D-Link®

DES-3226S
Layer 2 Switch

Command Line Interface Reference Manual

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RECYCLABLE

Wichtige Sicherheitshinweise

1. Bitte lesen Sie sich diese Hinweise sorgfältig durch.
2. Heben Sie diese Anleitung für den spätern Gebrauch auf.
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    c – Das Gerät war Feuchtigkeit ausgesetzt.
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1

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.

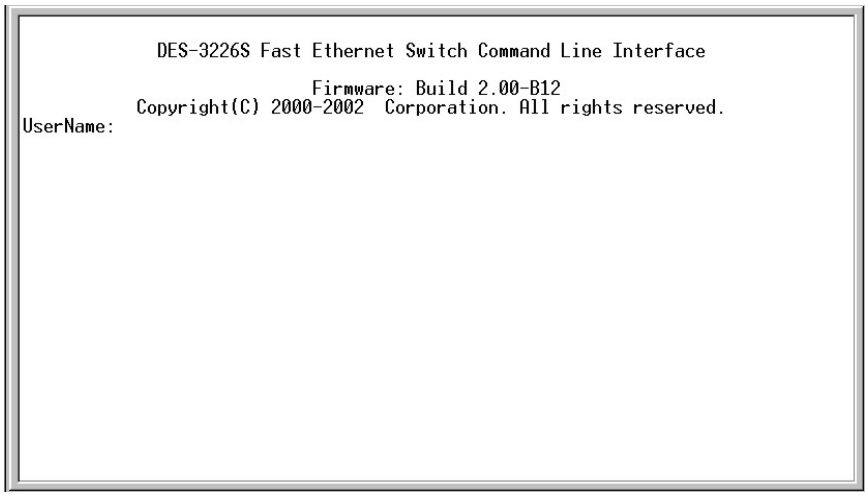

Figure 1-1. Initial Console screen.

There is no initial username or password. Just press the **Enter** key twice to display the CLI input cursor – **DES-3226S: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, 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 from the initial boot console screen – shown below.

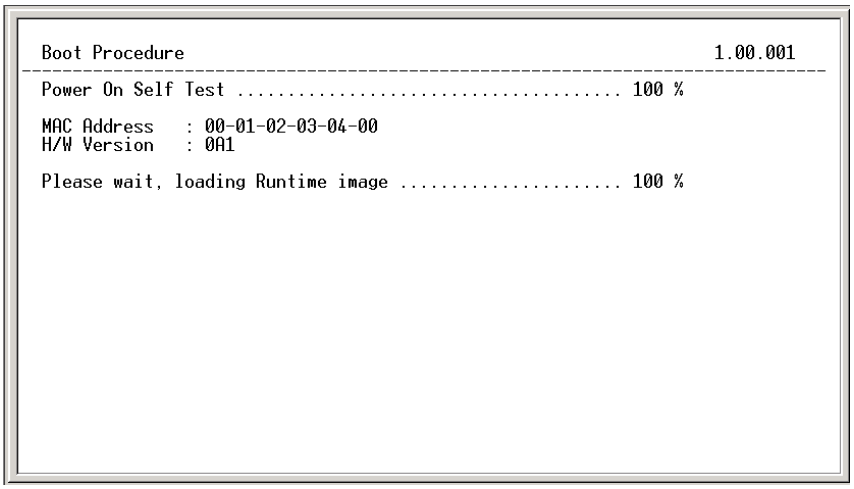

Figure 1-2. Boot Screen

The switch's MAC address can also be found from the Web management program on the Switch Information (Basic Settings) window on the Configuration menu.

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.

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, 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 **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.

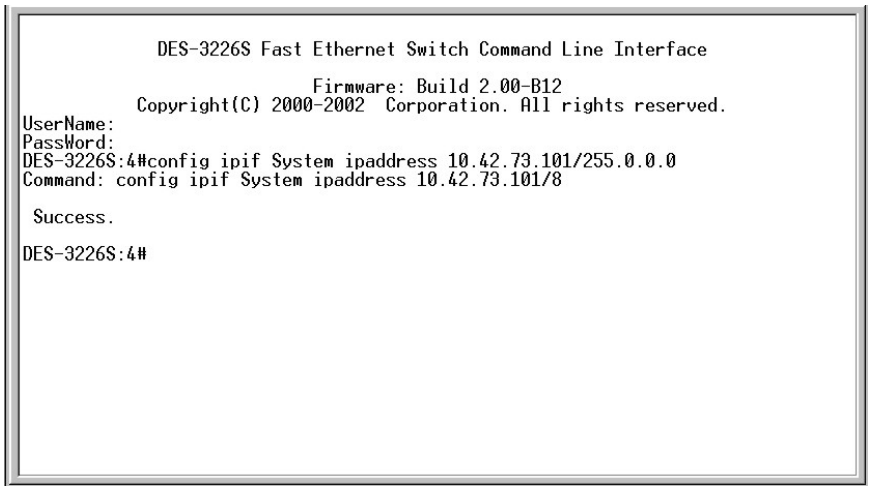

Figure 1-3. Assigning the Switch an IP Address

In the above example, the switch was assigned an IP address of 10.24.22.5 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-3226S 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:

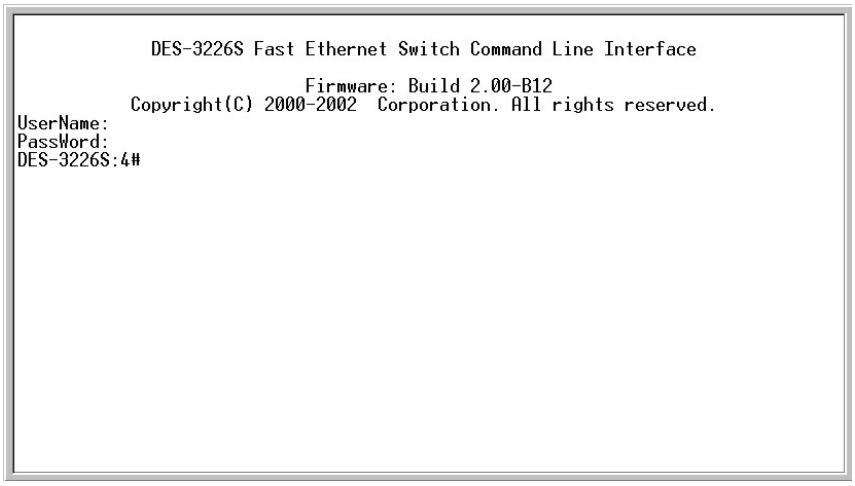

Figure 2-1. Initial Console Screen

Commands are entered at the command prompt, **DES-3226S: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.

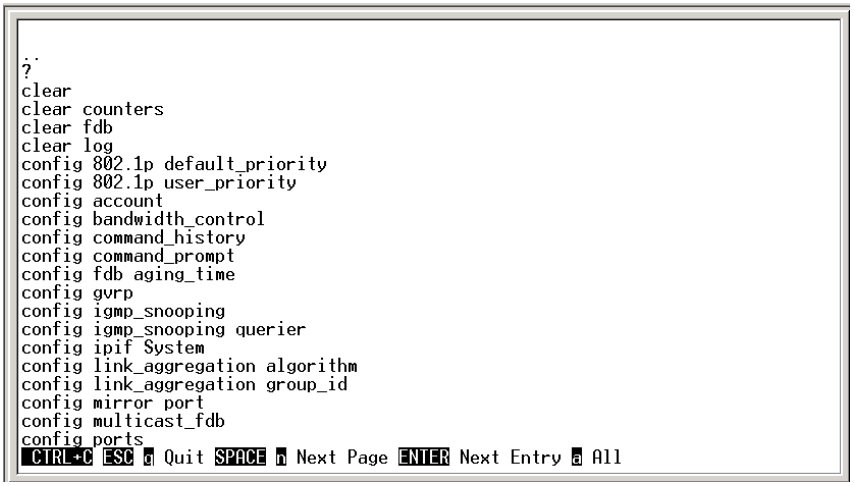

Figure 2-2. The ? Command

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.

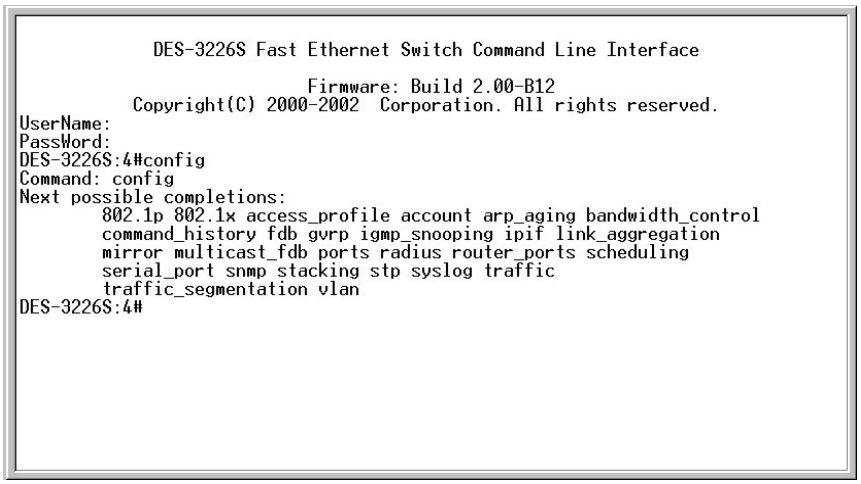

Figure 2-3. Example Command Parameter Help

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.

In addition, after typing any given command plus one space, you can see all of the next possible sub-commands, in sequential order, by repeatedly pressing the **Tab** key.

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.

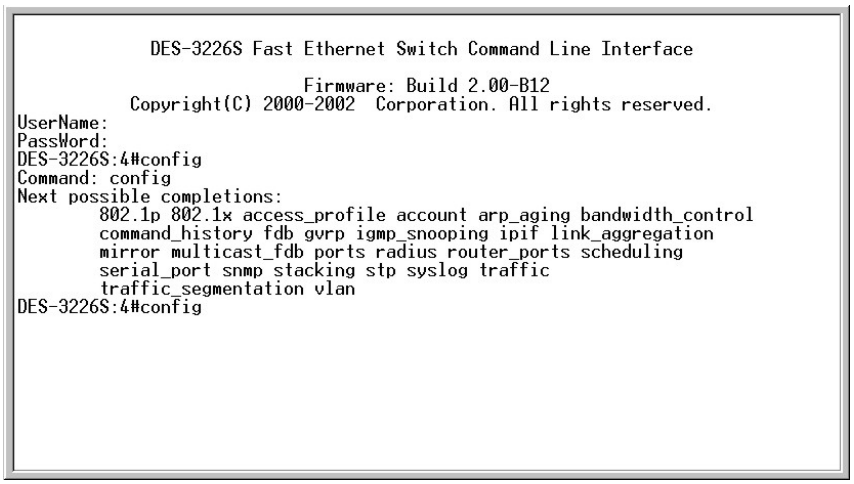

Figure 2-4. Using the Up Arrow to Re-enter a Command

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.

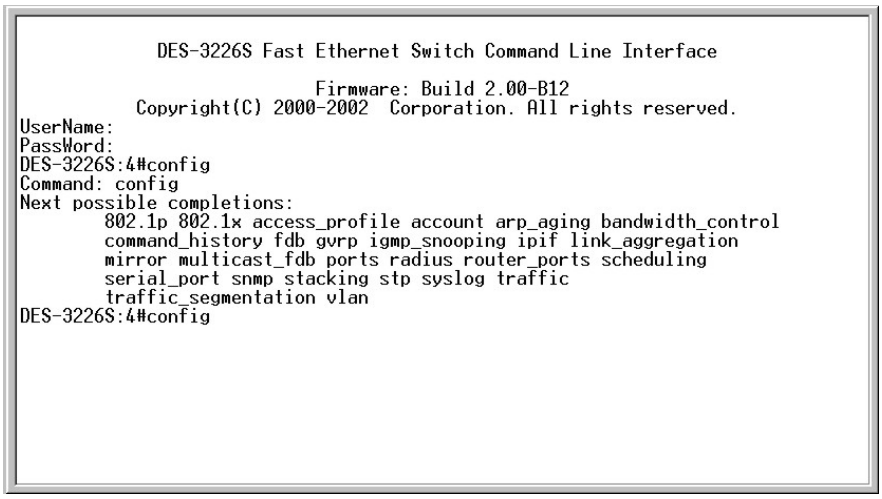

Figure 2-5. The Next Available Commands Prompt

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.

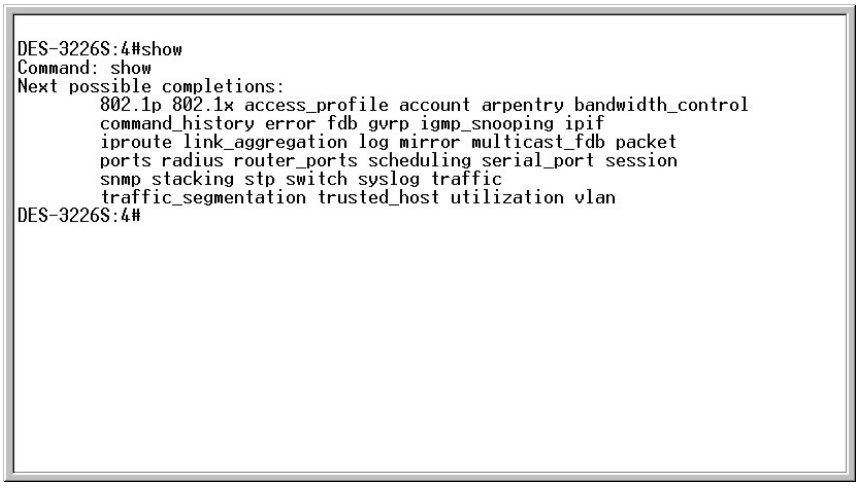

Figure 2-6. Next possible completions: Show Command

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 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.

<angle brackets>	
Purpose	Encloses a variable or value that must be specified.
Syntax	**create ipif <ipif_name> vlan <vlan_name> ipaddress <network_address>**
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	**create ipif Engineering vlan Design ipaddress 10.24.22.5/255.0.0.0**

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

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

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

Line Editing Key Usage	
Delete	Deletes character under the cursor and then shifts the remaining characters in the line to the left.
Backspace	Deletes the character to the left of the cursor and shifts the remaining characters in the line to the left**.**
Insert	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.
Left Arrow	Moves the cursor to the left.
Right Arrow	Moves the cursor to the right.
Tab	Shifts the cursor to the next field to the left.
Multiple Page Display Control Keys	
Space	Displays the next page.
CTRL+c	Stops the display of remaining pages when multiple pages are to be displayed.
ESC	Stops the display of remaining pages when multiple pages are to be displayed.
n	Displays the next page.

Line Editing Key Usage	
p	Displays the previous page.
q	Stops the display of remaining pages when multiple pages are to be displayed.
r	Refreshes the pages currently displaying.
a	Displays the remaining pages without pausing between pages.
Enter	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.

Command	Parameters
create account	[admin/user] <username>
config account	<username>
show account	
show session	
show switch	
show serial_port	
config serial_port	baud_rate [9600/19200/38400/115200] auto_logout [never/2_minutes/5_minutes /10_minutes/15_minutes]
enable clipaging	
disable clipaging	
enable telnet	<tcp_port_number>
disable telnet	
enable web	<tcp_port_number>
disable web	
save	
reboot	

Command	Parameters
reset	{config/system}
login	
logout	

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

create account	
Purpose	Used to create user accounts
Syntax	**create [admin/user] <username>**
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 8 user accounts can be created.
Parameters	Admin <username> User <username>
Restrictions	Only Administrator-level users can issue this command. Usernames can be between 1 and 15 characters. Passwords can be between 0 and 15 characters.

