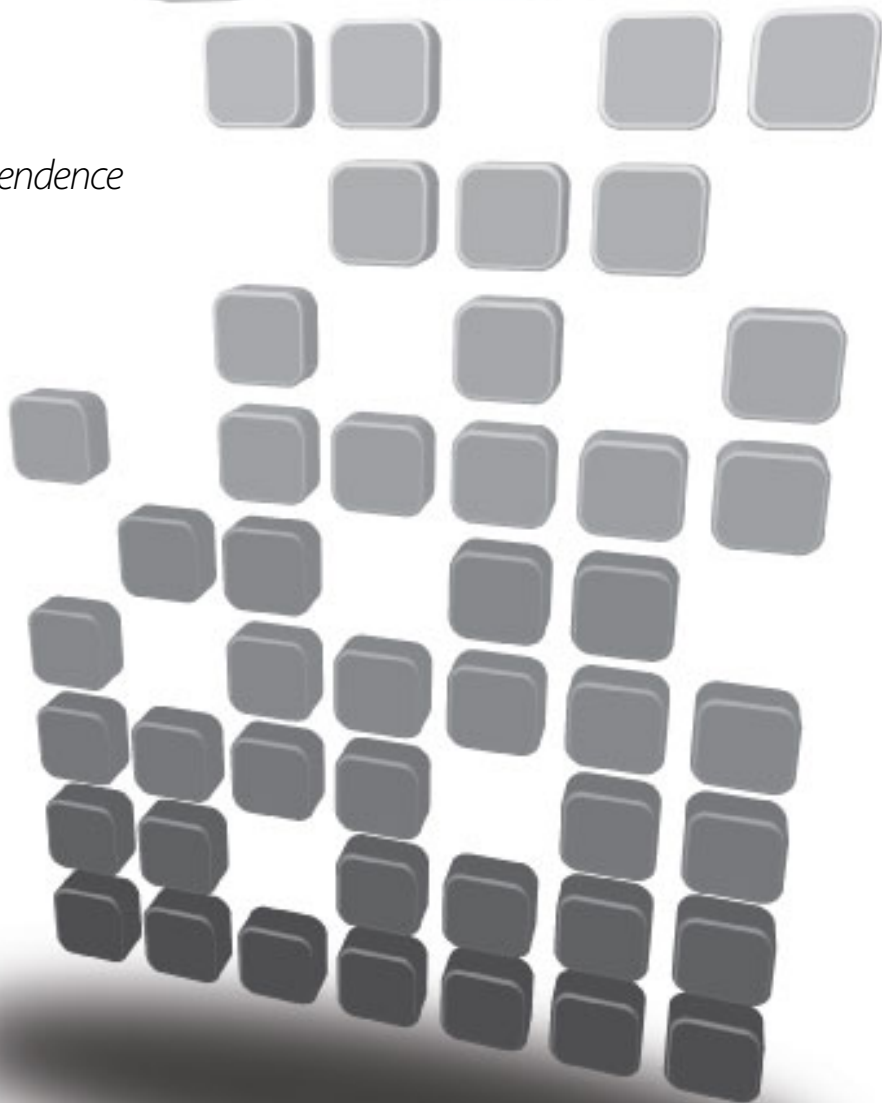




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Lighting the path to network independence

Release Notes v3.2.3



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Dropbear SSH

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sshpty.c is taken from OpenSSH 3.5p1

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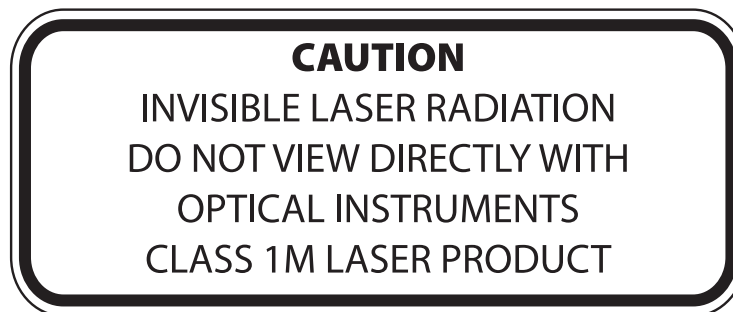


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Release Notes

This documentation highlights release information for v3.2.3 DarkStar products.

