disable syslog</b>   |
| Description  | The <b>disable syslog</b> command enables the system log to be sent to a remote host. |
| Parameters   | None.   |
| Restrictions | Only administrator-level users can issue this command.                                |

Example usage:

To disable the syslog function on the switch:

```
DES-3226L:4#disable syslog
```

```
Command: disable syslog
```

```
Success.
```

```
DES-3226L:4#
```

## **show syslog**

|              |   |
|--------------|---|
| Purpose      | Used to display the syslog protocol status as enabled or disabled.                |
| Syntax       | <b>show syslog</b>  |
| Description  | The <b>show syslog</b> command displays the syslog status as enabled or disabled. |
| Parameters   | None.   |
| Restrictions | None.   |

Example usage:

To display the current status of the syslog function:

```
DES-3226L:4#show syslog
Command: show syslog

Syslog Global State: Enabled

DES-3226L:4#
```

## create syslog host

| Purpose     | Used to create a new syslog host.  |           |          |      |  |   |                               |   |   |   |                               |
|-------------|--|-----------|----------|------|--|---|-------------------------------|---|---|---|-------------------------------|
| Syntax      | <b>config syslog host</b> [ <b>all</b>   <index 1-4>] { <b>severity</b> [ <b>informational</b>   <b>warning</b>   <b>all</b> ]   <b>facility</b> [ <b>local0</b>   <b>local1</b>   <b>local2</b>   <b>local3</b>   <b>local4</b>   <b>local5</b>   <b>local6</b>   <b>local7</b> ]   <b>udp_port</b> <int>   <b>ipaddress</b> <ipaddr>   <b>state</b> [ <b>enable</b>   <b>disable</b> ]   |           |          |      |  |   |                               |   |   |   |                               |
| Description | The <b>create syslog host</b> command is used to create a new syslog host.   |           |          |      |  |   |                               |   |   |   |                               |
| Parameters  | <p><b>all</b> – Specifies that the command will be applied to all hosts.</p> <p>&lt;index 1-4&gt; – Specifies that the command will be applied to an index of hosts. There are four available indexes, numbered 1 through 4.</p> <p><b>severity</b> – Severity level indicator. These are described in the following:</p> <p>Bold font indicates that the corresponding severity level is currently supported on the switch.</p> <table border="1"> <thead> <tr> <th>Numerical</th> <th>Severity</th> </tr> </thead> <tbody> <tr> <td>Code</td> <td></td> </tr> <tr> <td>0</td> <td>Emergency: system is unusable</td> </tr> <tr> <td>1</td> <td>Alert: action must be taken immediately</td> </tr> <tr> <td>2</td> <td>Critical: critical conditions</td> </tr> </tbody> </table> | Numerical | Severity | Code |  | 0 | Emergency: system is unusable | 1 | Alert: action must be taken immediately | 2 | Critical: critical conditions |
| Numerical   | Severity   |           |          |      |  |   |                               |   |   |   |                               |
| Code        |  |           |          |      |  |   |                               |   |   |   |                               |
| 0           | Emergency: system is unusable  |           |          |      |  |   |                               |   |   |   |                               |
| 1           | Alert: action must be taken immediately  |           |          |      |  |   |                               |   |   |   |                               |
| 2           | Critical: critical conditions  |           |          |      |  |   |                               |   |   |   |                               |

## create syslog host

- 3 Error: error conditions
- 4 Warning: warning conditions**
- 5 Notice: normal but significant condition
- 6 Informational: informational messages**
- 7 Debug: debug-level messages

informational – Specifies that informational messages will be sent to the remote host. This corresponds to number 6 from the list above.

warning – Specifies that warning messages will be sent to the remote host. This corresponds to number 4 from the list above.

all – Specifies that all of the currently supported syslog messages that are generated by the switch will be sent to the remote host.

facility – Some of the operating system daemons and processes have been assigned Facility values. Processes and daemons that have not been explicitly assigned a Facility may use any of the "local use" facilities or they may use the "user-level" Facility. Those Facilities that have been designated are shown in the following: Bold font indicates the facility values that the switch currently supports.

| Numerical | Facility |
|-----------|----------|
|-----------|----------|

**create syslog host**

## Code

|    |  |
|----|--|
| 0  | kernel messages                            |
| 1  | user-level messages                        |
| 2  | mail system                                |
| 3  | system daemons                             |
| 4  | security   authorization messages          |
| 5  | messages generated internally by<br>syslog |
| 6  | line printer subsystem                     |
| 7  | network news subsystem                     |
| 8  | UUCP subsystem                             |
| 9  | clock daemon                               |
| 10 | security   authorization messages          |
| 11 | FTP daemon                                 |
| 12 | NTP subsystem                              |
| 13 | log audit                                  |
| 14 | log alert                                  |
| 15 | clock daemon                               |



**create syslog host**

- |           |                             |
|-----------|-----------------------------|
| <b>16</b> | <b>local use 0 (local0)</b> |
| <b>17</b> | <b>local use 1 (local1)</b> |
| <b>18</b> | <b>local use 2 (local2)</b> |
| <b>19</b> | <b>local use 3 (local3)</b> |
| <b>20</b> | <b>local use 4 (local4)</b> |
| <b>21</b> | <b>local use 5 (local5)</b> |
| <b>22</b> | <b>local use 6 (local6)</b> |
| <b>23</b> | <b>local use 7 (local7)</b> |

local0 – Specifies that local use 0 messages will be sent to the remote host. This corresponds to number 16 from the list above.

local1 – Specifies that local use 1 messages will be sent to the remote host. This corresponds to number 17 from the list above.

local2 – Specifies that local use 2 messages will be sent to the remote host. This corresponds to number 18 from the list above.

local3 – Specifies that local use 3 messages will be sent to the remote host. This corresponds to number 19 from the list above.

local4 – Specifies that local use 4 messages will be sent to the remote host. This corresponds to number 20 from the list above.

## **create syslog host**

local5 – Specifies that local use 5 messages will be sent to the remote host. This corresponds to number 21 from the list above.

local6 – Specifies that local use 6 messages will be sent to the remote host. This corresponds to number 22 from the list above.

local7 – Specifies that local use 7 messages will be sent to the remote host. This corresponds to number 23 from the list above.

udp\_port <int> – Specifies the UDP port number that the syslog protocol will use to send messages to the remote host.

ipaddress <ipaddr> – Specifies the IP address of the remote host where syslog messages will be sent.

state [enabled | disabled] – Allows the sending of syslog messages to the remote host, specified above, to be enabled and disabled.

Restrictions      Only administrator-level users can issue this command.

Example usage:

To create syslog host:

**DES-3226L:4#create syslog host 1 severity all facility local0**  
**Command: create syslog host 1 severity all facility local0**

**Success.**

**DES-3226L:4#**

**config syslog host**

| Purpose     | Used to configure the syslog protocol to send system log data to a remote host.   |           |          |      |  |   |                               |   |   |
|-------------|---|-----------|----------|------|--|---|-------------------------------|---|---|
| Syntax      | <b>config syslog host [all   &lt;index 1-4&gt;] {severity [informational   warning   all]   facility [local0   local1   local2   local3   local4   local5   local6   local7]   udp_port &lt;int&gt;   ipaddress &lt;ipaddr&gt;   state [enabled   disabled]}</b>  |           |          |      |  |   |                               |   |   |
| Description | The <b>config syslog host</b> command is used to configure the syslog protocol to send system log information to a remote host.   |           |          |      |  |   |                               |   |   |
| Parameters  | <p>all – Specifies that the command will be applied to all hosts.</p> <p>&lt;index 1-4&gt; – Specifies that the command will be applied to an index of hosts. There are four available indexes, numbered 1 through 4.</p> <p>severity – Severity level indicator. These are described in the following:</p> <p>Bold font indicates that the corresponding severity level is currently supported on the switch.</p> <table border="0"> <thead> <tr> <th>Numerical</th> <th>Severity</th> </tr> </thead> <tbody> <tr> <td>Code</td> <td></td> </tr> <tr> <td>0</td> <td>Emergency: system is unusable</td> </tr> <tr> <td>1</td> <td>Alert: action must be taken immediately</td> </tr> </tbody> </table> | Numerical | Severity | Code |  | 0 | Emergency: system is unusable | 1 | Alert: action must be taken immediately |
| Numerical   | Severity  |           |          |      |  |   |                               |   |   |
| Code        |   |           |          |      |  |   |                               |   |   |
| 0           | Emergency: system is unusable   |           |          |      |  |   |                               |   |   |
| 1           | Alert: action must be taken immediately   |           |          |      |  |   |                               |   |   |

## **config syslog host**

- 2 Critical: critical conditions
- 3 Error: error conditions
- 4 Warning: warning conditions**
- 5 Notice: normal but significant condition
- 6 Informational: informational messages**
- 7 Debug: debug-level messages

informational – Specifies that informational messages will be sent to the remote host. This corresponds to number 6 from the list above.

warning – Specifies that warning messages will be sent to the remote host. This corresponds to number 4 from the list above.

all – Specifies that all of the currently supported syslog messages that are generated by the switch will be sent to the remote host.

facility – Some of the operating system daemons and processes have been assigned Facility values. Processes and daemons that have not been explicitly assigned a Facility may use any of the "local use" facilities or they may use the "user-level" Facility. Those Facilities that have been designated are shown in the following: Bold font indicates that the facility values the switch currently supports.

**config syslog host**

| Numerical<br>Code | Facility                                   |
|-------------------|--|
| 0                 | kernel messages                            |
| 1                 | user-level messages                        |
| 2                 | mail system                                |
| 3                 | system daemons                             |
| 4                 | security   authorization messages          |
| 5                 | messages generated internally by<br>syslog |
| 6                 | line printer subsystem                     |
| 7                 | network news subsystem                     |
| 8                 | UUCP subsystem                             |
| 9                 | clock daemon                               |
| 10                | security   authorization messages          |
| 11                | FTP daemon                                 |
| 12                | NTP subsystem                              |
| 13                | log audit                                  |
| 14                | log alert                                  |

**config syslog host**

- 15 clock daemon
- 16 local use 0 (local0)**
- 17 local use 1 (local1)**
- 18 local use 2 (local2)**
- 19 local use 3 (local3)**
- 20 local use 4 (local4)**
- 21 local use 5 (local5)**
- 22 local use 6 (local6)**
- 23 local use 7 (local7)**

local0 – Specifies that local use 0 messages will be sent to the remote host. This corresponds to number 16 from the list above.

local1 – Specifies that local use 1 messages will be sent to the remote host. This corresponds to number 17 from the list above.

local2 – Specifies that local use 2 messages will be sent to the remote host. This corresponds to number 18 from the list above.

local3 – Specifies that local use 3 messages will be sent to the remote host. This corresponds to number 19 from the list above.

local4 – Specifies that local use 4 messages

**config syslog host**

will be sent to the remote host. This corresponds to number 20 from the list above.

local5 – Specifies that local use 5 messages will be sent to the remote host. This corresponds to number 21 from the list above.

local6 – Specifies that local use 6 messages will be sent to the remote host. This corresponds to number 22 from the list above.

local7 – Specifies that local use 7 messages will be sent to the remote host. This corresponds to number 23 from the list above.

udp\_port <int> – Specifies the UDP port number that the syslog protocol will use to send messages to the remote host.

ipaddress <ipaddr> – Specifies the IP address of the remote host where syslog messages will be sent.

state [enabled | disabled] – Allows the sending of syslog messages to the remote host, specified above, to be enabled and disabled.

Restrictions    Only administrator-level users can issue this command.

Example usage:

To configure a syslog host:



```
DES-3226L:4#config syslog host all severity all facility local0
```

```
Command: config syslog host all severity all facility local0
```

```
Success.
```

```
DES-3226L:4#
```

## **delete syslog host**

|              |  |
|--------------|--|
| Purpose      | Used to remove a syslog host, that has been previously configured, from the switch.  |
| Syntax       | <b>delete syslog host [&lt;index 1-4&gt;   all]</b>  |
| Description  | The <b>delete syslog host</b> command is used to remove a syslog host that has been previously configured from the switch.   |
| Parameters   | <index 1-4> – Specifies that the command will be applied to an index of hosts. There are four available indexes, numbered 1 through 4.<br><br>all – Specifies that the command will be applied to all hosts. |
| Restrictions | Only administrator-level users can issue this command.   |

Example usage:

To delete a previously configured syslog host:

DES-3226L:4#delete syslog host 4

Command: delete syslog host 4

Success.

DES-3226L:4#

## show syslog host

|              |  |
|--------------|--|
| Purpose      | Used to display the syslog hosts currently configured on the switch.   |
| Syntax       | <b>show syslog host</b> {<index 1-4>}  |
| Description  | The <b>show syslog host</b> command is used to display the syslog hosts that are currently configured on the switch.                   |
| Parameters   | <index 1-4> – Specifies that the command will be applied to an index of hosts. There are four available indexes, numbered 1 through 4. |
| Restrictions | None.  |

Example usage:

To show Syslog host information:

**DES-3226L:4#show syslog host**

**Command: show syslog host**

**Syslog Global State: Disabled**

| <b>Host Id</b> | <b>Host IP Address</b> | <b>Severity</b> | <b>Facility</b> | <b>UDP port</b> | <b>Status</b> |
|----------------|------------------------|-----------------|-----------------|-----------------|---------------|
| 1              | 10.1.1.2               | All             | Local0          | 514             | Disabled      |
| 2              | 10.40.2.3              | All             | Local0          | 514             | Disabled      |
| 3              | 10.21.13.1             | All             | Local0          | 514             | Disabled      |

**Total Entries : 3**

**DES-3226L:4#**

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---

# ***SPANNING TREE COMMANDS***

The spanning tree commands in the Command Line Interface (CLI) are listed (along with the appropriate parameters) in the following table.

| <b>Command</b>          | <b>Parameters</b>  |
|-------------------------|--|
| <b>config stp</b>       | maxage <value 6-40><br>hellotime <value 1-10><br>forwarddelay <value 4-30><br>priority <value 1-65535><br>fbpdu [enabled disabled] |
| <b>config stp ports</b> | <portlist><br>cost   [auto <value 1-65535>]<br>priority <value 0-255><br>state [enable disable]                                    |
| <b>enable stp</b>       |  |
| <b>disable stp</b>      |  |
| <b>show stp</b>         |  |
| <b>show stp ports</b>   | <portlist>   |

Each command is listed, in detail, in the following sections.