Example Usage:

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

```
DES-3226S: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-3226S:4#
```

config account

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

Example Usage:

To configure the user password of “dlink” account:

```
DES-3226S: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-3226S:4#
```

show account	
Purpose	Used to display user accounts
Syntax	**show account**
Description	Displays all user accounts created on the switch. Up to 8 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-3226S:4#show account
Command: show account

 Current Accounts:
   Username         Access Level
   ---------------  ------------
  dlink             Admin
DES-3226S:4#
```

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

Example Usage:

To delete the user account “System”:

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

 Success.

DES-3226S:4#
```

show session

Purpose	Used to display a list of currently logged-in users.
Syntax	**show session**
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-3226S:4#show session

ID   Live Time     From      Level   Name
---  ------------  ------------  -----  ---------
8    0:17:16.2     Serial Port   4    Anonymous
```

show switch

Purpose	Used to display information about the switch.
Syntax	**show switch**

show switch

Description	This command displays information about the switch.
Parameters	None.
Restrictions	None.

Example Usage:

To display the switch information:

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

Device Type      : DES-3226S Fast-Ethernet Switch
Module Type      : DES-332GS 1-port GBIC Gigabit Ethernet and
1 Stacking Port
Unit ID          : 1
MAC Address      : DA-10-21-00-00-01
IP Address       : 10.41.44.22 (Manual)
VLAN Name        : default
Subnet Mask      : 255.0.0.0
Default Gateway  : 0.0.0.0
Boot PROM Version : Build 0.00.001
Firmware Version  : Build 3.00-B09
Hardware Version  : 1B1
Device S/N       :
System Name      : DES-3226S_#3
System Location  : 7th_flr_east_cabinet
System Contact   : Julius_Erving_212-555-6666
Spanning Tree    : Disabled
GVRP             : Disabled
IGMP Snooping    : Disabled
TELNET           : Enabled (TCP 23)
```

```
WEB             : Enabled (TCP 80)
RMON            : Enabled
DES-3226S:4#
```

show serial_port	
Purpose	Used to display the current serial port settings.
Syntax	**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-3226S: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-3226S:4#
```

config serial_port

Purpose	Used to configure the serial port.
Syntax	**config serial_port {baud_rate[9600/19200/38400/115200]/auto_logout [never/2_minutes/5_minutes/10_minutes/ 15_minutes]}**
Description	This command is used to configure the serial port's baud rate and auto logout settings.
Parameters	[9600/19200/38400/115200] – The serial bit rate that will be used to communicate with the management host. never – No time limit on the length of time the console can be open with no user input. 2_minutes – The console will log out the current user if there is no user input for 2 minutes. 5_minutes – The console will log out the current user if there is no user input for 5 minutes. 10_minutes – The console will log out the current user if there is no user input for 10 minutes. 15_minutes – The console will log out the current user if there is no user input for 15 minutes.
Restrictions	Only administrator-level users can issue this command.

Example Usage:

To configure baud rate:

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

 Success.

DES-3226S:4#
```

enable clipaging

Purpose	Used to pause the scrolling of the console screen when the show command displays more than one page.
Syntax	**enable clipaging**
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	Only administrator-level users can issue this command.

Example Usage:

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

```
DES-3226S:4#enable clipaging
Command: enable clipaging

Success.

DES-3226S: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 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	Only administrator-level users can issue this command.

Example Usage:

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

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

 Success.

DES-3226S: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 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	Only administrator-level users can issue this command.

Example Usage:

To enable Telnet and configure port number:

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

Success.

DES-3226S: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	Only administrator-level users can issue this command.

Example Usage:

To disable the Telnet protocol on the switch:

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

 Success.

DES-3226S:4#
```

enable web	
Purpose	Used to enable the HTTP-based management software on the switch.
Syntax	**enable web <tcp_port_number>**
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 65535. The "well-known" port for the Web-based management software is 80.
Restrictions	Only administrator-level users can issue this command.

Example Usage:

To enable HTTP and configure port number:

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

Success.

DES-3226S:4#
```

disable web	
Purpose	Used to disable the HTTP-based management software on the switch.
Syntax	**disable web**
Description	This command disables the Web-based management software on the switch.
Parameters	none.
Restrictions	Only administrator-level users can issue this command.

Example Usage:

To disable HTTP:

```
DES-3226S:4#disable web
Command: disable web

 Success.

DES-3226S:4#
```

save	
Purpose	Used to save changes in the switch's configuration to non-volatile RAM.
Syntax	**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-3226S:4#save
Command: save

Saving all settings to NV-RAM...   100%
done.
DES-3226S:4#
```

reboot	
Purpose	Used to restart the switch.
Syntax	**reboot**
Description	This command is used to restart the switch.
Parameters	none.
Restrictions	none.

Example Usage:

To restart the switch:

```
DES-3226S: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	**reset** {**config/system**}
Description	This command is used to restore the switch's configuration to the default settings assigned from the factory.
Parameters	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. system – If system is specified all of the factory default settings are restored on the switch. If no parameter 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.
Restrictions	Only administrator-level users can issue this command.

Example Usage:

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

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

 Success.

DES-3226S:4#
```

login	
Purpose	Used to log in a user to the switch's console.
Syntax	**login**
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-3226S:4#login
Command: login

UserName:
```

logout	
Purpose	Used to log out a user from the switch's console.
Syntax	**logout**
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-3226S: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
config ports	<portlist/all> speed [auto/10_half/10_full/100_half/100_full/ 1000_half/1000_full] learning [enabled/disabled] state [enabled/disabled]
config port_security	<portlist>/all admin_state [enabled/disaled] max_learning_addr <1-10> lock_address_mode [DeleteOnTimout/DeleteOnReset]
show ports	<portlist/all>
show port_security	

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[auto/10_half/10_full/100_half/100_half/1000_full] 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 affected.
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. learning [enabled/disabled] – Enables or

config ports	
	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 port 3 to be 10 Mbps, full duplex, learning and state enabled:

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

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

Success.

DES-3226S:4#
```

config port_security

Purpose	Used to configure port security settings.
Syntax	**config port_security** **<portlist>/all** **admin_state [enabled/disaled]** **max_learning_addr <1-10>** **lock_address_mode [DeleteOnTimout/DeleteOnReset]**
Description	This command allows for the configuration of the port security feature. Only the ports listed in the <portlist> are effected.
Parameters	all – configure port security for all ports on the switch. portlist – 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 highest switch number, and the highest port number of the range (also separeted by a colon) are specified. The beginning and end of the port list range are seperated by a dash. For example, 1:3 would specify switch number 1, port 3. 2:4 specifies switch number 2, port 4. 1:3-2:4 specifies all of the ports between switch 1, port 3 and switch 2, port 4 – in numerical order. admin_state [enabled/disaled] – enable or disable port security for the listed ports. max_learning_addr <1-10> - use this to limit

config port_security	
	the number of MAC addresses dynamically listed in the FDB for the ports. lock_address_mode[DeleteOnTimout/DeleteOn Reset] – delete FDB dynamic entries for the ports on timeout of the FDB (see Forwarding Database Commands). Specify DeleteOnReset to dlete all FDB entries, including static entries upon system reset or rebooti.
Restrictions	Only administrator-level users can issue this command.

Example Usage:

To configure the port security for ports 1:12 – 1:14 to delete the dynamic address table entries on timeout:

```
DES-3226S:4#config port_security ports 12-14
lock_address_mode DeleteOnTimeout
Command: config port_security ports 12-14 lock_address_mode
DeleteOnTimeout

 Success.

DES-3226S:4#
```

show ports

Purpose	Used to display the current configuration of a range of ports.
Syntax	**show ports** {**<portlist>**}
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 of module 1:

```
DES-3226S:4#show ports 1-7

Port  Port       Settings          Connection        Address
      State      Speed/Duplex      Speed/Duplex      Learning
----  --------   ----------------  ----------------  -----------
1     Enabled    Auto              Link Down         Enabled
2     Enabled    Auto              Link Down         Enabled
```

3	Enabled	Auto	Link Down	Enabled
4	Enabled	Auto	Link Down	Enabled
5	Enabled	Auto	Link Down	Enabled
6	Enabled	Auto	Link Down	Enabled
7	Enabled	Auto	Link Down	Enabled

show port_security

Purpose	Used to display the current portr lock configuration.
Syntax	**show port_security** {**<portlist>**}
Description	This command is used to display the current port security configuration of a range of ports.
Parameters	<portlist> – specifies a range of ports to be viewed. The port list is specified by listing the lowest switch number and the beginning port number on that switch, separated by a colon. Then highest switch number, and the highest port number of the range (also separeted by a colon) are specified. The beginning and end of the port list range are seperated by a dash. For example, **1:3** would specify switch number 1, port 3. **2:4** specifies switch number 2, port 4. **1:3-2:4** specifies all of the ports between switch 1, port 3 and switch 2, port 4 – in numerical order.
Restrictions	none.

Example Usage:

To display the port security configuration:

```
DES-3226S:4#show port_security
Command: show port_security

 Port#  Admin State  Max. Learning Addr.  Lock Address Mode
 ----   -----------  -------------------  -----------------
 1      Disabled           1              DeleteOnReset
 2      Disabled           1              DeleteOnReset
 3      Disabled           1              DeleteOnReset
 4      Disabled           1              DeleteOnReset
 5      Disabled           1              DeleteOnReset
 6      Disabled           1              DeleteOnReset
 7      Enabled            10             DeleteOnReset
 8      Disabled           1              DeleteOnReset
 9      Disabled           1              DeleteOnReset
 10     Disabled           1              DeleteOnReset
 11     Disabled           1              DeleteOnReset
 12     Disabled           1              DeleteOnReset
 13     Disabled           1              DeleteOnReset
 14     Disabled           1              DeleteOnReset
 15     Disabled           1              DeleteOnReset
 16     Disabled           1              DeleteOnReset
 17     Disabled           1              DeleteOnReset
 18     Disabled           1              DeleteOnReset
 19     Disabled           1              DeleteOnReset
 20     Disabled           1              DeleteOnReset
 CTRL+C ESC q Quit SPACE n Next Page p Previous Page r
Refresh
```

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-3226S supports the Simple Network Management Protocol (SNMP) versions 1, 2c, and 3. You can specifiy 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 DES	Authentication is based on the HMAC-MD5 or HMAC-SHA

	DES	HMAC-MD5 or HMAC-SHA algorithms – AuthPriv. 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 auth [md5/sha] <auth_password 8-20> priv [none/des <priv_password 8-16]
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> [read_only/read_write]
delete snmp community	<community_string 32>
show snmp community	
config snmp engineID	<snmp_engineID>
show snmp engineID	

Command	Parameters
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>
config mac_notification	ports <portlist>/all interval <int 1-2147483647> historysize <int 1 - 500>

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

create snmp user	
Purpose	Used to create a new SNMP user and adds the user to an SNMP group that is also created by this command.
Syntax	**create snmp user <username 32> <groupname 32> [v1/v2c/v3 {encrypted auth [md5/sha] <auth_password> priv [none/des <priv_password>]}]**
Description	The **create snmp user** command creates a new SNMP user and adds the user to an SNMP group that is also created by this command.
Parameters	<username 32> – An alphanumeric name of up to 32 characters that will identify the new SNMP user. \<groupname 32> – An alphanumeric name of up to 32 characters that will identify the SNMP group the new SNMP user will be associated with. 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

create snmp user

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.

encrypted – Specifies that the password will be in an encrypted format.

auth [md5/sha] – Initiate an authentication-level setting session.

md5 – Specifies that the HMAC-MD5-96 authentication level will be used.

sha – Specifies that the HMAC-SHA-96 authentication level will be used.

<auth_password 8-20> – An alphanumeric sting of between 8 and 20 characters that will be used to authorize the agent to receive packets for the host.

create snmp user	
	des <priv_password 8-16> – An alphanumeric string of between 8 and 16 characters that will be used to encrypt the contents of messages the host sends to the agent.
Restrictions	Only administrator-level users can issue this command.

Example Usage:

To create an SNMP user on the switch:

```
DES-3226S:4#create snmp user dlink default v3 encrypted auth md5
auth_password priv none
Command: create snmp user dlink default v3 encrypted auth md5
auth_password priv none

Success.

DES-3226S:4#
```

delete snmp user	
Purpose	Used to remove an SNMP user from an SNMP group and also to delete the associated SNMP group.
Syntax	**delete snmp user <username 32>**
Description	The **delete snmp user** command removes an SNMP user from its SNMP group and then deletes the associated SNMP group.
Parameters	<username 32> – An alphanumeric string of up to 32 characters that identifies the SNMP user that will be deleted.
Restrictions	Only administrator-level users can issue this command.

Example Usage:

To delete a previously entered SNMP user on the switch:

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

Success.

DES-3226S:4#
```

show snmp user

Purpose	Used to display information about each SNMP username in the SNMP group username table.
Syntax	**show snmp user**
Description	The **show snmp user** command displays information about each SNMP username in the SNMP group username table.
Parameters	None.
Restrictions	Only administrator-level users can issue this command.

Example Usage:

To display the SNMP users currently configured on the switch:

```
DES-3326S: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-3326S:4#
```

show snmp groups

Purpose	Used to display the group-names of SNMP groups currently configured on the switch. The security model, level, and status of each group is also displayed.
Syntax	**show snmp groups**
Description	The **show snmp groups** command displays the group-names of SNMP groups currently configured on the switch. The security model, level, and status of each group is also displayed.
Parameters	None.
Restrictions	None.

Example Usage:

To display the currently configured SNMP groups on the switch:

```
DES-3226S:4#show snmp groups
Command: show snmp groups

Vacm Access Table Settings


Group   Name      : Group3
ReadView Name     : ReadView
WriteView Name    : WriteView
Notify View Name  : NotifyView
Securiy Model     : SNMPv3
```

```
Securiy Level        : NoAuthNoPriv


Group    Name       : Group4
ReadView Name       : ReadView
WriteView Name      : WriteView
Notify View Name    : NotifyView
Securiy Model       : SNMPv3
Securiy Level       : authNoPriv


Group    Name       : Group5
ReadView Name       : ReadView
WriteView Name       : WriteView
Notify View Name    : NotifyView
Securiy Model       : SNMPv3
Securiy Level       : authNoPriv


Group    Name       : Group6
ReadView Name       : ReadView
WriteView Name      : WriteView
Notify View Name    : NotifyView
Securiy Model       : SNMPv3
Securiy Level        : authPriv


Group    Name       : Group7
ReadView Name       : ReadView
WriteView Name      : WriteView
Notify View Name    : NotifyView
Securiy Model       : SNMPv3
Securiy Level       : authPriv


Group    Name       : initial
ReadView Name       : restricted
```

```
WriteView Name    :
Notify View Name  : restricted
Securiy Model     : SNMPv3
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     : SNMPv2
Securiy Level     : NoAuthNoPriv

Total Entries: 10
```

```
DES-3226S:4#
```

create snmp view

Purpose	Used to assign views to community strings to limit which MIB objects and SNMP manager can access.
Syntax	**create snmp view <view_name 32> <oid> view_type [included/excluded]**
Description	The **create snmp view** assigns views to community strings to limit which MIB objects an SNMP manager can access.
Parameters	<view_name 32> – An alphanumeric string of up to 32 characters that identifies the SNMP view that will be created. <oid> – The object ID that identifies an object tree (MIB tree) that will be included or excluded from access by an SNMP manager. included – Include this object in the list of objects that an SNMP manager can access. excluded – Exclude this object from the list of objects that an SNMP manager can access.
Restrictions	Only administrator-level users can issue this command.

Example Usage:

To create and SNMP view:

```
DES-3226S:4#create snmp view dlinkview 1.3.6 view_type
included
Command: create snmp view dlinkview 1.3.6 view_type included

 Success.