The DarkStar v3.2.3 release is packaged with the DarkStar V3.1 User Guide and the DarkStar V3.1 Command Reference. The changes and updates in DarkStar v3.2.3 components do not result in significant changes in command sets or system operation.

Software release kits, beginning with the DarkStar V3.2.3 release, include DarkStar operating software for all DSM10 platforms. The upgrade utility included in the kit will automatically select and install the appropriate software for the hardware it is executed upon.

1 DXMOS Upgrade Instructions

This procedure explains how to upgrade to DXMOS v3.2.3.

`upgrade-2018-0.exe` is a software tool that contains all data necessary to upgrade to DXMOS v3.2.3 software and gateway. This installation program must be run from the console; it will not work over telnet or ssh.



Console access is REQUIRED for all upgrade, downgrade, and clean installation procedures documented here. Also, authorization and authentication credentials for access to enable-mode may be required at your site.

DXMOS software is stored redundantly in two independent flash chips on DarkStar systems, known as "startup flash" and "factory flash." Startup flash stores the software that runs the system. Factory flash stores a backup copy of the software that can be used to restore startup flash. This upgrade procedure will NOT modify any content on factory flash.

`upgrade-2018-0.exe` preserves custom system configurations on the startup flash, **except** when invoked with the option
`/program-argument:"install"`

1.1 Download

You can obtain `upgrade-2018-0.exe` via XKL's web site in the Support section. DarkStar support customers will receive notifications of updates as they become available, which will include login credentials for the download and further detailed instructions.

Once you obtain the update files, place the `upgrade-2018-0.exe` file on the target TFTP server. Then verify the integrity of the file using the checksum included in the upgrade kit.

1.2 Upgrade Procedure

To upgrade to DXMOS v3.2.3, carefully follow this procedure.

1. **Establish Server Connection.** Ensure the DXMOS system can reach the TFTP server, either by being on the same subnet or by provisioning static routes. The TFTP boot facility cannot use dynamic RIP routes. If you change any network configurations to ensure connectivity, be certain to save the settings using the `write memory` command.
2. **Backup DXMOS Configuration.** Create a remote backup of the DXMOS configuration file by using the `write network` command to put a copy of `/dxmos/config.dat` onto a remote tftp server.

```
write network tftp-server remote-filename
```

Alternate Method. An alternate method is to download the upgrade file into the DXMOS file system using the `tftp get` command before reloading. Then boot the locally stored copy of the upgrade file.

```
localhost# tftp get ip-address upgrade-2018-0.exe /upgrade-2018-0.exe

Are you sure? [yes/NO] y
```



NOTE

While the alternate method is an option, be aware that it is significantly slower (will take a half-hour at minimum) than writing the file to a remote server.

3. **Start Boot.** Bring up the Boot prompt by entering enabled mode and issuing `reload` from within DXMOS: Boot starts and attempts to load DXMOS. While attempting to load, the following messages display for 10 seconds:

```
localhost> enable
localhost# reload

Are you sure? [yes/NO] y

Initiating warm reload...

Unmounting "/dump" ...
Unmounting "/factory" ...
Unmounting "/" .....
All filesystems unmounted
Halting Processor

System Processor (XKL-2) Ver - 400000000672
.
.
.
[Delaying AUTO-BOOT for 10. seconds.]
[Type Ctrl+C to abort, or any other key to boot now.]
```

Type CTRL+C to halt the process and leave the system at the Boot prompt.

4. **Download Installer.** Download the upgrade from the TFTP server using the following command where the network address in the example is replaced with that of the TFTP server. This process will last several minutes, during which time, console output will display a succession of periods (.....) indicating that the transfer is in progress.

```
Boot> boot tftp ip-address upgrade-2018-0.exe
```



NOTE

Microsoft Windows servers require the full path name to `upgrade-2018-0.exe`. Linux servers require the relative pathname from the tftp directory.