**config stp**

|             |   |
|-------------|---|
| Purpose     | Used to setup STP on the switch.  |
| Syntax      | <b>config stp {maxage &lt;value 6-40&gt; hellotime &lt;value 1-10&gt; forwarddelay &lt;value 4-30&gt; priority &lt;value 0-65535&gt; fbpdu [enable disable]}</b>  |
| Description | This command is used to setup the Spanning Tree Protocol (STP) for the entire switch.   |
| Parameters  | <p>maxage &lt;value 6-40&gt; – The maximum amount of time (in seconds) that the switch will wait to receive a BPDU packet before reconfiguring STP. The default is 20 seconds.</p> <p>hellotime &lt;value 1-10&gt; – The time interval between transmission of configuration messages by the root device. The default is 2 seconds.</p> <p>forwarddelay &lt;value 4-30&gt; – The maximum amount of time (in seconds) that the root device will wait before changing states. The default is 15 seconds.</p> <p>priority &lt;value 0-65535&gt; – A numerical value between 0 and 65535 that is used in determining the root device, root port, and designated port. The device with the highest priority becomes the root device. The lower the numerical value, the higher the priority. The default is 32,768.</p> <p>fbpdu [enabled disabled] – Allows the</p> |

**config stp**

forwarding of STP BPDU packets from other network devices when STP is disabled on the switch. The default is enabled.

**Restrictions** Only administrator-level users can issue this command.

**Example Usage:**

To set maxage to 18 seconds and hellotime to 4 seconds:

```
DES-3226L:4#config stp maxage 18 hellotime 4
```

```
Command: config stp maxage 18 hellotime 4
```

```
Success.
```

```
DES-3226L:4#
```

**config stp ports**

|                    |  |
|--------------------|--|
| <b>Purpose</b>     | Used to setup STP on the port level.   |
| <b>Syntax</b>      | <b>config stp ports &lt;portlist&gt; { cost [auto   &lt;value 1-65535&gt;]   [priority &lt;value 1-255&gt;] state [enable   disable]</b>   |
| <b>Description</b> | This command is used to create and configure STP for a group of ports.   |
| <b>Parameters</b>  | cost [auto   <value>] – This defines a metric that indicates the relative cost of forwarding packets to the specified port list. The default cost for a 1000 Mbps port is 4, a 100 Mbps port is 19, and for a 10 |

**config stp ports**

Mbps port the default cost is 100.

priority <value> – A numeric value between 0 and 255 that is used in determining the root and designated port in an STP port list. The default is 128, with 0 indicating the highest priority.

<portlist> – Specifies a range of ports to be configured. The port list is specified by listing the beginning port number and the highest port number of the range. The beginning and end of the port list range are separated by a dash. For example, 3 would specify port 3. 4 specifies port 4. 3-4 specifies all of the ports between port 3 and port 4 – in numerical order.

state [enable|disable] – Allows STP to be enabled or disabled for the ports specified in the port list. The default is disabled.

Restrictions      Only administrator-level users can issue this command.

**Example Usage:**

To set the path cost 19, the priority 15, and the state enabled of the ports 1-5:

```
DES-3226L:4#config stp ports 1-5 cost 19 priority 15
state enabled
Command: config stp ports 1-5 cost 19 priority 15 state
enabled
Success.
```

DES-3226L:4#

### **enable stp**

|              |  |
|--------------|--|
| Purpose      | Used to globally enable STP on the switch.   |
| Syntax       | <b>enable stp</b>  |
| Description  | This command allows the Spanning Tree Protocol to be globally enabled on the switch. |
| Parameters   | none.  |
| Restrictions | Only administrator-level users can issue this command.                               |

Example Usage:

To enable STP on the switch:

```
DES-3226L:4#enable stp
```

```
Command: enable stp
```

```
Success.
```

```
DES-3226L:4#
```

### **disable stp**

|         |   |
|---------|---|
| Purpose | Used to globally disable STP on the switch. |
| Syntax  | <b>disable stp</b>                          |



**disable stp**

|              |   |
|--------------|---|
| Description  | This command allows the Spanning Tree Protocol to be globally disabled on the switch. |
| Parameters   | none.   |
| Restrictions | Only administrator-level users can issue this command.                                |

## Example Usage:

To disable STP on the switch:

```
DES-3226L:4#disable stp
Command: disable stp

Success.

DES-3226L:4#
```

**show stp**

|              |   |
|--------------|---|
| Purpose      | Used to display the switch's current STP configuration.       |
| Syntax       | <b>show stp</b>   |
| Description  | This command displays the switch's current STP configuration. |
| Parameters   | none  |
| Restrictions | none.   |

## Example Usage:

Status 1: STP enabled

```
DES-3226L:4#show stp
Command: show stp

STP Status          : Enabled
Max Age             : 18
Hello Time          : 4
Forward Delay       : 15
Priority            : 32768
Forwarding BPDU     : Enabled

Designated Root Bridge: 00-00-00-12-00-00
Root Priority        : 32768
Cost to Root        : 19
Root Port           : 33
Last Topology Change : 13sec
Topology Changes Count: 0
```

Status 2: STP Disabled

```
DES-3226L:4#show stp
Command: show stp

STP Status          : Disabled
Max Age             : 18
Hello Time          : 4
Forward Delay       : 15
Priority            : 32768
Forwarding BPDU     : Enabled

DES-3226L:4#
```

### **show stp ports**

|         |  |
|---------|--|
| Purpose | Used to display the switch's current per-port group STP configuration. |
|---------|--|

**show stp ports**

port group STP configuration.

## Syntax

**show stp ports <portlist>**

## Description

This command displays the switch's current per-port group STP configuration.

## Parameters

<portlist> – Specifies a range of ports to be configured. The port list is specified by listing the beginning port number and the highest port number of the range. The beginning and end of the port list range are separated by a dash. For example, 3 would specify port 3. 4 specifies port 4. 3-4 specifies all of the ports between port 3 and port 4 – in numerical order.

If no parameter is specified, the system will display all STP ports information.

## Restrictions

None

## Example Usage:

To display STP state of port 1-9:

**DES-3226L:4#show stp ports 1-9**

| Port | Connection | State   | Cost | Priority | Status     | STP Name |
|------|------------|---------|------|----------|------------|----------|
| 1    | Link Down  | Enabled | 19   | 128      | Forwarding | s0       |
| 2    | Link Down  | Enabled | 19   | 128      | Forwarding | s0       |
| 3    | Link Down  | Enabled | 19   | 128      | Forwarding | s0       |
| 4    | Link Down  | Enabled | 19   | 128      | Forwarding | s0       |
| 5    | Link Down  | Enabled | 19   | 128      | Forwarding | s0       |
| 6    | Link Down  | Enabled | 19   | 128      | Forwarding | s0       |

|   |           |         |    |     |            |    |
|---|-----------|---------|----|-----|------------|----|
| 7 | Link Down | Enabled | 19 | 128 | Forwarding | s0 |
| 8 | Link Down | Enabled | 19 | 128 | Forwarding | s0 |
| 9 | Link Down | Enabled | 19 | 128 | Forwarding | s0 |

**10****LAYER 2 FORWARDING  
DATABASE COMMANDS**

The layer 2 forwarding database commands in the Command Line Interface (CLI) are listed (along with the appropriate parameters) in the following table.

| <b>Command</b>    | <b>Parameters</b>   |
|-------------------|---|
| <b>config fdb</b> | <b>aging time &lt;sec 10-765&gt;</b>  |
| <b>show fdb</b>   | <b>port &lt;port&gt;<br/>vlan &lt;vlan_name&gt;<br/>mac_address &lt;macaddr&gt;<br/>static<br/>aging_time</b> |

Each command is listed, in detail, in the following sections.

| <b>config fdb</b> |  |
|-------------------|--|
| Purpose           | Used to configure the switch's MAC address aging time.                               |
| Syntax            | <b>config fdb aging_time &lt;sec 10-765&gt;</b>                                      |
| Description       | This command will set the age-out timer for the switch's dynamic unicast MAC address |

**config fdb**

forwarding tables.

**Parameters**      aging\_time – Specifies the time, in seconds, that a dynamically learned MAC address will remain unaccessed in the switch's MAC address forwarding table, before being dropped from the database. The range of the value is 10 - 750 seconds.

**Restrictions**      Only administrator-level users can issue this command.

Example Usage:

To configure MAC address aging time:

```
DES-3226L:4#config fdb aging_time 300
Command: config fdb aging_time 300
```

**Success.**

```
DES-3226L:4#
```

**show fdb**

**Purpose**              Used to display the current unicast MAC address forwarding database.

**Syntax**             **show    fdb    {port    <port> | vlan**  
**<vlan\_name> | mac\_address**  
**<macaddr> | static | aging\_time}**

**Description**        This command will display the current contents of the switch's forwarding

**show fdb**

database.

|              |  |
|--------------|--|
| Parameters   | <p>&lt;port&gt; – The port number corresponding to the MAC destination address. The switch will always forward traffic to the specified device through this port.</p> <p>&lt;vlan_name&gt; – The name of the VLAN on which the MAC address resides.</p> <p>&lt;macaddr&gt; – The MAC address that will be added to the forwarding table.</p> <p>static – Displays the static MAC address entries.</p> <p>aging_time – Displays the aging time for the MAC address forwarding database.</p> |
| Restrictions | none.  |

Example Usage:

To display unicast MAC address table:

**DES-3226L:4#show fdb**

**Command: show fdb**

**Unicast MAC Address Ageing Time = 300**

| VID  | VLAN Name | MAC Address       | Port | Type      |
|------|-----------|-------------------|------|-----------|
| ---- | -----     | -----             | ---  | -----     |
| 1    | default   | 00-00-00-00-01-02 | 5    | Permanent |
| 1    | default   | 00-50-BA-6B-2A-29 | 9    | Dynamic   |

**Total Entries = 2**

**DES-3226L:4#**



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---

# ***BROADCAST STORM CONTROL COMMANDS***

The broadcast storm control commands in the Command Line Interface (CLI) are listed (along with the appropriate parameters) in the following table.

| <b>Command</b>                          | <b>Parameters</b> |
|---|-------------------|
| <b>config traffic control broadcast</b> | [enable disable]  |
| <b>show traffic control</b>             |                   |

Each command is listed, in detail, in the following sections.

**config traffic control**

|             |  |
|-------------|--|
| Purpose     | Used to configure broadcast multicast traffic control.       |
| Syntax      | <b>config traffic control broadcast [enabled   disabled]</b> |
| Description | This command is used to configure broadcast storm control.   |

## **config traffic control**

|              |   |
|--------------|---|
| Parameters   | [enabled disabled] – Enables or disables broadcast storm control. |
| Restrictions | Only administrator-level users can issue this command.            |

Example Usage:

To configure traffic control and state:

```
DES-3226L:4#config traffic control broadcast enabled
Command: config traffic control broadcast enabled

Success.

DES-3226L:4#
```

## **show traffic control**

|              |  |
|--------------|--|
| Purpose      | Used to display current traffic control settings.                                    |
| Syntax       | <b>show traffic control</b>  |
| Description  | This command displays the current storm traffic control configuration on the switch. |
| Parameters   | none   |
| Restrictions | none.  |

Example Usage:

To display traffic control setting:

**DES-3226L:4#show traffic control**

**Command: show traffic control**

**Traffic Control**

**Broadcast Storm: Disabled**

**DES-3226L:4#**

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---

**QOS COMMANDS**

The DES-3226L switch supports 802.1p priority queuing. The switch has 2 priority queues. These priority queues are numbered from 0 (Class 0) — the lowest priority queue — to 1 (Class 1) — the highest priority queue. The eight priority queues specified in IEEE 802.1p (p0 to p7) are mapped to the switch's priority queues as follows:

- p0, p1, p2 and p3 are assigned to the switch's Class 0 queue.
- p4, p5, p6 and p7 are assigned to the switch's Class 1 queue.

Priority scheduling is implemented using two types of methods, strict priority and round-robin priority. If no changes are made to the QoS priority scheduling settings the method used is strict priority.

For strict priority-based scheduling, packets residing in the higher priority queues are transmitted first. Only when these queues are empty, are packets of lower priority allowed to be transmitted. Higher priority packets always receive preference regardless of the amount of lower priority packets in the buffer and regardless of the time elapsed since any lower priority packets have been transmitted. By default the switch is configured to empty the buffer using strict priority.



**NOTICE:** The default QoS scheduling arrangement is a strict priority schedule. To customize scheduling to set up round-robin queue clearing, the MAX. Latency and MAX. Packets values need to be changed using the config scheduling command. See **config scheduling** below.

To use implement round-robin (weighted) priority, the switch's four priority queues can be configured to reduce the buffer in a round-robin fashion - beginning with the highest priority queue, and proceeding to the lowest priority queue before returning to the highest priority queue.

The weighted-priority based scheduling alleviates the main disadvantage of strict priority-based scheduling - in that lower priority queues get starved of bandwidth - by providing a minimum bandwidth to all queues for transmission. This is accomplished by configuring the maximum number of packets allowed to be transmitted from a given priority queue and the maximum amount of time a given priority queue will have to wait before being allowed to transmit its accumulated packets. This establishes a Class of Service (CoS) for each of the switch's two hardware priority queues.

The possible range for maximum packets is: 0 to 255 packets.

The possible range for maximum latency is: 0 to 255 (in increments of 16 microseconds each).

| <b>Command</b>                         | <b>Parameters</b>                                |
|--|--|
| <b>config 802.1p<br/>user_priority</b> | <b>&lt;priority 0-7&gt; &lt;class_id 0-1&gt;</b> |
| <b>show 802.1p<br/>user_priority</b>   |  |

| <b>Command</b>                      | <b>Parameters</b>   |
|-------------------------------------|---|
| <b>config<br/>bandwidth_control</b> | <portlist>{rx_rate [no_limit   <value 1-1000>]   tx_rate [no_limit   <value 1-1000>]} |
| <b>show<br/>bandwidth_control</b>   | {<portlist>}  |

Each command is listed, in detail, in the following sections.

**config 802.1p user\_priority**

**Purpose** Used to map the 802.1p user priority of an incoming packet to one of the two hardware queues available on the switch.