DES-3226S:4#
```

delete snmp view

Purpose	Used to remove an SNMP view entry previously created on the switch.
Syntax	**delete snmp view <view_name 32> [all/<oid>]**
Description	The **delete snmp view** command is used to remove an SNMP view previously created on the switch.
Parameters	<view_name 32> – An alphanumeric string of up to 32 characters that identifies the SNMP view to be deleted. all – Specifies that all of the SNMP views on the switch will be deleted. <oid> – The object ID that identifies an object tree (MIB tree) that will be deleted from the switch.
Restrictions	Only administrator-level users can issue this command.

Example Usage:

To delete a previously configured SNMP view from the switch:

```
DES-3226S:4#delete snmp view dlinkview
Command: delete snmp view dlinkview

Success.
```

```
DES-3226S:4#
```

show snmp view

Purpose	Used to display an SNMP view previously created on the switch.
Syntax	**show snmp view {<view_name 32>}**
Description	The **show snmp view** command displays an SNMP view previously created on the switch.
Parameters	<view_name 32> – An alphanumeric string of up to 32 characters that identifies the SNMP view that will be displayed.
Restrictions	None.

Example Usage:

To show SNMP:

```
DES-3226S:4#show snmp view
Command: show snmp view

 Vacm View Table  Settings
 View Name          Subtree                View Type
 --------------------     -------------------------   ----------
 ReadView                    1                 Included
 WriteView                   1                Included
 NotifyView              1.3.6                Included
 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        .3.6.1.6.3.1           Included

Total Entries: 11

DES-3226S:4#
```

create snmp community

Purpose	Used to create an SNMP community string to define the relationship between the SNMP manager and an agent. The community string acts like a password to permit access to the agent on the switch. One or more of the following characteristics can be associated with the community string: An Access List of IP addresses of SNMP managers that are permitted to use the community string to gain access to the switch's SNMP agent. An MIB view that defines the subset of all MIB objects that will be accessible to the SNMP community. Read/write or read-only level permission for the MIB objects accessible to the SNMP community.
Syntax	**create snmp community <community_string 32> view <view_name 32> [read_only/read_write]**
Description	The **create snmp community** command is used to create an SNMP community string and to assign access-limiting characteristics to this community string.
Parameters	<community_string 32> – An alphanumeric string of up to 32 characters that is used to identify members of an SNMP community. This string is used like a password to give

create snmp community	
	remote SNMP managers access to MIB objects in the switch's SNMP agent. <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. 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-3226S:4#create snmp community dlink view ReadView
read_write
Command: create snmp community dlink view ReadView
read_write

Success.
```

delete snmp community

Purpose	Used to remove a specific SNMP community string from the switch.
Syntax	**delete snmp community <community_string 32>**
Description	The **delete snmp community** command is used to remove a previously defined SNMP community string from the switch.
Parameters	<community_string 32> – An alphanumeric string of up to 32 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-3226S:4#delete snmp community dlink
Command: delete snmp community dlink

 Success.

DES-3226S:4#
```

show snmp community

Purpose	Used to display SNMP community strings configured on the switch.
Syntax	**show snmp community {<community_string 32>}**
Description	The **show snmp community** command is used to display SNMP community strings that are configured on the switch.
Parameters	<community_string 32> – An alphanumeric string of up to 32 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-3226S: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
```

config snmp engineID

Purpose	Used to configure a name for the SNMP engine on the switch.
Syntax	**config snmp engineID <snmp_engineID>**
Description	The **config snmp engineID** command configures a name for the SNMP engine on the switch.
Parameters	<snmp_engineID> – An alphanumeric string 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-3226S:4#config snmp 0035636666
Command: config snmp engineID 0035636666

Success.

DES-3226S:4#
```

show snmp engineID

Purpose	Used to display the identification of the SNMP engine on the switch.
Syntax	**show snmp engineID**
Description	The **show snmp engineID** command displays the identification of the SNMP engine on the switch.
Parameters	None.
Restrictions	None.

Example Usage:

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

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

SNMP Engine ID : 0035636666

DES-3226S:4#
```

create snmp group

Purpose	Used to create a new SNMP group, or a table that maps SNMP users to SNMP views.
Syntax	**create snmp group <groupname 32> [v1/v2c/v3 [noauth_nopriv/auth_nopriv/auth_priv]] {read_view <view_name 32>/notify_view <view_name 32>/notify_view <view_name 32>}**
Description	The **create snmp group** command creates a new SNMP group, or a table that maps SNMP users to SNMP views.
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. 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.

create snmp group

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.

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 swtich and a remote SNMP manger will be encrypted.

create snmp group	
	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 recieve SNMP trap messages generated by the switch's SNMP agent.
Restrictions	Only administrator-level users can issue this command.

Example Usage:

To create an SNMP group named "sg1:"

```
DES-3326S:4#create snmp group sg1 v3 noauth_nopriv
read_view v1 write_view v1 no

tify_view v1
Command: create snmp group sg1 v3 noauth_nopriv read_view
v1 write_view v1 notif
y_view v1

 Success.

DES-3326S:4#
```

delete snmp group	
Purpose	Used to remove an SNMP group from the switch.
Syntax	**delete snmp group <groupname 32>**
Description	The **delete snmp group** command is used to remove an SNMP group from the switch.
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-3326S:4#delete snmp group sg1
Command: delete snmp group sg1

Success.

DES-3326S:4#
```

create snmp host	
Purpose	Used to create a recipient of SNMP traps generated by the switch's SNMP agent.
Syntax	**create snmp host <ipaddr> [v1/v2c/v3 [noauth_nopriv/auth_nopriv/auth_priv] <auth_string 32>]**
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 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

create snmp host

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 swtich and a remote SNMP manger will be encrypted.

<auth_sting 32> – An alphanumeric string used to authorize a remote SNMP manager to access the switch's

create snmp host	
	SNMP agent.
Restrictions	Only administrator-level users can issue this command.

Example Usage:

To create an SNMP host to receive SNMP messages:

```
DES-3226S: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-3226S:4#
```

delete snmp host	
Purpose	Used to remove a recipient of SNMP traps generated by the switch's SNMP agent.
Syntax	**delete snmp host <ipaddr>**
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-3226S:4#delete snmp host 10.48.74.100
Command: delete snmp host 10.48.74.100

Success.

DES-3226S:4#
```

show snmp host

Purpose	Used to display the recipient of SNMP traps generated by the switch's SNMP agent.
Syntax	**show snmp host** {**<ipaddr>**}
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-3226S: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

Total Entries: 2
```

config mac_notification

Purpose	Used to configure MAC address notification.
Syntax	**config mac_notification** **ports <portlist>/all** **interval <sec>** **historysize <1 - 500>**
Description	MAC address notificiation is used to monitor MAC addresses learned and entered into the FDB.
Parameters	**ports <portlist> -** 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 highest switch number, and the highest port number of the range (also separeted by a colon) are specified. The beginning and end of the port list range are seperated by a dash. For example, **1:3** would specify switch number 1, port 3. **2:4** specifies switch number 2, port 4. **1:3-2:4** specifies all of the ports between switch 1, port 3 and switch 2, port 4 – in numerical order. **all –** to configure all ports for MAC notification. **interval <sec> -** time in seconds between

config mac_notification	
	notifications. **historysize <1 - 500> -** maximum number of entries listed in the history log used for notification.
Restrictions	Only administrator-level users can issue this command.

Example Usage:

To enable MAC address notification for unit 1 ports 6-9:

```
DES-3226S:4#config mac_notification ports 1:6-1:9 enabled
Command: config mac_notification ports 1:6-1:9 enabled

 Success.

DES-3226S:4#
```

7

DOWNLOAD/UPLOAD 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> unit [all/<unitid>] configuration <ipaddr> <path_filename> {increment}
upload	configuration log <ipaddr> <path_filename>

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> {unit [all/<unitid>]}/configuration <ipaddr> <path_filename> {increment}]**
Description	This command is used to download a new firmware or a switch configuration file from a TFTP server.
Parameters	firmware – Download and install new firmware on the switch from a TFTP server. configuration – Download a switch configuration file from a TFTP server. <ipaddr> – The IP address of the TFTP server. <path_filename> – The DOS path and filename of the firmware or switch configuration file on the TFTP server. For example, C:\3226S.had. unit [all/<unitid>] – all specifies all units (switches), <unitid> is the unit id of the switch that will receive the download. 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

download	
	parameters will remain unchanged.
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 download a configuration file:

```
DES-3226S: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-3226S:4#
```

upload	
Purpose	Used to upload the current switch settings or the switch history log to a TFTP server.
Syntax	**upload [configuration/log] <ipaddr> <path_filename>**
Description	This command is used to upload either the switch's current settings or the switch's history log to a TFTP server.
Parameters	configuration – Specifies that the switch's current settings will be uploaded to the TFTP server. log – Specifies that the switch history log will be uploaded to the TFTP server. <ipaddr> – The IP address of the TFTP server. The TFTP server must be on the same IP subnet as the switch. <path_filename> – Specifies the location of the switch configuration file on the TFTP server. This file will be replaced by the uploaded file from the switch.
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-3226S: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-3226S: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.

Command	Parameters
show packet ports	<portlist>
show error ports	<portlist>
show utilitzation	
clear counters	ports <portlist>
clear log	
show log	index <value>
enable syslog	
disable syslog	
show syslog	
create syslog host	all <index 1-4> severity informational warning all facility local0 local1 local2 local3

Command	Parameters
	local4 local5 local6 local7 udp_port <int> ipaddress <ipaddr> state [enabled/disabled]
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 [enabled/disabled]
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	**show packet ports <portlist>**
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 lowest switch number and the beginning port number on that switch, separated by a colon. Then highest switch number, and the highest port number of the range (also separeted by a colon) are specified. The beginning and end of the port list range are seperated by a dash. For example, **1:3** would specify switch number 1, port 3. **2:4** specifies switch number 2, port 4. **1:3-2:4** specifies all of the ports between switch 1, port 3 and switch 2, port 4 – in numerical order.
Restrictions	None.

Example Usage:

To display the packets analysis for port 7 of module 2:

```
DES-3226S:4#show packet port 2:7

Port number : 2:7
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

Broadcast RX    4495          42

DES-3226S:4#
```

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 swtich for a given port list.
Parameters	<portlist> – 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 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, **1:3** would specify switch number 1, port 3. **2:4** specifies switch number 2, port 4. **1:3-2:4** specifies all of the ports between switch 1, port 3 and switch 2, port 4 – in numerical order.
Restrictions	None.

Example Usage:

To display the errors of the port 3 of module 1:

```
DES-3226S:4#show errors port 1:3

          RX Frames                       TX Frames
          ---------------                 ----------------
 CRC Error        0        Excessive Deferral      0
 Undersize        0        CRC Error               0
 Oversize         0        Late Collision          0
 Fragment         0        Excessive Collision     0
 Jabber           0        Single Collision        0
 Drop Pkts        0        Collision               0
```

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.
Restrictions	none.

Example Usage:

To display the port utilization statistics:

```
DES-3226S:4#show utilization

Port    TX/sec      RX/sec      Util    Port    TX/sec      RX/sec      Util
----    ----------  ----------  ----    ----    ----------  ----------  ----
1:1           0           0       0     1:22          0           0       0
1:2           0           0       0     1:23          0           0       0
1:3           0           0       0     1:24          0           0       0
1:4           0           0       0     1:25          0           0       0
1:5           0           0       0     1:26         19          49       1
1:6           0           0       0     2:1           0           0       0
1:7           0           0       0     2:2           0           0       0
1:8           0           0       0     2:3           0           0       0
1:9           0           0       0     2:4           0           0       0
1:10          0           0       0     2:5           0           0       0
1:11          0           0       0     2:6           0           0       0
1:12          0           0       0     2:7           0          30       1
1:13          0           0       0     2:8           0           0       0
1:14          0           0       0     2:9          30           0       1
1:15          0           0       0     2:10          0           0       0
1:16          0           0       0     2:11          0           0       0
1:17          0           0       0     2:12          0           0       0
1:18          0           0       0     2:13          0           0       0
1:19          0           0       0     2:14          0           0       0
1:20          0           0       0     2:15          0           0       0
1:21          0           0       0     2:16          0           0       0
```

clear counters

Purpose	Used to clear the switch's statistics counters.
Syntax	**clear counters** {**ports <portlist>**}
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 lowest switch number and the beginning port number on that switch, separated by a colon. Then 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, **1:3** would specify switch number 1, port 3. **2:4** specifies switch number 2, port 4. **1:3-2:4** specifies all of the ports between switch 1, port 3 and switch 2, port 4 – in numerical order.
Restrictions	Only administrator-level users can issue this command.

Example Usage:

To clear the counters:

```
DES-3226S:4#clear counters ports 2:7-2:9
Command: clear counters ports 2:7-2:9

Success.
```

clear log	
Purpose	Used to clear the switch's history log.
Syntax	**clear log**
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-3226S:4#clear log
Command: clear log

 Success.

DES-3226S:4#
```

show log	
Purpose	Used to display the switch history log.
Syntax	**show log {index <value>}**
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 number reaches this value.
Restrictions	None.

Example Usage:

To display the switch history log**:**

```
DES-3226S:4#show log
Index Time      Log Text
----- ----------    --------------------------------------------------------------
  4   000d00h50m Unit 1, Successful login through Console
(Username: Anonymous)
  3   000d00h50m Unit 1, Logout through Console (Username:
Anonymous)
  2   000d00h49m Unit 1, Successful login through Console
(Username: Anonymous)
   000d00h49m Unit 1, Logout through Console (Username:
Anonymous)

DES-3226S:4#
```

enable syslog

Purpose	Used to enable the system log to be sent to a remote host.
Syntax	**enable syslog**
Description	The **enable syslog** 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-3226S:4#enable syslog
Command: enable syslog

 Success.

DES-3226S:4#
```

disable syslog

Purpose	Used to enable the system log to be sent to a remote host.
Syntax	**disable syslog**
Description	The **disable syslog** 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-3226S:4#disable syslog
Command: disable syslog

 Success.

DES-3226S:4#
```

show syslog

Purpose	Used to display the syslog protocol status as enabled or disabled.
Syntax	**show syslog**
Description	The **show syslog** 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-3226S:4#show syslog
Command: show syslog

 Syslog Global State: Enabled

DES-3226S:4#
```

create syslog host

Purpose	Used to create a new syslog host.
Syntax	**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[enabled/disabled]**
Description	The **create syslog host** command is used to create a new syslog host.
Parameters	all – Specifies that the command will be applied to all hosts. <index 1-4> – Specifies that the command will be applied to an index of hosts. There are four available indexes, numbered 1 through 4. severity – Severity level indicator. These are described in the following: Bold font indicates that the corresponding severity level is currently supported on the switch.

Numerical Code	Severity
0	Emergency: system is unusable
1	Alert: action must be taken immediately
2	Critical: critical conditions
3	Error: error conditions
4	**Warning: warning conditions**
5	Notice: normal but significant condition

create syslog host

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 means the facility values the switch supports now.

Numerical Code	Facility
0	kernel messages
1	user-level messages
2	mail system
3	system daemons
4	security/authorization messages

create syslog host

5	messages generated internally by 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
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.

create syslog host

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.

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,

create syslog host	
	specified above, to be enabled and disabled.
Restrictions	Only administrator-level users can issue this command.

Example Usage:

To create syslog host:

```
DES-3226S:4#create syslog host 1 severity all facility local0

Command: create syslog host 1 severity all facility local0

 Success.

DES-3226S:4#
```

config syslog host

Purpose	Used to configure the syslog protocol to send system log data to a remote host.
Syntax	**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[enabled/disabled]**
Description	The **config syslog host** command is used to configure the syslog protocol to send system log information to a remote host.
Parameters	all – Specifies that the command will be applied to all hosts. <index 1-4> – Specifies that the command will be applied to an index of hosts. There are four available indexes, numbered 1 through 4. severity – Severity level indicator. These are described in the following: Bold font indicates that the corresponding severity level is currently supported on the switch.

Numerical Code	Severity
0	Emergency: system is unusable
1	Alert: action must be taken immediately
2	Critical: critical conditions
3	Error: error conditions

config syslog host

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 means the facility values the switch supports now.

Numerical Code	Facility
0	kernel messages
1	user-level messages
2	mail system

config syslog host

3	system daemons
4	security/authorization messages
5	messages generated internally by 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
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

config syslog host

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.

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

config syslog host	
	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-3226S:4#config syslog host all severity all facility local0

Command: config syslog host all severity all facility local0

 Success.

DES-3226S:4#
```

delete syslog host

Purpose	Used to remove a syslog host, that has been previously configured, from the switch.
Syntax	**delete syslog host [<index 1-4>/all]**
Description	The **delete syslog host** 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. 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-3226S:4#delete syslog host 4
Command: delete syslog host 4

Success.

