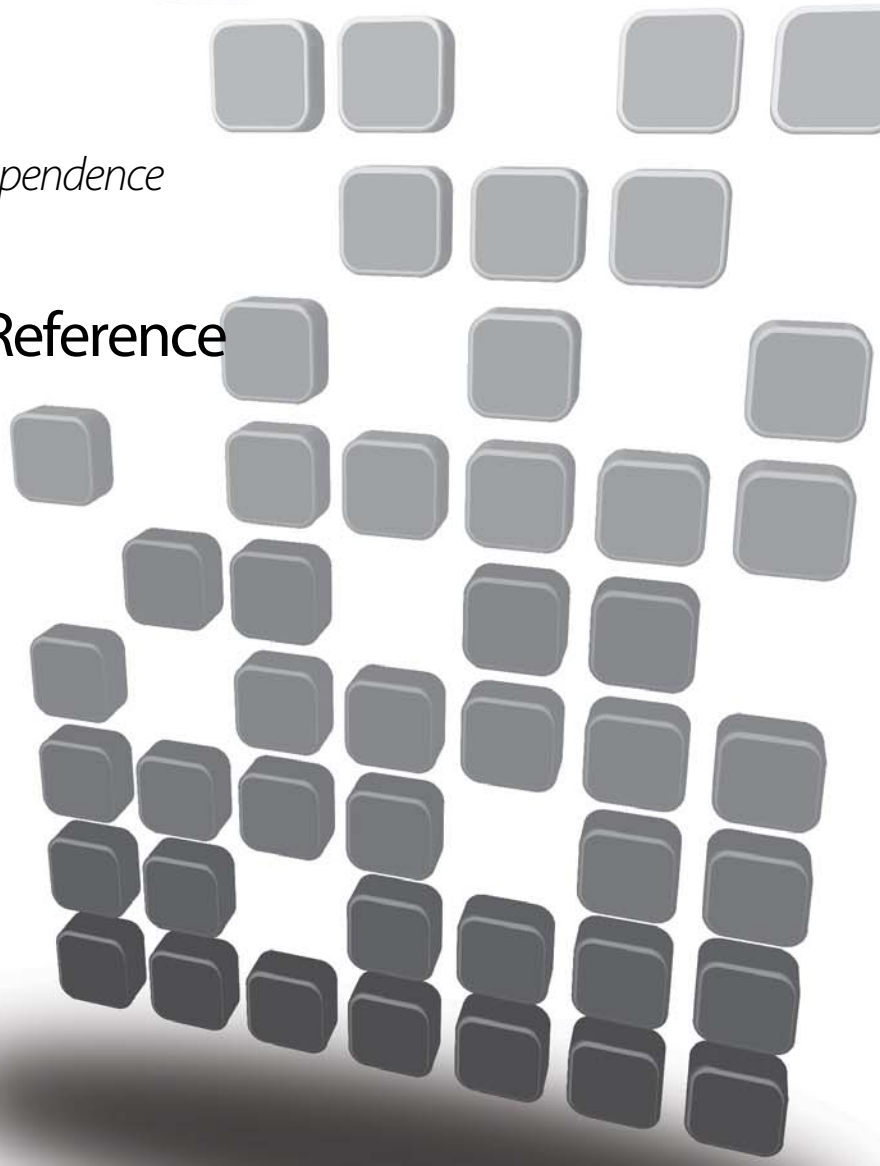
DarkStar®

Lighting the path to network independence

DXMOS
Command Reference



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CHAPTERS

1

Introduction

1.1 Operating System

DarkStar systems run on the DXMOS operating system, which works exclusively with a CLI (command line interface). This chapter contains DXMOS command summaries, keyboard shortcuts and syntax conventions for interpreting the following chapter of the Command Reference. Chapter 2 provides detailed information regarding the command line operation and administration of DarkStar products.

1.2 Syntax Format

This guide uses the following conventions to represent DXMOS command-line syntax:

TABLE 1.1 Conventions for DXMOS Syntax

Format	Meaning
`localhost>`	All text appearing on the command line is represented by Courier Standard font.
`show interfaces`	User entries are represented by Courier Standard bold font.
`interface-number`	Arguments, such as free-from input (text, number, etc.) that the user replaces with variable information, are represented by Courier Standard italicized font.
`<interface-identifier>`	Greater than & less than symbols surround user arguments that are legally provided keywords.
`{ east | west }`	Curly braces denote required keywords and arguments. The vertical bar(s) between keywords and arguments denotes "or" and means one of multiple terms must be chosen as an option.
`[ no ] connect <transport-identifier1> <transport identifier2> [ clock rate | encapsulation <encapsulation-type> ]`	Brackets denote optional keywords or arguments. Oftentimes they denote the "no" version of a command, which reverses the action of the command.

1.2.1 Command Prompt

DXMOS has several command prompts depending on which mode or level you are in. The top level of the `configure` command introduces a sub level of commands, some of the commands at the `configure` sub level introduces further levels of commands. Each sub level has its own prompt. At any sub level `exit` will return to the previous sub level, while `end` will return to the top level. At any sub level, `do` can be used to execute a top level command without leaving that sub level.

TABLE 1.2 Command Prompts

Format	Meaning
>	Default prompt for top level commands
#	Default prompt for enable mode commands
CONF#	Default prompt for configure commands

1.3 Syntax Shortcuts

To prevent syntax blocks from becoming hard to follow, this reference shortens some often-repeated syntax segments. When you use a command, expand the shortcut in its syntax reference to include the relevant options.

1.3.1 <ethernet-identifier>

`<ethernet-identifier>` expands to:

```
{{ ethernet | loopback | osc }interface-number} | {osc { east | west } }}
```

1.3.2 <transport-identifier>

On non-redundant systems, `<transport-identifier>` expands to:

```
{ client | wave } interface-number
```

On redundant (5R) systems, `<transport-identifier>` expands to:

```
{ client | wave { east | west} } interface-number
```

1.3.3 <interface-identifier>

On non-redundant systems, `<interface-identifier>` expands to:

```
{ <ethernet-identifier> | <transport-identifier> } interface-number
```

1.3.4 <encapsulation type>

On DarkStar systems using SFP+ laser modules `<encapsulation type>` expands to:

```
{ gigabitethernet { 1GE | 10GE | 10GE+FEC } fibrechannel { 1G | 2G | 4G |
10G } sonet { OC48 | OC192 | OC192+FEC } }
```

On DarkStar systems using XFP laser modules `<encapsulation type>` expands to:

```
{ 10gigabitethernet | fibrechannel 10g | sonet OC192 }
```

1.3.5 <storage-location-boot>

`<storage-location-boot>` expands to:

```
{ startup-boot | factory-boot | backup1-boot }
```

- `startup-boot` is equivalent to writing "/boot/boot.exe"
- `factory-boot` is equivalent to writing "/factory/boot/boot.exe"
- `backup1-boot` is equivalent to writing "/boot/boot-backup.exe"

NOTE

The copy command may copy from any factory-* storage location. However, none of the factory-* locations are valid destinations for the copy or tftp commands.

1.3.6 <storage-location-config>

`<storage-location-config>` expands to:

```
{ startup-config | backup1-config | backup2-config }
```

- `startup-config` is equivalent to writing "/dxmos/config-backup.dat"
- `backup1-config` is equivalent to writing "/dxmos/config-backup1.dat"
- `backup2-config` is equivalent to writing "/dxmos/config-backup2.dat"

1.3.7 <storage-location-gateware>

`<storage-location-gateware>` expands to:

```
{ startup-gateware | factory-gateware }
```

- `startup-gateware` is equivalent to writing "/boot/ccc.bin"
- `factory-gateware` is equivalent to writing "/factory/boot/ccc.bin"

1.3.8 <storage-location-image>

`<storage-location-image>` expands to:

```
{ startup-image | backup1-image | backup2-image | factory-image }
```

- `startup-image` is equivalent to writing "/dxmos/dxmos.exe"
- `backup1-image` is equivalent to writing "/dxmos/dxmos-backup1.exe"
- `backup2-image` is equivalent to writing "/dxmos/dxmos-backup2.exe"
- `factory-image` is equivalent to writing "/factory/dxmos/dxmos.exe"

1.3.9 <storage-location>

`<storage-location>` expands to:

```
{ <storage-location-boot> | <storage-location-config> |
<storage-location-gateware> | <storage-location-image> }
```

This shortcut is a combination of all four `<storage-location>` shortcuts.

1.4 High-Level Command Summaries

The DarkStar system has two modes of commands, enable and disable. Enable mode allows users with appropriate permission to reconfigure and display all information about a system. The commands available in the disable (default) mode are a subset of the commands available in enable mode. The following tables "1.3 Disabled Mode Command Summary", "1.4 Enabled Mode Command Summary" and "1.5 Configure Command Summary" outline the commands and descriptions of the three main modes in DXMOS. All commands and their options are detailed alphabetically in chapter 2 - Command Reference.

TABLE 1.3 Disabled Mode Command Summary

Command	Description
`disable`	No-op when DarkStar system is in disabled mode
`enable`	Enters enabled mode
`exit`	Logs out when issued from console configured with password protection; logs out and disconnects when issued from telnet or SSH session
`logout`	Disconnects from the DarkStar system
`no`	Reverses the action of the specified command
`ping`	Sends test packets to a specific address
`show`	Displays configuration and other system information
`terminal`	Sets the terminal pager behavior. This value becomes the login default
`version`	Displays version information about the DarkStar system

TABLE 1.4 Enabled Mode Command Summary

Command	Description
`app`	Configures automatic path protection (APP)
`checksum`	Calculates the md5sum and sum results for the given file
`clear`	Clears some aspect of the DXMOS software or a hardware component state
`clock`	Sets time and date of the DarkStar system clock

TABLE 1.4 Enabled Mode Command Summary

Command	Description
`configure`	Places the DarkStar system in configuration mode
`copy`	Copies configuration, software images, and gateware images between storage locations
`debug`	Enables diagnostic debugging output
`delete`	Deletes the specified file from the file system, if the file is not read only.
`dir`	Provides a directory listing for the specified file or directory. If no argument is present, provides a listing of the root directory.
`disable`	Exits enabled mode
`enable`	No-op when DarkStar system is in enabled mode
`exit`	Returns to disabled mode when issued from console configured without password protection; logs out when issued from console configured with password protection; logs out and disconnects when issued from telnet or SSH session
`logout`	Disconnects from the DarkStar system
`no`	Reverses the action of the specified command
`ping`	Sends test packets to a specified address
`reload`	Reloads the DXMOS software and gateware
`set`	Sets values for DarkStar system functions
`terminal`	Sets the terminal pager behavior. This value becomes the login default
`show`	Displays configuration and other information
`tftp`	Updates DXMOS software, gateware, and configuration from an external server
`undebug`	Stops diagnostic debugging output
`version`	Displays version information about the DarkStar system
`write`	Writes configuration information to storage