**Syntax** **config 802.1p user\_priority <priority 0-7> <class\_id 0-1>**

**Description** The **config 802.1p user\_priority** command is used to configure the way the switch will map an incoming packet, based on its 802.1p user priority tag, to one of the two hardware priority queues available on the switch. The switch's default is to map the incoming 802.1p priority values to the two hardware queues according to the following chart:

| 802.1p<br>Value | Switch Priority<br>Queue | Remark |
|-----------------|--------------------------|--------|
| -----           | -----                    | -----  |
| 0               | 0                        | low    |
| 1               | 0                        | low    |
| 2               | 0                        | low    |
| 3               | 0                        | low    |
| 4               | 1                        | high   |
| 5               | 1                        | high   |

**config 802.1p user\_priority**

|   |   |      |
|---|---|------|
| 6 | 1 | high |
| 7 | 1 | high |

**Parameters**      <priority 0-7> – Specifies which of the 8 802.1p priority values (0 through 7) you want to map to one of the switch's hardware priority queues (<class\_id>, 0 through 1).

                         <class\_id 0-1> – Specifies which of the switch's hardware priority queues the 802.1p priority value (specified above) will be mapped to.

**Restrictions**      Only administrator-level users can issue this command.

**Example Usage:**

To configure 802.1p user priority:

```
DES-3226L:4# config 802.1p user_priority 1 0
Command: config 802.1p user_priority 1 0

Success.

DES-3226L:4#
```

**show 802.1p user\_priority**

**Purpose**              Used to display the current 802.1p user priority to hardware priority queue mapping



## **show 802.1p user\_priority**

in use by the switch.

|              |   |
|--------------|---|
| Syntax       | <b>show 802.1p user_priority</b>  |
| Description  | This command will display the current 802.1p user priority to hardware priority queue mapping in use by the switch. |
| Parameters   | none.   |
| Restrictions | none.   |

Example Usage:

To show 802.1p user priority:

```
DES-3226L:4# show 802.1p user_priority  
Command: show 802.1p user_priority
```

### **QOS Class of Traffic**

```
Priority-0 -> <Class-0>  
Priority-1 -> <Class-0>  
Priority-2 -> <Class-0>  
Priority-3 -> <Class-0>  
Priority-4 -> <Class-1>  
Priority-5 -> <Class-1>  
Priority-6 -> <Class-1>  
Priority-7 -> <Class-1>
```

```
DES-3226L:4#
```

**config bandwidth\_control**

|             |  |
|-------------|--|
| Purpose     | Used to configure bandwidth control on a by-port basis.  |
| Syntax      | <b>config bandwidth_control &lt;portlist&gt; {rx_rate [no_limit   &lt;value 1-1000&gt;]   tx_rate [no_limit   &lt;value 1-1000&gt;]};</b>  |
| Description | The <b>config bandwidth_control</b> command is used to configure bandwidth on a by-port basis.   |
| Parameters  | <p>&lt;portlist&gt; – Specifies a range of ports to be configured. The port list is specified by listing the lowest switch number and the beginning port number on that switch, separated by a colon. Then the highest switch number, and the highest port number of the range (also separated by a colon) are specified. The beginning and end of the port list range are separated by a dash. For example, <b>1:3</b> specifies switch number 1, port 3. <b>2:4</b> specifies switch number 2, port 4. <b>1:3-2:4</b> specifies all of the ports between switch 1, port 3 and switch 2, port 4 – in numerical order.</p> <p>rx_rate – Specifies that one of the parameters below (<b>no_limit</b> or <b>&lt;value 1-1000&gt;</b>) will be applied to the rate at which the above specified ports will be allowed to receive packets</p> <p>no_limit – Specifies that there will be no limit on the rate of packets received by the</p> |

## **config bandwidth\_control**

above specified ports.

<value 1-1000> – Specifies the packet limit, in Mbps, that the above ports will be allowed to receive.

tx\_rate – Specifies that one of the parameters below (**no\_limit** or **<value 1-1000>**) will be applied to the rate at which the above specified ports will be allowed to transmit packets.

no\_limit – Specifies that there will be no limit on the rate of packets received by the above specified ports.

<value 1-1000> – Specifies the packet limit, in Mbps, that the above ports will be allowed to receive. Gigabit ports must be configured to using a limit value that is a multiple of 8 i.e. for Gigabit ports <value 8-1000 in increments of 8>.

Restrictions      Only administrator-level users can issue this command.

Example usage:

To configure bandwidth control:

```
DES-3226L:4#config bandwidth_control 1-10 tx_rate 10
```

```
Command: config bandwidth_control 1-10 tx_rate 10
```

```
Success.
```

```
DES-3226L:4#
```

**show bandwidth\_control**

|              |  |
|--------------|--|
| Purpose      | Used to display the bandwidth control configuration on the switch.   |
| Syntax       | <b>show bandwidth_control</b> {<portlist>}   |
| Description  | The <b>show bandwidth_control</b> command displays the current bandwidth control configuration on the switch, on a port-by-port basis.   |
| Parameters   | <p>&lt;portlist&gt; – Specifies a range of ports to be configured. The port list is specified by listing the lowest switch number and the beginning port number on that switch, separated by a colon. Then the highest switch number, and the highest port number of the range (also separated by a colon) are specified. The beginning and end of the port list range are separated by a dash. For example, <b>1:3</b> specifies switch number 1, port 3. <b>2:4</b> specifies switch number 2, port 4. <b>1:3-2:4</b> specifies all of the ports between switch 1, port 3 and switch 2, port 4 – in numerical order.</p> <p>If no parameter is specified, the system will display all ports bandwidth configuration.</p> |
| Restrictions | None.  |

## Example usage:

To display bandwidth control settings:

DES-3226L:4#show bandwidth\_control 1-10

Command: show bandwidth\_control 1-10

**Bandwidth Control Table**

Port RX Rate (100K/|sec) TX\_RATE (100K/sec)

|    | -----    | ----- |
|----|----------|-------|
| 1  | no_limit | 10    |
| 2  | no_limit | 10    |
| 3  | no_limit | 10    |
| 4  | no_limit | 10    |
| 5  | no_limit | 10    |
| 6  | no_limit | 10    |
| 7  | no_limit | 10    |
| 8  | no_limit | 10    |
| 9  | no_limit | 10    |
| 10 | no_limit | 10    |

DES-3226L:4#

**14*****PORT MIRRORING  
COMMANDS***

The port mirroring commands in the Command Line Interface (CLI) are listed (along with the appropriate parameters) in the following table.

| <b>Command</b>            | <b>Parameters</b>   |
|---------------------------|---|
| <b>config mirror port</b> | <b>&lt;port&gt; [add delete]<br/>source ports &lt;portlist&gt; [rx tx both]</b> |
| <b>enable mirror</b>      |   |
| <b>disable mirror</b>     |   |
| <b>show mirror</b>        |   |

Each command is listed, in detail, in the following sections.

**config mirror port**

|         |   |
|---------|---|
| Purpose | Used to configure a mirror port – source port pair on the switch.                         |
| Syntax  | <b>config mirror port &lt;port&gt; add source ports &lt;portlist&gt; [rx   tx   both]</b> |

**config mirror port**

|             |  |
|-------------|--|
| Description | This command allows a range of ports to have all of their traffic also sent to a designated port – where a network sniffer or other device can monitor the network traffic. In addition, you can specify that only traffic received by or sent by or both is mirrored to the Target port.  |
| Parameters  | <p>&lt;port&gt; – This specifies the Target port (the port where mirrored packets will be sent).</p> <p>&lt;portlist&gt; – This specifies a range of ports that will be mirrored. That is, a range of ports for which all traffic will be copied and sent to the Target port. The port list is specified by listing the beginning port number on that switch and the highest port number of the range. The beginning and end of the port list range are separated by a dash. For example, 3 would specify port 3. 4 specifies port 4. 3-4 specifies all of the ports between port 3 and port 4 – in numerical order.</p> <p>rx – Allows the mirroring of only packets received (flowing into) the port or ports in the port list.</p> <p>tx – Allows the mirroring of only packets sent (flowing out of) the port or ports in the port list.</p> <p>both – Mirrors all the packets received or sent by the port or ports in the port list.</p> |



**config mirror port**

**Restrictions** Only administrator-level users can issue this command.

Example Usage:

To add the mirroring ports:

**DES-3226L:4#config mirror port 10 add source ports 1-5 both**  
**Command: config mirror port 10 add source ports 1-5 both**

**Success.**

**DES-3226L:4#**

**config mirror delete**

**Purpose** Used to delete a port mirroring configuration |

**Syntax** **config mirror port <port> delete source ports <portlist> [rx | tx | both]**

**Description** This command is used to delete a previously entered port mirroring configuration.

**Parameters** <port> – This specifies the Target port (the port where mirrored packets will be sent).

<portlist> – This specifies a range of ports that will be mirrored. That is, a range of ports for which all traffic will be copied and sent to the Target port.

## config mirror delete

rx – Allows the mirroring of only packets received (flowing into) the port or ports in the port list.

tx – Allows the mirroring of only packets sent (flowing out of) the port or ports in the port list.

both – Mirrors all the packets received or sent by the port or ports in the port list.

Restrictions      Only administrator-level users can issue this command.

Example Usage:

To delete the mirroring ports:

```
DES-3226L:4#config mirror port 5 delete source ports 1-5 both
```

```
Command: config mirror port 5 delete source ports 1-5 both
```

```
Success.
```

```
DES-3226L:4#
```

## enable mirror

Purpose              Used to enable a previously entered port mirroring configuration.

Syntax             **enable mirror**

**enable mirror**

|              |   |
|--------------|---|
| Description  | This command, combined with <b>the disable mirror</b> command below, allows you to enter a port mirroring configuration into the switch, and then turn the port mirroring on and off without having to modify the port mirroring configuration. |
| Parameters   | none.   |
| Restrictions | none.   |

## Example Usage:

To enable mirroring configurations:

```
DES-3226L:4#enable mirror
Command: enable mirror

Success.

DES-3226L:4#
```

**disable mirror**

|             |  |
|-------------|--|
| Purpose     | Used to disable a previously entered port mirroring configuration.   |
| Syntax      | <b>disable mirror</b>  |
| Description | This command, combined with the enable mirror command above, allows you to enter a port mirroring configuration into the switch, and then turn the port mirroring on and off without having to modify the port |

**disable mirror**

mirroring configuration.

Parameters none.

Restrictions Only administrator-level users can issue this command.

Example Usage:

To disable mirroring configurations:

```
DES-3226L:4#disable mirror
```

```
Command: disable mirror
```

```
Success.
```

```
DES-3226L:4#
```

**show mirror**

Purpose Used to show the current port mirroring configuration on the switch.

Syntax **show mirror**

Description This command displays the current port mirroring configuration on the switch.

Parameters none

Restrictions none.

Example Usage:

To display mirroring configuration:

```
DES-3226L:4#show mirror  
Command: show mirror
```

**Current Settings**

**Target Port: 9**

**Mirrored Port:**

**RX:**

**TX: 1-5**

```
DES-3226L:4#
```

**15****VLAN COMMANDS**

The VLAN commands in the Command Line Interface (CLI) are listed (along with the appropriate parameters) in the following table.

| <b>Command</b> | <b>Parameters</b>   |
|----------------|---|
| create vlan    | <vlan_name 32><br>{tag <vlanid 1-4094><br>advertisement [enabled   disabled]}         |
| delete vlan    | <vlan_name 32>  |
| config vlan    | <vlan_name 32><br>add [tagged untagged forbidden]<br><portlist 1-26>                  |
| config vlan    | <vlan_name 32><br>delete <portlist 1-26>  |
| config vlan    | <vlan_name 32><br>advertisement [enable disable]                                      |
| config gvrp    | <portlist 1-26><br>all<br>state [enable disable]<br>ingress_checking [enable disable] |
| enable gvrp    |   |
| disable gvrp   |   |
| show vlan      | <vlan_name 32>  |
| show gvrp      | <portlist>  |

| Command          | Parameters            |
|------------------|-----------------------|
| config vlan_mode | [802.1q   port_based] |

Each command is listed, in detail, in the following sections.

### create vlan

|              |  |
|--------------|--|
| Purpose      | Used to create a VLAN on the switch.   |
| Syntax       | <b>create vlan &lt;vlan_name&gt; {tag &lt;vlanid&gt;   advertisement [enable   disable]}</b>   |
| Description  | This command allows you to create a VLAN on the switch.  |
| Parameters   | <p>&lt;vlan_name&gt; – The name of the VLAN to be created.</p> <p>&lt;vlanid&gt; – The VLAN ID of the VLAN to be created, in the range of 1-4094.</p> <p>advertisement – Specifies the VLAN participates normally in GARP/GVRP protocol exchanges. If this parameter is not set, the switch cannot send any GARP/GVRP messages about the VLAN.</p> <p>enable  disable – Specifies whether the user wishes to enable or disable the advertisement function for the specific VLAN.</p> |
| Restrictions | Each VLAN name can be up to 32 characters. If the VLAN is not given a tag, it will automatically allocate a VID value. Only administrator-level users can issue  |

**create vlan**

this command.

Example Usage:

To create a VLAN v1, tag 2:

```
DES-3226L:4#create vlan v1 tag 2
```

```
Command: create vlan v1 tag 2
```

```
Success.
```

```
DES-3226L:4#
```

**delete vlan**

|              |  |
|--------------|--|
| Purpose      | Used to delete a previously configured VLAN on the switch.           |
| Syntax       | <b>delete vlan &lt;vlan_name&gt;</b>                                 |
| Description  | This command will delete a previously configured VLAN on the switch. |
| Parameters   | <vlan_name> – The VLAN name of the VLAN you want to delete.          |
| Restrictions | Only administrator-level users can issue this command.               |

Example Usage:

To remove a vlan v1:

```
DES-3226L:4#delete vlan v1
```

```
Command: delete vlan v1
```



**Success.**

**DES-3226L:4#**

## **config vlan add ports**

|             |  |
|-------------|--|
| Purpose     | Used to add additional ports to a previously configured VLAN.  |
| Syntax      | <b>config vlan &lt;vlan_name 32&gt; add [tagged   untagged   forbidden] &lt;portlist&gt;</b>   |
| Description | This command allows you to add ports to the port list of a previously configured VLAN. You can specify the additional ports as tagging, untagging, or forbidden.   |
| Parameters  | <p>&lt;vlan_name&gt; – The name of the VLAN you want to add ports to.</p> <p>tagged – Specifies the additional ports as tagged.</p> <p>untagged – Specifies the additional ports as untagged.</p> <p>forbidden – Specifies the additional ports as forbidden.</p> <p>&lt;portlist&gt; – A range of ports to add to the VLAN. The port list is specified by listing the beginning port number and the highest port number of the range. The beginning and end of the port list range are separated by a dash. For example, 3 would specify port 3. 4 specifies port 4. 3-4 specifies all of</p> |

**config vlan add ports**

the ports between port 3 and port 4 – in numerical order.