DES-3226S:4#
```

show syslog host

Purpose	Used to display the syslog hosts currently configured on the switch.
Syntax	**show syslog host** {**<index 1-4>**}
Description	The **show syslog host** 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 a syslog host:

```
DES-3226S:4#show syslog host
Command: show syslog host
 Syslog Global State: Disabled
 Host Id  Host IP Address  Severiry   Facility UDP port   Status
 -------  ---------------  ---------- -------- --------   --------
 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-3226S:4#
```

9

SPANNING TREE COMMANDS

The switch supports 802.1d STP and 802.1w Rapid STP. The spanning tree commands in the Command Line Interface (CLI) are listed (along with the appropriate parameters) in the following table.

Command	Parameters
config stp	maxage <value> hellotime <value> forwarddelay <value> priority <value> fdpdu [enabled/disabled] version [rstp/stp]
config stp ports	<portlist> cost <value> priority <value> migrate [yes/no] edge [true/false] p2p [true/false] state [enabled/disabled]
enable stp	
disable stp	
show stp	
show stp_ports	<portlist>

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

config stp	
Purpose	Used to setup STP and RSTP on the switch.
Syntax	**config stp {maxage <value>/hellotime <value>/forwarddelay <value>/priority <value>/fbpdu [enabled/disabled]/ txholdcount <1-10>/ version[rstp/stp]}**
Description	This command is used to setup the Spanning Tree Protocol (STP) for the entire switch.
Parameters	maxage <value> – 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. hellotime <value> – The time interval between transmission of configuration messages by the root device. The default is 2 seconds. forwarddelay <value> – The maximum amount of time (in seconds) that the root device will wait before changing states. The default is 15 seconds. priority <value> – A numerical value between 0 and 61440 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. fbpdu [enabled/disabled] – Allows the

config stp	
	forwarding of STP BPDU packets from other network devices when STP is disabled on the switch. The default is enabled. Txholdcount <1-10> - the maximum number of Hello packets transmitted per interval. Default value = 3. version [rstp/stp] - select the Spanning Tree Protocol version used for the switch. For IEEE 802.1d STP select stp. Select rstp for IEEE 802.1w Rapid STP.
Restrictions	Only administrator-level users can issue this command.

Example Usage:

To configure STP with maxage 18 and hellotime 4:

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

 Success.

DES-3226S:4#
```

config stp ports

Purpose	Used to setup STP on the port level.
Syntax	**config stp ports <portlist> {cost <value>/priority <value>/ migrate [yes/no]/ edge [true/false]/ p2p [true/false]/ state [enabled/disabled]**
Description	This command is used to create and configure STP for a group of ports.
Parameters	cost <value> – This defines a metric that indicates the relative cost of forwarding packets to the specified port list. Port cost can be set from 1 to 200000000. The lower the number, the greater the probability the port will be chosen to forward packets. Default port cost: 100Mbps port = 200000 Gigabit port = 20000 priority <value> – Port Priority can be from 0 to 240. The lower the number, the greater the probability the port will be chosen as the Root Port. Default = 128. <portlist> – 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 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, **1:3** would specify switch number

config stp ports

1, port 3. **2:4** specifies switch number 2, port 4. **1:3-2:4** specifies all of the ports between switch 1, port 3 and switch 2, port 4 – in numerical order.

migrate [yes/no] – yes will enable the port to migrate from 802.1d STP status to 802.1w RSTP status. RSTP can coexist with standard STP, however the benefits of RSTP are not realized on a port where an 802.1d network connects to an 802.1w enabled network. Migration should be enabled (yes) on ports connected to network stations or segments that will be upgraded to 802.1w RSTP onall or some portion of the segment.

edge [true/false] – true designates the port as an edge port. Edge ports cannot create loops, however an edge port can lose edge port status if a topology change creates a potential for a loop. An edge port normally should not receive BPDU packets. If a BPDU packet is received it automatically loses edge port status. False indicates the port does not have edge port status.

p2p [true/false] – true indicates a point-to-point (p2p) shared link. These are similar to edge ports however they are restricted in that a p2p port must operate in full-duplex. Like edge ports, p2p ports transition to a forwarding state rapidly thus benefiting from RSTP.

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

config stp ports

Restrictions	Only administrator-level users can issue this command.

Example Usage:

To configure STP with path cost 19, priority 15, and state enabled for ports 1-5 of module 1.

```
DES-3226S:4#config stp_ports 1:1-1:5 cost 19 priority 15 state
enabled
Command: config stp_ports 1-5 cost 19 priority 15 state enabled

 Success.

DES-3226S:4#
```

enable stp

Purpose	Used to globally enable STP on the switch.
Syntax	enable stp
Description	This command allows the Spanning Tree Protocol to be globally enabled on the switch.
Parameters	none.

enable stp

Restrictions	Only administrator-level users can issue this command.

Example Usage:

To enable STP, globally, on the switch:

```
DES-3226S:4#enable stp
Command: enable stp

 Success.

DES-3226S:4#
```

disable stp

Purpose	Used to globally disable STP on the switch.
Syntax	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-3226S:4#disable stp
Command: disable stp

 Success.

DES-3226S:4#
```

show stp

Purpose	Used to display the switch's current STP configuration.
Syntax	**show stp**
Description	This command displays the switch's current STP configuration.
Parameters	none
Restrictions	none.

Example Usage:

To display the status of STP on the switch:
Status 1: STP Enabled

```
DES-3326S:4#show stp
Command: show stp

STP Status       : Enabled
Max Age          : 20
Hello Time       : 2
Forward Delay    : 15
Priority         : 32768
STP Version      : RSTP
TX Hold Count    : 3
Forwarding BPDU  : Enabled


Designated Root Bridge: 00-80-00-00-01-02
Root Priority       : 32767
Cost to Root        : 200015
Root Port           : 2
```

```
Last Topology Change  : 77sec
Topology Changes Count: 198
Protocol Specification: 3
Max Age               : 20
Hello Time            : 2
Forward Delay         : 15
 Hold Time            : 3
```

Status 2 : STP Disabled

```
DES-3326S:4#show stp
Command: show stp

STP Status        : Disabled
Max Age           : 20
Hello Time        : 2
Forward Delay     : 15
Priority          : 32768
STP Version       : RSTP
TX Hold Count     : 3
Forwarding BPDU   : Enabled

DES-3326S:4#
```

show stp ports

Purpose	Used to display the switch's current per-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 lowest switch number and the beginning port number on that switch, separated by a colon. Then highest switch number, and the highest port number of the range (also separeted by a colon) are specified. The beginning and end of the port list range are seperated by a dash. For example, **1:3** would specify switch number 1, port 3. **2:4** specifies switch number 2, port 4. **1:3-2:4** specifies all of the ports between switch 1, port 3 and switch 2, port 4 – in numerical order.
Restrictions	none

Example Usage:

To display STP state of port 1-9 of module 1:

```
DES-3226S:4#show stp_ports 1:1-1:9

Port   Connection      State   Cost    Priority   Status    STP
Name
----   ----------------   -----------  -----    ----------   --------------- ------------
1:1    Link Down      Enabled   19      128    Forwarding    s0
1:2    Link Down      Enabled   19      128    Forwarding    s0
1:3    Link Down      Enabled   19      128    Forwarding    s0
1:4    Link Down      Enabled   19      128    Forwarding    s0
1:5    Link Down      Enabled   19      128    Forwarding    s0
1:6    Link Down      Enabled   19      128    Forwarding    s0
1:7    Link Down      Enabled   19      128    Forwarding    s0
1:8    Link Down      Enabled   19      128    Forwarding    s0
1:9    Link Down      Enabled   19      128    Forwarding    s0

DES-3226S:4#
```

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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.

Command	Parameters
create fdb	<vlan_name> <macaddr> port <port>
create multicast_fdb	<vlan_name> <macaddr>
config multicast_fdb	<vlan_name> <macaddr> [add/delete] <portlist>
config fdb aging_time	<sec 300-1000000>
delete fdb	<vlan_name 32> <macaddr>
clear fdb	vlan <vlan_name 32> port <port>/all
show multicast_fdb	vlan <vlan_name 32> mac_address <macaddr>
show fdb	port <port> vlan <vlan_name 32> mac_address <macaddr> static aging_time

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

create fdb	
Purpose	Used to create a static entry to the unicast MAC address forwarding table (database)
Syntax	**create fdb <vlan_name> <macaddr> [port <port>]**
Description	This command will make an entry into the switch's unicast MAC address forwarding database.
Parameters	<vlan_name> – The name of the VLAN on which the MAC address resides. <macaddr> – The MAC address that will be added to the forwarding table. <port> – The port number corresponding to the MAC destination address. The switch will always forward traffic to the specified device through this port.
Restrictions	Only administrator-level users can issue this command.

Example Usage:

To create a unicast MAC FDB entry**:**

```
DES-3226S:4#create fdb default 00-00-00-00-01-02 port 2:5
Command: create fdb default 00-00-00-00-01-02 port 2:5

 Success.
DES-3226S:4#
```

create multicast_fdb

Purpose	Used to create a static entry to the multicast MAC address forwarding table (database)
Syntax	**create multicast_fdb <vlan_name> <macaddr>**
Description	This command will make an entry into the switch's multicast MAC address forwarding database.
Parameters	<vlan_name> – The name of the VLAN on which the MAC address resides. <macaddr> – The MAC address that will be added to the forwarding table.
Restrictions	Only administrator-level users can issue this command.

Example Usage:

To create multicast MAC forwarding**:**

```
DES-3226S:4#create multicast_fdb default 01-00-5E-00-00-00
Command: create multicast_fdb default 01-00-5E-00-00-00

  Success.

DES-3226S:4#
```

config multicast_fdb

Purpose	Used to configure the switch's multicast MAC address forwarding database.
Syntax	**config multicast_fdb <vlan_name> <macaddr> [add/delete] <portlist>**
Description	This command configures the multicast MAC address forwarding table.
Parameters	<vlan_name> – The name of the VLAN on which the MAC address resides. <macaddr> – The MAC address that will be added to the forwarding table. [add/delete] – Add will add the MAC address to the forwarding table, delete will remove the MAC address from the forwarding table. <portlist> – 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 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, **1:3** would specify switch number 1, port 3. **2:4** specifies switch number 2, port 4. **1:3-2:4** specifies all of the ports between switch 1, port 3 and switch 2, port 4 – in numerical order.
Restrictions	Only administrator-level users can issue this command.

Example Usage:

To add multicast MAC forwarding:

```
DES-3226S:4#config multicast_fdb default 01-00-5E-00-00-00 add
1:1-1:5
Command: config multicast_fdb default 01-00-5E-00-00-00 add
1:1-1:5

Success.


DES-3226S:4#
```

config macentry unicast aging_time	
Purpose	Used to configure the switch's MAC address aging time.
Syntax	**config macentry unicast aging_time <sec>**
Description	This command is used to set the age-out timer for the switch's dynamic unicast MAC address forwarding tables.
Parameters	aging_time <sec> – Specifies the time, in seconds, that a dynamically learned MAC address will remain in the switch's MAC address forwarding table, without being accessed, before being dropped from the database.
Restrictions	Only administrator-level users can issue this command.

Example Usage:

To configure MAC address aging time:

```
DES-3226S:4#config macentry unicast aging_time 300
Command: config macentry unicast aging_time 300

  Success.

DES-3226S:4#
```

delete fdb

Purpose	Used to delete an entry to the switch's forwarding database.
Syntax	**delete fdb <vlan_name> <macaddr>**
Description	This command is used to delete a previous entry to the switch's MAC address forwarding database.
Parameters	<vlan_name> – The name of the VLAN on which the MAC address resides. <macaddr> – The MAC address that will be added to the forwarding table.
Restrictions	Only administrator-level users can issue this command.

Example Usage:

To delete a permanent FDB entry:

```
DES-3226S:4#delete fdb default 00-00-00-00-01-02
Command: delete fdb default 00-00-00-00-01-02

Success.

DES-3226S:4#
```

clear fdb

Purpose	Used to clear the switch's forwarding database of all dynamically learned MAC addresses.
Syntax	**clear fdb [vlan <vlan_name>/port <port>/all]**
Description	This command is used to clear dynamically learned entries to the switch's forwarding database.
Parameters	<vlan_name> – The name of the VLAN on which the MAC address resides. <port> – The port number corresponding to the MAC destination address. The switch will always forward traffic to the specified device through this port. all – Clears all dynamic entries to the switch's forwarding database.
Restrictions	Only administrator-level users can issue this command.

Example Usage:

To clear all FDB dynamic entries**:**

```
DES-3226S:4#clear fdb all
Command: clear fdb all

Success.
```

```
DES-3226S:4#
```

show multicast_fdb

Purpose	Used to display the contents of the switch's multicast forwarding database.
Syntax	**show mulitcast_fdb [vlan <vlan_name>/mac_address <macaddr>**
Description	This command is used to display the current contents of the switch's multicast MAC address forwarding database.
Parameters	<vlan_name> – The name of the VLAN on which the MAC address resides. <macaddr> – The MAC address that will be added to the forwarding table.
Restrictions	none.

Example Usage:

To display multicast MAC address table:

```
DES-3226S:4#show multicast_fdb
Command: show multicast_fdb

VLAN Name      : default
MAC Address    : 01-00-5E-00-00-00
Egress Ports   : 1:1-1:5,1:26,2:26
Mode           : Static

Total Entries  : 1
```

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

Example Usage:

To display unicast MAC address table:

```
DES-3226S:4#show fdb
Command: show fdb

 Unicast MAC Address Ageing Time  = 300

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

 Total Entries = 3

DES-3226S: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.

Command	Parameters
config traffic control	<storm_grouplist> all broadcast [enabled/disabled] multicast [enabled/disabled] dlf [enabled/disabled] threshold <value>
show traffic control	group_list <storm_grouplist>

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

config traffic control	
Purpose	Used to configure broadcast/multicast traffic control.
Syntax	**config traffic control [<storm_grouplist>/all] broadcast [enabled/disabled]/multicast [enabled/disabled]/dlf [enabled/disabled]/threshold <value>**
Description	This command is used to configure broadcast storm control.
Parameters	<storm_grouplist> – Used to specify a broadcast storm control group with the syntax: module_id:group_id. all – Specifies all broadcast storm control groups on the switch. broadcast [enabled/disabled] – Enables or disables broadcast storm control. multicast [enabled/disabled] – Enables or disables multicast storm control. dlf [enabled/disabled] – Enables or disables dlf traffic control. threshold <value> – The upper threshold at which the specified traffic control is switched on. The <value> is the number of broadcast/multicast/dlf packets, in Kbps, received by the switch that will trigger the storm traffic control measures.
Restrictions	Only administrator-level users can issue this command.

Example Usage:

To configure traffic control:

```
DES-3226S:4#config traffic control 1-3,1-2 broadcast enabled
Command: config traffic control 1-1,2-2 broadcast enabled

Success.

DES-3226S:4#
```

show traffic control

Purpose	Used to display current traffic control settings.
Syntax	**show traffic control <storm_grouplist>**
Description	This command displays the current storm traffic control configuration on the switch.
Parameters	group_list <storm_grouplist> – Used to specify a broadcast storm control group with the syntax: module_id:group_id.
Restrictions	None.

Example Usage:

To display traffic control setting:

```
DES-3226S:4#show traffic control
Command: show traffic control


Traffic Control

                          Broadcast Multicast Destination
Module Group [ports] Threshold Storm     Storm     Lookup Fail
------ ------------- --------- --------- --------- -----------
1      1 [ 1 - 8 ]   128       Disabled  Disabled  Disabled
1      2 [ 9 - 16]   128       Disabled  Disabled  Disabled
1      3 [17 - 24]   128       Disabled  Disabled  Disabled
1      4 [  25   ]   128       Disabled  Disabled  Disabled
1      5 [  26   ]   128       Disabled  Disabled  Disabled

Total Entries: 5


DES-3226S:4#
```

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QOS COMMANDS

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

Command	Parameters
config bandwidth_control	<portlist> rx_rate no_limit <value 1-1000> tx_rate no_limit <value 1-1000>
show bandwidth_control	<portlist>
config scheduling	<class_id 0-3> max_packet <value 0-255> max_latency <value 0-255>
show scheduling	
config 802.1p user_priority	<priority 0-7> <class_id 0-3>
show 802.1p user_priority	
config 802.1p default_priority	<portlist> all <priority 0-7>
show 802.1p default_priority	<portlist>

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

config bandwidth_control

Purpose	Used to configure bandwidth control on a by-port basis.
Syntax	**config bandwidth_control <portlist> {re_rate [no_limit/<value 1-1000>]/tx_rate [no_limit/<value 1-1000>]}**
Description	The **config bandwidth_control** command is used to configure bandwidth on a by-port basis.
Parameters	<portlist> – 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 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, **1:3** would specify switch number 1, port 3. **2:4** specifies switch number 2, port 4. **1:3-2:4** specifies all of the ports between switch 1, port 3 and switch 2, port 4 – in numerical order. rx_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 receive packets no_limit – Specifies that there will be no limit on the rate of packets received by

config bandwidth_control	
	the above specified ports. <value 1-1000> – Specifies the limit, in Mbps, that the above ports will be allowed to receive packets. 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 limit, in Mbps, that the above ports will be allowed to receive packets. Gigabit ports must be configured to using a limit value that is a multiplt 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 bandwitdth control:

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

 Success.