Alternate Method. If you are using the alternate method of storing `upgrade-2018-0.exe` to `/upgrade-2018-0.exe`, then you would use the command `boot file now`:

```
Boot> boot file /upgrade-2018-0.exe
```

For both methods: Do not interrupt the TFTP transfer. If the process is interrupted, you must reload boot using the following commands:

```
Boot> enable wheel
Boot# reload
Reload DIP (set for Startup) gateway, Warm. Press Enter to confirm: <Enter>
```

5. **Run Startup Flash Upgrade.** After Boot has loaded `upgrade-2018-0.exe`, the program will run. After a few minutes, you will see a last-chance abort message before proceeding. Upgrade provides a 30-second window to abort the process. *If you wish to abort for any reason, do it now. Otherwise, ignore the message and let the installation continue.* If you do not abort during this window, upgrade will ignore all subsequent keyboard input. The upgrade process will last several minutes and console output will change as the procedure progresses. A full sample of console output during a successful upgrade is available in the upgrade kit.



Do not interrupt the upgrade process. Doing so may cause serious errors.

When `upgrade-2018-0.exe` runs on the startup flash, the following events occur:

- The current software is saved.
- Configuration file and SSH key files are saved (and restored later in the upgrade process).
- DXMOS 3.2.3 software is installed.
- The system is reloaded.

The system reloads when the installation is completed. Boot then loads the new DXMOS v3.2.3 software and runs it.

6. **Verify System Flash Upgrade.** Once reload is completed, verify the software version:

```
localhost> show version
```

Verify the following in the console output:

- Gateway is startup-gateway
- Version is v3.2.3

If the upgrade was unsuccessful, the reload will fail to load the new software and instead revert to the original factory flash.



Beware that if the system reverts to factory flash, you may lose custom configurations, which may also result in a loss of traffic.

7. **Downgrade (if required).** In the unlikely event that the upgrade procedure fails, you may want to downgrade to the previously running version of DXMOS. `upgrade-2018-0.exe` can restore the original installation using files saved during the upgrade process. To perform a downgrade, use the following command at the Boot prompt:

```
Boot> boot tftp ip-address 'upgrade-2018-0.exe' /program-argument:"downgrade"
```

Do not interrupt upgrade. Once the downgrade is complete, the system will return to the Boot prompt and you must

reload manually using the following commands:

```
Boot> enable wheel
Boot# reload
Reload DIP (set for Startup) gateway, Warm. Press Enter to confirm: <Enter>
```

- 8. Post-installation configuration.** If you have changed network settings for this update, be certain to restore them at this time.

2 Clean Reinstallation

In the unlikely event that the upgrade or downgrade procedures detailed above are unsuccessful, you may attempt to cleanly reinstall using `upgrade-2018-0.exe`. You are encouraged to contact XKL support for questions and advice concerning the use of `upgrade-2018-0.exe` for clean re-installation.



Use of `upgrade-2018-0.exe` for clean installation will cause ALL data in the flash memory to be erased. Clean installation will prevent any future attempt to downgrade to a prior release. Upon successful installation, DXMOS will start up WITHOUT a configuration, and will disrupt customer traffic and disable management network access to your DarkStar system until an appropriate configuration is re-established. Use this option only after you have backed up your configuration files first using the `write network` command while running DXMOS.

- 1. Save your configuration and reload.** If running DXMOS, first ensure that your configuration is saved remotely by using the `write network` command (you will need to save any SSH keys separately). Next, issue a `reload` command.

```
localhost> enable
localhost# write network ip-address remote-config-backup.dat
Are you sure? [yes/no] y
localhost# reload
Are you sure? [yes/no] y
```

- 2. Abort Boot Start.** Watch for the following message then type CTRL+C. The message displays for 10 seconds.

```
[Type Ctrl+C to abort, or any other key to boot now.]
```

- 3. Download Installer.** Download `upgrade-2018-0.exe` from the TFTP server using the following command where the network address in the example is replaced with that of the TFTP server. This process will last several minutes, during which time the console output will display a succession of periods (.....) indicating that the transfer is in progress.

```
Boot> boot tftp ip-address 'upgrade-2018-0.exe'/program-argument:"install"
```

- 4. Startup Flash Reinstallation.** After Boot has loaded `upgrade-2018-0.exe`, the program will run. After a few minutes, you will see a last-chance abort message before proceeding. Upgrade provides a 30-second window to abort the process. *If you wish to abort for any reason, do it now. Otherwise, ignore the message and let the installation continue.* If you do not abort during this time, upgrade will ignore all subsequent keyboard input. The installation process lasts several minutes and console output will change as the procedure progresses..