**Restrictions** Only administrator-level users can issue this command.

**Example Usage:**

To add 4 through 8 as tagged ports to the VLAN v1:

```
DES-3226L:4#config vlan v1 add tagged 4-8
Command: config vlan v1 add tagged 4-8
```

```
Success.
```

```
DES-3226L:4#
```

**config vlan delete ports**

**Purpose** Used to delete one or more ports from a previously configured VLAN |

**Syntax** **config vlan <vlan\_name> delete <portlist>**

**Description** This command allows you to delete ports from a previously configured VLAN's port list.

**Parameters** <vlan\_name> – The name of the VLAN you want to delete ports from.

<portlist> – A range of ports you want to delete from the above specified VLAN. The port list is specified by listing the beginning

**config vlan delete ports**

port number and the highest port number of the range. The beginning and end of the port list range are separated by a dash. For example, 3 would specify port 3. 4 specifies port 4. 3-4 specifies all of the ports between port 3 and port 4 – in numerical order.

**Restrictions** Only administrator-level users can issue this command.

**Example Usage:**

To delete 4 through 8 to the VLAN v1:

```
DES-3226L:4#config vlan v1 delete 4-8
```

```
Command: config vlan v1 delete 4-8
```

```
Success.
```

```
DES-3226L:4#
```

**config vlan advertisement**

**Purpose** Used to enable or disable the VLAN advertisement.

**Syntax** **config vlan <vlan\_name> advertisement [enable | disable]**

**Description** This command is used to enable or disable sending GVRP messages on the specified VLAN.

## config vlan advertisement

|              |   |
|--------------|---|
| Parameters   | <p>&lt;vlan_name&gt; – The name of the VLAN on which you want to enable or disable sending GVRP messages.</p> <p>enable – Enables sending GVRP messages on the specified VLAN.</p> <p>disable – Disables sending GVRP messages on the specified VLAN.</p> |
| Restrictions | Only administrator-level users can issue this command.  |

### Example Usage:

To enable the VLAN default advertisement:

```
DES-3226L:4#config vlan default advertisement enable
Command: config vlan default advertisement enable

Success.

DES-3226L:4#
```

## config gvrp

|             |  |
|-------------|--|
| Purpose     | Used to configure GVRP on the switch.  |
| Syntax      | <b>config gvrp [&lt;portlist&gt;   all] {state [enabled   disabled]   ingress_checking [enabled   disabled]}</b>         |
| Description | This command is used to configure the Group VLAN Registration Protocol on the switch. You can configure ingress checking |

**config gvrp**

and the GVRP status for each port.

|              |  |
|--------------|--|
| Parameters   | <p>&lt;portlist&gt; – A range of ports for which you want ingress checking. The port list is specified by listing the beginning port number and the highest port number of the range. The beginning and end of the port list range are separated by a dash. For example, 3 would specify port 3. 4 specifies port 4. 3-4 specifies all of the ports between port 3 and port 4 – in numerical order.</p> <p>all – Specifies all of the ports on the switch.</p> <p>state [enabled disabled] – Enables or disables GVRP for the ports specified in the port list.</p> <p>ingress_checking [enabled disabled] – Enables or disables ingress checking for the specified port list.</p> |
| Restrictions | Only administrator-level users can issue this command.   |

**Example Usage:**

To sets the ingress checking status and the GVRP status:

```
DES-3226L:4#config gvrp 1-5 state enable
ingress_checking enable
Command: config gvrp 1-5 state enable
ingress_checking enable
```

**Success.**

**DES-3226L:4#**

## **enable gvrp**

|              |   |
|--------------|---|
| Purpose      | Used to enable GVRP on the switch.  |
| Syntax       | <b>enable gvrp</b>  |
| Description  | This command, along with <code>disable gvrp</code> below, is used to enable and disable GVRP on the switch – without changing the GVRP configuration for each port on the switch. |
| Parameters   | none.   |
| Restrictions | Only administrator-level users can issue this command.  |

Example Usage:

To enable the generic VLAN Registration Protocol (GVRP):

**DES-3226L:4#enable gvrp**  
**Command: enable gvrp**

**Success.**

**DES-3226L:4#**

## **disable gvrp**

|         |                                     |
|---------|-------------------------------------|
| Purpose | Used to disable GVRP on the switch. |
|---------|-------------------------------------|

**disable gvrp**

|              |   |
|--------------|---|
| Syntax       | <b>disable gvrp</b>   |
| Description  | This command, along with <code>disable gvrp</code> below, is used to enable and disable GVRP on the switch – without changing the GVRP configuration for each port on the switch. |
| Parameters   | none.   |
| Restrictions | Only administrator-level users can issue this command.  |

## Example Usage:

To disable the Generic VLAN Registration Protocol (GVRP):

```
DES-3226L:4#disable gvrp  
Command: disable gvrp
```

```
Success.
```

```
DES-3226L:4#
```

**show vlan**

|             |   |
|-------------|---|
| Purpose     | Used to display the current VLAN configuration on the switch                                    |
| Syntax      | <b>show vlan {&lt;vlan_name&gt;}</b>  |
| Description | This command displays summary information about each VLAN including the VLAN ID, VLAN name, the |

**show vlan**

Tagging/Untagging status, and the Member/Non-member/Forbidden status of each port that is a member of the VLAN.

**Parameters**      <vlan\_name> - The VLAN name of the VLAN for which you want to display a summary of settings.

**Restrictions**      none.

Example Usage:

To display VLAN settings:

```
DES-3226L:4#show vlan
Command: show vlan
```

```
VID           : 1           VLAN Name     : default
VLAN TYPE     : static     Advertisement  : Enabled
Member ports  : 1-26
Static ports  : 1-26
Untagged ports : 1-26
Forbidden ports :
```

```
Total Entries : 1
```

```
DES-3226L:4#
```

**show gvrp**

**Purpose**              Used to display the GVRP status for a port list on the switch.

**Syntax**             **show gvrp** {<portlist>}



**show gvrp**

|              |   |
|--------------|---|
| Description  | This command displays the   |
| Parameters   | <p>&lt;portlist&gt; – Specifies a range of ports for which the GVRP status is to be displayed. The port list is specified by listing the beginning port number and the highest port number of the range. The beginning and end of the port list range are separated by a dash. For example, 3 would specify port 3. 4 specifies port 4. 3-4 specifies all of the ports port 3 and port 4 – in numerical order.</p> <p>If no parameter is specified, the system will display the GVRP information for all ports.</p> |
| Restrictions | none.   |

## Example Usage:

To display 802.1Q port setting:

```
DES-3226L:4#show gvrp
Command: show gvrp

Global GVRP : Disabled

Port   PVID   GVRP   Ingress Checking
----   -
1      1      Enabled Enabled
2      1      Enabled Enabled
3      1      Enabled Enabled
4      1      Enabled Enabled
5      1      Enabled Enabled
6      1      Disabled Disabled
7      1      Disabled Disabled
```

|    |   |          |          |
|----|---|----------|----------|
| 8  | 1 | Disabled | Disabled |
| 9  | 1 | Disabled | Disabled |
| 10 | 1 | Disabled | Disabled |
| 11 | 1 | Disabled | Disabled |
| 12 | 1 | Disabled | Disabled |
| 13 | 1 | Disabled | Disabled |
| 14 | 1 | Disabled | Disabled |
| 15 | 1 | Disabled | Disabled |
| 16 | 1 | Disabled | Disabled |
| 17 | 1 | Disabled | Disabled |
| 18 | 1 | Disabled | Disabled |
| 19 | 1 | Disabled | Disabled |
| 20 | 1 | Disabled | Disabled |
| 21 | 1 | Disabled | Disabled |
| 22 | 1 | Disabled | Disabled |
| 23 | 1 | Disabled | Disabled |
| 24 | 1 | Disabled | Disabled |
| 26 | 1 | Disabled | Disabled |
| 26 | 1 | Disabled | Disabled |

Total Entries : 26

DES-3226L:4#

## config vlan mode

|             |  |
|-------------|--|
| Purpose     | Used to change the vlan mode. The user may opt between 802.1q vlan and port-based vlan.  |
| Syntax      | <b>config vlan_mode [802.1q   port_based]</b>  |
| Description | This command will change the current vlan mode to 802.1q vlan or port-based vlan. After applying the change, the switch will reboot and the current vlan configuration |

## **config vlan mode**

will be altered.

|              |  |
|--------------|--|
| Parameters   | 802.1q – Choosing this parameter will reset the switch to 802.1q vlan mode.<br><br>port_based – Choosing this parameter will reset the switch to port-based vlan mode. |
| Restrictions | none   |

Example:

To configure the switch for port-based vlan mode:

```
DES-3226L:4#config vlan_mode port_based
Command: config vlan_mode port_based

Are you sure to change vlan mode?(y/n)

The vlan mode has been set successful!!

Please wait, the switch is rebooting.....
```

**16****LINK AGGREGATION  
COMMANDS**

The link aggregation commands in the Command Line Interface (CLI) are listed (along with the appropriate parameters) in the following table.

| <b>Command</b>                                  | <b>Parameters</b>  |
|---|--|
| <b>create<br/>link_aggregation<br/>group_id</b> | <value1-7>   |
| <b>delete<br/>link_aggregation</b>              | group_id <value 1-7>   |
| <b>config<br/>link_aggregation</b>              | group_id <value 1-7>[master_port <port 1-26>   ports <portlist 1-26>   state [enable disable]] |
| <b>show<br/>link_aggregation</b>                | group_id <value 1-7>   |

Each command is listed, in detail, in the following sections.

**create link\_aggregation group\_id**

**Purpose** Used to create a link aggregation group on the switch.

**create link\_aggregation group\_id**

|              |   |
|--------------|---|
| Syntax       | <b>create link_aggregation group_id &lt;value&gt;</b>   |
| Description  | This command will create a link aggregation group.  |
| Parameters   | <value 1-7> – Specifies the group id. The switch allows up to 7 link aggregation groups to be configured. The group number identifies each of the groups. |
| Restrictions | Only administrator-level users can issue this command.  |

## Example Usage:

To create link aggregation group:

```
DES-3226L:4#create link_aggregation group_id 1
Command: create link_aggregation group_id 1

Success.

DES-3226L:4#
```

**delete link\_aggregation group\_id**

|             |  |
|-------------|--|
| Purpose     | Used to delete a previously configured link aggregation group.                 |
| Syntax      | <b>delete link_aggregation group_id &lt;value&gt;</b>                          |
| Description | This command is used to delete a previously configured link aggregation group. |

**delete link\_aggregation group\_id**

|              |   |
|--------------|---|
| Parameters   | <value> – Specifies the group id. The switch allows up to 7 link aggregation groups to be configured. The group number identifies each of the groups. |
| Restrictions | Only administrator-level users can issue this command.  |

## Example Usage:

To delete link aggregation group:

```
DES-3226L:4#delete link_aggregation group_id 6
Command: delete link_aggregation group_id 6
```

Success.

```
DES-3226L:4#
```

**config link\_aggregation**

|             |   |
|-------------|---|
| Purpose     | Used to configure a previously created link aggregation group.  |
| Syntax      | <b>config link_aggregation group_id &lt;value&gt;</b><br><b>{master_port &lt;port&gt;   ports &lt;portlist&gt;  </b><br><b>state [enabled   disabled]</b> |
| Description | This command allows you to configure a link aggregation group that was created with the create link_aggregation command above.                            |
| Parameters  | <value> – Specifies the group id. The switch allows up to 7 link aggregation  |

## config link\_aggregation

switch allows up to 32 link aggregation groups to be configured. The group number identifies each of the groups.

master\_port <port> – Master port ID. Specifies which port (by port number) of the link aggregation group will be the master port. All of the ports in a link aggregation group will share the port configuration with the master port.

<portlist> – Specifies a range of ports that will belong to the link aggregation group. The beginning and end of the port list range are separated by a dash. For example, 3 would specify port 3. 4 specifies port 4. 1-4 specifies all of the ports between port 1 and port 4 – in numerical order.

state [enable|disable] – Allows you to enable or disable the specified link aggregation group.

Restrictions Only administrator-level users can issue this command.

### Example Usage:

To define a load-sharing group of ports, group-id 1, master port 17:

```
DES-3226L:4#config link_aggregation group_id 1 master_port 17
ports 5-10
Command: config link_aggregation group_id 1 master_port 17
ports 5-10
```

**Success.**

DES-3226L:4#

**show link\_aggregation**

|              |   |
|--------------|---|
| Purpose      | Used to display the current link aggregation configuration on the switch.   |
| Syntax       | <b>show link_aggregation group_id &lt;value&gt;</b>   |
| Description  | This command will display the current link aggregation configuration of the switch.   |
| Parameters   | <p>&lt;value&gt; – Specifies the group id. The switch allows up to six link aggregation groups to be configured. The group number identifies each of the groups.</p> <p>If no parameter is specified, the system will display all link aggregation information.</p> |
| Restrictions | none.   |

## Example Usage:

To show link aggregation:

```
DES-3226L:4#show link_aggregation
Command: show link_aggregation

Link Aggregation Algorithm = MAC-source
Group ID      : 1
Master Port   : 1
Member Port   : 1-8
Status        : Disabled
Flooding Port : 5
```



DES-3226L:4#

# 17

## IP INTERFACE COMMANDS

The IP interface commands in the Command Line Interface (CLI) are listed (along with the appropriate parameters) in the following table.

| Command                   | Parameters  |
|---------------------------|---|
| <b>config ipif System</b> | [vlan <vlan_name>   ipaddress <network_address>   state [enabled disabled]]<br>bootp dhcp |
| <b>show ipif</b>          | <ipif_name>   |

Each command is listed, in detail, in the following sections.