DES-3226S:4#
```

show bandwidth_control

Purpose	Used to display the bandwidth control configuration on the switch.
Syntax	**show bandwidth_control** {**<portlist>**}
Description	The **show bandwidth_control** command displays the current bandwidth control configuration on the switch, on a port-by-port basis.
Parameters	<portlist> – 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 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, **1:3** would specify switch number 1, port 3. **2:4** specifies switch number 2, port 4. **1:3-2:4** specifies all of the ports between switch 1, port 3 and switch 2, port 4 – in numerical order.
Restrictions	None.

Example Usage:

To show bandwidth control:

```
DES-3226S:4#show bandwidth_control  1-10
Command: show bandwidth_control 1-10

Bandwidth Control Table

Port  RX Rate (Mbit/sec)   TX_RATE (Mbit/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-3226S:4#
```

config scheduling

Purpose	Used to configure traffic scheduling for each of the switch's COS queues.
Syntax	**config scheduling <class_id 0-3> {max_packet <value 0-255>/max_latency <value 0-255>}**
Description	The switch contains four hardware priority queues per port. The **config scheduling** command is used to specify the round robin rotation by which these four hardware priority queues are emptied. The switch's default is to empty the four hardware queues in order, from the highest priority (queue 0) to the lowest priority (queue 3). Each priority queue will transmit all of the packets in its buffer before allowing the next lower priority queue to transmit its packets. When the lowest priority queue (queue 3) had finished transmitting all of the packets in its buffer, the highest priority queue can again transmit any packets in its buffer. The **max_packets** parameter allows you to specify the maximum number of packets a given priority queue can transmit before allowing the next lowest priority queue to begin transmitting its packets. A value between 0 and 255 packets can be specified. For example, if a value of 3 is specified, then the highest priority queue (queue 0) will be allowed to transmit 3 packets – then the next lower priority queue (queue 1) will be allowed to transmit 3 packets, and so on, until all of the

config scheduling	
	queues have transmitted 3 packets. The process will then repeat. The **max_latency** parameter allows you to specify the maximum amount of time that packets will be delayed before being transmitted. For a given priority queue, a value between 0 and 255 can be specified. This number is then multiplied by 16 milliseconds to determine the maximum allowed latency. For example, if 3 is specified for queue 0, the maximum latency allowed will be 3 X 16 ms = 48 ms. When queue 0 has been waiting to transmit packets for longer than 48 ms, the currently transmitting priority queue is allowed to finish transmitting its current packet, and then queue 0 is allowed to begin transmitting its packets.
Parameters	<class_id> – Specifies which of the four priority queues the **config scheduling** command will be applied to. The four priority queues are identified by number – from 0 to 3 – with queue 0 being the highest priority. max_packet <value 0-255> – Specifies the maximum number of packets the above specified priority queue will be allowed to transmit before allowing the next lowest priority queue to transmit its packets. A value between 0 and 255 packets can be specified. max_latency <value 0-255> – Specifies the maximum amount of time the above specified priority queue will have to wait

config scheduling	
	before being allowed to transmit any packets that have accumulated in its transmit buffer. A value between 0 and 255 can be specified – with this value being multiplied by 16 ms to arrive at the total time the priority queue will have to wait.
Restrictions	Only administrator-level users can issue this command.

Example Usage:

To config scheduling:

```
DES-3226S:4# config scheduling 0 max_packet 100 max_latency 150
Command: config scheduling 0 max_packet 100 max_latency 150

 Success.

DES-3226S:4#
```

show scheduling	
Purpose	Used to display the currently configured traffic scheduling on the switch.
Syntax	**show scheduling**
Description	The **show scheduling** command displays the current configuration for the maximum number of packets (**max_packets**) and the maximum latency (**max_latency**) values

show scheduling	
	assigned to the four priority queues on the switch. The switch's default max_latency = 0. At this value it will empty the four hardware queues in order, from the highest priority (queue 0) to the lowest priority (queue 3).
Parameters	None.
Restrictions	None.

Example Usage:

To display the current scheduling configuration:

```
DES-3226S:4# show scheduling
Command: show scheduling


QOS Output Scheduling

      MAX. Packets  MAX. Latency
      ------------  ------------
Class-0    50            1
Class-1    100           1
Class-2    150           1
Class-3    200           1

DES-3226S:4#
```

config 802.1p user_priority

Purpose	Used to map the 802.1p user priority of an incoming packet to one of the four hadware queues available on the switch.
Syntax	**config 802.1p user_priority <priority 0-7> <class_id 0-3>**
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 four hardware priority queues available on the switch. The switch's default is to map the incoming 802.1p priority values to the four hardware queues according to the following chart:

802.1p Value	Switch Priority Queue	Remark
0	1	
1	0	
2	0	
3	1	
4	2	
5	2	
6	3	
7	3	

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

config 802.1p user_priority	
	through 3). <class_id 0-3> – 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 802.1 user priority on the switch:

```
DES-3226S:4# config 802.1p user_priority 1 3
Command: config 802.1p user_priority 1 3

 Sucess.

DES-3226S:4#
```

show 802.1p user_priority

Purpose	Used to display the current mapping between an incoming packet's 802.1p priority value and one of the switch's four hardware priority queues.
Syntax	**show 802.1p user_priority**
Description	The **show 802.1p user_priority** command displays the current mapping of an incoming packet's 802.1p priority value to one of the switch's four hardware priority queues.
Parameters	None.
Restrictions	None.

Example Usage:

To show 802.1p user priority:

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

COS Class of Traffic

Priority-0  ->  <Class-1>
Priority-1  ->  <Class-0>
Priority-2  ->  <Class-0>
Priority-3  ->  <Class-1>
Priority-4  ->  <Class-2>
Priority-5  ->  <Class-2>
Priority-6  ->  <Class-3>
Priority-7  ->  <Class-3>
DES-3226S:4#
```

config 802.1p default_priority

Purpose	Used to specify how to map an incoming packet that has no 802.1p priority tag to one of the switch's four hardware priority queues.
Syntax	**config 802.1p default_priority [<portlist>/all] <priority 0-7>**
Description	The **config 802.1p default_priority** command allows you to specify the 802.1p priority value an untagged, incoming packet will be assigned before being forwarded to its destination.
Parameters	<portlist> – 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 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, **1:3** would specify switch number 1, port 3. **2:4** specifies switch number 2, port 4. **1:3-2:4** specifies all of the ports between switch 1, port 3 and switch 2, port 4 – in numerical order. all – Specifies that the **config 802.1p default_priority** command will be applied to all ports on the switch. <priority 0-7> – Specifies the 802.1p priority value that an untagged, incoming

config 802.1p default_priority	
	packet will be given before being forwarded to its destination.
Restrictions	Only administrator-level users can issue this command.

Example Usage:

To configure 802.1p default priority on the switch:

```
DES-3226S:4#config 802.1p default_priority all 5
Command: config 802.1p default_priority all 5

  Success.

DES-3226S:4#
```

show 802.1 default_priority

Purpose	Used to display the currently configured 802.1p priority value that will be assigned to an incoming, untagged packet before being forwarded to its destination.
Syntax	**show 802.1p default_priority** {**<portlist>**}
Description	The **show 802.1p default_priority** command displays the currently configured 802.1p priority value that will be assigned to an incoming, untagged packet before being forwarded to its destination.
Parameters	<portlist> – 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 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, **1:3** would specify switch number 1, port 3. **2:4** specifies switch number 2, port 4. **1:3-2:4** specifies all of the ports between switch 1, port 3 and switch 2, port 4 – in numerical order.
Restrictions	None.

Example Usage:

To display the current 802.1p default priority configuration on the switch:

```
DES-3226S:4# show 802.1p default_priority
Command: show 802.1p default_priority

Port    Priority
-------  -----------
   1       0
   2       0
   3       0
   4       0
   5       0
   6       0
   7       0
   8       0
   9       0
  10       0
  11       0
  12       0
  13       0
  14       0
  15       0
  16       0
  17       0
  18       0
  19       0
  20       0
  21       0
  22       0
  23       0
  24       0
  25       0
  26       0

DES-3226S:4#
```

13

PORT MIRRORING COMMANDS

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

Command	Parameters
config mirror port	<port> [add/delete] source ports <portlist> [rx/tx/both]
enable mirror	
disable mirror	
show mirror	

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	**config mirror port <port> add source ports <portlist> [rx/tx/both]**
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	<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. The port list is specified by listing the lowest switch number and the beginning port number on that switch, separated by a colon. Then 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, **1:3** would specify switch number 1, port 3. **2:4** specifies switch number 2, port 4. **1:3-2:4** specifies all of the ports between switch 1, port 3 and switch 2, port 4 – in numerical order.

config mirror port	
	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 add the mirroring ports:

```
DES-3226S:4# config mirror port 1:5 add source ports 1:1-1:5 both
Command: config mirror port 1:5 add source ports 1:1-1:5 both

Success.

DES-3226S:4#
```

config mirror delete

Purpose	Used to delete a port mirroring configuration/
Syntax	**config mirror <port> delete source <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. 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-3226S:4#config mirror 1:5 delete source 1:1-1:5 both
Command: config mirror 1:5 delete source 1:1-1:5 both

Success.

DES-3226S:4#
```

enable mirror	
Purpose	Used to enable a previously entered port mirroring configuration.
Syntax	**enable mirror**
Description	This command, combined with **the disable mirror** 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-3226S:4#enable mirror
Command: enable mirror

Success.

DES-3226S:4#
```

disable mirror

Purpose	Used to disable a previously entered port mirroring configuration.
Syntax	**disable mirror**
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 mirroring configuration.
Parameters	none.
Restrictions	Only administrator-level users can issue this command.

Example Usage:

To disable mirroring configurations:

```
DES-3226S:4#disable mirror
Command: disalbe mirror

 Success.

DES-3226S: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-3226S:4#show mirror
Command: show mirror

 Current Settings
 Target Port: 9
 Mirrored Port:
        RX:
        TX: 1:1-1:5

DES-3226S:4#
```

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VLAN COMMANDS

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

Command	Parameters
create vlan	<vlan_name> tag <vlanid> advertisement
delete vlan	<vlan_name>
config vlan	<vlan_name> add [tagged/untagged/forbidden] delete <portlist> advertisement [enabled/disabled]
config vlan	<vlan_name> delete <portlist>
config vlan	<vlan_name>
config gvrp	<portlist> all state [enabled/disabled] ingress_checking [enabled/disabled]
enable gvrp	
disable gvrp	
show vlan	<vlan_name>
show gvrp	<portlist>

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

create vlan	
Purpose	Used to create a VLAN on the switch.
Syntax	**create vlan <vlan_name> {tag <vlanid>/advertisement}**
Description	This command allows you to create a VLAN on the switch.
Parameters	<vlan_name> – The name of the VLAN to be created. <vlanid> – The VLAN ID of the VLAN to be created. advertisement – Specifies the VLAN as able to join GVRP. If this parameter is not set, the VLAN cannot be configured to have forbidden ports.
Restrictions	Each VLAN name can be up to 32 characters. If the VLAN is not given a tag, it will be a port-based VLAN. Only administrator-level users can issue this command.

Example Usage:

To create a VLAN v1, tag 2:

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

Success.
```

```
DES-3226S:4#
```

delete vlan

Purpose	Used to delete a previously configured VLAN on the switch.
Syntax	**delete vlan <vlan_name>**
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-3226S:4#delete vlan v1
Command: delete vlan v1

 Success.

DES-3226S:4#
```

config vlan

Purpose	Used to add additional ports to a previously configured VLAN.
Syntax	**config vlan <vlan_name> add [tagged/untagged/forbidden]/delete <portlist>/advertisement [enabled/disabled]**
Description	This command allows you to add ports to the port list of a previously configured VLAN. You can specifiy the additional ports as tagging, untagging, or forbidden. The default is to assign the ports as untagging.
Parameters	<vlan_name> – The name of the VLAN you want to add ports to. add – Specifies all of the ports on the switch. tagged – Specifies the additional ports as tagged. untagged – Specifies the additional ports as untagged. forbidden – Specifies the additional ports as forbidden. delete – Deletes the above specified VLAN from the switch. <portlist> – A range of ports to add to the VLAN. The port list is specified by listing

config vlan	
	the lowest switch number and the beginning port number on that switch, separated by a colon. Then 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, **1:3** would specify switch number 1, port 3. **2:4** specifies switch number 2, port 4. **1:3-2:4** specifies all of the ports between switch 1, port 3 and switch 2, port 4 – in numerical order. advertisement [enabled/disabled] – Enables or disables GVRP on the specified VLAN.
Restrictions	Only administrator-level users can issue this command.

Example Usage:

To add 4 through 8 of module 2 as tagged ports to the VLAN v1:

```
DES-3226S:4#config vlan v1 add tagged 2:4-2:8
Command: config vlan v1 add tagged 2:4-2:8

 Success.

DES-3226S:4#
```

config gvrp	
Purpose	Used to configure GVRP on the switch.
Syntax	**config gvrp [<portlist>/all] {state [enabled/disabled]/ingress_checking [enabled/disabled]}**
Description	This command is used to configure the Group VLAN Registration Protocol on the switch. You can configure ingress checking, the sending and receiving of GVRP information, and the Port VLAN ID (PVID).
Parameters	<portlist> – A range of ports for which you want ingress checking. The port list is specified by listing the lowest switch number and the beginning port number on that switch, separated by a colon. Then 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, **1:3** would specify switch number 1, port 3. **2:4** specifies switch number 2, port 4. **1:3-2:4** specifies all of the ports between switch 1, port 3 and switch 2, port 4 – in numerical order. all – Specifies all of the ports on the switch. state [enabled/disabled] – Enabled or disables GVRP for the ports specified in the port list. ingress_checking [enabled/disabled] – Enables or disables ingress checking for the specified port list.
Restrictions	Only administrator-level users can issue

config gvrp
this command.

Example Usage:

To set the ingress checking status, the sending and receiving GVRP information and Port VLAN ID(PVID):

```
DES-3226S:4#config gvrp 1:1-1:5 state enabled ingress_checking
enabled pvid 21
Command: config gvrp 1:1-1:5 state enabled ingress_checking
enabled pvid 21

 Success.

DES-3226S:4#
```

enable gvrp	
Purpose	Used to enable GVRP on the switch.
Syntax	**enable gvrp**
Description	This command, along with **disable gvrp** below, is used to enable and disable GVRP on the switch – without changing the GVRP configuration 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-3226S:4#enable gvrp
Command: enable gvrp

 Success.