TABLE 1.5 Configure Command Summary

Command	Description
`aaa`	Authentication, authorization, and accounting
`access-list`	Defines an IP access control list
`app`	Configures automatic path protection (APP)
`banner`	Specifies a display message that appears to the user at login
`boot`	Selects a boot image from a tftp or flash memory location
`clock`	Configures time zone and Daylight Saving Time
`connect`	Connects a transport interface to a second interface
`do`	Execute top level commands described in Table 1.2 and Table 1.3 without leaving configuration mode
`edfa`	Places the DarkStar system in EDFA configuration mode (only available on systems with an EDFA)

TABLE 1.5 Configure Command Summary

Command	Description
`enable secret`	Sets password for enabled mode
`end`	Exits configuration mode and returns to top level
`exit`	Exits configuration mode and returns to top level
`fan`	Places the DarkStar system in fan configuration mode
`hostname`	Sets the hostname for the DarkStar system
`interface`	Places the DarkStar system in interface configuration mode
`ip`	Configures IP settings for the DarkStar system
`line`	Places the DarkStar system in line configuration mode
`logging`	Configures logging of events to the local event log and the syslog service
`no`	Reverses the action of the specified command
`RADIUS-server`	Server to perform authentication, authorization, and accounting (AAA) for specific RADIUS server.
`raman`	Displays information about Raman amplifier state and function
`router`	Sets a router configuration
`snmp-server`	Configures SNMP settings
`sntp`	Configures an SNTP server for setting the system clock
`terminal`	Sets the terminal pager behavior. This value becomes the login default
`uart`	Sets the default baud rate of the system EDFA device
`user`	Creates a user account for logging in to the DarkStar system
`watchdog`	Configures the length of the system watchdog timeout

1.5 Command Abbreviations

Commands may be abbreviated if the command is unique in the current mode. For example, `show connections` can be shortened to `sh conn`, but cannot be shortened to `s con` because there are multiple possible completions as such.

1.6 Keyboard Shortcuts

The following keyboard shortcuts are available in DXMOS:

TABLE 1.6 DXMOS Keyboard Shortcuts

Shortcut	Action
`CTRL+A`	Go to beginning of line
`CTRL+B`	Go back one character
`CTRL+C`	Cancel input currently on command line
`CTRL+D`	Delete current character

TABLE 1.6 DXMOS Keyboard Shortcuts

Shortcut	Action
`CTRL+E`	Go to end of line
`CTRL+F`	Go forward one character
`CTRL+K`	Delete all characters starting a the current cursor position to the end of the command line.
`CTRL+N,` ↓	Scroll forward through command history
`CTRL+P,` ↑	Scroll backward through command history
`CTRL+R`	Redraw current command input (useful for restoring what was typed if system writes output to screen while you enter a command)
`CTRL+U`	Clear the current command line contents and provide a new command prompt.
`CTRL+Z`	Discard current command line and exit configure mode (equivalent to typing `end` at a configure mode prompt)
`tab`	Complete partially entered unique keyword. If more than one possible completion exists, tab displays list of choices.
`?`	Lists options for context-sensitive entered keywords. Displays information on additional command options.

1.7 Help

DarkStar systems include a help feature for all commands. To use this feature, enter `?` at any system prompt or command line. Or, press tab at the end of incomplete commands.

2

Command Reference

This chapter contains a complete list of commands available in DXMOS.

2.1 app switch

Syntax:

```
app switch <transport-identifier1> <transport-identifier2> [ force ]
#
```

Description:
Switches an automatic path protection (APP) group to a particular interface within the group.

Command Keyword Definitions

`<transport-identifier1>`	Specifies by interface the APP group to switch.
`<transport-identifier2>`	Specifies the target interface.
`[ force ]`	Optionally overrides a locked APP group.

2.2 checksum

Syntax:

```
checksum file-name
#
```

Description:
Calculates the md5sum and sum results for the given file.

Command Keyword Definitions

`file-name`	Specifies file to be checked.

2.3 clear

Syntax:

```
clear
#
```

Description:
Typically this command resets a software subsystem or counters.

2.3.1 clear app

Syntax:

```
clear app
#
```

Description:
Resets automatic path protection (APP) groups to their default state and resets all APP counters.

WARNING

The `clear app` ***command may cause some packet loss from interrupted operation during possible resource transitions.***

2.3.2 clear counters

Syntax:

```
clear counters [ interface <interface-identifier> ]
#
```

Description:
Clears interface counters.

Without arguments, `clear counters` clears all counters displayed by the `show interface` command.

Command Keyword Definitions

`<interface-identifier>`	Clear the counters for the specified interface.

2.3.3 clear interface

Syntax:

```
clear interface <interface-identifier>
#
```

Description:
Clears the logic related to an interface.

WARNING

The `clear interface` ***command may temporarily interrupt interface operation.***

Command Keyword Definitions

`<interface-identifier>`	Clear the hardware logic for the specified interface.

2.3.4 clear line

Syntax:

`clear line` *`line-number`*

`#`

Description:
Logs out a session on any arbitrary line.

A *`line-number`* value of 0 is the console, and values 1 through 4 are the VTY lines. Use the `show lines` command to see which lines are currently connected.

NOTE

The `clear line` *`n`* command will terminate the present session when `n` names the line to which the session is connected.

2.3.5 clear logging

Syntax:

`clear logging`

`#`

Description:
Clears the DarkStar system event log buffer.

2.4 clock

Syntax:

`clock { set` *`hh:mm:ss day month year`* `| read-calendar | update-calendar }`

```
#
```

Description:
Sets time and date of the DarkStar system clock.

Command Keyword Definitions

`set` *`hh:mm:ss day month year`*	Set the time for the system clock.
`read-calendar`	Copy the time from the calendar chip to the system clock.
`update-calendar`	Copy the time from the system clock to the calendar chip.

2.5 configure

Syntax:

```
configure
#
```

Description:
Places the DarkStar system into global configuration mode.

Changes made in enabled mode affect how the DarkStar is operating right now. Changes made in configure mode are intended to be more permanent and may be saved in non-volatile storage using the `write memory` and `write network` commands.

2.5.1 aaa accounting

Syntax:

```
[ no ] aaa accounting exec default start-stop group radius
CONF#
```

Description:
Enables or disables AAA accounting for session starts/stops.

Command Keyword Definitions

`aaa accounting`	Enables AAA accounting for session starts/stops.
`[ no ] aaa accounting`	Disables AAA accounting for session starts/stops.
`exec`	Specifies accounting type.
`default`	Specifies name of method list.
`start-stop`	Specifies type of record to account.
`group radius`	Specifies group radius is used for accounting.

2.5.2 aaa authorization exec default group radius

Syntax:

```
aaa authorization exec default group radius
CONF#
```

Description:
When set, a user is immediately placed in enabled mode upon login, provided that the authentication server declares that the user has sufficient privileges. For radius, a successful authentication request for a user holding privilege level 15 will result in an enabled login.

Command Keyword Definitions

`aaa authorization`	Enables AAA authorization functionality.
`[ no ] aaa authorization`	Disables AAA authorization functionality.
`exec`	Directs the user to exec mode, if authorized.
`default`	Specifies name of the method list.
`group radius`	Specifies use of radius server group.

2.5.3 aaa authentication

Syntax:

```
[ no ] aaa authentication {login | enable } default { enable | line | local |
none | group radius }
CONF#
```

Description:
Enables or disables AAA authentication.

One or more of the options in the syntax may be used and will be tried in order until a success or deny state is reached. If any method returns an error, the next item on the list is attempted.

Command Keyword Definitions

`aaa authentication`	Enables AAA functionality.
`[ no ] aaa authentication`	Disables AAA functionality.
`login`	Specifies rules list used for login.
`enable`	Specifies rules list used to enable privileges.
`default`	Specifies name of the method list.
`enable`	Specifies use of enable password.
`line`	Specifies use of line-specific password.
`local`	Specifies use of local user database.
`none`	Specifies no authorization is required.

`group radius`	Specifies use of radius server group.

NOTE

Use of `none` is dangerous and should be used with extreme caution, even as a final item on the list of methods. For example, a missing username in a local database or unreachable radius server followed by a none will give anyone access to the system.

2.5.4 aaa new-model

Syntax:

```
[ no ] aaa new-model
CONF#
```

Description:
Enables or disables authentication, authorization, and accounting (AAA) feature globally.

Command Keyword Definitions

`aaa new-model`	Enables AAA functionality.
`[ no ] aaa new-model`	Disables AAA functionality.

2.5.5 access-list

Syntax:

```
[ no ] access-list list-number { deny | permit } ip mask
CONF#
```

Description:
Defines an IP Access Control List (ACL) rule for filtering management network traffic.

Command Keyword Definitions

`access-list`	Enables access list.
`[ no ] access-list`	Disables access list.
`list-number`	Assigns a number to identify the access list rule.
`{ deny | permit }`	Use `permit` to allow traffic that matches this rule. Use `deny` to prevent traffic that matches this rule.
`ip`	Specify IP or network address to match.
`mask`	Specify IP wildcard mask to match.

2.5.6 app

Syntax:

```
[ no ] app { <transport-identifier1> <transport-identifier2> | lockout
<transport-identifier> | revertive <transport-identifier> [holdoff
reversion-holdoff ] [ force ] }
CONF#
```

Description:
Configures automatic path protection (APP).

NOTE

Without any options specified, the `app` command creates an APP group:

```
[ no ] app <transport-identifier1> <transport-identifier2>
```

Command Keyword Definitions

`<transport-identifier1>`	Specifies the working interface to be added or removed.
`<transport-identifier2>`	Specifies the protected interface to be added or removed.

2.5.6.1 app lockout

Syntax:

```
[ no ] app lockout <transport-identifier>
CONF#
```

Description:
Locks an automatic path protection (APP) group so it does not switch interfaces, effectively disabling switching but not data multicasting.

Command Keyword Definitions

`lockout <transport-identifier>`	Specifies by interface the APP group to lock.
`no lockout <transport-identifier>`	Specifies by interface the APP group to release from lockout.

NOTE

A locked APP group may still switch interfaces through the `app switch force` command.

2.5.6.2 app revertive

Syntax:

```
[ no ] app revertive <transport-identifier> [ holdoff reversion-holdoff ]
CONF#
```

Description:
Configures an automatic path protection (APP) group to be revertive.

A revertive APP group uses the working interface any time that interface is functioning normally. APP groups are revertive by default.