### config ipif System

|             |  |
|-------------|--|
| Purpose     | Used to configure the System IP interface.   |
| Syntax      | <b>config ipif System</b> [{vlan <vlan_name>   ipaddress <network_address>   state [enabled   disabled]   bootp   dhcp}] |
| Description | This command is used to configure the System IP interface on the switch.   |

## config ipif System

System IP interface on the switch.

|              |   |
|--------------|---|
| Parameters   | <p>&lt;vlan_name&gt; – The name of the VLAN corresponding to the System IP interface.</p> <p>&lt;network_address&gt; – IP address and netmask of th IP interface to be created. You can specify the address and mask information using the traditional format (for example, 10.1.2.3/255.0.0.0 or in CIDR format, 10.1.2.3/16).</p> <p>state [enabled disabled] – Allows you to enable or disable the IP interface.</p> <p>bootp – Allows the selection of the BOOTP protocol for the assignment of an IP address to the switch's System IP interface.</p> <p>dhcp – Allows the selection of the DHCP protocol for the assignment of an IP address to the switch's System IP interface.</p> |
| Restrictions | Only administrator-level users can issue this command.  |

### Example Usage:

To configure the IP interface System:

```
DES-3226L:4#config ipif System ipaddress
10.48.74.122/8
Command: config ipif System ipaddress 10.48.74.122/8

Success.
```

**DES-3226L:4#****show ipif**

|              |   |
|--------------|---|
| Purpose      | Used to display the configuration of an IP interface on the switch.           |
| Syntax       | <b>show ipif {&lt;ipif_name&gt;}</b>  |
| Description  | This command will display the configuration of an IP interface on the switch. |
| Parameters   | <ipif_name> – The name of the IP interface you want to disable.               |
| Restrictions | none.   |

Example Usage:

To display IP interface settings:

```
DES-3226L:4#show ipif System
Command: show ipif System

IP Interface Settings

Interface Name : System
IP Address    : 10.48.74.122 (MANUAL)
Subnet Mask   : 255.0.0.0
VLAN Name    : default
Admin. State  : Disabled
Link Status   : Link UP
Member Ports  : 1-24

Total Entries : 1
```

DES-3226L:4#

**18*****IGMP SNOOPING  
COMMANDS***

The switch port commands in the Command Line Interface (CLI) are listed (along with the appropriate parameters) in the following table.

| <b>Command</b>                              | <b>Parameters</b>   |
|---|---|
| <b>config<br/>igmp_snooping</b>             | <vlan_name 32><br>all<br>host_timeout <sec 1-16711450><br>router_timeout <sec 1-16711450><br>leave_timer <sec 1-16711450><br>state [enabled disabled]   |
| <b>config<br/>igmp_snooping<br/>querier</b> | <vlan_name 32><br>all<br>query_interval <sec 1-65535><br>max_response_time <sec 1-25><br>robustness_variable <value 1-255><br>last_member_query_interval <sec 1-25><br>state [enable disable] |
| <b>config<br/>router_ports</b>              | <vlan_name 32> [add delete]<br><portlist>   |
| <b>enable igmp<br/>snooping</b>             | forward_mcrouter_only   |
| <b>show igmp</b>                            | vlan <vlan_name 32>   |

| <b>Command</b>                  | <b>Parameters</b>                        |
|---------------------------------|--|
| <b>snooping</b>                 |  |
| <b>show router ports</b>        | vlan <vlan_name 32><br>static<br>dynamic |
| <b>show igmp_snooping group</b> | {vlan <vlan_name 32>}                    |
| <b>config router_ports</b>      | <vlan_name 32> [add delete] <portlist>   |
| <b>disable igmp_snooping</b>    |  |

Each command is listed, in detail, in the following sections.

### **config igmp\_snooping**

|             |   |
|-------------|---|
| Purpose     | Used to configure IGMP snooping on the switch.  |
| Syntax      | <b>config igmp_snooping [&lt;vlan_name&gt;   all] {host_timeout &lt;sec&gt;   router_timeout &lt;sec&gt;   leave_timer &lt;sec&gt;   state [enabled   disabled]}</b>  |
| Description | This command allows you to configure IGMP snooping on the switch  |
| Parameters  | <vlan_name> – The name of the VLAN for which IGMP snooping is to be configured.<br><br>host_timeout <sec> – Specifies the maximum amount of time a host can be a member of a multicast group without the switch receiving a host membership report. |

**config igmp\_snooping**

The default is 260 seconds.

`route_timeout <sec>` – Specifies the maximum amount of time a route will remain in the switch's can be a member of a multicast group without the switch receiving a host membership report. The default is 260 seconds.

`leave_timer <sec>` – Leave timer. The default is 2 seconds.

`state [enabled|disabled]` – Allows you to enable or disable IGMP snooping for the specified VLAN.

**Restrictions** Only administrator-level users can issue this command.

Example Usage:

To configure the IGMP snooping:

```
DES-3226L:4#config igmp_snooping default host_timeout 250
state enabled
Command: config igmp_snooping default host_timeout 250 state
enabled
```

**Success.**

```
DES-3226L:4#
```



**config igmp\_snooping querier**

|             |  |
|-------------|--|
| Purpose     | Used to configure the time in seconds between general query transmissions, the maximum time in seconds to wait for reports from members, the permitted packet loss that guarantees IGMP snooping.  |
| Syntax      | <b>config igmp_snooping querier</b><br><b>[&lt;vlan_name&gt;   all] {query_interval</b><br><b>&lt;sec&gt;   max_response_time</b><br><b>&lt;sec&gt;   robustness_variable</b><br><b>&lt;value&gt;   last_member_query_interval</b><br><b>&lt;sec&gt;   state [enable   disable]}</b>   |
| Description | This command configures IGMP snooping querier.   |
| Parameters  | <p>&lt;vlan_name&gt; – The name of the VLAN for which IGMP snooping querier is to be configured.</p> <p>query_interval &lt;sec&gt; – Specifies the amount of time in seconds between general query transmissions. the default setting is 125 seconds.</p> <p>max_response_time &lt;sec&gt; – Specifies the maximum time in seconds to wait for reports from members. The default setting is 10 seconds.</p> <p>robustness_variable &lt;value&gt; – Provides fine-tuning to allow for expected packet loss on a subnet. The value of the robustness variable is used in calculating</p> |

**config igmp\_snooping querier**

the following IGMP message intervals:

- Group member interval—Amount of time that must pass before a multicast router decides there are no more members of a group on a network. This interval is calculated as follows: (robustness variable x query interval) + (1 x query response interval).
- Other querier present interval—Amount of time that must pass before a multicast router decides that there is no longer another multicast router that is the querier. This interval is calculated as follows: (robustness variable x query interval) + (0.5 x query response interval).
- Last member query count—Number of group-specific queries sent before the router assumes there are no local members of a group. The default number is the value of the robustness variable.
- By default, the robustness variable is set to 2. You might want to increase this value if you expect a subnet to be lossy.

last\_member\_query\_interval <sec> – The maximum amount of time between group-specific query messages, including those

**config igmp\_snooping querier**

sent in response to leave-group messages. You might lower this interval to reduce the amount of time it takes a router to detect the loss of the last member of a group.

state [enabled|disabled] – Allows the switch to be specified as an IGMP Querier or Non-querier.

Restrictions Only administrator-level users can issue this command.

Example Usage:

To configure the igmp snooping:

```
DES-3226L:4#config igmp_snooping querier default
query_interval 125 state enable
```

```
Command: config igmp_snooping querier default
query_interval 125 state enable
```

Success.

```
DES-3226L:4#
```

**config router\_ports**

Purpose Used to configure ports as router ports.

Syntax **config router\_ports <vlan\_name>**  
**[add|delete] <portlist>**

Description This command allows you to designate a range of ports as being connected to

**config router\_ports**

range of ports as being connected to multicast-enabled routers. This will ensure that all packets with such a router as its destination will reach the multicast-enabled router – regardless of protocol, etc.

**Parameters**

<vlan\_name> – The name of the VLAN on which the router port resides.

<portlist> – Specifies a range of ports which will be configured as router ports. The port list is specified by listing the beginning port number and the highest port number of the range. The beginning and end of the port list range are separated by a dash. For example, 3 would specify port 3. 4 specifies port 4. 3-4 specifies all of the ports between port 3 and port 4 – in numerical order.

**Restrictions**

Only administrator-level users can issue this command.

**Example Usage:**

To set up static router ports:

```
DES-3226L:4#config router_ports default add 1-10
```

```
Command: config router_ports default add 1-10
```

```
Success.
```

```
DES-3226L:4#
```

**enable igmp\_snooping**

|              |  |
|--------------|--|
| Purpose      | Used to enable IGMP snooping on the switch.  |
| Syntax       | <b>enable igmp_snooping</b><br><b>{forward_mcrouter_only}</b>  |
| Description  | This command allows you to enable IGMP snooping on the switch. If <b>forward_mcrouter_only</b> is specified, the switch will forward all multicast traffic to the multicast router, only. Otherwise, the switch forwards all mulitcast traffic to any IP router. |
| Parameters   | forward_mcrouter_only – Specifies that the switch should forward all multicast traffic to a multicast-enabled router only. Otherwise, the switch will forward all multicast traffic to any IP router.  |
| Restrictions | Only administrator-level users can issue this command.   |

## Example Usage:

To enable IGMP snooping on the switch:

```
DES-3226L:4#enable igmp_snooping  
Command: enable igmp_snooping
```

```
Success.
```

```
DES-3226L:4#
```

**disable igmp\_snooping**

|              |   |
|--------------|---|
| Purpose      | Used to enable IGMP snooping on the switch.   |
| Syntax       | <b>disable igmp_snooping</b>  |
| Description  | This command disables IGMP snooping on the switch. IGMP snooping can be disabled only if IP multicast routing is not being used. Disabling IGMP snooping allows all IGMP and IP multicast traffic to flood within a given IP interface. |
| Parameters   | none.   |
| Restrictions | Only administrator-level users can issue this command.  |

## Example Usage:

To disable IGMP snooping on the switch:

```
DES-3226L:4#disable igmp_snooping
Command: disable igmp_snooping

Success.

DES-3226L:4#
```

**show igmp\_snooping**

|         |   |
|---------|---|
| Purpose | Used to show the current status of IGMP snooping on the switch. |
| Syntax  | <b>show igmp_snooping vlan &lt;vlan_name&gt;</b>                |

**show igmp\_snooping**

|              |  |
|--------------|--|
| Description  | This command will display the current IGMP snooping configuration on the switch.               |
| Parameters   | <vlan_name> – The name of the VLAN for which you want to view the IGMP snooping configuration. |
| Restrictions | none.  |

## Example Usage:

To show IGMP snooping:

```
DES-3226L:4#show igmp_snooping
Command: show igmp_snooping
```

```
IGMP Snooping Global State : Enabled
Multicast router Only      : Disabled
VLAN Name                  : default
Query Interval             : 125
Max Response Time          : 10
Robustness Value           : 2
Last Member Query Interval : 1
Host Timeout               : 260
Route Timeout              : 260
Leave Timer                 : 2
Querier State              : Disabled
Querier Router Behavior    : Non-Querier
State                      : Disabled

VLAN Name                  : vlan2
Query Interval             : 125
Max Response Time          : 10
Robustness Value           : 2
```

```
Last Member Query Interval : 1
Host Timeout                : 260
Route Timeout               : 260
Leave Timer                  : 2
Querier State               : Disabled
Querier Router Behavior    : Non-Querier
State                       : Disabled
```

Total Entries: 2

DES-3226L:4#

## **show igmp\_snooping group**

|              |  |
|--------------|--|
| Purpose      | Used to display the current IGMP snooping group configuration on the switch.                                 |
| Syntax       | <b>show igmp_snooping group {vlan &lt;vlan_name&gt;}</b>   |
| Description  | This command will display the current IGMP snooping group configuration on the switch.                       |
| Parameters   | <vlan_name> – The name of the VLAN for which you want to view IGMP snooping group configuration information. |
| Restrictions | none.  |

Example Usage:

To show IGMP snooping group:

```
DES-3226L:4#show igmp_snooping group
Command: show igmp_snooping group
```



VLAN Name : default  
Multicast group: 224.0.0.2  
MAC address : 01-00-5E-00-00-02  
Reports : 1  
Port Member : 7

VLAN Name : default  
Multicast group: 224.0.0.9  
MAC address : 01-00-5E-00-00-09  
Reports : 1  
Port Member : 7

VLAN Name : default  
Multicast group: 234.5.6.7  
MAC address : 01-00-5E-05-06-07  
Reports : 1  
Port Member : 9

VLAN Name : default  
Multicast group: 236.54.63.75  
MAC address : 01-00-5E-36-3F-4B  
Reports : 1  
Port Member : 5

Total Entries : 4

DES-3226L:4#

### **show router\_ports**

Purpose Used to display the currently configured router ports on the switch.

Syntax **show router\_ports {vlan <vlan\_name>}  
{static | dynamic}**

**show router\_ports**

|              |   |
|--------------|---|
| Description  | This command will display the router ports currently configured on the switch.  |
| Parameters   | <p>&lt;vlan_name&gt; – The name of the VLAN on which the router port resides.</p> <p>static – Displays router ports that have been statically configured.</p> <p>dynamic – Displays router ports that have been dynamically configured.</p> |
| Restrictions | none.   |

## Example Usage:

To display the router ports:

```
DES-3226L:4#show router_ports
Command: show router_ports

VLAN Name      : default
Static router port : 1-10
Dynamic router port :

VLAN Name      : vlan2
Static router port :
Dynamic router port :

Total Entries: 2
DES-3226L:4#
```

**19*****ROUTING TABLE  
COMMANDS***

The routing table commands in the Command Line Interface (CLI) are listed (along with the appropriate parameters) in the following table.

| <b>Command</b>        | <b>Parameters</b>  |
|-----------------------|--|
| <b>create iproute</b> | <b>default<br/>&lt;ipaddr&gt;<br/>&lt;metric 1-65535&gt;</b> |
| <b>delete iproute</b> | <b>default</b>   |
| <b>show iproute</b>   |  |

Each command is listed, in detail, in the following sections.