DES-3226S:4#
```

disable gvrp

Purpose	Used to disable GVRP on the switch.
Syntax	**disable gvrp**
Description	This command, along with **disable gvrp** below, is used to enable and disable GVRP on the switch – without changing the GVRP configuration 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-3226S:4#disable gvrp
Command: disable gvrp

 Success.

DES-3226S:4#
```

show vlan	
Purpose	Used to display the current VLAN configuration on the switch
Syntax	**show vlan** {**<vlan_name>**}
Description	This command displays summary information about each VLAN including the VLAN ID, VLAN name, the 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 the switch's current VLAN settings:

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

VID              : 1              VLAN Name      : default
VLAN TYPE        : static         Advertisement  : Enabled
Member ports     : 1:1-1:26,2:1-2:26
  Static ports   : 1:1-1:26,2:1-2:26
Untagged ports   : 1:1-1:25,2:1-2:25
Forbidden ports  :
VID              : 2              VLAN Name      : v1
VLAN TYPE        : static         Advertisement  : Disabled
Member ports     : 1:26,2:26
```

```
 Static ports      : 1:26,2:26
Untagged ports     :
Forbidden ports    :

 Total Entries : 2

DES-3226S:4#
```

show gvrp

Purpose	Used to display the GVRP status for a port list on the switch.
Syntax	**show gvrp** {**<portlist>**}
Description	This command displays the GVRP status for a port list on the switch
Parameters	<portlist> – Specifies a range of ports for which the GVRP status is to be displayed. The port list is specified by listing the lowest switch number and the beginning port number on that switch, separated by a colon. Then 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, **1:3** would specify switch number 1, port 3. **2:4** specifies switch number 2, port 4. **1:3-2:4** specifies all of the ports between switch 1, port 3 and switch 2, port 4 – in numerical order.

show gvrp

Restrictions None.

Example Usage:

To display GVRP port status:

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

Global GVRP : Disabled

Port   PVID   GVRP       Ingress Checking
----   -------- --------   --------------------
1:1    21     Enabled      Enabled
1:2    21     Enabled      Enabled
1:3    21     Enabled      Enabled
1:4    21     Enabled      Enabled
1:5    21     Enabled      Enabled
1:6    1      Disabled     Disabled
1:7    1      Disabled     Disabled
1:8    1      Disabled     Disabled
1:9    1      Disabled     Disabled
1:10   1      Disabled     Disabled
1:11   1      Disabled     Disabled
1:12   1      Disabled     Disabled
1:13   1      Disabled     Disabled
1:14   1      Disabled     Disabled
1:15   1      Disabled     Disabled
1:16   1      Disabled     Disabled
1:17   1      Disabled     Disabled
1:18   1      Disabled     Disabled
1:19   1      Disabled     Disabled
1:20   1      Disabled     Disabled
1:21   1      Disabled     Disabled
```

```
1:22    1       Disabled        Disabled
1:23    1       Disabled        Disabled
1:24    1       Disabled        Disabled
1:25    1       Disabled        Disabled
1:26    0       Enabled         Disabled
2:1     1       Disabled        Disabled
2:2     1       Disabled        Disabled
2:3     1       Disabled        Disabled
2:4     1       Disabled        Disabled
2:5     1       Disabled        Disabled
2:6     1       Disabled        Disabled
2:7     1       Disabled        Disabled
2:8     1       Disabled        Disabled
2:9     1       Disabled        Disabled
2:10    1       Disabled        Disabled
2:11    1       Disabled        Disabled
2:12    1       Disabled        Disabled
2:13    1       Disabled        Disabled
2:14    1       Disabled        Disabled
2:15    1       Disabled        Disabled
2:16    1       Disabled        Disabled
2:17    1       Disabled        Disabled
2:18    1       Disabled        Disabled
2:19    1       Disabled        Disabled
2:20    1       Disabled        Disabled
2:21    1       Disabled        Disabled
2:22    1       Disabled        Disabled
2:23    1       Disabled        Disabled
2:24    1       Disabled        Disabled
2:25    1       Disabled        Disabled
2:26    0       Enabled         Disabled

Total Entries : 52

DES-3226S:4#
```

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LINK AGGREGATION COMMANDS

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

Command	Parameters
create link_aggregation	group_id <value>
delete link_aggregation	group_id <value>
config link_aggregation	group_id <value> master_port <port> ports <portlist> state [enabled/disabled]
config link_aggregation algorithm	mac_source mac_destination mac_source_dest ip_source ip_destination ip_source_dest
show link_aggregation	group_id <value> algorithm

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.
Syntax	**create link_aggregation group_id <value>**
Description	This command will create a link aggregation group.
Parameters	<value> – Specifies the group id. The switch allows up to 6 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-3226S:4#create link_aggregation group_id 1
Command: create link_aggregation group_id 1

Success.

DES-3226S:4#
```

delete link_aggregation group_id	
Purpose	Used to delete a previously configured link aggregation group.
Syntax	**delete link_aggregation group_id <value>**
Description	This command is used to delete a previously configured link aggregation group.
Parameters	<value> – Specifies the group id. The switch allows up to 6 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-3226S:4#delete link_aggregation group_id 6
Command: delete link_aggregation group_id 6

Success.

DES-3226S:4#
```

config link_aggregation

Purpose	Used to configure a previously created link aggregation group.
Syntax	**config link_aggregation group_id <value> {master_port <port>/ports <portlist>/ state [enabled/disabled]**
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 six link aggregation groups to be configured. The group number identifies each of the groups. <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 port list is specified by listing the lowest switch number and the beginning port number on that switch, separated by a colon. Then 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, **1:3**

config link_aggregation	
	would specify switch number 1, port 3. **2:4** specifies switch number 2, port 4. **1:3-2:4** specifies all of the ports between switch 1, port 3 and switch 2, port 4 – in numerical order. state [enabled/disabled] – 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 of module 2:

```
DES-3226S:4#config link_aggregation group_id 1 master_port
2:17 ports 1:5-1:10
Command: config link_aggregation group_id 1 master_port 2:17
ports 1:5-1:10

 Success.

DES-3226S:4#
```

config link_aggregation algorithm	
Purpose	Used to configure the link aggregation algorithm.
Syntax	**config link_aggregation algorithm [mac_source/mac_destination/mac_source_dest/ ip_source/ip_destination/ip_source_dest]**
Description	This command configures to part of the packet examined by the switch when selecting the egress port for transmitting load-sharing data. This feature is only available using the address-based load-sharing algorithm.
Parameters	mac_source – Indicates that the switch should examine the MAC source address. mac_destination – Indicates that the switch should examin the MAC destination address. mac_source_dest – Indicates that the switch should examine the MAC source and ddestination addresses ip_source – Indicates that the switch should examine the IP source address. ip_destination – Indicates that the switch should examine the IP destination address. ip_source_dest – Indicates that the switch should examine the IP source address and the destination address.
Restrictions	Only administrator-level users can issue this command.

Example Usage:

To configure link aggregation algorithm for mac-source-dest:

```
DES-3226S:4#config link_aggregation algorithm
mac_source_dest
Command: config link_aggregation algorithm mac_source_dest

 Success.

DES-3226S:4#
```

show link_aggregation

Purpose	Used to display the current link aggregation configuration on the switch.
Syntax	**show link_aggregation** {**group_id <value>/algorithm**}
Description	This command will display the current link aggregation configuration of the switch.
Parameters	<value> – Specifies the group id. The switch allows up to six link aggregation groups to be configured. The group number identifies each of the groups. algorithm – Allows you to specify the display of link aggregation by the algorithm in use by that group.
Restrictions	None.

Example Usage:

To show link aggregation:

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

Link Aggregation Algorithm = MAC-source-dest
Group ID      : 1
Master Port   : 2:17
Member Port   : 1:5-1:10,2:17
Status        : Disabled
Flooding Port : 1:5
```

16

BASIC IP COMMANDS

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

Command	Parameters
config ipif System	ipaddress <network_address> vlan <vlan_name 32> state [enabled/disabled] bootp dhcp
show ipif	

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

config ipif System

Purpose	Used to configure the System IP interface.
Syntax	**config ipif System [{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.
Parameters	<network_address> – 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). <vlan_name> – The name of the VLAN corresponding to the System IP interface. state [enabled/disabled] – Allows you to enable or disable the IP interface. bootp – Allows the selection of the BOOTP protocol for the assignment of an IP address to the switch's System IP interface. dhcp – Allows the selection of the DHCP protocol for the assignment of an IP address to the switch's System IP interface.
Restrictions	Only administrator-level users can issue this command.

Example Usage:

To configure the IP interface System:

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

 Success.

DES-3226S:4#
```

show ipif

Purpose	Used to display the configuration of an IP interface on the switch.
Syntax	**show ipif**
Description	This command will display the configuration of an IP interface on the switch.
Parameters	None.
Restrictions	None.

Example Usage:

To display IP interface settings:

```
DES-3226S: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   : 1-26

DES-3226S:4#
```

17

IGMP SNOOPING COMMANDS

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

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

Command	Parameters
show igmp snooping	vlan <vlan_name 32>
show igmp snooping group	vlan <vlan_name 32>
show router ports	vlan <vlan_name 32> static dynamic

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

config igmp_snooping

Purpose	Used to configure IGMP snooping on the switch.
Syntax	**config igmp_snooping [<vlan_name>/all] {host_timeout <sec>/router_timeout <sec>/leave_timer <sec>/state [enabled/disabled]}**
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. 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. 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.

config igmp_snooping

Restrictions	Only administrator-level users can issue this command.

Example Usage:

To configure the igmp snooping:

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

 Success.

DES-3226S:4#
```

config igmp_snooping queri :r	
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	**config igmp_snooping querier [<vlan_name>/all] {query_interval <sec>/max_response_time <sec>/robustness_variable <value>/last_member_query_interval <sec>/state [enabled/disabled]**
Description	This command configures IGMP snooping querier.
Parameters	<vlan_name> – The name of the VLAN for which IGMP snooping querier is to be configured. query_interval <sec> – Specifies the amount of time in seconds between general query transmissions. The default setting is 125 seconds. max_response_time <sec> – Specifies the maximum time in seconds to wait for reports from members. The default setting is 10 seconds. robustness_variable <value> – Provides fine-tuning to allow for expected packet loss on a subnet. The value of the

config igmp_snooping queri :r

robustness variable is used in calculating 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-

config igmp_snooping queri :r	
	specific query messages, including those 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-3226S:4#config igmp_snooping querier default query_interval
125 state enabled

Command: config igmp_snooping querier default query_interval
125 state enabled

 Success.

DES-3226S: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 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 lowest switch number and the beginning port number on that switch, separated by a colon. Then 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, **1:3** would specify switch number 1, port 3. **2:4** specifies switch number 2, port 4. **1:3-2:4** specifies all of the ports between switch 1, port 3 and switch 2, port 4 – in numerical order.
Restrictions	Only administrator-level users can issue this command.

Example Usage:

To set up static router ports:

```
DES-3226S:4#config router_ports default add 2:1-2:10
Command: config router_ports default add 2:1-2:10

Success.

DES-3226S:4#
```

enable igmp_snooping

Purpose	Used to enable IGMP snooping on the switch.
Syntax	**enable igmp_snooping {forward_mcrouter_only}**
Description	This command allows you to enable IGMP snooping on the switch. If **forward_mcrouter_only** 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-3226S:4#enable igmp_snooping
Command: enable igmp_snooping

Success.
```

disable igmp_snooping

Purpose	Used to enable IGMP snooping on the switch.
Syntax	**disable igmp_snooping**
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-3226S:4#disable igmp_snooping
Command: disable igmp_snooping

 Success.

DES-3226S:4#
```

show igmp_snooping

Purpose	Used to show the current status of IGMP snooping on the switch.
Syntax	**show igmp_snooping {vlan <vlan_name>}**
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-3226S:4#show igmp_snooping
Command: show igmp_snooping

IGMP Snooping Global State    : Disabled
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-3226S:4#
```

show igmp_snooping group

Purpose	Used to display the current IGMP snooping group configuration on the switch.
Syntax	**show igmp_snooping group {vlan <vlan_name>}**
Description	This command will display the current IGMP snooping group configuration on the swtich.
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 an IGMP snooping group:

```
DES-3226S: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    : 1:26,2:7

VLAN Name      : default
Multicast group: 224.0.0.9
MAC address    : 01-00-5E-00-00-09
```

```
Reports          : 1
Port Member    : 1:26,2:7
VLAN Name      : default
Multicast group: 234.5.6.7
MAC address    : 01-00-5E-05-06-07
Reports          : 1
Port Member    : 1:26,2:9

VLAN Name      : default
Multicast group: 236.54.63.75
MAC address    : 01-00-5E-36-3F-4B
Reports          : 1
Port Member    : 1:26,2:7

VLAN Name      : default
Multicast group: 239.255.255.250
MAC address    : 01-00-5E-7F-FF-FA
Reports          : 2
Port Member    : 1:26,2:7

VLAN Name      : default
Multicast group: 239.255.255.254
MAC address    : 01-00-5E-7F-FF-FE
Reports          : 1
Port Member    : 1:26,2:7

Total Entries    : 6
DES-3226S: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**}
Description	This command will display the router ports currently configured on the switch.
Parameters	<vlan_name> – The name of the VLAN on which the router port resides. static – Displays router ports that have been statically configured. dynamic – Displays router ports that have been dynamically configured.
Restrictions	None.

Example Usage:

To display the router ports:

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

VLAN Name         : default
Static router port     : 2:1-2:10
Dynamic router port   :

VLAN Name         : vlan2
Static router port     :
```

```
Dynamic router port   :

Total Entries: 2

DES-3226S:4#
```

18

802.1X COMMANDS

The DES-3226S 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
enable 802.1x	
disable 802.1x	
show 802.1x	ports <portlist>
config 802.1x capability	ports <portlist>/all authenticator none
config 802.1x auth_parameter	ports <portlist>/all default direction [both/in] port_control [force_unauth/auto/force_auth] quiet_period <sec 0-65535> tx_period <sec 1-65535> supp_timeout <sec 1-65535> server_timeout <sec 1-65535> max_req <value 1-10> reauth_period <sec 1-65535> enable_reauth [enabled/disabled]
config 802.1x init ports	<portlist> all

Command	Parameters
config 802.1x reauth ports	<portlist> all
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 delete	<server_index 1-3>
config radius	<server_index 1-3> ipaddress <server_ip> key <passwd 32> auth_port <udp_port_number> acct_port <udp_port_number>
show radius	

enable 802.1x

Purpose	Used to enable the 802.1x server on the switch.
Syntax	**enable 802.1x**
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-3226S:4#enable 802.1x
Command: enable 802.1x

 Success.

DES-3226S:4#
```

disable 802.1x	
Purpose	Used to disable the 802.1x server on the switch.
Syntax	**disable 802.1x**
Description	The **disable 802.1x** command is used to disable 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 disable 802.1x on the switch:

```
DES-3226S:4#disable 802.1x
Command: disable 802.1x

 Success.

DES-3226S:4#
```

show 802.1x

Purpose	Used to display the current configuration of the 802.1x server on the switch.
Syntax	**show 802.1x {ports <portlist>}**
Description	The **show 802.1x** command is used to display the current configuration of the 802.1x Port-based Network Access Control server application on the switch.
Parameters	ports <portlist> – Specifies a range of ports. The port list is specified by listing the lowest switch number and the beginning port number on that switch, separated by a colon. Then 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, **1:3** would specify switch number 1, port 3. **2:4** specifies switch number 2, port 4. **1:3-2:4** specifies all of the ports between switch 1, port 3 and switch 2, port 4 – in numerical order. The following details what is displayed: 802.1x Enabled/Disabled – Shows the current status of 802.1x functions on the switch. Authentication Protocol: Raduis_Eap – Shows the authentication protcol suite in use between the switch and a Radius

show 802.1x

server.

Port number – Shows the physical port number on the switch.

Capability: Authenticator/None – Shows the capability of 802.1x functions on the port number displayed above. There are four 802.1x capabilities that can be set on the switch: Authenciator, Suplicant, Authenticator and Suplicant, and None.

Prot Status: Authorized/Unauthorized – Shows the result of the authentication process. Authorized means that the user was authenticated, and can access the network. Unauthorized means that the user wan not authenticated, and cannot access the network.

PAE State:
Initalize/Disconnected/Connecting/ Authenticating/Authenticated/Held /ForceAuth/ForceUnauth – Shows the current state of the Authenticator PAE.

Backend State: Request/Response/Fail/ Idle/Initalize – Shows the current state of the Backend Authenticatior.

AdminCtlDir: Both/In – Shows whether a controlled Port that is unauthorized will exert control over communication in both recieving and transmitting directions, or just the recieving direction.

show 802.1x

OpenCtlDir: Both/In – Shows whether a controlled Port that is unauthorized will exert control over communication in both recieving and transmitting directions, or just the recieving direction.

Port Control:
ForceAuth/ForceUnauth/Auto – Shows the adminstrative control over the port's authorization status. ForceAuth forces the Authenticator of the port to become Authorized. ForceUnauth forces the port to become Unauthorized.

QuietPeriod – Shows the time interval between authentication failure and the start of a new authentication attempt.

TxPeriod – Shows the time to wait for a response from a supplicant (user) to send EAP Request/Identiy packets.

SuppTimeout – Shows the time to wait for a response from a supplicant (user) for all EAP packets, except for the Request/Identity packets.

ServerTimeout – Shows the length of time to wait for a response from a Radius server.

MaxReq – Shows the maximum number of times to retry sending packets to the supplicant.

ReAuthPeriod – shows the time interval

show 802.1x	
	between successive re-authentications. ReAuthenticate: Enabled/Disabled – Shows whether or not to re-authenticate.
Restrictions	Only administrator-level users can issue this command.

Example Usage:

To display 802.1x port settings for port 1:1:

```
DES-3226S:4#show 802.1x ports 1:
Command: show 802.1x ports 1:1

802.1X              : Disabled
Authentication Protocol: Radius_Eap

 Port number     : 1:1
 Capability      : None
 Port Status     : Authorized
 PAE  State      : ForceAuth
 Backend State   : Sucess
 AdminCrlDir     : Both
 OpenCrlDir      : Both
 Port Control    : Auto
 QuietPeriod     : 60    sec
 TxPeriod        : 30    sec
 SuppTimeout     : 30    sec
 ServerTimeout   : 30    sec
 MaxReq          : 2     times
 ReAuthPeriod    : 3600  sec
 ReAuthenticate  : Disabled

DES-3226S:4#
```

config 802.1x capability

Purpose	Used to configure the 802.1x capability of a range of ports on the switch.
Syntax	**config 802.1x capability ports [<portlist>/all] [authenticator/none]**
Description	The **config 802.1x** command has four capabilities that can be set for each port. Authenticaor, Supplicant, Authenticator and Supplicant, and None.
Parameters	<portlist> – Specifies a range of ports. The port list is specified by listing the lowest switch number and the beginning port number on that switch, separated by a colon. Then 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, **1:3** would specify switch number 1, port 3. **2:4** specifies switch number 2, port 4. **1:3-2:4** specifies all of the ports between switch 1, port 3 and switch 2, port 4 – in numerical order. 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 on switch 1:

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

Success.

DES-3226S: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 [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

config 802.1x auth_parameter	
	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 lowest switch number and the beginning port number on that switch, separated by a colon. Then 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, **1:3** would specify switch number 1, port 3. **2:4** specifies switch number 2, port 4. **1:3-2:4** specifies all of the ports between switch 1, port 3 and switch 2, 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] – Determins whether a controlled port blocks communication in both the recieving and transmitting directions, or just the receiving direction. port_control – Configures the 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

config 802.1x auth_parameter	
	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 authenticaiton 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.
Restrictions	Only administrator-level users can issue this command.

Example Usage:

To cconfigure 802.1x authentication parameters for ports 1 – 20 of switch 1:

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

```
Success.