Optionally, a hold-off time can be specified, which is the amount of time between when the working interface comes up and the APP group reverts to using the working interface.

A non-revertive APP group switches interfaces only when the currently used interface goes down. It has no preference for the working interface.

Command Keyword Definitions

`<transport-identifier>`	Makes the APP group containing the specified transport revertive.
`[ holdoff reversion-holdoff ]`	Optionally specifies a time, in milliseconds, for the given interface to wait before reverting.
`no app revertive <transport-identifier>`	Makes the APP group containing the specified transport non-revertive.

2.5.7 banner motd

Syntax:

```
banner motd delimiter message delimiter
CONF#
```

Description:
Specifies a display message that appears to the user at login.

Command Keyword Definitions

delimiter	Delimits the displayed message. Delimiter value may be any ASCII character not used in the message, but the same delimiter value must be included at the beginning and end of the message.
message	The actual message to appear at login.

2.5.8 boot

Syntax:

```
[ no ] boot {flash the-executable-file | tftp ip-address filename }
CONF#
```

Description:
Selects a boot image from a flash memory or tftp location.

Boot settings must be saved in `startup-config` in order to take effect during subsequent reloads

If multiple boot locations are specified, the DarkStar system tries them in the order in which they are specified. Setting multiple boot locations provides a fallback in case the boot image in one location is missing or damaged. The DarkStar system stores up to 5 separate boot command entries in the configuration file.

Command Keyword Definitions

`flash` *`the executable file`*	Sets the DarkStar system to boot from a configuration file in flash memory.
`tftp` *`ip-address`* `file` *`filename`*	Sets the DarkStar system to boot from filename located at *`ip-address filename`*.
`no boot boot-target`	Removes the specified boot target.

2.5.9 boot host dhcp

Syntax:

```
[ no ] boot host dhcp [ <client-id interface> ]
```

where `<client-id interface>` expands to:

```
{ ethernet 0 | ethernet 1 | ethernet 2 | ethernet 3 | {osc 0 | west }{ osc 1
| east } }
```

```
CONF#
```

Description:
Directs Boot to acquire a configuration file via remote DHCP/TFTP server(s).

Upon powering up or readying the DarkStar system, DHCP configuration is initiated when a `boot host dhcp` command is found or when no `startup-config` file is present in the flash memory. In either case, Boot persistently broadcasts DHCP discovery messages on each active Ethernet interface for 2 minutes.

If Boot receives no DHCP offer after 2 minutes, Boot will time out and proceed to load DXMOS without a configuration. If Boot is attempting DHCP because the configuration file instructs it to, Boot goes onward with that configuration file.

If a DHCP offer is received that includes a boot file name and TFTP server identifier, Boot requests the IP address offered and assigns it to the Ethernet interface through which the offer was received. Next, Boot acquires the configuration file from the TFTP server as indicated in the DHCP offer. Upon successfully acquiring a configuration file, Boot loads DXMOS with the configuration. The configuration file obtained by TFTP supersedes any configuration information contained in the flash file.

Command Keyword Definitions

`boot host dhcp`	Directs Boot to seek configuration information via DHCP and TFTP.
`[ no ] boot host dhcp`	Disables boot host dhcp.
`[ <client-id interface> ]`	Optionally, direct Boot to advertise the MAC address of just one of its interfaces as its DHCP client identifier.

WARNING

Use of `boot host dhcp` ***in a production environment may result in an interruption of traffic if reload occurs when the TFTP/DHCP host is unreachable.***

2.5.10 clock

Syntax:

`clock { timezone` *`hours-offset minutes-offset`* `| summer-time { on | off | usa | eu } }`

`CONF#`

Description:
Sets timezone and Daylight Saving Time (DST) behavior of the DarkStar system clock.

Command Keyword Definitions

`timezone` *`hours-offset minutes-offset`*

Sets the time zone for the system clock to hour-offset and minutes-offset from UTC. Most timezones have a minutes-offset of 0.

`summer-time { on | off | usa | eu }`

Alter Daylight Savings Time (DST) setting.

`on` displays time with a forward offset of one hour from the system clock time.

`off` displays system clock time without any adjustments.

`usa` applies DST rules for United States.

`eu` applies DST rules for the European Union.

NOTE

Time zones west of Greenwich time have a negative offset from Greenwich time.

2.5.11 connect

Syntax:

```
[ no ] connect <transport-identifier1> <transport-identifier2> [ clock rate |
encapsulation <encapsulation-type> ]
CONF#
```

Description:
Connects a transport interface to a second interface.

A connection may be made from any interface to any interface of the same type (3G or 10G), including itself. Some switch cards may impose additional board specific limitations.

Command Keyword Definitions

`<transport-identifier1>`	Specify the first interface for the connection.
`<transport-identifier2>`	Specify the second interface for the connection.
`encapsulation <encapsulation-type>`	Optionally specify a named encapsulation value, which sets the clock rate according to a specific network standard.
`no connect <transport-identifier1> <transport-identifier2>`	Disconnect two interfaces.

2.5.12 do

Syntax:

```
do { command }
CONF#
```

Description:
Executes enabled mode commands without leaving configuration mode.

Command Keyword Definitions

command	Specifies the command to execute.

2.5.13 edfa

Syntax:

```
edfa { edfa | edfa-east | edfa-west } edfa-number
CONF#
```

Description:
Places the DarkStar system in Erbium-Doped Amplifier (EDFA) configuration mode.

NOTE

The `edfa` command is available only on DarkStar systems with an EDFA installed.

Command Keyword Definitions

`<edfa-identifier>`	Identifies the EDFA amplifier.
`edfa-number`	Specifies which EDFA to configure.

2.5.13.1 control output gain

Syntax:

```
control output gain gain-in-dB
CONF-{EDFA | EDFA-EAST | EDFA-WEST }[n]#
```

Description:
Specifies target output gain as a set point for controlling amplifier.

NOTE

Only one EDFA control command/method (output gain, output power, or pump current) may be employed at any given time. Therefore, when you issue any EDFA control command, it becomes the de facto set point for amplifier control and invalidates previously issued control commands.

Command Keyword Definitions

`gain-in-dB`	Sets control point in dB as a a decimal value (e.g. x.y), which may also be a negative value.

2.5.13.2 control output power

Syntax:

```
control output power gain-in-dB
CONF-{EDFA | EDFA-EAST | EDFA-WEST }[n]#
```

Description:
Specifies target output power as a set point for controlling amplifier.

NOTE

Only one EDFA control command/method (output gain, output power, or pump current) may be employed at any given time. Therefore, when you issue any EDFA control command, it becomes the de facto set point for amplifier control and invalidates previously issued control commands.

Command Keyword Definitions

gain-in-dB	Sets control point in dB as a a decimal value (e.g. x.y), which may also be a negative value.

2.5.13.3 control pump current

Syntax:

```
control pump current current-in-mA
CONF-{EDFA | EDFA-EAST | EDFA-WEST }[n]#
```

Description:
Specifies target laser-bias current as a set point for controlling amplifier.

NOTE

Only one EDFA control command/method (output gain, output power, or pump current) may be employed at any given time. Therefore, when you issue any EDFA control command, it becomes the de facto set point for amplifier control and invalidates previously issued control commands.

Command Keyword Definitions

current-in-mA	Sets control point in mA as a a decimal value (e.g. x.y), which may also be a negative value.

2.5.13.4 disable

Syntax:

```
[ no ] disable
CONF-{EDFA | EDFA-EAST | EDFA-WEST }[n]#
```

Description:
Enables or disables EDFA output.

WARNING

This command is deprecated and will be removed in future versions of the software. It has been replaced by the `shutdown` ***command.***

Command Keyword Definitions

`disable`	Disable EDFA output.
`no disable`	Enable EDFA output. This is the default setting.

2.5.13.5 do

Syntax:

```
do { command }
CONF-{EDFA | EDFA-EAST | EDFA-WEST }[n]#
```

Description:
Exits configuration mode and executes a enabled mode command.

Use the do command to execute the enabled mode commands without leaving EDFA configuration mode.

Command Keyword Definitions

command	Specifies the command to execute.

2.5.13.6 end

Syntax:

```
end
CONF-{EDFA | EDFA-EAST | EDFA-WEST }[n]#
```

Description:
Exits configuration mode and returns to the top level of the command line.

Typing `CTRL+Z` has the same effect and discards the current command line.

2.5.13.7 exit

Syntax:

```
exit
CONF-{EDFA | EDFA-EAST | EDFA-WEST }[n]#
```

Description:
Exits EDFA configuration and returns to configuration mode.

2.5.13.8 send

Syntax:

```
send <text to send to the edfa>
CONF-{EDFA | EDFA-EAST | EDFA-WEST }[n]#
```

Description:
Sends direct text commands to the EDFA as a debugging tool.

WARNING

Be aware that it is possible to reboot the EDFA module with this command, which can interrupt data traffic.

NOTE

This feature will be available only in initial versions of this software. It will not be available in future versions.

Command Keyword Definitions

`<text to send to the edfa>`	Specify the EDFA command to send. Commands are dependent on the model of EDFA device installed in the DarkStar system. Except in rare circumstances, there should be no need to make changes directly to EDFA settings.

2.5.13.9 shutdown

Syntax:

```
[ no ] shutdown
CONF-{EDFA | EDFA-EAST | EDFA-WEST }[n]#
```

Description:
Enables or disables the amplifier.

Command Keyword Definitions

`shutdown`	Disables the amplifier.
`no shutdown`	Enables the amplifier.

2.5.14 enable secret

Syntax:

```
[ no ] enable secret [ 0 | 5 ] password
CONF#
```

Description:
Sets password to control access to the DarkStar CLI enabled mode.

WARNING

The only way to clear the enabled mode password without entering enable mode is to reload the DarkStar system in factory default mode by pressing and holding the side reset button. Reloading in factory default mode disrupts network traffic across all transport interfaces.

Command Keyword Definitions

password	Set the password for enabled mode to password. The DarkStar system automatically encrypts a plaintext password as an MD5 hash before storing it.
`enable secret 5` *password*	Specifies password as an MD5 hash.
`enable secret 0` *password*	Specifies plaintext password. This command is equivalent to `enable secret password`.
`no enable secret`	Turns off password protection for enabled mode.

2.5.15 end

Syntax:

```
end
CONF#
```

Description:
Exits configuration mode and returns to the top level of the command line.

Typing `CTRL+Z` has the same effect and discards the current command line.

2.5.16 exit

Syntax:

```
exit
CONF#
```

Description:
Exits configuration mode and returns to the top level of the command line.

2.5.17 fan

Syntax:

`fan` *`fan-module-number`*

`CONF-FAN[FAN-MODULE-NUMBER]#`

Description:
Places the DarkStar system in fan configuration mode.