**create iproute**

|             |  |
|-------------|--|
| Purpose     | Used to create an IP route entry to the switch's IP routing table.                 |
| Syntax      | <b>create iproute [default   &lt;ipaddr&gt; {&lt;metric&gt;}]</b>                  |
| Description | This command is used to create an IP route entry to the switch's IP routing table. |

**create iproute**

|              |  |
|--------------|--|
|              | entry to the switch's IP routing table.  |
| Parameters   | default – creates a default IP route entry.<br><br><ipaddr> – The IP address for the next hop router.<br><br><metric> – The default setting (hop cost) is 1. |
| Restrictions | Only administrator-level users can issue this command.   |

## Example Usage:

To add a static address 10.48.74.121, with a metric value of 8:

```
DES-3226L:4#create iproute default 10.48.74.121 8  
Command: create iproute default 10.48.74.121 8
```

```
Success.
```

```
DES-3226L:4#
```

**delete iproute**

|             |  |
|-------------|--|
| Purpose     | Used to delete an IP route entry from the switch's IP routing table.           |
| Syntax      | <b>delete iproute default</b>  |
| Description | This command will delete an existing entry from the switch's IP routing table. |

**delete iproute**

|              |  |
|--------------|--|
| Parameters   | default – Deletes a default IP route entry.            |
| Restrictions | Only administrator-level users can issue this command. |

## Example Usage:

To delete a static address 10.48.75.121, mask 255.0.0.0 from the routing table:

```
DES-3226L:4#delete iproute default
Command: delete iproute default
```

**Success.**

```
DES-3226L:4#
```

**show iproute**

|             |  |
|-------------|--|
| Purpose     | Used to display the switch's current IP routing table.   |
| Syntax      | <b>show iproute</b> {<network_address>}<br>{static   rip   ospf}   |
| Description | This command will display the switch's current IP routing table.   |
| Parameters  | <network_address> – IP address and netmask of the IP interface that is the destination of the route. You can specify the address and mask information using the traditional format (for example, |

## **show iproute**

10.1.2.3/255.0.0.0 or in CIDR format,  
10.1.2.3/16).

Restrictions none.

Example Usage:

To display the contents of the IP routing table:

```
DES-3226L:4#show iproute
```

```
Command: show iproute
```

| <b>IP Address</b> | <b>Netmask</b> | <b>Gateway</b> | <b>Interface Name</b> | <b>Hops</b> | <b>Protocol</b> |
|-------------------|----------------|----------------|-----------------------|-------------|-----------------|
| 0.0.0.0           | 0.0.0.0        | 10.1.1.254     | System                | 1           | Default         |
| 10.0.0.0          | 255.0.0.0      | 10.48.74.122   | System                | 1           | Local           |

```
Total Entries: 2
```

```
DES-3226L:4#
```

## 20

## 802.1X COMMANDS

The DES-3226L implements the server-side of the IEEE 802.1x Port-based Network Access Control. This mechanism is intended to allow only authorized users, or other network devices, access to network resources by establishing criteria for each port on the switch that a user or network device must meet before allowing that port to forward or receive frames.

| Command                                       | Parameters  |
|---|---|
| <code>enable 802.1x</code>                    |   |
| <code>disable 802.1x</code>                   |   |
| <code>config 802.1x<br/>auth_protocol</code>  | <code>[local radius_eap]</code>   |
| <code>config 802.1x capability</code>         | <code>ports &lt;portlist&gt; all<br/>authenticator<br/>none</code>  |
| <code>config 802.1x<br/>auth_parameter</code> | <code>ports &lt;portlist&gt; all<br/>default<br/>direction [both in]<br/>port_control<br/>  [force_unauth auto force_auth]<br/>quiet_period &lt;sec 0-65535&gt;<br/>tx_period &lt;sec 1-65535&gt;<br/>supp_timeout &lt;sec 1-65535&gt;<br/>server_timeout &lt;sec 1-65535&gt;<br/>max_req &lt;value 1-10&gt;</code> |

| <b>Command</b>               | <b>Parameters</b>   |
|------------------------------|---|
|                              | reauth_period <sec 1-65535><br>enable_reauth [enabled disabled]   |
| config 802.1x init           | ports [<portlist> all]  |
| config 802.1x reauth         | ports [<portlist> all]  |
| config radius add            | <server_index 1-3><br><server_ip><br>key <passwd 32><br>default<br>auth_port <udp_port_number 0-65535><br>acct_port <udp_port_number 0-65535> |
| config radius delete         | <server_index 1-3>  |
| config radius                | <server_index 1-3><br>ipaddress <server_ip><br>key <passwd 32><br>auth_port <udp_port_number><br>acct_port <udp_port_number>                  |
| show radius                  |   |
| show 802.1x                  | [ports <portlist 1-26>   user]  |
| create 802.1x user           | <username 16>   |
| delete 802.1x user           | <username 16>   |
| show auth_statistics         | ports <portlist>  |
| show auth_diagnostics        | ports <portlist>  |
| show auth_session_statistics | ports <portlist>  |
| show 802.1x user             |   |
| show radius auth_client      |   |
| show radius acct_client      |   |

Each command is listed, in detail, in the following sections.



**enable 802.1x**

|              |  |
|--------------|--|
| Purpose      | Used to enable the 802.1x server on the switch.  |
| Syntax       | <b>enable 802.1x</b>   |
| Description  | The enable 802.1x command enables the 802.1x Port-based Network Access control server application on the switch. |
| Parameters   | None.  |
| Restrictions | Only administrator-level users can issue this command.   |

## Example Usage:

To enable 802.1x switch-wide:

```
DES-3226L:4#enable 802.1x
Command: enable 802.1x

Success.

DES-3226L:4#
```

**disable 802.1x**

|             |  |
|-------------|--|
| Purpose     | Used to disable the 802.1x server on the switch.   |
| Syntax      | <b>disable 802.1x</b>  |
| Description | The disable 802.1x command is used to disable the 802.1x Port-based Network Access control server application on the |

**disable 802.1x**

switch.

Parameters

None.

Restrictions

Only administrator-level users can issue this command.

Example Usage:

To disable 802.1x on the switch:

**DES-3226L:4#disable 802.1x****Command: disable 802.1x****Success.****DES-3226L:4#****config 802.1x auth\_protoco**

Purpose

Used to configure the 802.1x authentication protocol on the switch.

Syntax

**config 802.1x auth\_protocol  
[local | radius\_eap]**

Description

The config 802.1x auth\_protocol command enables you to configure the authentication protocol.

Parameters

local|radius\_EAP – Specify the type of authentication protocol desired.

Restrictions

Only administrator-level users can issue this command.

**config 802.1x auth\_protoco**

this command.

## Example Usage:

To configure 802.1x authentication protocol:

```
DES-3226L:4# config 802.1x auth_protocol
Command: config 802.1x auth_protocol local
```

Success.

```
DES-3226L:4#
```

**config 802.1x capability**

|             |  |
|-------------|--|
| Purpose     | Used to configure the 802.1x capability of a range of ports on the switch.   |
| Syntax      | <b>config 802.1x capability ports</b><br><b>[&lt;portlist&gt;   all] [authenticator   none]</b>  |
| Description | The config 802.1x command has two capabilities that can be set for each port: Authenticator and None.  |
| Parameters  | <portlist> – Specifies a range of ports. The port list is specified by listing the beginning port number and the highest port number of the range. The beginning and end of the port list range are separated by a dash. For example, 3 would specify port 3. 4 specifies port 4. 3-4 specifies all of the ports between port 3 and port 4 – in numerical order. |

**config 802.1x capability**

all – Specifies all of the ports on the switch.

authenticator – A user must pass the authentication process to gain access to the network.

none – The port is not controlled by the 802.1x functions.

Restrictions      Only administrator-level users can issue this command.

## Example Usage:

To configure 802.1x capability on ports 1-10:

```
DES-3226L:4#config 802.1x capability ports 1 – 10 authenticator
Command: config 802.1x capability ports 1-10 authenticator
```

Success.

```
DES-3226L:4#
```

**config 802.1x auth\_parameter**

Purpose              Used to configure the 802.1x Authentication parameters on a range of ports. The default parameter will return all ports in the specified range to their default 802.1x settings.

Syntax             **config 802.1x auth\_parameter ports**  
                          [**<portlist> | all**]            [**default | {direction**  
                          [**both | in} | port\_control**

**config 802.1x auth\_parameter**

```
[force_unauth|auto|force_auth]|
quiet_period <sec 0-65535>| max_req
<value 1-10>|reauth_period <sec 1-
65535>|enable_reauth
[enabled|disabled];]
```

**Description** The config 802.1x auth\_parameter command is used to configure the 802.1x Authentication parameters on a range of ports. The default parameter will return all ports in the specified range to their default 802.1x settings.

**Parameters** <portlist> – Specifies a range of ports. The port list is specified by listing the beginning port number and the highest port number of the range. The beginning and end of the port list range are separated by a dash. For example, 3 would specify port 3. 4 specifies port 4. 3-4 specifies all of the ports between port 3 and port 4 – in numerical order.

all – Specifies all of the ports on the switch.

default – Returns all of the ports in the specified range to their 802.1x default settings.

direction [both|in] – Determines whether a controlled port blocks communication in both the receiving and transmitting directions, or just the receiving direction.

port\_control – Configures the

**config 802.1x auth\_parameter**

administrative control over the authentication process for the range of ports.

force\_auth – Forces the Authenticator for the port to become authorized. Network access is allowed.

auto – Allows the port's status to reflect the outcome of the authentication process.

force\_unauth – Forces the Authenticator for the port to become unauthorized. Network access will be blocked.

quiet\_period <sec 0-65535> – Configures the time interval between authentication failure and the start of a new authentication attempt.

max\_req <value 1-10> – Configures the number of times to retry sending packets to a supplicant (user).

reauth\_period <sec 1-65535> – Configures the time interval between successive re-authentications.

enable\_reauth [enabled|disabled] – Determines whether or not the switch will re-authenticate. Enabled causes re-authentication of users at the time interval specified in the Re-authentication Period field, above.

**config 802.1x auth\_parameter**

Restrictions      Only administrator-level users can issue this command.

## Example Usage:

To configure 802.1x authentication parameters for ports 1 to 20:

```
DES-3226L:4#config 802.1x auth_parameter ports 1 – 20 direction both
```

```
Command: config 802.1x auth_parameter ports 1-20 direction both
```

Success.

```
DES-3226L:4#
```

**config 802.1x init**

Purpose              Used to initialize the 802.1x functions on a range of ports.

Syntax             **config 802.1x init ports [<portlist> | all]**

Description        The config 802.1x init command is used to immediately initialize the 802.1x functions on a range of ports.

Parameters        <portlist> – Specifies a range of ports. The port list is specified by listing the beginning port number and the highest port number of the range. The beginning and end of the port list range are separated by a dash. For example, 3 would specify port 3. 4 specifies port 4. 3-4 specifies all of the ports

**config 802.1x init**

between port 3 and port 4 – in numerical order.

all – Specifies all of the ports on the switch.

Restrictions Only administrator-level users can issue this command.

## Example Usage:

To initialize 802.1x port-based functions on ports 1 to 15:

```
DES-3226L:4#config 802.1x init ports 1-15
```

```
Command: config 802.1x init ports 1-15
```

```
Success.
```

```
DES-3226L:4#
```

**config 802.1x reauth**

Purpose Used to configure the 802.1x re-authentication feature of the switch.

Syntax **config 802.1x reauth ports [<portlist> | all]**

Description The config 802.1x reauth command is used to enable the 802.1x re-authentication feature on the switch.

Parameters <portlist> – Specifies a range of ports. The port list is specified by listing the beginning port number and the highest port number



**config 802.1x reauth**

of the range. The beginning and end of the port list range are separated by a dash. For example, 3 would specify port 3. 4 specifies port 4. 3-4 specifies all of the ports between port 3 and port 4 – in numerical order.

all – Specifies all of the ports on the switch.

Restrictions Only administrator-level users can issue this command.

## Example Usage:

To configure 802.1x reauthentication for ports 1-15:

```
DES-3226L:4#config 802.1x reauth ports 1-15
Command: config 802.1x reauth ports 1-15
```

```
Success.
```

```
DES-3226L:4#
```

**config radius add**

Purpose Used to configure the settings the switch will use to communicate with a RADIUS server.

Syntax **config radius add <server\_index 1-3> <server\_ip> key <passwd 32> [default|{auth\_port <udp\_port\_number>|acct\_port <udp\_port\_number>}]**

**config radius add**

|              |   |
|--------------|---|
| Description  | The config radius add command is used to configure the settings the switch will use to communicate with a RADIUS server.  |
| Parameters   | <p>&lt;server_index 1-3&gt; – Assigns a number to the current set of RADIUS server settings. Up to three groups of RADIUS server settings can be entered on the switch.</p> <p>&lt;server_ip&gt; – The IP address of the RADIUS server.</p> <p>key – Specifies that a password and encryption key will be used between the switch and the RADIUS server.</p> <p>&lt;passwd 32&gt; – The shared-secret key used by the RADIUS server and the switch. Up to 32 characters can be used.</p> <p>default – Returns all of the ports in the range to their default RADIUS settings.</p> <p>auth_port &lt;udp_port_number&gt; – The UDP port number for authentication requests. The default is 1812.</p> <p>acct_port &lt;udp_port_number&gt; – The UDP port number for accounting requests. The default is 1813.</p> |
| Restrictions | Only administrator-level users can issue this command.  |

Example Usage:

To configure RADIUS server communication settings:

```
DES-3226L:4#config radius add 1 10.48.74.121 key dlink default
Command: config radius add 1 10.48.74.121 key dlink default
```

**Success.**

```
DES-3226L:4#
```

### **config radius delete**

|              |  |
|--------------|--|
| Purpose      | Used to delete a previously entered RADIUS server configuration.   |
| Syntax       | <b>config radius delete &lt;server_index 1-3&gt;</b>   |
| Description  | The config radius delete command is used to delete a previously entered RADIUS server configuration.   |
| Parameters   | <server_index 1-3> – Assigns a number to the current set of RADIUS server settings. Up to three groups of RADIUS server settings can be entered on the switch. |
| Restrictions | Only administrator-level users can issue this command.   |

Example Usage:

To delete previously configured RADIUS server communication settings:

```
DES-3226L:4#config radius delete 1
Command: config radius delete 1
```

**Success.**

DES-3226L:4#

**config radius**

|             |  |
|-------------|--|
| Purpose     | Used to configure the switch's RADIUS settings.  |
| Syntax      | <b>config radius &lt;server_index 1-3&gt; {ipaddress &lt;server_ip&gt; {ipaddress &lt;server_ip&gt; key &lt;passwd 32&gt; auth_port &lt;udp_port_number&gt; acct_port &lt;udp_port_number&gt;}}</b>  |
| Description | The config radius command is used to configure the switch's RADIUS settings.   |
| Parameters  | <p>&lt;server_index 1-3&gt; – Assigns a number to the current set of RADIUS server settings. Up to three groups of RADIUS server settings can be entered on the switch.</p> <p>&lt;server_ip&gt; – The IP address of the RADIUS server.</p> <p>key – Specifies that a password and encryption key will be used between the switch and the RADIUS server.</p> <p>&lt;passwd 32&gt; – The shared-secret key used by the RADIUS server and the switch. Up to 32 characters can be used.</p> <p>default – Returns all of the ports in the range to their default RADIUS settings.</p> <p>auth_port &lt;udp_port_number&gt; – The UDP</p> |

**config radius**

port number for authentication requests. The default is 1812.

acct\_port <udp\_port\_number> – The UDP port number for accounting requests. The default is 1813.