DES-3226S:4#
```

config 802.1x init ports

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 lowest switch number and the beginning port number on that switch, separated by a colon. Then 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, **1:3** would specify switch number 1, port 3. **2:4** specifies switch number 2, port 4. **1:3-2:4** specifies all of the ports between switch 1, port 3 and switch 2, 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 802.1xfunctions on ports 1:1 – 1:15:

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

 Success.

DES-3226S:4#
```

config 802.1x reauth ports	
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 ports** 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 lowest switch number and the beginning port number on that switch, separated by a colon. Then 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, **1:3** would specify switch number 1, port 3. **2:4** specifies switch number 2, port 4. **1:3-2:4** specifies all of the ports between switch 1, port 3 and switch 2, 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 posrts 1:1-1:15:

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

 Success.
DES-3226S: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>}]**
Description	The **config radius add** command is used to configure the settings the switch will use to communicate with a Radius server.
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. <server_ip> – The IP address of the Radius server. key – Specifies that a password and encryption key will be used between the switch and the Radius server. <passwd 32> – The shared-secret key used by the Radius server and the switch. Up to 32 characters can be used. default – Returns all of the ports in the range to their default Radius settings. auth_port <udp_port_number> – The UDP port number for authentication requests.

config radius add	
	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 server communication setttings:

```
DES-3226S: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-3226S:4#
```

config radius delete

Purpose	Used to delete a previously entered Radius server configuration.
Syntax	**config radius delete <server_index 1-3>**
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 3 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-3226S:4#config radius delete 1
Command: config radius delete 1

 Success.

DES-3226S:4#
```

config radius	
Purpose	Used to configure the switch's Radius settings.
Syntax	**config radius <server_index 1-3> {ipaddress <server_ip> {ipaddress <server_ip>/key <passwd 32>/auth_port <udp_port_number>/acct_port <udp_port_number>}**
Description	The **config radius** command is used to configure the switch's Radius settings.
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. <server_ip> – The IP address of the Radius server. key – Specifies that a password and encryption key will be used between the switch and the Radius server. <passwd 32> – The shared-secret key used by the Radius server and the switch. Up to 32 characters can be used. default – Returns all of the ports in the range to their default Radius settings. auth_port <udp_port_number> – The UDP 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-3226S: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-3226S: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-3226S:4#show radius
Command: show radius

Index  IP Address       Auth-Port Number   Acct-Port Number   Status      Key
-----  ---------------  ---------          ---------          ----------  ----------
1      10.1.1.1         1812               1813               Active      switch
2      20.1.1.1         1800               1813               Active      des3226
3      30.1.1.1         1812               1813               Active      dlink

Total Entries : 3

DES-3226S:4#
```

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ACCESS CONTROL LIST (ACL) COMMANDS

The DES-3226S implements Access Control Lists that enable the switch to deny network access to specific devices or device groups based on IP settings or MAC address.

Command	Parameters
create access_profile	ethernet vlan source_mac <macmask> destination_mac <macmask> 802.1p ethernet_type ip vlan source_ip_mask <netmask> destination_ip_mask <netmask> dscp icmp type code igmp type tcp src_port_mask <hex 0x0-0xffff> dst_port_mask <hex 0x0-0xffff> udp udp src_port_mask <hex 0x0-0xffff>

Command	Parameters
	dst_port_mask <hex 0x0-0xfff> protocol_id user_mask <hex 0x0-0xffffffff> permit deny profile_id <value 1-255>}
delete access_profile	Profile_id <value 1-255>
config access_profile	profile_id <value 1-255> add access_id <value 1-255> ethernet vlan <vlan_name 32> source_mac <macaddr> destination_mac <macaddr> 802.1p <value 0-7> ethernet_type <hex 0x0-0xfff> ip vlan <vlan_name 32> source_ip <ipaddr> destination_ip <ipaddr> dscp <value> icmp type <value 0-255> code <value 0-255> igmp type <value 0-255> tcp src_port <value 0-65535> dst_prot <value 0-65535> udp src_port <value 0-65535> dst_port <value 0-65535> protocol_id <value 0-255> user_define <hex 0x0-0xffffffff> priority <value 0-7>

Command	Parameters
	replace_priority replace_dscp <value 0-63> delete <value 1-255>

Due to a chipset limitation, the switch currently supports a maximum of 10 access profiles, each containing a maximum of 50 rules – with the additional limitation of 50 rules total for all 10 access profiles.

Access profiles allow you to establish criteria to determine whether or not the switch will forward packets based on the information contained in each packet's header. These criteria can be specified on a VLAN-by-VLAN basis.

Creating an access profile is divided into two basic parts. First, an access profile must be created using the **create access_profile** command. For example, if you want to deny all traffic to the subnet 10.42.73.0 to 10.42.73.255, you must first **create** an access profile that instructs the switch to examine all of the relevant fields of each frame, and specify **deny**:

create access_profile ip source_ip_mask 255.255.255.0 profile_id 1 deny

Here we have created an access profile that will examine the IP field of each frame received by the switch. Each source IP address the switch finds will be combined with the **source_ip_mask** with a logical AND operation. The **profile_id** parameter is used to give the access profile an identifying number – in this case, **1**. The **deny** parameter instructs the switch to filter any frames that meet the criteria – in this case, when a logical AND operation between an IP address specified in the next step and the **ip_source_mask** match.

The default for an access profile on the switch is to **permit** traffic flow. If you want to restrict traffic, you must use the **deny** parameter.

Now that an access profile has been created, you must add the criteria the switch will use to decide if a given frame should be forwarded or filtered. Here, we want to filter any packets that have an IP source address between 10.42.73.0 and 10.42.73.255:

config access_profile profile_id 1 add access_id 1 ip source_ip 10.42.73.1

Here we use the **profile_id 1** which was specified when the access profile was created. The **add** parameter instructs the switch to add the criteria that follows to the list of rules that are associated with access profile 1. For each rule entered into the access profile, you can assign an **access_id** that both identifies the rule and establishes a priority within the list of rules. A lower **access_id** gives the rule a higher priority. In case of a conflict in the rules entered for an access profile, the rule with the highest priority (lowest **access_id**) will take precedence.

The **ip** parameter instructs the switch that this new rule will be applied to the IP addresses contained within each frame's header. **source_ip** tells the switch that this rule will apply to the source IP addresses in each frame's header. Finally, the IP address **10.42.73.1** will be combined with the **source_ip_mask 255.255.255.0** to give the IP address 10.42.73.0 for any source IP address between 10.42.73.0 to 10.42.73.255.

create access_profile

Purpose	Used to create an access profile on the switch and to define which parts of each incoming frame's header the switch will examine. Masks can be entered that will be combined with the values the switch finds in the specified frame header fields. Specific values for the rules are entered using the **config access_profile** command, below.
Syntax	**create access_profile [ethernet {vlan/source_mac <macmask>/destination_mac <macmask> /802.1p/ethernet_type}/ip {vlan/source_ip_mask <netmask>/destination_ip_mask <netmask>/dscp/[icmp {type/code}/igmp {type}/tcp {src_port_mask <hex 0x0-0xffff>/dst_port_mask <hex 0x0-0xffff>}/udp {src_port_mask <hex 0x0-0xfff>/dst_port_mask <hex 0x0-0xffff>}/protocol_id {user_mask <hex 0x0-0xffffffff>}]}]{[permit/deny]/profile_id <value 1-255>}**
Description	The **create access_profile** command is used to create an access profile on the switch and to define which parts of each incoming frame's header the switch will examine. Masks can be entered that will be combined with the values the switch finds in the specified frame header fields. Specific values for the rules are entered

create access_profile

using the **config access_profile** command, below.

Parameters

ethernet – Specifies that the switch will examine the layer 2 part of each packet header.

vlan – Specifies that the switch will examine the VLAN part of each packet header.

source_mac <macmask> – Specifies a MAC address mask for the source MAC address. This mask is entered in the following hexadecimal format,

destination_mac <macmask> – Specifies a MAC address mask for the destination MAC address.

802.1p – Specifies that the switch will examine the 802.1p priority value in the frame's header.

ethernet_type – Specifies that the switch will examine the Ethernet type value in each frame's header.

ip – Specifies that the switch will examine the IP address in each frame's header.

vlan – Specifies a VLAN mask.

source_ip_mask <netmask> – Specifies an IP address mask for the source IP address.

destination_ip_mask <netmask> – Specifies an IP address mask for the destination IP address.

create access_profile

dscp – Specifies that the switch will examine the DiffServ Code Point (DSCP) field in each frame's header.

icmp – Specifies that the switch will examine the Internet Control Message Protocol (ICMP) field in each frame's header.

type – Specifies that the switch will examine each frame's ICMP Type field.

code – Specifies that the switch will examine each frame's ICMP Code field.

igmp – Specifies that the switch will examine each frame's Internet Group Management Protocol (IGMP) field.

type – Specifies that the switch will examine each frame's IGMP Type field.

tcp – Specifies that the switch will examine each frames Transport Control Protocol (TCP) field.

src_port_mask <hex 0x0-0xffff> – Specifies a TCP port mask for the source port.

dst_port_mask <hex 0x0-0xffff> – Specifies a TCP port mask for the destination port.

udp – Specifies that the switch will examine each frame's Universal Datagram Protocol (UDP) field.

src_port_mask <hex 0x0-0xffff> – Specifies a UDP port mask for the source port.

create access_profile	
	dst_port_mask <hex 0x0-0xffff> – Specifies a UDP port mask for the destination port. protocol_id – Specifies that the switch will examine each frame's Protocol ID field. user_mask <hex 0x0-0xffffffff> – Specifies that the rule applies to the IP protocol ID and the mask options behind the IP header. permit – Specifies that packets that match the access profile are permitted to be forwarded by the switch. deny – Specifies that packets that do not match the access profile are not permitted to be forwarded by the switch and will be filtered. profile_id <value 1-255> – Specifies an index number that will identify the access profile being created with this command.
Restrictions	Only administrator-level users can issue this command.

Example Usage:

To create an access profile that will deny service to the subnet ranging from 10.42.73.0 to 10.42.73.255:

```
DES-3226S:4# create access_profile ip source_ip_mask
255.255.255.0 profile_id 1 deny
Command: create access_profile ip source_ip_mask
255.255.255.0 profile_id 1 deny
```

```
Success.

DES-3226S:4#
```

delete access_profile

Purpose	Used to delete a previously created access profile.
Syntax	**delete access_profile [profile_id <value 1-255>]**
Description	The **delete access_profile** command is used to delete a previously created access profile on the swtich.
Parameters	profile_id <value 1-255> – an integer between 1 and 255 that is used to identify the access profile that will be deleted with this command. This value is assigned to the access profile when it is created with the **create access_profile** command.
Restrictions	Only administrator-level users can issue this command.

Example Usage:

To delete the access profile with a profile ID of 1:

```
DES-3226S:4# delete access_profile profile_id 1
Command: delete access_profile profile_id 1

Success.

DES-3226S:4#
```

config access_profile

Purpose	Used to configure an access profile on the switch and to define specific values that will be used to by the switch to determine if a given packet should be forwarded or filtered. Masks entered using the **create access_profile** command will be combined, using a logical AND operation, with the values the switch finds in the specified frame header fields. Specific values for the rules are entered using the **config access_profile** command, below.
Syntax	**config access_profile profile_id <value 1-255> [add access_id <value 1-255>] [ethernet {vlan <vlan_name 32>/source_mac <macaddr>/destination_mac <macaddr>/802.1 <value 0-7>/ethernet_type <hex 0x0-0xffff}/ip{vlan <vlan_name>/source_ip <ipaddr>/destination_ip <ipaddr>/dscp <value 0-63>/[icmp {type <value 0-65535> code <value 0-255>}/igmp {type <value 0-255>}/tcp {src_port <value 0-65535>/dst_port <value 0-65535>}/ udp {src_port <value 0-65535>/dst_port <value 0-65535>}/protocol_id <value 0-255> {user_define <hex 0x0-0xffffffff>}]}]{priority <value 0-7> {replace_priority}/replace_dscp <value 0-63>}/delete <value 1-255>]**
Description	The **config access_profile** command is

config access_profile

	used to configure an access profile on the switch and to enter specific values that will be combined, using a logical AND operation, with masks entered with the **create access_profile** command, above.
Parameters	profile_id <value 1-255> –
	add access_id <value 1-255> – Adds an additional rule to the above specified access profile. The value specifies the relative priority of the additional rule. A lower access ID, the higher the priority the rule will be given.
	ethernet – Specifies that the switch will look only into the layer 2 part of each packet.
	vlan <vlan_name 32> – Specifies that the access profile will apply to only to this VLAN.
	source_mac <macaddr> – Specifies that the access profile will apply to only packets with this source MAC address.
	destination_mac <macaddr> – Specifies that the access profile will apply to only packets with this destination MAC address.
	802.1p <value 0-7> – Specifies that the access profile will apply only to packets with this 802.1p priority value.
	ethernet_type <hex 0x0-0xffff> – Specifies that the access profile will apply only to packets with this hexidecimal 802.1Q Ethernet type value

config access_profile

in the packet header.

ip – Specifies that the switch will look into the IP fields in each packet.

vlan <vlan_name 32> – – Specifies that the access profile will apply to only to this VLAN.

source_ip <ipaddr> – Specifies that the access profile will apply to only packets with this source IP address.

destination_id <value 0-255> – Specifies that the access profile will apply to only packets with this destination IP address.

dscp <value 0-63> – Specifies that the access profile will apply only to packets that have this value in their Type-of-Service (DiffServ code point, DSCP) field in their IP packet header.

icmp – Specifies that the switch will examine the Internet Control Message Protocol (ICMP) field within each packet.

type <value 0-65535> – Specifies that the access profile will apply to this ICMP type value.

code <value 0-255> – Specifies that the access profile will apply to this ICMP code.

igmp – Specifies that the switch will examine the Internet Group Management Protocol (IGMP) field within each packet.

type <value 0-255> – Specifies that the access profile will apply to packets that

config access_profile

have this IGMP type value.

tcp – Specifies that the switch will exmamine the Transmission Control Protocol (TCP) field within each packet.

src_port <value 0-65535> – Specifies that the access profile will apply only to packets that have this TCP source port in their TCP header.

dst_port <value 0-65535> – Specifies that the access profile will apply only to packets that have this TCP destination port in their TCP header.

udp – Specifies that the switch will examine the Universal Datagram Protocol (UDP) field in each packet.

src_port <value 0-65535> – Specifies that the access profile will apply only to packets that have this UDP source port in their header.

dst_port <value 0-65535> – Specifies that the access profile will apply only to packets that have this UDP destination port in their header.

protocol_id <value 0-255> – Specifies that the switch will examine the Protocol field in each packet and if this field contains the value entered here, apply the following rules.

user_define <hex 0x0-0xffffffff> – Specifies a mask to be combined with the value found in the frame header using a logical AND operaiton.

config access_profile	
	priority <value 0-7> – Specifies that the access profile will apply to packets that contain this value in their 802.1p priority field of their header. replace_priority – This parameter is specified if you want to change the 802.1p user priority of a packet that meets the specified criteria. Otherwise, a packet will have its incoming 802.1p user priority re-written to its original value before being transmitted from the switch. replace_dscp <value 0-63> – Allows you to specify a value to be written to the DSCP field of an incoming packet that meets the criteria specified in the first part of the command. This value will over-write the value in the DSCP field of the packet. delete <value 1-255> – Specifies that the access ID of a rule you want to delete.
Restrictions	Only administrator-level users can issue this command.