DarkStar systems ship with two fan modules, numbered 0 and 2. Fan module 1 is intentionally absent. As viewed from the rear Fan 0 is on the left while Fan 2 is on the right.

Command Keyword Definitions

`fan-module-number`	Identifies the fan module that is to be configured.

2.5.17.1 do

Syntax:

`do` { *`command`* }

`CONF-FAN[FAN-MODULE-NUMBER]#`

Description:
Executes top-level commands.

Use the `do` command to execute top-level commands without leaving configuration mode.

Command Keyword Definitions

`command`	Specifies the command to execute.

2.5.17.2 end

Syntax:

`end`

`CONF-FAN[FAN-MODULE-NUMBER]#`

Description:
Exits configuration mode and returns to the top level of the command line.

Typing `CTRL+Z` has the same effect and discards the current command line.

2.5.17.3 exit

Syntax:

```
exit
CONF-FAN#
```

Description:
Exits fan configuration submode and returns to configuration mode.

2.5.17.4 reset

Syntax:

```
reset
CONF-FAN[FAN-MODULE-NUMBER]#
```

Description:
Resets fan module.

The `reset` command resets the logic board for the fan module without affecting its settings. Use `reset` on a fan that has become stuck or unresponsive.

2.5.17.5 speed

Syntax:

`speed { auto | off | low | med | high | percentage }`
`CONF-FAN#`

Description:
Sets fan speed.

Command Keyword Definitions

`auto`	Sets the fans to automatically adjust their speed. This setting is the default.
`off`	Turns the fans off.
`low`	Sets the fans to the lowest possible speed.
`med`	Sets the fans to medium speed.
`high`	Sets the fans to the highest possible speed.
`percentage`	Sets the fans to a percentage of their maximum speed, from 1 to 100, inclusive.

2.5.18 hostname

Syntax:

`hostname` *`name`*

```
CONF#
```

Description:
Serves as the prompt string and sets the hostname for the DarkStar system.

Command Keyword Definitions

name	Sets the DarkStar system hostname to the string defined by name.

2.5.19 interface

Syntax:

```
interface <interface-identifier>
CONF#
```

Description:
Places the DarkStar system in interface configuration mode.

Command Keyword Definitions

`<interface-identifier>`	Configures the specified interface.

2.5.19.1 bert receive

Syntax:

```
[ no ] bert receive
CONF-INT-{CLIENT | WAVE | WAVE-EAST | WAVE-WEST}[n]#
```

Description:
Initiates reception of BERT/PRBS on selected interface.

Command Keyword Definitions

`bert receive`	Specifies interface for reception of BERT/PRBS.
`[ no ] bert receive`	Cancels BERT/PRBS reception on selected interface and generates final test results.

2.5.19.2 bert transmit

Syntax:

```
[ no ] bert transmit
CONF-INT-{CLIENT | WAVE | WAVE-EAST | WAVE-WEST}[n]#
```

Description:
Initiates transmission of BERT/PRBS on selected interface.

Command Keyword Definitions

`bert transmit`	Specifies for transmission of BERT/PRBS.
`[ no ] bert transmit`	Cancels BERT/PRBS transmission on selected interface.

2.5.19.3 description

Syntax:

```
[ no ] description string
CONF-INT-{CLIENT | WAVE | WAVE-EAST | WAVE-WEST | ETH | OSC | LOOPBACK}[n]#
```

Description:
Creates a site-configurable description used to describe the use of wave and client interfaces.

Command Keyword Definitions

`string`	Set the label for the interface to `string`.
`no description`	Remove the description from the interface.

2.5.19.4 encapsulation

Syntax:

```
encapsulation <encapsulation-type>
CONF-INT-{CLIENT | WAVE | WAVE-EAST | WAVE-WEST}[n]#
```

Description:
Configures interface encapsulation type.

WARNING

Changing the encapsulation on an interface carrying traffic will interrupt it.

Command Keyword Definitions

`<encapsulation-type>`	Sets encapsulation type.

2.5.19.5 do

Syntax:

```
do { command }
CONF-INT-{CLIENT | WAVE | WAVE-EAST | WAVE-WEST}[n]#
```

Description:
Executes enabled mode commands.

Use the `do` command to execute enabled mode commands without leaving configuration mode.

Command Keyword Definitions

`command`	`Specifies the command to execute.`

2.5.19.6 end

Syntax:

```
end
CONF-INT-{CLIENT | WAVE | WAVE-EAST | WAVE-WEST}[n]#
```

Description:
Exits configuration mode and returns to the top level of the command line.

Typing CTRL+Z has the same effect and discards the current command line.

2.5.19.7 exit

Syntax:

```
exit
CONF-INT-{CLIENT | WAVE | WAVE-EAST | WAVE-WEST}[n]#
```

Description:
Exits interface configuration submode and returns to configuration mode.

2.5.19.8 label

Syntax:

```
[ no ] label string
CONF-INT-{CLIENT | WAVE | WAVE-EAST | WAVE-WEST}[n]#
```

Description:
Creates a site-configurable label used to describe the use of wave and client interfaces.

Command Keyword Definitions

`string`	Set the label for the interface to `string`.
`no label`	Remove the label from the interface.

NOTE

The command `label` has been DEPRECATED as of DXMOS v2.4 use `description` instead.

2.5.19.9 laser shutdown

Syntax:

```
[ no ] laser shutdown
CONF-INT-{CLIENT | WAVE | WAVE-EAST | WAVE-WEST}[n]#
```

Description:
Powers down a wave or client interface laser.

NOTE

If a `write memory` command is issued after a `laser shutdown` command, the `laser shutdown` command is stored in `startup-config` and will take effect during subsequent reloads. To power up lasers following a reload, issue a `no laser shutdown` command. To avoid future laser shutdowns following a reload, issue a `no laser shutdown` command, followed by `write memory`.

2.5.19.10 lol-forward

Syntax:

```
[ no ] lol-forward
CONF-INT-{CLIENT | WAVE | WAVE-EAST | WAVE-WEST}[n]#
```

Description:
Enables and disables loss of lock (LOL) forwarding.

Command Keyword Definitions

`lol-forward`	Enables LOL forwarding.
`no lol-forward`	Disables LOL forwarding.

2.5.19.11 loopback

Syntax:

```
loopback { ELECTRICAL | OPTICAL }
CONF-INT-{CLIENT | WAVE | WAVE-EAST | WAVE WEST}[interface-number]#
```

Description:
Enables the chosen loopback mode on the selected interface. Only one loopback mode can be supported at one

time. If a user attempts to switch to a loopback mode not supported, the loopback mode will default to None.

2.5.19.12 virtualight

Syntax:

```
[ no ] virtualight
CONF-INT-{CLIENT | WAVE | WAVE-EAST | WAVE-WEST}[n]#
```

Description:
Enables and disables Virtualight mode.

By default, Virtualight is enabled for client interfaces and disabled for DWDM wave interfaces.

Command Keyword Definitions

`virtualight`	Enables Virtualight mode.
`no virtualight`	Disables Virtualight mode.

2.5.19.13 ip

Syntax:

```
[ no ] ip { address ip-address/netmask | helper-address ip-address | poison-reverse | proxy-arp | rip receive version rip-version | rip send version rip-version | rip v2-broadcast | split-horizon }
CONF-INT-{ETH | OSC | LOOPBACK}[n]#
```

Description:
Configures IP settings for an Ethernet interface.

Command Keyword Definitions

`address` *`ip-address/netmask`*	Sets the interface IP address to `ip-address` with a netmask of `netmask.` Netmask is specified in Classless Inter-Domain Routing (CIDR) notation.
`helper-address` *`ip-address`*	Any DHCP request received on this interface will be forwarded to the specified ip address, which should be the DHCP server providing addresses for the subnet connected to the interface.
`poison-reverse`	Enables the poisoning (advertisement with infinite metric 16) of routes that have become unreachable. When combined with `split-horizon,` routes received from a given subnet are advertised with infinite metric back to the subnet to help prevent routing loops. Enabled in RIP by default.
`proxy-arp`	Allows the DarkStar system to answer Address Resolution Protocol (ARP) requests for hosts other than itself, when the request originates on a subnet other than that of the ARP request. This features is enabled by default and details of the protocol can be found in RFC1027.

`rip receive version` *`rip-version`*	Configures the RIP version that the interface will receive. Valid values for `rip-version` are 1, 2, and 1 2 (default value is 1 2). The individual rip version specified in interface overrides global rip setting in router rip.
`rip send version` *`rip-version`*	Configures the RIP version that the interface will send. Valid values for `rip-version` are 1, 2, and 1 2 (the default value is 1 2). The individual rip version specified in interface overrides global rip setting in router rip.
`rip v2-broadcast`	Sends v2 updates as broadcast packets. This command is enabled by default.
`split-horizon`	Prevents RIP from advertising a route out of the interface on which it learned the route to help prevent routing loops. Works in conjunction with poison-reverse. It is enabled by default.

2.5.19.14 shutdown

Syntax:

```
[ no ] shutdown
CONF-INT-{ETH | OSC | LOOPBACK}[n]#
```

Description:
Shuts down an Ethernet interface or brings it online.

Command Keyword Definitions

`shutdown`	Shuts down the Ethernet interface.
`no shutdown`	Brings the Ethernet interface online.

2.5.20 ip domain name

Syntax:

```
[ no ] ip domain-name domainname
CONF#
```

Description:
Specifies the search domain for DNS host inquiries.

Command Keyword Definitions

`ip domain-name`	Enables ip domain-name
`no ip domain-name`	Disables ip domain-name
`domainname`	DNS domain name for search path

2.5.21 ip dhcp pool

Syntax:

`[ no ] ip dhcp pool` *`pool-id`*

`CONF#`

Description:
Enters DHCP configuration submode for a specific pool of network addresses.

Command Keyword Definitions

`pool-id`	Enters DHCP configuration submode for a specific pool of network addresses. The `pool-id` argument is a convenience identifier that allows creation and management of multiple pools of networks to which DHCP should provide addresses.
`no ip dhcp pool pool-id`	Remove a pool of network addressees from DHCP.

2.5.21.1 do

Syntax:

`do {` *`command`* `}`

`CONF-DHCP#`

Description:
Executes enabled mode commands.

Use the `do` command to execute enabled mode commands without leaving configuration mode.

Command Keyword Definitions

`command`	Specifies the command to execute.

2.5.21.2 end

Syntax:

`end`

`CONF-DHCP#`

Description:
Exits configuration mode and returns to the enabled mode of the command line.

Typing `CTRL+Z` has the same effect and discards the current command line.