Restrictions Only administrator-level users can issue this command.

Example Usage:

To configure RADIUS settings:

```
DES-3226L:4#config radius add 1 10.48.74.121 key dlink default
Command: config radius add 1 10.48.74.121 key dlink default
```

**Success.**

```
DES-3226L:4#
```

**show radius**

Purpose Used to display the current RADIUS configurations on the switch.

Syntax **show radius**

Description The show radius command is used to display the current RADIUS configurations on the switch.

Parameters None.

Restrictions None.

Example Usage:

To display RADIUS settings on the switch:

```
DES-3226L:4#show radius
Command: show radius
```

| Index | IP Address | Auth-Port<br>Number | Acct-Port<br>Number | Status | Key     |
|-------|------------|---------------------|---------------------|--------|---------|
| 1     | 10.1.1.1   | 1812                | 1813                | Active | switch  |
| 2     | 20.1.1.1   | 1800                | 1813                | Active | des3250 |
| 3     | 30.1.1.1   | 1812                | 1813                | Active | dlink   |

Total Entries : 3

```
DES-3226L:4#
```

### show 802.1x user

|              |   |
|--------------|---|
| Purpose      | Used to display the current configuration of the 802.1x server on the switch.   |
| Syntax       | <b>show 802.1x user</b>   |
| Description  | The show 802.1x user command is used to display the current configuration of the 802.1x Port-based Network Access Control server application on the switch. |
| Parameters   | none.   |
| Restrictions | none  |

Example Usage:

To show the 802.1x user:

```
DES-3226L:4#show 802.1x user
Command: show 802.1x user
```

```
Index  UserName
-----  -
1      ctsnow
```

```
DES-3226L:4#
```

### **create 802.1x user**

|              |  |
|--------------|--|
| Purpose      | Used to create a new 802.1x user.  |
| Syntax       | <b>create 802.1x user &lt;username 16&gt;</b>                            |
| Description  | The create 802.1x user command is used to create new 802.1x users.       |
| Parameters   | <username 16> – A username can be as many as 16 alphanumeric characters. |
| Restrictions | Only administrator-level users can issue this command.                   |

Example Usage:

To create an 802.1x user:

```
DES-3226L:4#create 802.1x user ctsnow
Command: create 802.1x user ctsnow
```

```
Enter a case-sensitive new password:*****
Enter the new password again for confirmation:*****
Success.
```

```
DES-3226L:4#
```

**delete 802.1x user**

|              |  |
|--------------|--|
| Purpose      | Used to delete the switch's 802.1x users.                                |
| Syntax       | <b>delete 802.1x user &lt;username 16&gt;</b>                            |
| Description  | The delete 802.1x user command is used to delete 802.1x users.           |
| Parameters   | <username 16> – A username can be as many as 16 alphanumeric characters. |
| Restrictions | Only administrator-level users can issue this command.                   |

## Example Usage:

To delete 802.1x users:

```
DES-3226L:4# delete 802.1x user
Command: delete 802.1x user ctsnow

Are you sure to delete the user?(y/n)
Success.

DES-3226L:4#
```

**show auth statistics**

|         |   |
|---------|---|
| Purpose | Used to display authenticator statistics information. |
| Syntax  | <b>show auth_statistics ports &lt;portlist&gt;</b>    |



**show auth\_statistics**

|              |   |
|--------------|---|
| Description  | The show auth_statistics command displays authenticator statistics information.   |
| Parameters   | <portlist> -- Specifies a range of ports. The port list is specified by listing the beginning port number and the highest port number of the range. The beginning and end of the port list range are separated by a dash. For example, 3 would specify port 3. 4 specifies port 4. 3-4 specifies all of the ports between port 3 and port 4 – in numerical order. |
| Restrictions | none  |

## Example Usage:

To display authenticator statistics for port 1:

```
DES-XXXXX:4#show auth_statistics ports 1
Command: show auth_statistics ports 1
```

Port number : 1

```
EapolFramesRx          0
EapolFramesTx          6
EapolStartFramesRx     0
EapolReqIdFramesTx     6
EapolLogoffFramesRx    0
EapolReqFramesTx       0
EapolRespIdFramesRx    0
EapolRespFramesRx      0
InvalidEapolFramesRx   0
EapLengthErrorFramesRx 0
LastEapolFrameVersion  0
```

|                      |                   |
|----------------------|-------------------|
| LastEapolFrameSource | 00-00-00-00-00-00 |
|----------------------|-------------------|

|              |
|--------------|
| DES-XXXXS:4# |
|--------------|

### **show auth\_diagnostics**

|              |   |
|--------------|---|
| Purpose      | Used to display authenticator diagnostics information.  |
| Syntax       | <b>show auth_diagnostics ports &lt;portlist&gt;</b>   |
| Description  | The show auth_statistics command displays authenticator diagnostics information.  |
| Parameters   | <portlist> -- Specifies a range of ports. The port list is specified by listing the beginning port number and the highest port number of the range. The beginning and end of the port list range are separated by a dash. For example, 3 would specify port 3. 4 specifies port 4. 3-4 specifies all of the ports between port 3 and port 4 – in numerical order. |
| Restrictions | none  |

#### Example Usage:

To display authenticator diagnostics information for port 1:

|  |
|--|
| DES-XXXXS:4# show auth_diagnostics ports 1 |
| Command: show auth_diagnostics ports 1     |

|                 |
|-----------------|
| Port number : 1 |
|-----------------|

```

EntersConnecting          20
EapLogoffsWhileConnecting  0
EntersAuthenticating      0
SuccessWhileAuthenticating 0
TimeoutsWhileAuthenticating 0
FailWhileAuthenticating   0
ReauthsWhileAuthenticating 0
EapStartsWhileAuthenticating 0
EapLogoffWhileAuthenticating 0
ReauthsWhileAuthenticated 0
EapStartsWhileAuthenticated 0
EapLogoffWhileAuthenticated 0
BackendResponses          0
BackendAccessChallenges   0
BackendOtherRequestsToSupplicant 0
BackendNonNakResponsesFromSupplicant 0
BackendAuthSuccesses      0
BackendAuthFails          0

```

```
DES-XXXXS:4#
```

### **show auth\_session\_statistic ;**

|             |   |
|-------------|---|
| Purpose     | Used to display authenticator session statistics information.   |
| Syntax      | <b>show auth_session_statistics ports &lt;portlist&gt;</b>  |
| Description | The show auth_session_statistics command displays authenticator session statistics information.                                       |
| Parameters  | <portlist> -- Specifies a range of ports. The port list is specified by listing the beginning port number and the highest port number |

**show auth\_session\_statistic s**

of the range. The beginning and end of the port list range are separated by a dash. For example, 3 would specify port 3. 4 specifies port 4. 3-4 specifies all of the ports between port 3 and port 4 – in numerical order.

Restrictions            none

Example Usage:

To display authenticator session statistics for port 1:

**DES-XXXXS:4#show auth\_session\_statistics ports 1**

**Command: show auth\_session\_statistics ports 1**

**Port number : 1**

|                               |          |                                     |
|-------------------------------|----------|-------------------------------------|
| <b>SessionOctetsRx</b>        | <b>0</b> |                                     |
| <b>SessionOctetsTx</b>        | <b>0</b> |                                     |
| <b>SessionFramesRx</b>        | <b>0</b> |                                     |
| <b>SessionFramesTx</b>        | <b>0</b> |                                     |
| <b>SessionId</b>              |          |                                     |
| <b>SessionAuthenticMethod</b> |          | <b>Remote Authentication Server</b> |
| <b>SessionTime</b>            | <b>0</b> |                                     |
| <b>SessionTerminateCause</b>  |          | <b>SupplicantLogoff</b>             |
| <b>SessionUserName</b>        |          |                                     |

**DES-XXXXS:4#**

**show radius\_auth\_client**

Purpose                    Used to display radius authenticator client information.

**show radius auth\_client**

|              |   |
|--------------|---|
| Syntax       | <b>show radius auth_client ports &lt;portlist&gt;</b>   |
| Description  | The show radius auth_client command displays radius authenticator client information.   |
| Parameters   | <portlist> -- Specifies a range of ports. The port list is specified by listing the beginning port number and the highest port number of the range. The beginning and end of the port list range are separated by a dash. For example, 3 would specify port 3. 4 specifies port 4. 3-4 specifies all of the ports between port 3 and port 4 – in numerical order. |
| Restrictions | none  |

Example usage:

To display radius authentication client information for port 1:

```
DES-XXXX:4# show radius auth_client
Command: show radius auth_client

radiusAuthClient ==>
radiusAuthClientInvalidServerAddresses 0
radiusAuthClientIdentifier      D-Link

radiusAuthServerEntry ==>
radiusAuthServerIndex :1

radiusAuthServerAddress          0.0.0.0
radiusAuthClientServerPortNumber X
radiusAuthClientRoundTripTime    0
radiusAuthClientAccessRequests  0
```

```

radiusAuthClientAccessRetransmissions 0
radiusAuthClientAccessAccepts      0
radiusAuthClientAccessRejects      0
radiusAuthClientAccessChallenges    0
radiusAuthClientMalformedAccessResponses 0
radiusAuthClientBadAuthenticators    0
radiusAuthClientPendingRequests      0
radiusAuthClientTimeouts             0
radiusAuthClientUnknownTypes         0
radiusAuthClientPacketsDropped       0

radiusAuthClientRoundTripTime        0
radiusAuthClientAccessRequests       0
radiusAuthClientAccessRetransmissions 0
radiusAuthClientAccessAccepts        0
radiusAuthClientAccessRejects         0
radiusAuthClientAccessChallenges      0
radiusAuthClientMalformedAccessResponses 0
radiusAuthClientBadAuthenticators     0
radiusAuthClientPendingRequests       0
radiusAuthClientTimeouts              0
radiusAuthClientUnknownTypes          0
radiusAuthClientPacketsDropped        0

```

DES-XXXXS:4#

### **show radius acct\_client**

|             |   |
|-------------|---|
| Purpose     | Used to display RADIUS account client information.    |
| Syntax      | <b>show radius acct_client ports &lt;portlist&gt;</b> |
| Description | The show radius acct_client command                   |

**show radius acct\_client**

displays radius account client information.

|              |   |
|--------------|---|
| Parameters   | <portlist> -- Specifies a range of ports. The port list is specified by listing the beginning port number and the highest port number of the range. The beginning and end of the port list range are separated by a dash. For example, 3 would specify port 3. 4 specifies port 4. 3-4 specifies all of the ports between port 3 and port 4 – in numerical order. |
| Restrictions | none  |

Example usage:

To display radius account client information for port 1:

```
DES-XXXX:4# show radius acct_client
Command: show radius acct_client

radiusAcctClient ==>
radiusAcctClientInvalidServerAddresses 0
radiusAcctClientIdentifier      D-Link

radiusAuthServerEntry ==>
radiusAccServerIndex : 1

radiusAccServerAddress      0.0.0.0
radiusAccClientServerPortNumber  X
radiusAccClientRoundTripTime  0
radiusAccClientRequests     0

radiusAccClientRetransmissions  0
radiusAccClientResponses       0
radiusAccClientMalformedResponses  0
radiusAccClientBadAuthenticators  0
```

|                                       |          |
|---------------------------------------|----------|
| <b>radiusAccClientPendingRequests</b> | <b>0</b> |
| <b>radiusAccClientTimeouts</b>        | <b>0</b> |
| <b>radiusAccClientUnknownTypes</b>    | <b>0</b> |
| <b>radiusAccClientPacketsDropped</b>  | <b>0</b> |



---

## **SSH COMMANDS**

The steps required to use the SSH protocol for secure communication between a remote PC (the SSH Client) and the Switch (the SSH Server), are as follows:

- Create a user account with *admin*-level access using the *create account admin <username> <password>* command. In the example presented below, the username *SSHtest* is used. This is identical to creating any other admin-level User account on the Switch, including specifying a password. This password is used to login to the Switch, once secure communication has been established using the SSH protocol.
- Configure the user account to use a specified authorization method to identify users that are allowed to establish SSH connections with the Switch using the *config ssh user authmode* command. There are three choices as to the method SSH will use to authorize the user, and they are *password*, *publickey* and *hostbased*.
- Configure the encryption algorithm that SSH will use to encrypt and decrypt messages sent between the SSH Client and the SSH Server. Again, there are some choices to make, but *Blowfish* is used in the example presented below.
- Finally, enable SSH on the Switch using the *enable ssh* command.

- After following the above steps, you can configure an SSH Client on the remote PC and manage the Switch using secure, in-band communication.