Example Usage:

To configure the access profile with the profile ID of 1 to filter frames that have IP addresses in the range between 10.42.73.0 to 10.42.73.255:

```
DES-3226S:4# config access_profile profile_id 1 add access_id 1
ip source_ip 10.42.73.1
Command: config access_profile profile_id 1 add access_id 1 ip
source_ip 10.42.73.1
```

```
Success.

DES-3226S:4#
```

show access_profile

Purpose	Used to display the currently configured access profiles on the switch.
Syntax	**show access_profile**
Description	The **show access_profile** command is used to display the currently configured access profiles
Parameters	None.
Restrictions	Only administrator-level users can issue this command.

Example Usage:

To display all of the currently configured access profiles on the switch:

```
DES-3226S:4#
Access Profile Table

Access Profile  ID:1                              Mode : Deny
                                                  TYPE : IP
=====================================================
MASK  Option  Source IP MASK
              255.255.255.0
------------------  ---------------------
Access ID
------------------  ---------------------
1                   10.42.73.0
```

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TRAFFIC SEGMENTATION COMMANDS

Traffic segmentation allows you to further sub-divide VLANs into smaller groups of ports that will help to reduce traffic on the VLAN. The VLAN rules take precedence, and then the traffic segmentation rules are applied.

Command	Parameters
config traffic_segmentation	<portlist> forward_list null <portlist>
show traffic_segmentation	<portlist>

config traffic_segmentation

Purpose	Used to configure traffic segmentation on the switch.
Syntax	**config traffic_segmentation <portlist> forward_list [null/<portlist>]**
Description	The **config traffic_segmentation** command is used to configure traffic segmentation on the switch.
Parameters	<portlist> – Specifies a range of ports that will be configured for traffic setmentation. 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. forward_list – Specifies a range of ports that will receive forwarded frames from the ports specified in the portlist, above. null – no ports are specified <portlist> – Specifies a range of ports for the forwarding list. This list must be on the same switch previously specified for traffic segmentation (i.e. following the <portlist> specified above for config traffic_segmentation).
Restrictions	Only administrator-level users can issue this command.

Example Usage:

To configure ports 1 through 10 to be able to forward frames to port 11 through 15:

```
DES-3226S:4# config traffic_segmentation 1-10 forward_list 11-
15
Command: config traffic_segmentation 1-10 forward_list 11-15

Success.

DES-3226S:4#
```

show traffic_segmentation	
Purpose	Used to display the current traffic segmentation configuration on the switch.
Syntax	**config traffic_segmentation <portlist> forward_list [null/<portlist>]**
Description	The **show traffic_segmentation** command is used to display the current traffic segmentation configuration on the switch.
Parameters	<portlist> – Specifies a range of ports for which the current traffic setmentation configuration on the switch will 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 between port 3 and port 4 – in numerical order.
Restrictions	The port lists for segmentation and the forward list must be on the same switch.

Example Usage:

To display the current traffic segmentation configuraiton on the switch:

```
DES-3226S:4#show traffic_segmentation
Command: show traffic_segmentation

Traffic Segmentation Table

Port  Forward Portlist
----  -------------------------------------------------
1     9-15
2     9-15
3     9-15
4     9-15
5     9-15
6     9-15
7     9-15
8     9-15
9     9-15
10    9-15
11    1-26
12    1-26
13    1-26
14    1-26
15    1-26
16    1-26
17    1-26
18    1-26
19    1-26
20    1-26
21    1-26
22    1-26
23    1-26
24    1-26
25    1-26
26    1-26

DES-3226S:4#
```

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STACKING COMMANDS

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

Command	Parameters
config stacking mode	master auto slave standalone
show stacking	mode version

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

config stacking mode

Purpose	Used to configure the stacking mode.
Syntax	**config stacking mode [master/auto/slave/standalone]**
Description	
Parameters	master – The switch in the switch stack that becomes the management switch. auto – Automatically determine the master switch and the stacking order based upon the numerical value of the individual switch's MAC address. The lowest MAC address becomes the master switch. slave – Forces a given switch in the switch stack to never become the master switch. standalone – No stacking functions enabled. The switch is not stacked.
Restrictions	The switch's stacking mode can only be configured when the switch is in standalone mode. Only administrator-level users can issue this command.

Example Usage:

To configure the stacking mode:

```
DES3226S:4#config stack mode auto
Command: config stacking mode auto
 Success.
```

show stacking

Purpose	Used to display the current stacking mode.
Syntax	**show stacking** {**mode/version**}
Description	This command will display the current stacking mode.
Parameters	mode – Displays the current stacking mode. version – Displays the version number of the stacking firmware.
Restrictions	none.

Example Usage:

To display the current stacking mode:

```
DES3226S:4#show stacking
Command: show stacking

Module ID  MAC Address        Start Port  Port Range  Mode  Version
---------  -----------------  ----------  ----------  ----  -------
    1      00-01-02-03-04-00      1          26      AUTO     1
    2      00-01-03-04-05-00      1          26      AUTO     1

Total number = 2

DES3226S:4#
```

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ROUTING TABLE COMMANDS

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

Command	Parameters
create iproute	default <ipaddr> <metric>
delete iproute default	default
show iproute	

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	**create iproute default <ipaddr> {<metric>}**
Description	This command is used to create an IP route entry to the switch's IP routing table.
Parameters	default – creates a default IP route entry. <ipaddr> – The IP address for the next hop router. <metric> – The default setting is 1.
Restrictions	Only administrator-level users can issue this command.

Example Usage:

To add a static address 10.48.74.121, mask 255.0.0.0 and gateway 10.1.1.254 to the routing table:

```
DES3226S:4#create iproute 10.48.74.121/255.0.0.0 10.1.1.254 1
Command: create iproute 10.48.74.121/8 10.1.1.254 1

Success.

DES3226S:4#
```

delete iproute default

Purpose	Used to delete an IP route entry from the switch's IP routing table.
Syntax	**delete iproute default**
Description	This command will delete an existing entry from the switch's IP routing table.
Parameters	default – deletes a default IP route entry.
Restrictions	Only administrator-level users can issue this command.

Example Usage:

To delete the default IP route from the switch's routing table:

```
DES3226S:4#delete iproute default
Command: delete iproute default

 Success.
DES3226S:4#
```

show iproute

Purpose	Used to display the switch's current IP routing table.
Syntax	**show iproute** {**<network_address>**} {**static/rip/ospf**}
Description	This command will display the switch's current IP routing table.
Parameters	None.
Restrictions	None.

Example Usage:

To display the contents of the IP routing table:

```
DES3226S:4#show iproute
Command: show iproute

IP Address       Netmask        Gateway        Interface Name  Hops  Protocol
---------------  ---------------  ---------------  ---------------  ----  -----------
  0.0.0.0          0.0.0.0        0.1.1.254        System          1    Default
  10.0.0.0         255.0.0.0      10.48.74.122      System          1     Local

Total Entries: 2
```

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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 command_history	
dir	
config command_history	<value>

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

?	
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-3226S:4#?
Command: ?
clear
clear arptable
clear counters {ports <portlist2>}
clear log
clear macentry unicast [vlan <vlan_name> | port <port> | all]
config account <username>
config auto-logout [0|2|5|10|15]
config baud rate [9600|19200|38400|115200]
DES-3226S:4#
```

show command_history	
Purpose	Used to display the command history.
Syntax	**show command_history**
Description	This command will display the command history.
Parameters	None.
Restrictions	None.

Usage Example:

To display the command history:

```
DES-3226S: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-3226S:4#
```

dir	
Purpose	Used to display all commands.
Syntax	**dir**
Description	This command will display all commands.
Parameters	None.
Restrictions	None.

Usage Example:

To display all of the commands:

```
DES-3226S:4#dir
Command: dir
.
?
clear
clear arptable
clear counters
clear log
clear macentry unicast
config account
config auto logout
config baud rate
config command history
config dnsr
config dvmrp
config gvrp
config igmp
config igmp snooping
config ingress_checking
config ipif
config ipif System
```

- more -

config command_history

Purpose	Used to configure the command history.
Syntax	**config command_history <value>**
Description	This command is used to configure the command history.
Parameters	<1-40> – the number of commands to display from the switch's command history.
Restrictions	None.

Usage Example:

To configure the command history:

```
DES-3226S:4#config command_history 20
Command: config command_history 20

 Success.

DES-3226S:4#
```

A

TECHNICAL SPECIFICATIONS

	General	
Standards:	IEEE 802.3 10BASE-T Ethernet	
	IEEE 802.3u 100BASE-TX Fast Ethernet	
	IEEE 802.3z 1000BASE-SX Gigabit Ethernet	
	IEEE 802.3ab 1000BASE-T Gigabit Ethernet	
	IEEE 802.1 P/Q VLAN	
	IEEE 802.3x Full-duplex Flow Control	
	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

	General
Network Cables:	
10BASE-T:	2-pair UTP Cat. 3,4,5 (100 m) EIA/TIA- 568 100-ohm STP (100 m)
100BASE-TX:	2-pair UTP Cat. 5 (100 m) EIA/TIA-568 100-ohm STP (100 m)
Number of Ports:	24 x 10/100 Mbps NWay ports 2 Gigabit Ethernet (optional)

	Physical and Enviro1 mental
AC input & External Redundant power Supply:	100 – 120; 200 - 240 VAC, 50/60 Hz (internal universal power supply)
Power Consumption:	30 watts maximum
DC fans:	3 built-in 40 x 40 x10 mm fans
Operating Temperature:	0 to 40 degrees Celsius
Storage Temperature:	-40 to 70 degrees Celsius
Humidity:	Operating: 5% to 95% RH non-condensing; Storage: 0% to 95% RH non-condensing
Dimensions:	441 mm x 207 mm x 44 mm (1U), 19 inch rack-mount width
Weight:	2.5 kg
EMI:	FCC Class A, CE Class A, BSMI Class A, C-Tick Class A

Physical and Environmental	
Safety:	CSA International

Performance	
Transmission Method:	Store-and-forward
RAM Buffer:	8 Megabytes per device
Filtering Address Table:	8K MAC address per device
Packet Filtering/ Forwarding Rate:	Full-wire speed for all connections. 148,800 pps per port (for 100Mbps) 1,488,000 pps per port (for 1000Mbps)
MAC Address Learning:	Automatic update.

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Registration Card

Print, type or use block letters.

Your name: Mr./Ms_____
Organization: _____ Dept. _____
Your title at organization: _____
Telephone: _____ Fax:_____
Organization's full address: _____
_____
Country: _____
Date of purchase (Month/Day/Year): _____

Product Model	Product Serial No.	* Product installed in type of computer (e.g., Compaq 486)	* Product installed in computer serial No.

(* Applies to adapters only)

Product was purchased from:

Reseller's name: _____
Telephone: _____ Fax:_____
Reseller's full address: _____
_____
_____

Answers to the following questions help us to support your product:

1. Where and how will the product primarily be used?
☐Home ☐Office ☐Travel ☐Company Business ☐Home Business ☐Personal Use

2. How many employees work at installation site?
☐1 employee ☐2-9 ☐10-49 ☐50-99 ☐100-499 ☐500-999 ☐1000 or more

3. What network protocol(s) does your organization use ?
☐XNS/IPX ☐TCP/IP ☐DECnet ☐Others_____

4. What network operating system(s) does your organization use ?
☐D-Link LANsmart ☐Novell NetWare ☐NetWare Lite ☐SCO Unix/Xenix ☐PC NFS ☐3Com 3+Open
☐Banyan Vines ☐DECnet Pathwork ☐Windows NT ☐Windows NTAS ☐Windows '95
☐Others_____

5. What network management program does your organization use ?
☐D-View ☐HP OpenView/Windows ☐HP OpenView/Unix ☐SunNet Manager ☐Novell NMS
☐NetView 6000 ☐Others_____

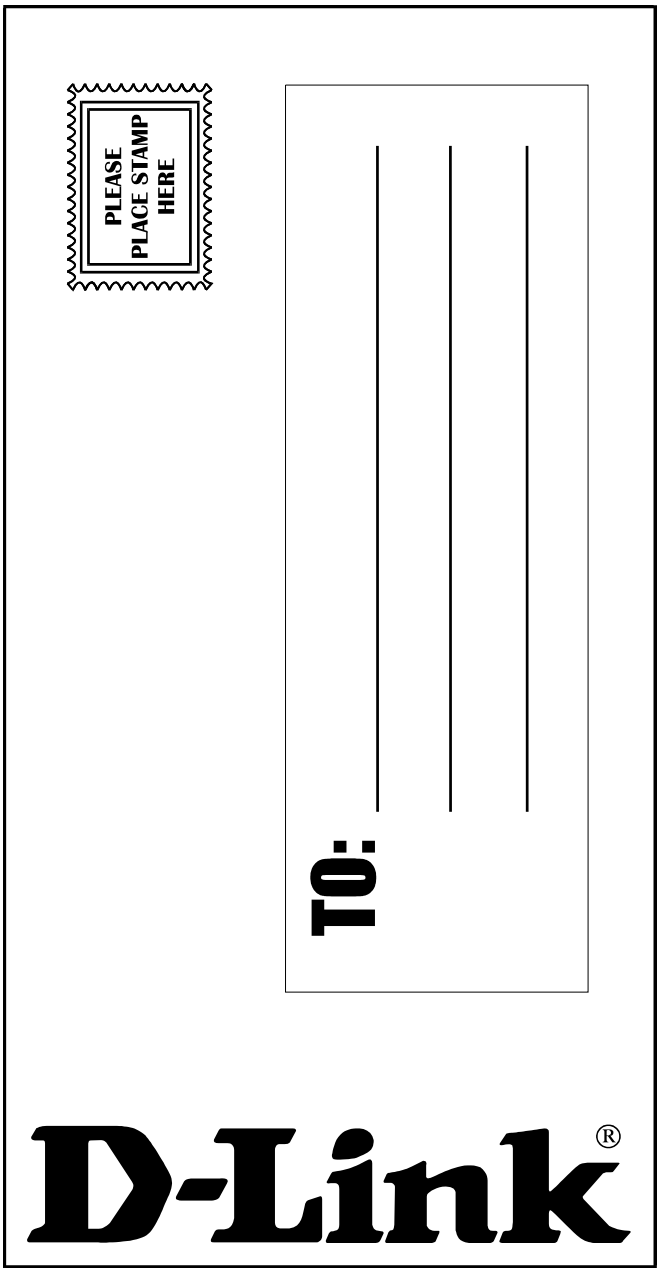
6. What network medium/media does your organization use ?
☐Fiber-optics ☐Thick coax Ethernet ☐Thin coax Ethernet ☐10BASE-T UTP/STP
☐100BASE-TX ☐100BASE-T4 ☐100VGAnyLAN ☐Others_____

7. What applications are used on your network?
☐Desktop publishing ☐Spreadsheet ☐Word processing ☐CAD/CAM
☐Database management ☐Accounting ☐Others_____

8. What category best describes your company?
☐Aerospace ☐Engineering ☐Education ☐Finance ☐Hospital ☐Legal ☐Insurance/Real Estate ☐Manufacturing
☐Retail/Chainstore/Wholesale ☐Government ☐Transportation/Utilities/Communication ☐VAR
☐System house/company ☐Other_____

9. Would you recommend your D-Link product to a friend?
☐Yes ☐No ☐Don't know yet

10. Your comments on this product?
_____
_____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