2.5.21.3 exit

Syntax:

`exit`

`CONF-DHCP#`

Description:
Exits DHCP configuration submode and returns to configuration mode.

2.5.21.4 network

Syntax:

`network` *`address/netmask`*
`CONF-DHCP#`

Description:
Assigns a network for which DHCP should provide addresses.

Command Keyword Definitions

`address/netmask`	Adds `address/netmask` as a network for which DHCP should provide addresses.

2.5.22 ip host

Syntax:

`[ no ] ip host` *`hostname address`*
`CONF#`

Description:
Sets the IP address for a particular host.

Command Keyword Definitions

`hostname`	Sets the name of the host to which an IP address is assigned.
`address`	Sets the IP address for the given hostname.

2.5.23 ip name-server

Syntax:

`[ no ] ip name-server` *`address`*
`CONF#`

Description:
Sets the Domain Name Service (DNS) name server for the DarkStar system.

Command Keyword Definitions

`address`	Set the IP address of the DNS server to `address.`

2.5.24 ip route

Syntax:

```
[ no ] ip route address/netmask gateway [ metric ]
CONF#
```

Description:
Adds a static route in the routing table.

Command Keyword Definitions

`ip route address/netmask gateway`	Enables static route in routing table.
`no ip route address/netmask gateway`	Disables static route in routing table.
`address/netmask`	Sets the IP address and netmask for the static route.
`gateway`	Sets the gateway IP address through which `address/netmask` may be accessed.
`metric`	Specifies the metric value for the static route. Valid range is 0 to 65535.

2.5.25 line

Syntax:

```
line { console | vty }
CONF#
```

Description:
Places the DarkStar system in line configuration mode.

Command Keyword Definitions

`console`	Configures the console line.
`vty`	Configures the virtual terminal (VTY) lines. DarkStar systems have four VTY lines, all configured identically.

2.5.25.1 access-class

Syntax:

```
[ no ] access-class list-number { in | out }
CONF-LINE-{VTY | CTY}#
```

Description:
Assigns the line to an access list.

Command Keyword Definitions

list-number	Assign the line to be accessible only to connections in the access list identified by `list-number.`
`in	out`	Specifies whether or not ACL is applied in an inbound or outbound direction for VTYs.

2.5.25.2 do

Syntax:

```
do { command }
CONF-LINE-{VTY | CTY}#
```

Description:
Executes top-level commands.

Use the `do` command to execute top-level commands without leaving configuration mode.

Command Keyword Definitions

command	Specifies the command to execute.

2.5.25.3 end

Syntax:

```
end
CONF-LINE-{VTY | CTY}#
```

Description:
Exits configuration mode and returns to the top level of the command line.

Typing CTRL+Z has the same effect and discards the current command line.

2.5.25.4 exit

Syntax:

```
exit
CONF-LINE-{VTY | CTY}#
```

Description:
Exits line configuration submode and returns to configuration mode.

2.5.25.5 login

Syntax:

```
[ no ] login [ local ]
```

```
CONF-LINE-{VTY | CTY}#
```

Description:
Enables or disables remote login to VTY lines.

VTY lines refuse telnet connectivity attempts until VTY login is enabled or AAA new model is set. Logins are always enabled for the console line.

NOTE

Login settings are over-ridden by AAA rules when `aaa new-model` is selected.

NOTE

VTY lines must have a password set before telnet or ssh access is granted unless `aaa new-model` or `login local` is set with a user database.

NOTE

To use stored usernames and passwords with the login local option, users must first be created with the `user` command.

Command Keyword Definitions

`login`	Enables logins for VTY lines, using only a password for authentication.
`login local`	Enables logins for VTY lines, using stored usernames and passwords for authentication.
`no login`	Disables logins for VTY lines.

2.5.25.6 monitor

Syntax:

```
[ no ] monitor
CONF-LINE-{VTY | CTY}#
```

Description:
Enables or disables the DarkStar system's message display on console or VTY lines.

Message display is enabled by default for the console line and disabled by default for the VTY lines.

Command Keyword Definitions

`monitor`	Enables message display.
`no monitor`	Disables message display.

2.5.25.7 password

Syntax:

`[ no ] password [ 0 | 5 ] password`
`CONF-LINE-{VTY | CTY}#`

Description:
Enforces password protected access to console or VTY lines.

Command Keyword Definitions

password	Sets the password for the line to *password*. DarkStar systems automatically encrypt a plaintext password as an MD5 hash before storing it.
`password 5` *password*	Specifies password as an MD5 hash.
`password 0` *password*	Specifies plaintext password. This syntax is equivalent to `password` *password*.
`no password`	Removes password protection from the line. Removing the vty password disables all vty access.

2.5.25.8 session-timeout

Syntax:

`session-timeout` *n*
`CONF-LINE-{VTY | CTY}#`

Description:
By default there is no timeout. The argument in the command specifies the number of minutes until an idle session times out. Setting the argument to zero will return to the default setting of no timeout.

Command Keyword Definitions

n	Specifies number of minutes until idle session times out.

2.5.25.9 transport input

Syntax:

`[ no ] transport input [ all | ssh | telnet ]`
`CONF-LINE-{VTY | CTY}#`

Description:
Enables or disables Secure Shell (SSH) and telnet access to VTY lines.

NOTE

To completely disable logins through VTY lines, use the `no login` and `no aaa new-model` commands.

Command Keyword Definitions

`all`	Allows VTY access via both telnet and SSH.
`ssh`	Allows VTY access only via SSH.
`telnet`	Allows VTY access only via telnet.
`no transport input [ all | ssh | telnet ]`	Allows VTY access via both telnet and SSH. The no form of the `transport input` command, regardless of what other parameters are used, is equivalent to entering `transport input all.`

2.5.26 logging

Syntax:

`[ no ] logging { buffer events | host` ***address*** `| mark` ***mark-interval*** `| rate-limit` ***limit*** `}`

`CONF-LINE-{VTY | CTY}#`

Description:
Configures logging of DarkStar system events in both the local DarkStar system event log and the syslog service.

NOTE

The contents of the local circular logging buffer are lost upon system reload. They are also cleared upon execution of the `no logging buffer` or `logging buffer 0` commands.

Command Keyword Definitions

`buffer` ***events***	Sets events as the number of events to store in the local circular logging buffer. Values from 1 to 512, inclusive, turn on logging. A buffer counter of 0, or the `no logging buffer` command turns off event logging to the local buffer.
`host` ***address***	Set `address` as the host to receive syslog messages. Multiple hosts may be specified. Specifying at least one turns on syslog message generation. The `no logging` ***host address*** command stops syslog logging to the specified host.

`mark` *`mark-interval`*	Set the mark interval to `mark-interval` minutes. The DarkStar system sends a "mark" time-keeping message to syslog hosts at this interval. The commands `no logging mark` and `logging mark 0` both turn off mark event generation. Valid range for *`mark-interval`* is 0-60.
`rate-limit` *`limit`*	Set the message rate `limit` to limit messages per second. Valid range for `limit` is 0-10000. The rate limit applies only to syslog logging.

2.5.27 radius-server host

Syntax:

`[ no ] radius-server host` *`host`* `[ auth-port` *`port`* `] [ acct-port` *`port`* `] [ key` *`host-specific-key`* `]`

`CONF-LINE-{VTY | CTY}#`

Description:
Sets radius host server to be used with AAA.

Command Keyword Definitions

`host`	Specifies host or IP address of radius server. If multiple radius-servers are specified, the DarkStar system will make attempts using this configuration order.
`[ auth-port` *`port`* `]`	Optionally, specifies host-specific authorization port.
`[ acct-por` *`port`* `]`	Optionally, specifies host-specific accounting port.
`[ key` *`host-specific-key`* `]`	Optionally, specifies host-specific radius-server key. Key must be configured as last item.

2.5.28 radius-server key

Syntax:

`radius-server key <global-shared-key>`

`CONF#`

Description:
Sets radius server key.

Command Keyword Definitions

`<global-shared-key>`	Optionally, specifies a global shared key for radius server. Specifying a host-specific key overrides `global-shared key.`

2.5.29 raman

Syntax:

```
raman { raman | raman-east | raman-west } raman-number
CONF#
```

Description:
Places the DarkStar system in Raman configuration mode.

NOTE

The `raman` command is available only on DarkStar systems with Raman installed.

Command Keyword Definitions

`<raman-identifier>`	Identifies the EDFA amplifier.
`raman-number`	Specifies which EDFA to configure.

2.5.29.1 apr osc detection

Syntax:

```
[ no ] apr osc detection
CONF-{RAMAN | RAMAN-EAST | RAMAN-WEST }[n]#
```

Description:
Enables detection of a remote optical service channel (OSC) signal as a part of the Automatic Power Reduction (APR) control system.

This mechanism is enabled by default. A fiber type must be specified before osc-detection can be disabled. It is only useful to disable `apr osc-detection` when a Raman amplifier is so far away from the remote DarkStar system signal it is amplifying that it cannot detect the DarkStar system's OSC.

WARNING

Disabling this safety feature may cause this device to operate outside of its laser safety classification.

2.5.29.2 control pump power

Syntax:

```
control pump power { auto | maximum | <power-level-in-mW> }
CONF-{RAMAN | RAMAN-EAST | RAMAN-WEST }[n]#
```

Description:
Performs Raman bring-up procedures and defines the set points for the Raman pump lasers. `auto` is the default and takes precedent over manual control settings.

Command Keyword Definitions

`maximum`	Defines set point as a maximum value that is automatically determined for each pump and application fiber type.
`<power-level-in-mW>`	Defines a set point value in mW.
`automatic`	Performs bring-up procedures, defines set point at maximum value.

2.5.29.3 fiber-type

Syntax:

```
fiber-type { g653 | g654 | leaf | smf | teralight | truewave }
CONF-{RAMAN | RAMAN-EAST | RAMAN-WEST }[n]#
```

Description:
Sets the type of fiber used by the Raman amplifier.

Attributes of the amplifier's control system are adjusted when `fiber-type` is changed because different fiber types have different physical properties with regard to Raman amplification. The default fiber type is SMF.

Command Keyword Definitions

`fiber-type <fiber-type>`	Specifies fiber type for use with Raman amplifier.

2.5.29.4 label

Syntax:

```
[ no ] label label-text
CONF-{RAMAN | RAMAN-EAST | RAMAN-WEST }[n]#
```

Description:
Appends a user-specified metadata label to the Raman amplifier's UI.

A metadata label allows for the inclusion of information about the link's purpose, location, and other similar data. By default there is no label.

Command Keyword Definitions

`label`	Append metadata label to Raman amplifier UI.
`no label`	Exclude metadata label from Raman amplifier UI.
`<label-text>`	Text to be used for the table.