Do not interrupt the upgrade process. Doing so may cause serious errors.

- 5. Verify Startup Flash Installation.** Once reload is completed, verify the software version:

```
localhost> show version
```

Verify the following in the console output:

- Gateware is startup-gateway
- Version is v3.2.3

If this procedure was unsuccessful, the reload will fail to load the new software and may instead revert to the original factory flash. Beware that if the system reverts to factory flash, you may lose custom configurations, which may also result in a loss of traffic.

- 6. Restore Configuration.** This step assumes that you will retrieve your configuration from a remote TFTP server. You may also manually establish configuration settings. Refer to the DarkStar User Guide and DarkStar Command Reference for information concerning manual configuration.

First, provision an Ethernet interface with an IP address to access your remote TFTP server, as shown in the example below. You may need to manually configure static routes or RIP routing. (See the Remote File Configuration section in the DarkStar User Guide for more information about this procedure.)

```
localhost> enable
localhost# config
localhost CONF# int eth X
localhost CONF-INT-ETH[n]# ip addr 1.2.3.4/24
localhost CONF-INT-ETH[n]# end
localhost CONF#
localhost# ping 1.2.3.5
Ping 1.2.3.5 (1.2.3.5)
Done pinging 1.2.3.5 - 5 of 5 packets received
```

Next, retrieve your configuration file from a remote TFTP server, or you may manually establish configuration settings. To retrieve your configuration file, issue the following commands to restore the system configuration.

```
localhost> enable
localhost# tftp get ip-address remote-config-backup.dat /dxmos/config.dat
Are you sure? [yes/no] y
localhost# reload
```

Running configuration differs from startup configuration.
If you are unsure the consequences of these differences, answer NO to the following prompt and carefully review the current running configuration.

```
Are you sure? [yes/no] y
```

Once the system reloads and DXMOS is running again, the prior configuration settings will be restored.

- 7. Save the Configuration.** Fully update the configuration by saving it. This step will automatically upgrade your configuration to be fully compatible with the current running software.

```
localhost> enable
localhost# write memory
Are you sure? [yes/no] y
```

3 Updates

Updates in this release resolve the following caveats noted in v3.2.3.

3.1 Message Rate Limit

The command `logging rate-limit` correctly sets the message rate limit in messages per second.

3.2 Dropbear SSH v2017.75 Replaces OpenSSH

DXMOS v3.2.3 includes Dropbear v2017.75 for SSH connectivity. This change resolves many OpenSSH issues present in DXMOS v3.2.2.

The Dropbear SSH key exchange procedure in DXMOS v3.2.3 is computationally intensive and requires about 30 seconds to complete. You will notice this delay between the time you issue an `ssh` command and the instant you receive a password prompt.

Upon upgrading your system to DXMOS v3.2.3, you will need to install a Dropbear DSS private key in order to successfully login with `ssh`.