The Secure Shell (SSH) commands in the Command Line Interface (CLI) are listed (along with the appropriate parameters) in the following table.

| <b>Command</b>              | <b>Parameters</b>  |
|-----------------------------|--|
| <b>config ssh algorithm</b> | [3DES Blowfish MD5 SHA1  DSA RSA]<br>[enable disable]  |
| <b>show ssh algorithm</b>   |  |
| <b>config ssh authmode</b>  | [password  publickey  hostbased]<br>[enable disable]   |
| <b>show ssh authmode</b>    |  |
| <b>config ssh user</b>      | <username> authmode [Publickey<br> Password   Hostbased [host_name<br><domain_name 32>  hostname_IP<br><domain_name 32> <ipaddr>]] |
| <b>show ssh user</b>        |  |
| <b>config ssh server</b>    | {maxsession <int 1-2>  contimeout <sec<br>120-600>   authfail <int 2-20>  rekey [10min<br> 30min   60min  never]}                  |
| <b>show ssh server</b>      |  |
| <b>enable ssh</b>           |  |
| <b>disable ssh</b>          |  |

Each command is listed, in detail, in the following sections.

### **config ssh algorithm**

Purpose                      Used to configure the SSH algorithm.

**config ssh algorithm**

|              |   |
|--------------|---|
| Syntax       | <b>config ssh algorithm</b><br><b>[3DES   Blowfish   MD5   SHA1   DSA   RSA]</b><br><b>[enabled   disabled]</b>   |
| Description  | This command allows you to configure the desired type of SSH algorithm.   |
| Parameters   | [3DES   Blowfish   MD5   SHA1   DSA   RSA] – Choose the desired security algorithm.<br><br>[enabled   disabled] – This allows you to enable or disable the SSH algorithm. |
| Restrictions | None.   |

Usage Example:

To configure SSH algorithm:

```
DES-3226L:4#config ssh algorithm Blowfish enable
Command: config ssh algorithm Blowfish enable
```

```
Success.
```

```
DES-3226L:4#
```

**show ssh algorithm**

|             |   |
|-------------|---|
| Purpose     | Used to display the SSH algorithm setting.                          |
| Syntax      | <b>show ssh algorithm</b>   |
| Description | This command will display the current SSH algorithm setting status. |

**show ssh algorithm**

|              |       |
|--------------|-------|
| Parameters   | none. |
| Restrictions | none. |

Usage Example:

To display the SSH algorithm:

```
DES-3226L:4#show ssh algorithm
Command: show ssh algorithm
```

**Encryption Algorithm**

```
MD5      : Enabled
SHA1     : Enabled
DSA      : Enabled
RSA      : Enabled
3DES     : Enabled
Blowfish : Enabled
```

```
DES-3226L:4#
```

**config ssh authmode**

|             |  |
|-------------|--|
| Purpose     | Used to configure the SSH authentication mode setting.                             |
| Syntax      | <b>config ssh authmode [password   publickey   hostbased] [enabled   disabled]</b> |
| Description | This command will allow you to configure the SSH authentication mode.              |
| Parameters  | [password   publickey   hostbased] – Choose the desired SSH authentication mode.   |

**config ssh authmode**

the desired SSH authentication mode.

[enabled|disabled] – This allows you to enable or disable SSH authentication.

Restrictions      None.

Usage Example:

To enable the SSH authentication mode by password:

**DES-3226L:4#config ssh authmode password enable**  
**Command: config ssh authmode password enable**

**Success**

**DES-3226L:4#**

**show ssh authmode**

Purpose              Used to display the SSH authentication mode setting.

Syntax             **show ssh authmode**

Description        This command will allow you to display the current SSH authentication mode.

Parameters        none.

Restrictions       none.

Usage Example:

To display the SSH authmode:

```
DES-3226L:4#show ssh authmode
Command: show ssh authmode
```

**Authentication Algorithm**

```
Hostbase : Enabled
Password : Enabled
Publickey : Enabled
```

```
DES-3226L:4#
```

**config ssh user**

|              |   |
|--------------|---|
| Purpose      | Used to configure the SSH user.   |
| Syntax       | <b>config ssh user &lt;username&gt; authmode [Publickey   Password   Hostbased [host_name &lt;domain_name 32&gt;   hostname_IP &lt;domain_name 32&gt;   ipaddr]]</b>  |
| Description  | This command allows you to modify the parameters of the SSH user.   |
| Parameters   | <p>&lt;username&gt; – Enter an optional SSH user name.</p> <p>authmode – Select the type of security authentication mode: [Publickey   Password   Hostbased [host_name &lt;domain_name 32&gt;   hostname_IP &lt;domain_name 32&gt;   ipaddr]] .</p> |
| Restrictions | None.   |

Usage Example:

To configure the password option for the SSH authmode for the User Account "Trinity":

```
DES-3226L:4#config ssh user Trinity authmode Password
Command: config ssh user Trinity authmode Password
```

```
Enter a case sensitive new password: *****
Enter the new password again for conformation:*****
Success.
```

```
DES-3226L:4#
```



**NOTE:** To configure the SSH user, the administrator must create a user account on the switch. For information concerning configuring a user account, please see Section 4 of this manual, *Basic Switch Commands*, pages 23-25, create user account.

### show ssh user

|              |  |
|--------------|--|
| Purpose      | Used to display the SSH user setting.                            |
| Syntax       | <b>show ssh user</b>   |
| Description  | This command allows you to display the current SSH user setting. |
| Parameters   | none.  |
| Restrictions | none.  |

Usage Example:

To display the SSH user:

```

DES-3226L:4#show ssh user
Command: show ssh user

Current Accounts:
UserName           Authentication
-----           -
Trinity            Password

The total entry: 1

DES-3226L:4#

```

## config ssh server

|             |  |
|-------------|--|
| Purpose     | Used to configure the SSH server.  |
| Syntax      | <b>config ssh server {maxsession &lt;int 1-2&gt;  <br/>contimeout &lt;sec 120-600&gt;   authfail<br/>&lt;int 2-20&gt;  rekey [10min  30min  <br/>60min  never]}</b>  |
| Description | This command allows you to configure the SSH server.   |
| Parameters  | <p>maxsession &lt;int 1-2&gt; – Allows the user to set the number of times an outside guest may attempt to log on to the switch.</p> <p>contimeout &lt;sec 120-600&gt; – Allows the user to set the connection timeout.</p> <p>authfail &lt;int 2-20&gt; – Allows the user to set the maximum number of authentication fail attempts.</p> <p>rekey [10min  30min   60min  never] – Sets the time period that the switch will</p> |



## **config ssh server**

change the security shell encryptions.

Restrictions      None.

Usage Example:

To configure the SSH server:

```
DES-3226L:4#config ssh server maxsession 2 contimeout 300
authfail 2
Command: config ssh server maxsession 2 contimeout 300 authfail
2
Success.
DES-3226L:4#
```

## **show ssh server**

|              |  |
|--------------|--|
| Purpose      | Used to display the SSH server setting.                            |
| Syntax       | <b>show ssh server</b>   |
| Description  | This command allows you to display the current SSH server setting. |
| Parameters   | None.  |
| Restrictions | None.  |

Usage Example:

To display the SSH server:

```
DES-3226L:4#show ssh server
Command: show ssh server
```

The SSH server configuration

```
Max Session      : 2
Connection timeout : 300
Authfail attempts : 2
Rekey timeout     : 3600
```

```
DES-3226L:4#
```

## **enable ssh**

|              |  |
|--------------|--|
| Purpose      | Used to enable SSH.                                  |
| Syntax       | <b>enable ssh</b>                                    |
| Description  | This command allows you to enable SSH on the switch. |
| Parameters   | None.  |
| Restrictions | None.  |

Usage Example:

To enable SSH:

```
DES-3226L:4#enable ssh
Command: enable ssh
```

```
Success.
```

```
DES-3226L:4#
```

## **disable ssh**

|              |   |
|--------------|---|
| Purpose      | Used to disable SSH.                                  |
| Syntax       | <b>disable ssh</b>                                    |
| Description  | This command allows you to disable SSH on the switch. |
| Parameters   | None.   |
| Restrictions | None.   |

Usage Example:

To disable SSH:

```
DES-3226L:4#disable ssh
```

```
Command: disable ssh
```

```
Success.
```

```
DES-3226L:4#
```

---

## COMMAND HISTORY LIST

The switch port commands in the Command Line Interface (CLI) are listed (along with the appropriate parameters) in the following table.

| Command                   | Parameters   |
|---------------------------|--------------|
| ?                         |              |
| show<br>command_history   |              |
| dir                       |              |
| config<br>command_history | <value 1-40> |

Each command is listed, in detail, in the following sections.

|             |   |
|-------------|---|
| <b>?</b>    |   |
| Purpose     | Used to display all commands in the Command Line Interface (CLI).                                 |
| Syntax      | ?   |
| Description | This command will display all of the commands available through the Command Line Interface (CLI). |

|              |       |
|--------------|-------|
| ?            |       |
| Parameters   | none. |
| Restrictions | none. |

Usage Example:

To display all of the commands in the CLI:

```
DES-3226L:4#?  
Command: ?  
  
..  
?  
clear  
clear counters  
clear log  
config 802.1p user_priority  
config 802.1x auth_parameter ports  
config 802.1x auth_protocol  
config 802.1x capability ports  
config 802.1x init ports  
config 802.1x reauth ports  
config account  
config bandwidth_control  
config command_history  
config fdb aging_time  
config gvrp  
config igmp_snooping  
config igmp_snooping querier  
config ipif  
config link_aggregation group_id  
config mirror port  
config ports  
config radius  
CTRL+C ESC q Quit SPACE n Next Page Enter Next Entry a All
```

**show command\_history**

|              |  |
|--------------|--|
| Purpose      | Used to display the command history.           |
| Syntax       | <b>show command_history</b>                    |
| Description  | This command will display the command history. |
| Parameters   | none.  |
| Restrictions | none.  |

Usage Example:

To display the command history:

```
DES-3226L:4#show command_history
Command: show command_history

?
? show
show vlan
config router_ports vlan2 add 1:1-1:10
config router_ports vlan2 add
config router_ports vlan2
config router_ports
show vlan
create vlan vlan2 tag 3
create vlan vlan2 tag 2
show router_ports
show router ports
login
DES-3226L:4#
```

**dir**

|              |   |
|--------------|---|
| Purpose      | Used to display all commands.           |
| Syntax       | <b>dir</b>                              |
| Description  | This command will display all commands. |
| Parameters   | none.                                   |
| Restrictions | none.                                   |

Usage Example:

To display all of the commands:

```
DES-3226L:4#dir
Command: dir
..
?
clear
clear arptable
clear counters
clear fdb
clear log
config 802.1p default_priority
config 802.1p user_priority
config 802.1x auth_parameter ports
config 802.1x auth_protocol
config 802.1x capability ports
config 802.1x init ports
config 802.1x reauth ports
config access_profile profile_id
config account
config arp_aging time
config bandwidth_control
config command_history
```

```
config fdb aging_time
config gvrp
config hol prevention
CTRL+C ESC q Quit SPACE n Next Page Enter Next Entry a All
```

## **config command\_history**

|              |  |
|--------------|--|
| Purpose      | Used to configure the command history.   |
| Syntax       | <b>config command_history &lt;value 1-40&gt;</b>   |
| Description  | This command is used to configure the command history.   |
| Parameters   | <value> – the number of previously executed commands maintained in the buffer. Up to 40 of the latest executed commands may be viewed. |
| Restrictions | none.  |

Usage Example:

To configure the command history:

```
DES-3226L:4#config command_history 20
Command: config command_history 20

Success.

DES-3226L:4#
```





# TECHNICAL SPECIFICATIONS

| General              |   |             |
|----------------------|---|-------------|
| Standards:           | IEEE 802.3 10BASE-T Ethernet<br>IEEE 802.3u 100BASE-TX Fast Ethernet<br>IEEE 802.3z 1000BASE-LX/SX Gigabit Ethernet<br>IEEE 802.3ab 1000BASE-T Gigabit Ethernet<br>IEEE 802.1 P/Q VLAN<br>IEEE 802.3x Full-duplex Flow Control<br>ANSI/IEEE 802.3 Nway auto-negotiation |             |
| Protocols:           | CSMA/CD   |             |
| Data Transfer Rates: | Half-duplex   | Full-duplex |
| Ethernet             | 10 Mbps   | 20Mbps      |
| Fast Ethernet        | 100Mbps   | 200Mbps     |
| Gigabit Ethernet     | n/a   | 2000Mbps    |

|                |      |
|----------------|------|
| <b>General</b> |      |
| Topology:      | Star |

| <b>General</b>               |   |
|------------------------------|---|
| Network Cables:<br>10BASE-T: | 2-pair UTP Cat. 3,4,5 (100 m)<br>EIA/TIA- 568 100-ohm STP (100 m)   |
| 100BASE-TX:                  | 2-pair UTP Cat. 5 (100 m)<br>EIA/TIA-568 100-ohm STP (100 m)  |
| Fiber Optic:                 | IEC 793-2:1992<br>Type A1a - 50/125um multimode<br>Type A1b - 62.5/125um multimode<br>Both types use MTRJ or SC optical connector |
| Number of Ports:             | 24 x 10/100Mbps NWay ports<br>2 x 1000Mbps Mini-GBIC combo ports  |

| <b>Physical and Environmental</b> |   |
|-----------------------------------|---|
| AC inputs:                        | 100 - 240 VAC, 50/60 Hz (internal universal power supply)     |
| Power Consumption:                | 60 watts maximum  |
| DC fans:                          | 2 built in 40 x 40x 10 mm fans                                |
| Operating Temperature:            | 0 to 40 degrees Celsius                                       |
| Storage Temperature:              | -25 to 55 degrees Celsius                                     |
| Humidity:                         | Operating: 5% to 95% RH non-condensing                        |
| Dimensions:                       | 441(W) x 209(D) x 44mm(H), 19 inch rack-mount width 1U height |

| <b>Physical and Environmental</b> |  |
|-----------------------------------|--|
| Weight:                           | 5.2 kg                                       |
| EMI:                              | FCC Class A, CE Mark Class A, C-Tick Class A |
| Safety:                           | CSA International                            |

| <b>Performance</b>                    |   |
|---------------------------------------|---|
| Forwarding Mode                       | Store-and-forward   |
| Packet buffer memory                  | 3 Mbit per device   |
| Packet Filtering/<br>Forwarding Rate: | Full-wire speed for all connections.<br><br>1,488,095 pps per port (for 1000Mbps) |
| MAC Address Learning:                 | Automatic update. Supports 4K MAC address   |
| Priority Queues                       | 2 Priority Queues per port  |
| Forwarding Table Age Time:            | Max age:10-765 seconds.<br>Default = 300.   |