2.5.29.5 shutdown

Syntax:

```
[ no ] shutdown
CONF-{RAMAN | RAMAN-EAST | RAMAN-WEST }[n]#
```

Description:
Enables or disables amplification.

By default amplification is `no shutdown`.

Command Keyword Definitions

`shutdown`	Disables amplification.
`no shutdown`	Enables amplification.

2.5.30 router rip

Syntax:

```
[ no ] router rip
CONF#
```

Description:
Places the DarkStar system in Routing Information Protocol (RIP) configuration mode.

Command Keyword Definitions

`router rip`	Enables RIP and enters `rip configuration` mode.
`no router rip`	Disables RIP.

NOTE

Rip version configured on an interface will override rip version set globally by router rip on that particular interface.

2.5.30.1 do

Syntax:

```
do { command }
CONF-RIP#
```

Description:
Executes top-level commands.

Use the `do` command to execute top-level commands without leaving configuration mode.

Command Keyword Definitions

command	Specifies the command to execute.

2.5.30.2 default-information originate

Syntax:

```
default-information originate
#
```

Description:
Causes a system with `redistribute static` active to both advertise and accept default (0/0) route, if one is configured.

2.5.30.3 distance

Syntax:

```
[ no ] distance rip-distance
CONF-RIP#
```

Description:
Sets the rip distance.

Command Keyword Definitions

`distance` *`rip-distance`*	Sets the RIP distance value to `rip-distance.`
`no distance`	Removes RIP distance setting.

2.5.30.4 end

Syntax:

```
end
CONF-RIP#
```

Description:
Exits configuration mode and returns to the enabled mode or the command line.

Typing CTRL+Z has the same effect and discards the current command line.

2.5.30.5 exit

Syntax:

```
exit
CONF-RIP#
```

Description:
Exits RIP configuration submode and returns to configuration mode.

2.5.30.6 network

Syntax:

```
[ no ] network address
CONF-RIP#
```

Description:
Turns on RIP for a given interface.

Command Keyword Definitions

`network address`	Turns on RIP for interfaces with addresses that belong to the specified network.
`no network address`	Disables RIP for the specified network. If an interface is a subnet of another interface, the `no` variant for the smaller subnet will also be applied to the larger subnet, even if router RIP is turned on in separate network commands.

2.5.30.7 passive-interface

Syntax:

```
[ no ] passive-interface [ <ethernet-identifier> ]
CONF-RIP#
```

Description:
Disables sending of routing updates.

Command Keyword Definitions

`passive-interface <ethernet-identifier>`	Disables sending of routing updates on the specified interface.
`no passive-interface <ethernet-identifier>`	Enables sending of routing updates on the specified interface.

2.5.30.8 redistribute

Syntax:

```
[ no ] redistribute static [ metric value ]
CONF-RIP#
```

Description:
Redistributes routes from other routing protocols via RIP.

Command Keyword Definitions

`static [ metric value ]`	Specifies the routing `metric` to use. Without the metric keyword, `redistribute static` defaults to a metric of 1.
`no redistribute static`	Disables redistribution of static routes.

2.5.30.9 version

Syntax:

```
[ no ] version version-number
CONF-RIP#
```

Description:
Sets which version of RIP is sent by the DarkStar system.

This setting can be overridden by specific interfaces with `ip rip send version` and `ip rip receive version` commands.

Command Keyword Definitions

`version-number`	Sets the RIP version number to version-number. Valid values for `version-number` are 1 or 2.
`no version`	Returns RIP version to its default value of 2/1 compatibility mode.

2.5.31 snmp-server disablev-2c

Syntax:

```
[ no ] snmp-server disablev-2c
CONF#
```

Description:
Disables SNMP responses to version 2c requests.

2.5.32 snmp-server

Syntax:

```
[ no ] snmp-server { chassis-id string | community string | contact string |
enable traps [ snmp | xkl | xkl-generic ] | host address [ community-string ]
| location string }
CONF#
```

Description:
Configures Simple Network Management Protocol (SNMP) settings.

NOTE

DNS must be configured with the `ip name-server` command for host `address` to work with a hostname instead of an IP address.

Command Keyword Definitions

`chassis-id` *`string`*	The `chassis-id` is not currently used.
`community` *`string`*	Start a read-only SNMP server using the community string specified by string. The `no snmp-server community` command turns off the SNMP server.
`contact` *`string`*	Sets SNMP-retrievable contact information to the value of *`string`*. This value may be accessed through the SNMP variable `SNMPv2-MIB:sysContact.0.` The `no snmp--server contact` command sets this value to an empty string.
`enable traps [ snmp | xkl | xkl-generic ]`	Turn on sending of SNMP traps. A host address is also required. By itself, `enable` turns on all SNMP traps. Turn on only SNMP standard traps, XKL-specific or XKL-generic traps by appending `snmp, xkl` or `xkl-generic` respectively. The `no snmp-server enable traps` command disables sending of SNMP traps.
`host` *`address`* `[` *`community-string`* `]`	Sends SNMP traps to a specific host, specified by `address.` The `address` parameter may be either a hostname or an IP address. Only one host may be specified. A second invocation of this command overwrites the host value. The `no snmp-server host` command removes an existing target host. The *`community-string`* argument will cause traps to use this community string rather than the global community string specified for SNMP read operations.
`location` *`string`*	Set SNMP-retrievable location information to the value of `string.` This value may be accessed through the SNMP variable `SNMPv2-MIB::sysLocation.0`. The `no snmp-server location` command sets this value to an empty string.

2.5.33 sntp

Syntax:

`[ no ] sntp server` *`address`*

`CONF#`

Description:
Configures one or multiple Simple Network Time Protocol (SNTP) server for setting the system clock.

NOTE

DNS must be configured with the `ip name-server` command for *`address`* to work with a hostname instead of an IP address.

Command Keyword Definitions

`address`	`IP address or hostname of the SNTP server from which the DarkStar system should set its system clock.`

2.5.34 terminal pager

Syntax:

```
terminal pager [ n | default ]
CONF>
```

Description:
Sets the terminal pager behavior. This value becomes the login default.

Command Keyword Definitions

n	Specifies number of lines for console output.
`default`	Displays the default number of lines.

2.5.35 uart

Syntax:

```
uart speed { 9600 | 19200 }
CONF#
```

Description:
Sets the default baud rate of the system EDFA device.

NOTE

The `uart speed` command is useful only on DarkStar systems with an EDFA installed. Beyond general management of baud-rate setting, this command may be particularly useful during firmware upgrades, which may cause a DarkStar system with an EDFA to revert to the default baud-rate setting of 19200.

Command Keyword Definitions

`9600`	Sets rate to 9600 baud.
`19200`	Sets rate to 19200 baud.

2.5.36 user

Syntax:

`[ no ] user` *`username`* `password [ 0 | 5 ]` *`password`*

`CONF#`

Description:
Creates a user account for logging in to the DarkStar system.

NOTE

To enable user accounts, use the `login local` command or `setup aaa`.

Command Keyword Definitions

`username`	Sets name for the new account to username, which may contain only letters, digits, and the following characters: -_
`[ 0 | 5 ]`	Sets password input type. If the value is 0, `password` is treated as a plaintext string. If the value is 5, `password` is treated as an MD5-hashed password. The default is 0.
`password`	Sets the password for the account to `password.`
`no user username`	Removes `username` and its associated password from the local user database.

2.5.37 watchdog timeout

Syntax:

`[ no ] watchdog timeout` *`length`*

`CONF#`

Description:
Configures the length of the system watchdog timeout.

The watchdog timeout is the number of seconds for which the DarkStar system can be non-responsive before

the controlling software automatically reloads. See the `reload` command for the consequences of a reload.

NOTE

XKL recommends leaving the watchdog timeout at its default value of 63.

NOTE

This command is not saved in the configuration files as a low value may prevent the system from booting.

NOTE

This command has been deprecated.

Command Keyword Definitions

length	Set watchdog timer to time out after `length` seconds. Valid values for `length` are from 0 to 63, inclusive. The default is 63 seconds. The commands `no watchdog timeout` and `watchdog timeout` 0 both disable the watchdog timeout feature.

2.6 copy

Syntax:

`copy` *`source-storage-location destination-storage-location`*

#

Description:
Copies configuration data, software images, and gateware images between storage areas.

WARNING

Creating image and gateware copies can take several minutes. To avoid creating a corrupted or incomplete copy, do not interrupt the `copy` ***command. Interruption of flash memory write operations with*** `CTRL+C` ***generates a system warning that corruption may have occurred.***

WARNING

Before using copy to install a new `dxmos/config.dat file`***, be sure the enable password in the new file is known or empty. After installing a new*** `dxmos/config.dat` ***file, to make the new configuration effective, the system must be reloaded. Beware that a*** `write memory` ***command will overwrite the new file with the running configuration.***

2.7 debug

Syntax:

`[ no ] debug` *`argument`*

`#`

Description:
Turns on verbose debugging information for a specified subsystem.

This command should only be used to diagnose problems. When debug output is active, system performance may be degraded and the amount of output may make typing additional commands difficult, especially when the system is under heavy load. A heavy load may cause a watchdog timeout and subsequent reload. These messages are only visible on the console unless monitor is activated.

Command Keyword Definitions

`debug`	Enables verbose debugging.
`no debug`	Disables verbose debugging.

2.8 delete

Syntax:

`delete` *`file-name`*

```
#
```

Description:
Deletes the specified file from the file system, if the file is not read only.

Command Keyword Definitions

file-name	Specifies file to be deleted.

2.9 dir

Syntax:

```
dir [ directory | filename ]
#
```

Description:
Provides a directory listing for the specified file or directory. If no argument is present, provides a listing of the root directory.

Command Keyword Definitions

directory	Specifies directory to list.
filename	Specifies file to list.

2.10 disable

Syntax:

```
disable
#
```

Description:
Exits enabled mode and returns to disabled mode.

2.11 enable

Syntax:

```
enable
>
```

Description:
Enters enabled mode.

NOTE

If an enabled mode password is set, the DXMOS prompts for the password before entering enabled mode.

2.12 exit

Syntax:

```
exit
>
```

Description:
Returns to the previous command entry level or disconnects from the top level of DXMOS.

At the top-level command prompt, `exit` does the same thing as logout.

2.13 logout

Syntax:

```
logout
>
```

Description:
Disconnects from the DarkStar system.

The `logout` command disconnects any telnet or SSH session and releases the VTY line for use by others.

When performed on the console, logout resets the console line. If a console password has been set, you must enter a password to return to the disabled mode prompt.

2.14 ping

Syntax:

```
ping [ remote-host-name | ip-address ]
>
```

Description:
Sends test packets to a specific address.