This requires an installation of Dropbear SSH on a supported host. The following example illustrates the procedure to generate new keys using a locally installed (non-root) build of Dropbear V2017.75 on a Linux host. A similar procedure using the `dropbearconvert` utility can be used to generate a Dropbear private key using an existing DSS public key. Reference the `dropbear(1)` and `dropbearconvert(1)` man pages included in the Dropbear distribution.

```
$ bin/dbclient -V
Dropbear v2017.75
$ bin/dropbearkey -t dss -f hostkey-private.dat
Generating key, this may take a while...
Public key portion is:
ssh-dss
AAAAB3NzaC1kc3MAAACBAOUJqNZf2Mwn4BAjNK3z3u7g1IW6eaB3X7RJfekjse7A72B9v1arqP97
bxtkdqtejHGAuMqPphtJVbRMro9g0Pm+YwLVMv1WF0hluwhY3haE2TMzdQVItld+z0bW+Nmvn-
VrKTxQIUM5RUbhzyuVi4E0koJpZ0yBjKU8Ndd2Zcl/3AAAAFQD7bLbtBnLW+sUoak-
lSl+q55lqo8wAAAIbvKxg5UE2rP4M3Nzi+pvJ1IE9Jr452vCs37kAMO5S4vmSV4xhQ5ytBxpwejU
r9OZ+t+eiyfSYSLxxnynDwr4zy4nAQJCf7HZ2/RgEDxo3NFvR54zV5P9ogr7MYDe6kwev-
0a5hNp8gO9uz4CJV+vJtSvpDpDFe/kc4y-
sCE3uieU+QAAAIEAho2eU9RmFSrUXY5m00DjaCsOo0Iydrmak1Eq2esYnjaRcCfq4pdoyNHAQVF5
RTm4VKvlsAeTQegKKJehhmKdg84QN9Hup1W/COvUZY93gVWTdbThcLvIHe6SchsOfVZ0niDpDb-
vSPWW1lVoEKY+GPAhA6h9EwS5V7vp94tefsh4= user@host
Fingerprint: md5 39:19:af:ec:8f:ae:79:38:70:8e:b4:af:b0:9e:e3:b0
$ edit hostkey-public.dat # Public key above is copy 'n' pasted into file
$ cp -p hostkey-private.dat /tftp
$ cp -p hostkey-public.dat /tftp
$ chmod o+r /tftp/hostkey-private.dat # Grant read permission for TFTP
transfer
```

As the enabled user in DXMOS, transfer the key files to your DarkStar system using the `tftp` command as illustrated below. Note the need to reboot your system following key file installation.

```
localhost# tftp get 10.15.1.99 hostkey-public.dat /dxmos/hostkey-public.dat

Determining file type...
Destination has 150642688 bytes (37660672 words) available.
Existing file uses 6144 bytes (1536 words).

Are you sure? [yes/NO] y
Connecting...
File transferred successfully.
...Completing flash write.
localhost# tftp get 10.15.1.99 hostkey-private.dat /dxmos/hostkey-private.dat

Determining file type...
Destination has 150642688 bytes (37660672 words) available.
Existing file uses 6144 bytes (1536 words).

Are you sure? [yes/NO] y
Connecting...
File transferred successfully.
...Completing flash write.
localhost# reboot running

Are you sure? [yes/NO] yes
...
```

Lastly, be sure to remove publicly-readable private key copied onto the TFTP server.

```
$ rm /tftp/hostkey-private.dat
```

3.3 Addition of Receive (Rx) Power Alerts and SNMP Traps

DXMOS v3.2.3 includes message alerts and SNMP trap generation for optical Rx power outside of normal operating ranges. Optical transceiver vendors include four thresholds for abnormal Rx power. Those thresholds are High Alarm, High Warning, Low Warning, and Low Alarm. A High Alarm condition indicates excess optical power may cause physical damage to the transceiver. A High Warning condition indicates excess optical power may degrade signal reception quality. A Low Warning condition indicates optical Rx power may be insufficient for error-free signal recovery. However, a Low Warning condition is not low enough to trigger a loss-of-signal (LOS) condition.

Any of five different message and trap types are possible:

- Transceiver Rx power above high alarm threshold.
- Transceiver Rx power above high warn threshold.
- Transceiver Rx power below low warn threshold.
- Transceiver Rx power below low alarm threshold.
- Transceiver Rx power returned to normal.

Rx power threshold values are specific to each transceiver model. The values for each optical transceiver can be viewed using the `verbose` keyword on `show interface` commands.