The `ping` command sends 5 ICMP echo request packets and reports whether or not it receives responses for

each. An exclamation point (!) is displayed for each successful packet and a period (.) is displayed for each unsuccessful packet.

NOTE

DNS must be configured with the `ip name-server` command for `remote-host` to work with a hostname instead of an IP address.

Command Keyword Definitions

`remote-host`	Sets the destination hostname or IP address to which `ping` sends packets.

Command Display Example

```
localhost> ping 10.15.1.90
Ping 10.15.1.90
!!!!!
Done pinging 10.15.1.90 - 5 of 5 packets received
localhost> ping 10.15.1.110
Ping 10.15.1.110
.....
Done pinging 10.15.1.110 - 0 of 5 packets received
localhost>
```

2.15 reload

Syntax:

`reload`

`#`

Description:
Reloads the DXMOS operating system software.

The `reload` command does not affect the transport interfaces (client and wave) unless there is a difference between the saved configuration (`startup-config`) and the running configuration. To ensure that the transport interfaces are unaffected by `reload`, use the `write memory` command before the reload.

2.16 set fan-controllers

Syntax:

`set fan-controllers` *`hex-value`*

`#`

Description:
Sets a hexadecimal bit-mask to select DarkStar system fan controllers.

The `set fan-controllers` command is useful when the default fan controller configuration has been changed by attaching additional fan modules to the DarkStar system.

Changes made by the `set fan-controllers` command are persistent and need not be saved to non-volatile storage with the `write memory` command. However, the changes made do not take effect immediately. The system must be reloaded.

Command Keyword Definitions

`hex-value`	Sets which DarkStar system fan controllers to use by specifying a hexadecimal bit-mask in *`hex-value`*. Each bit in the bit-mask represents a fan controller, starting at controller - in the right-most bit. For example, to configure the DarkStar system to use fan controllers 0 and 2, the binary bit-mask is 101, which is represented by a *`hex-value`* of 5.

2.17 set split-trunk

Syntax:

```
set split-trunk { yes | no }
#
```

Description:
Controls how the DarkStar system parses wave interfaces.

By default, redundant systems are configured with `split-trunk yes` and non-redundant systems with `split-trunk no.` For split-trunk systems, wave lasers use the west/east designation; for non split-trunk systems, this designation is not used. This command is only useful for turning off split trunk support of redundant systems.

Changes made by the set `split-trunk` command are persistent and need not be saved to non-volatile storage with the `write memory` command. However, the changes made do not take effect immediately. The

system must be reloaded.

WARNING

Do not change the `split-trunk` ***setting while running customer traffic. Because the*** `split-trunk` ***setting controls how wave interfaces are parsed, changing the setting can cause the DarkStar system to parse existing configuration files incorrectly when it reloads.***

2.18 show

Displays information about how the DarkStar system is configured.

2.18.1 show app

Syntax:

```
show app
>
```

Description:
Displays information about the settings and current status of automatic path protection (APP) groups.

See the `app` command for more information about path protection.

2.18.2 show arp

Syntax:

```
show arp [ <ethernet-identifier> ]
>
```

Description:
Displays the Address Resolution Protocol (ARP) cache for Ethernet interfaces.

See also `show ip arp` command.

Command Keyword Definitions

`<ethernet-identifier>`	Display the ARP cache for the specified interface. Without an `<ethernet-identifier>`, `show arp` displays the cache for all interfaces.

2.18.3 show bert

Syntax:

```
show bert
>
```

Description:
Can be used on any transport interface to obtain results up to the time the command was issued. This command displays all transport interfaces running BERT in the console output.

2.18.4 show batch-queue

Syntax:

```
show batch-queue
>
```

Description:
Displays the current batch queue.

The `show batch-queue` command is useful only for diagnosing DarkStar system problems. It does not provide information that is useful during routine operation.

2.18.5 show calendar

Syntax:

```
show calendar
>
```

Description:
Displays the current time and date according to the DarkStar system calendar chip.

2.18.6 show clock

Syntax:

```
show clock
>
```

Description:
Displays the current time and date according to the DarkStar system clock.

2.18.7 show connections

Syntax:

```
show connections [ <transport-identifier> ]
```

```
>
```

Description:
Displays information about the wave and client interface connections, line status, and line rates.

Each line in the displayed table describes an active connection between If1 and If2. See `connect` command for additional information.

Command Keyword Definitions

`<transport-identifier>`	Display connections to the specified interface. Without a `<transport-identifier>`, the `show connections` command displays information for all transport interfaces.

2.18.8 show controllers

Syntax:

```
show controllers <interface-identifier>
#
```

Description:
Displays current operational warning and alarm status for client and wave interfaces.

The `show controllers` command requires enabled mode.

Command Keyword Definitions

`interface-identifier>`	Displays operational warning and alarm status for the specified interface.

2.18.9 show debug

Syntax:

```
show debug
>
```

Description:
Displays a list of debug flags currently enabled.

2.18.10 show edfa

Syntax:

```
show edfa [ <trunk> ] <optical component id>
>
```

Description:
Displays status of EDFA devices, settings and alarms.

NOTE

The `show edfa` command is available only on DarkStar systems with an EDFA installed.

Command Keyword Definitions

`[ trunk ]`	Optionally, specifies trunk if DarkStar system is split-trunk system.
`optical component id`	Specifies the optical component id.

2.18.11 show environment

Syntax:

```
show environment [ all | fans | power | temp ]
>
```

Description:
Displays operating environment information, including temperature, status of fans, and status of power systems.

Issuing the show environment command without any arguments is equivalent to issuing `show environment all`.

Command Keyword Definitions

`all`	Displays summary of fan and power system status.
`fans`	Displays detailed fan status and operational parameters.
`power`	Displays detailed power system status and operational parameters.
`temp`	Displays current temperature readings and temperature operating ranges for many DarkStar systems.

2.18.12 show file

Syntax:

```
show file { descriptors | info | systems }
#
```

Description:
Shows information pertaining to the file system.

Command Keyword Definitions

`descriptors`	Displays which files are currently in use.

`info`	Equivalent to `dir` command.
`systems`	Displays information about file systems present.

2.18.13 show flash

Syntax:

```
show flash [ all | detailed | summary ]
#
```

Description:
Displays information about flash chips in the system. The default output is a listing of each flash partition and the files it contains.

Command Keyword Definitions

`all`	Displays same information as default output.
`detailed`	Displays file information with additional details.
`summary`	Displays file system information as a summary output.

2.18.14 show flash-config

Syntax:

```
show flash-config [ backup1-config | backup2-config | startup-config ]
#
```

Description:
Displays configuration information stored in flash memory.

Command Keyword Definitions

`backup1-config`	Displays information stored in the `backup1-config` flash location.
`backup2-config`	Displays information stored in the `backup2-config` flash location.
`startup-config`	Displays information stored in the `startup-config` flash location. Equivalent to the `show startup-config` command.

2.18.15 show gateware

Syntax:

```
show gateware filename
#
```

Description:
Displays the gateware preface file, which contains information pertaining to contents of gateware.

Command Keyword Definitions

filename	Specifies file to be examined .

2.18.16 show hardware

Syntax:

```
show hardware
>
```

Description:
Displays serial numbers, manufacturing dates, and hardware revision data for DarkStar controller and switch circuit boards. Displays the presence of certain devices in the system IDROM, such as OADM (Optical Add-Drop Multiplexer) devices, DCMs (Dispersion Compensations Modules), and other passive optical components such as attenuators.

2.18.17 show hostkey

Syntax:

```
show hostkey { private | public }
#
```

Description:
Displays the public and private DSA keys used by SSH.

Command Keyword Definitions

`private`	Prints the private hostkey for this system.
`public`	Prints the public hostkey for this system.

2.18.18 show hosts

Syntax:

```
show hosts
#
```

Description:
Displays the hosts table from Domain Name Service (DNS) resolution or from manual configuration by the `ip host` command.

2.18.19 show led

Syntax:

```
show led
>
```

Description:
Prints readout of front panel LEDs and a summary of system status.

2.18.20 show interfaces

Syntax:

```
show interfaces [ <interface-identifier> ] [ summary ]
>
```

Description:
Displays interface information.

Without any arguments, the `show interfaces` command displays information for all interfaces.

Command Keyword Definitions

`<interface-identifier>`	Displays information about the specified interface.
`summary`	Displays a short summary of the interface information.

2.18.21 show ip arp

Syntax:

```
show ip arp [ <ethernet-identifier> ]
>
```

Description:
Displays the Address Resolution Protocol (ARP) cache for an Ethernet interface.

See also `show arp` command.

Command Keyword Definitions

`<ethernet-identifier>`	Display the ARP cache for the specified interface. Without an `<ethernet-identifier>`, the `show ip arp` command displays the cache for all Ethernet interfaces.

2.18.22 show ip routes

Syntax:

```
show ip routes [ detailed ]
>
```

Description:
Displays the current system routing table.

The `show ip routes` command also displays the IP/CML, metric, source, next hop address, and routing

protocols to which the route is distributed.

Command Keyword Definitions

`detailed`	Displays more details, including link layer information.

Command Display Definitions

`C`	Connected.
`S`	Static.
`R`	RIP.

2.18.23 show ip traffic

Syntax:

```
show ip traffic
>
```

Description:
Displays current IP traffic statistics.

2.18.24 show lines

Syntax:

```
show lines
>
```

Description:
Shows the status of console and VTY lines, including whether or not they are logged in or in enabled mode.

2.18.25 show logging

Syntax:

```
show logging
#
```

Description:
Displays the contents of the circular logging buffer.

2.18.26 show optical wavelength-map

Syntax:

```
show optical wavelength-map
>
```

Description:
Displays a reference table of optical channels and their frequencies and wavelengths.

2.18.27 show peers

Syntax:

```
show peers
>
```

Description:
Displays peer information.

2.18.28 show raman

Syntax:

```
show raman <raman-identifier>
>
```

Description:
Displays information about Raman amplifier state and function.

Command Keyword Definitions

`<raman-identifier>`	Specifies the Raman amplifier against which the command is executed.

2.18.29 show running-config

Syntax:

```
show running-config [ amplifiers | app | banner | boot | dhcp | fan | host |
interface [ <interface-identifier> ] | line | logging | rip | snmp | sntp |
static-routes | switch ]
#
```

Description:
Displays current active configuration settings.

Without options, the `show running-config` command displays full configuration information, starting with a string of eight semicolons (::::::::). This information can be captured in a text file, starting with the semicolons, and placed on a tftp server for later download via the `tftp` command. With an option, the `show running-config` command displays the relevant portion of the current active configuration.

The `show running-config` command is identical to `write terminal`.