For example:

```
localhost# show interface wave west 0 verbose
Detailed Information for Interface Wave West 0
Description: .....
Vendor: ..... OPLINK
Part Number: ..... TPD1XGJERC00030G
Manufacturing Date: ..... 120128
Serial Number: ..... 7469155
Module Type: ..... SFP
Signal Type: ..... 10GE
CDR Mode: ..... Normal
Supported Distance: ..... 40 Km on SM
Channel: ..... 30.0
Nominal Frequency: ..... 193000GHz
Nominal Wavelength: ..... 1553.33nm
Reported Wavelength: ..... 1553.33nm
I2C Address: ..... 0,10,80
General Status:
Administrative State: ..... Up
Transmitter: ..... OK
Receiver: ..... LOS
Error Forwarding: ..... Error Forwarding Enabled
Total Down/Error Time: ..... 40s
Time Since Last State Change: .... 0:00:00:39
Last Cleared Time Stamp: ..... 2018-12-24 07:29:12
I2C Transaction Error Count: ..... 0
Status Register Contents: ..... 0x0A00
Sensor Status:
Laser Temperature: ..... OK
+3.3V Supply Voltage: ..... OK
Rx Laser Input Power: ..... Low Alarm
Tx Laser Output Power: ..... OK
Tx Laser Bias Current: ..... OK
Sensor Readings and Thresholds:
Laser Temperature: ..... 33C
High Alarm: ..... 76C
High Warning: ..... 74C
Low Warning: ..... -9C
Low Alarm: ..... -10C
+3.3V Supply Voltage: ..... 3.28 V
High Alarm: ..... 3.51 V
High Warning: ..... 3.50 V
Low Warning: ..... 3.12 V
Low Alarm: ..... 3.10 V
Rx Laser Input Power: ..... <-40.0 dBm
High Alarm: ..... 0.9 dBm
High Warning: ..... 0.0 dBm
Low Warning: ..... -16.0 dBm
Low Alarm: ..... -17.0 dBm
```



```
Tx Laser Output Power: ..... 0.7 dBm
  High Alarm: ..... 4.4 dBm
  High Warning: ..... 3.9 dBm
  Low Warning: ..... -4.7 dBm
  Low Alarm: ..... -5.2 dBm
Tx Laser Bias Current: ..... 51.2 mA
  High Alarm: ..... 120.0 mA
  High Warning: ..... 110.0 mA
  Low Warning: ..... 20.0 mA
  Low Alarm: ..... 15.0 mA
CDR Temperature: ..... 41C
CDR +3.3V Supply Voltage: ..... 3.37V
BERT Status:
  Receive: ..... Off
  Transmit: ..... Off
```

Wave, client, and OSC transceivers are monitored for Rx power relative to their specific alert thresholds. SNMP traps can be enabled or disabled using the `snmp-traps` command or the `no snmp-traps` command, respectively, while in configure-interface mode.

Rx power alert messages are displayed on the serial console under all verbosity settings. Rx power alerts are recorded in the internal logging buffer if enabled (configure-mode `logging` commands). Rx power alerts are communicated to a remote syslog server if enabled (configure-mode `logging host` command). When SNMP is configured with traps enabled, an SNMP trap is emitted if a Rx power threshold is crossed.

The XKL MIB has been extended in support of Rx power alert traps. The updated MIB is available in the DarkStar 2018-0 kit.

4 Caveats in DXMOS v3.2.3

The following caveats relate to DXMOS v3.2.3 behavior and are sorted by type:

- AAA Administration
- APP (Automatic Path Protection)
- Boot
- DXMOS
- Hardware
- Loopbacks
- Management Ethernet and OSC Interfaces
- Management Access
- Monitoring
- Optical Modules
- SNMP
- Undocumented Commands

4.1 AAA Administration

The following caveats relate to AAA behavior.

4.1.1 Constant Login Attempts

Constant login attempts may cause the relevant user id to be missing from the radius accounting packets. [#1303101]

4.1.2 AAA authentication

When AAA authentication is not required, username and password prompts still display; however, authentication is not performed. [#1303102]

4.2 APP (Automatic Path Protection)

The following caveat relates to APP.

4.2.1 APP Error Messages

If a reload occurs while an APP group is switched to the protection path, spurious switch connect error messages may occur. These messages may be ignored. They only occur because the required connection already exists. The following is an example of such a message.

```
Switch Connect Error: Can't connect, interface already member of another connection.  
(Client 0, Wave West 0)
```

```
Blocked by connection Client 0 -> Wave East 0
```

```
Switch Connect Error: Can't connect (Client 4, Wave East 4) due to APP resource  
conflict. [#1303104]
```

4.3 BERT

The following caveats relate to BERT behavior.