WARNING

Running config may not yet have been preserved as a file. To preserve it, use the `write memory` ***command.***

Command Keyword Definitions

`app`	Displays current automatic path protection (APP) settings in systems with a switchboard.
`banner`	Displays current banner settings.
`boot`	Displays current boot settings.
`dhcp`	Displays current DHCP settings.
`fan`	Displays current fan settings.
`host`	Displays current hostname.
`interface [ <interface-identifier> ]`	Displays current settings for the specified interface. Without an `<interface-identifier>`, settings are displayed for all interface.
`line`	Displays current line settings.
`logging`	Displays current logging settings.
`rip`	Displays current RIP settings.
`snmp`	Displays current SNMP settings.
`sntp`	Displays current SNTP settings.
`static-routes`	Displays current static routes.
`switch`	Displays current switch settings (in switching systems only).

2.18.30 show sntp

Syntax:

```
show sntp
>
```

Description:
Reports the IP address and last sync time of the currently selected Simple Network Time Protocol (SNTP) server, also that SNTP is electing a new server, or that there are no servers configured.

2.18.31 show startup-config

Syntax:

```
show startup-config
#
```

Description:
Displays DarkStar system startup and backup configurations from customer flash memory.

2.18.32 show switch

Syntax:

```
show switch
>
```

Description:
Displays detailed crosspoint switch information.

Information displayed by the `show switch` command is useful only for diagnosing software problems. It does not provide information that is useful during normal DarkStar system operation.

2.18.33 show time

Syntax:

```
show time
>
```

Description:
This command is a synonym for `show clock`. See show `clock command`.

2.18.34 show tech-support

Syntax:

```
show tech-support
#
```

Description:
Displays all system information in a format useful to customer support engineers for diagnostics.

2.18.35 show timer-queue

Syntax:

```
show timer-queue
>
```

Description:
Displays the current timer queue.

The `show timer-queue` command is useful only for diagnosing DarkStar system problems. It does not provide information that is useful during routine operation.

2.18.36 show version

Syntax:

```
show version [ verbose ]
>
```

Description:
Displays DXMOS and other version information.

The show version command displays the following information:

- Operating system version

- XKL software part number

- Storage (flash) location

- System uptime

- Whether the last reload was due to power cycling or due to a watchdog timeout event. If the reload was due to power cycling, a distinction will be made to indicate whether it was an internal or external power cycle.

Command Keyword Definitions

`verbose`	Display additional version information: - Version of DXMOS currently running. - Location from which the DXMOS image was booted. - The location of the currently running gateware. - A table of hardware component revision numbers.

2.19 terminal pager

Syntax:

```
[ no ] terminal pager [ n | default ]
>
```

Description:
The terminal pager displays a block of text and pauses to provide time to review console output. When the console output pauses, the user may proceed to the next page by pressing any key. The default output display

per page is 24 lines, but the number of lines output may be set by passing an argument to the command.

NOTE

This setting does not persist across reloads or subsequent logins.

Command Keyword Definitions

n	Specifies number of lines for console output.
`default`	Displays the default number of lines as set in configure mode.

2.20 tftp

Syntax:

`tftp { get | put } tftp-server source-file-name destination-file-name`
`#`

Description:
Retrieves or sends files from one location to another via the DarkStar network. Use of the `tftp` command requires a functioning TFTP server. Configuring TFTP servers is beyond the scope of this documentation.

NOTE

Factory files are not writeable and attempts to do so will fail.

NOTE

DNS must be configured with the `ip name-server` command for `tftp-server` to work with a hostname instead of an IP address.

WARNING

It is possible to corrupt valid storage locations using the `tftp` command. No checks are made to ensure the downloaded data files are legitimate DarkStar system data files. Use the `checksum` command on the retrieved file and manually verify its integrity.

Using tftp to create copies can take several minutes. To avoid creating a corrupted or incomplete copy, do not interrupt the `tftp` command. Interruption of flash memory write operations with

`CTRL+C` ***generates a warning that corruption may occur.***

WARNING

It is possible to use `tftp` ***to obtain a configuration whose enable password is unknown. Be sure to write down the password in a safe place. Once the password is set and you leave enabled mode, there is no way to configure the DarkStar system without entering the password to return to enabled mode. If the password is saved to the startup configuration using the*** `write memory` ***command, the only way to clear the enabled mode password without entering enable mode is to reload the DarkStar system in factory default mode by pressing and holding the side reset button. Reloading in factory default mode disrupts network traffic across all transport interfaces.***

Command Keyword Definitions

`get`	Retrieves file from remote TFTP server.
`put`	Places file on remote TFTP server.
`tftp server`	Specifies the IP address or the hostname of the TFTP server.
`source-file name`	Specifies the file to be transferred.
`destination-file name`	Specifies the target location for the file to be transferred.

2.21 undebug

Syntax:

`undebug` *`argument`*

`#`

Description:
Turns off verbose debugging information. Using this command is the equivalent of `no debug`.

Debugging information is useful only for diagnosing system problems. It does not provide information that is useful during normal DarkStar system operation. If the amount of debugging information is so extreme as to interfere with operation, `undebug all` is the quickest way to recover without reloading.

2.22 version

Syntax:

`version`

`>`

Description:
Displays the version of the software currently loaded.

The `version` command displays slightly different information from the show version command.

2.23 write

Writes configuration information to and erases information from non-volatile memory.

2.23.1 write erase config

Syntax:

```
write erase config [ <storage-location-config> ]
#
```

Description:
Erases configuration information from non-volatile storage (flash memory).

Command Keyword Definitions

`<storage-location-config>`	Erase configuration from the specified storage location. Without a `<storage-location-config>`, `write erase config` erases the configuration in the `startup-config` location.

2.23.2 write memory

Syntax:

```
write memory [ storage-location-config ]
#
```

Description:
Writes current configuration information to non-volatile storage (flash memory).

Command Display Definitions

`<storage-location-config>`	Write configuration to the specified storage location. Without a `<storage-location-config>`, `write memory` writes to the `startup-config` location.

2.23.3 write network

Syntax:

```
write network tftp-server filename
#
```

Description:
Writes current configuration information to a remote server using TFTP.

NOTE

XKL strongly encourages a backup of the startup-config data on a remote TFTP server. In the event that flash backups of the configuration on the DarkStar system itself become corrupted, a TFTP backup of your settings allows you to restore your DarkStar system and customer traffic to normal conditions.

NOTE

DNS must be configured with the `ip name-server` command for `tftp-server` to work with a hostname instead of an IP address.

Command Keyword Definitions

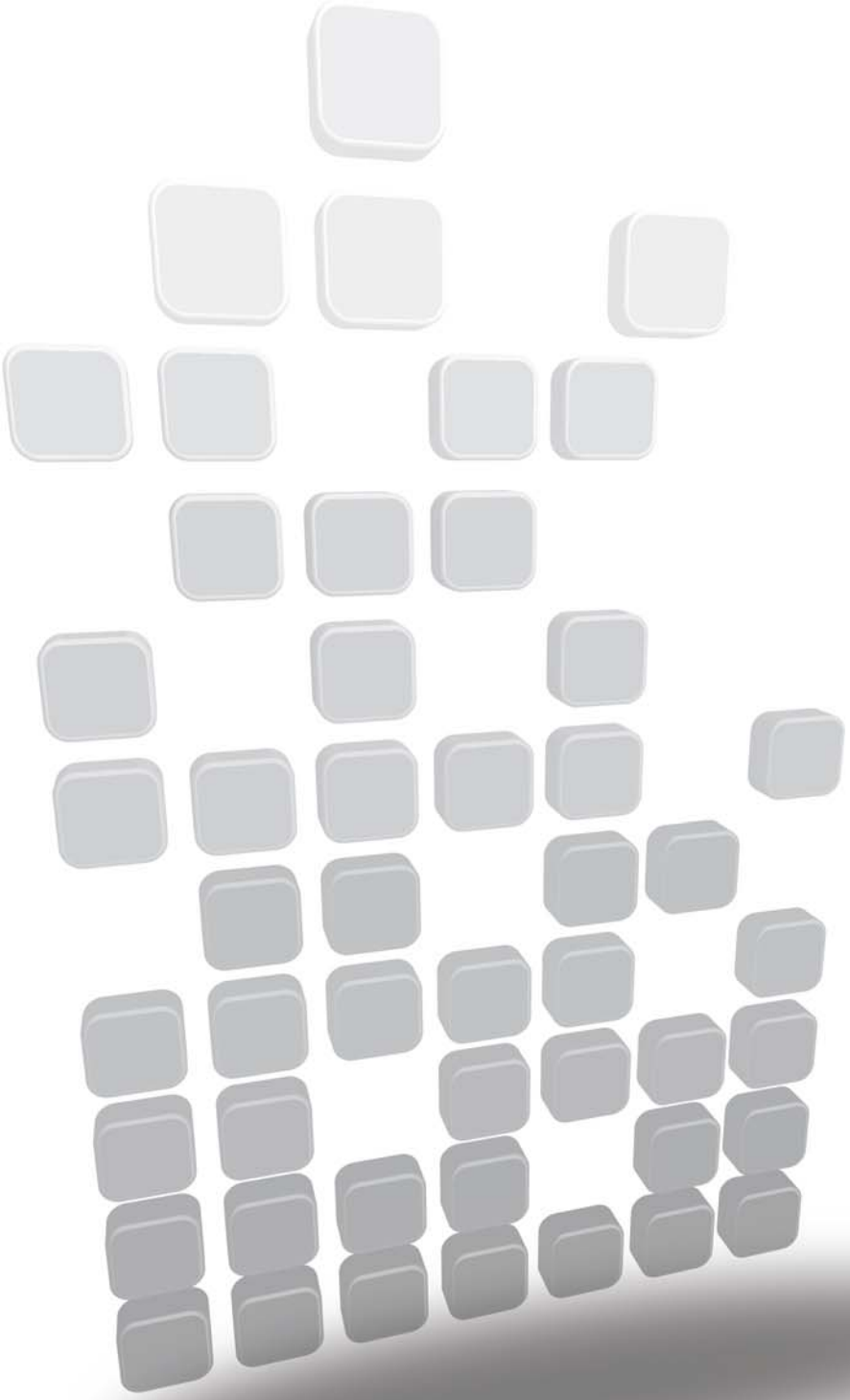
`tftp-server`	Specifies IP address or hostname of a TFTP server to which the `write network` command copies the current `running-config.`
`filename`	Specifies name of the file to which the `write network` command copies the current configuration. If the file already exists at the remote location, `write network` overwrites it.

2.23.4 write terminal

Syntax:

```
write terminal
#
```

Description:
Identical to the `show running-config` command.



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