4.3.1 BERT Commands in the Config File

BERT configuration commands saved to a config file may not restart the BERT successfully following a cold boot; BERT commands in the config file will restart the BERT successfully following a warm reload. [#1303105]

4.3.2 BERT Not Achieving Lock

When attempting to start a BERT, if lock is not achieved the following error message displays and a restart of BERT is necessary. [#1303106]

```
LOT and LOL conditions detected, cannot start pattern checking.
```

4.3.3 BERT Command Latency

When BERT logging is turned on, ensure that there is a time gap of at least 5 seconds between a `no bert receive` command and a `bert receive` command. Otherwise, the system will have problems reporting accurate logging. If this happens, turn off the current running `bert receive` and wait five seconds before issuing a new `receive`. This allows the logging thread time to finish the previous logging activities.[10930]

4.3.4 "no" Does Not Change Behavior

There are several BERT commands that do not recognize the "no" prefix. The following commands with a 'no' in front of them behave the same as their counterparts without a 'no' in front.[#10597]

```
localhost CONF# no bert logging max-log-count xx
localhost CONF# no bert logging log-interval seconds xx
localhost CONF# no bert logging number-of-samples xxxx
```

4.4 Boot

The following caveats relate to boot behavior.

4.4.1 Interrupting Boot

While it is possible to interrupt Boot it is recommended you don't do so. If Boot is unintentionally interrupted by typing CTRL+C before it announces itself ready, Boot will not be able to load any programs. The `reinitialize` command is useful to restore Boot to competency following a premature interruption to Boot. [#1303107]

4.4.2 Infinite Loop

If a DarkStar system is configured exclusively with invalid boot targets that are then saved to startup-config using the `write memory` command or which are present in the remote configuration acquired through DHCP and TFTP, the bootloader software enters an infinite loop of failed boot attempts. When this happens, messages such as the following display:

```
Boot has exhausted its collection of executable images.
[Delaying AUTO-BOOT for 600. seconds.]
[Type Ctrl-C to abort or any other key to boot now.]
```

To interrupt the reboot cycle, press CTRL+C, then enter a `boot` command at the `Boot>` prompt. [#1303108]

4.4.3 Boot Host DHCP Ignores Local Config File

If the local configuration file (`/dxmos/config.dat`) directs the Boot program to gather configuration data from a remote server (`boot host dhcp` command), and the remote configuration data is unsuitable for use on the DarkStar system (syntax errors, etc.), Boot will ignore other "boot" commands present in the local configuration file, and DXMOS will not enter recovery mode during startup. This combination of events may result in a running system that is not configured as intended.

To avoid these conditions, ensure that the remote configuration file is consistent with DarkStar system requirements. One method is to generate the remote configuration file using the `write network` command.[#9484]

4.4.4 Message Requesting Commit May Display During Restart

In the unlikely event that the factory flash chip is reinstalled, the following message may appear during system restart.

```
% Boot has initialized its volatile version of non-volatile memory.

This new version of Boot arranges the data differently than before.
The data have not been written to permanent storage.
Please use the Commit command to make these changes permanent.
```

The request to use the `commit` command can be safely ignored.[#10878]

4.5 DXMOS

The following caveats relate to DXMOS behavior.

4.5.1 Aux1 Temperature Readings

The `show interfaces wave` command may report incorrect temperature readings in the `Aux1` field for some lasers, since there is variation in the way that lasers from different manufacturers report temperature data. Instead, use the value reported in the `Temperature` field. [#1303110]

4.5.2 Copying Dump Files

Do not create a new file called `/dump.exe`. If you wish to copy the existing `/dump/dump.exe` elsewhere for safekeeping, XKL recommends use of the `tftp put` command:

```
localhost# tftp put <TFTP server host or IP> /dump/dump.exe remote-filename
```

If adequate filesystem free space is available, you may also copy modest-sized `/dump/dump.exe` files into the `/` directory under a different name, as in this example:

```
localhost# copy /dump/dump.exe /copy-of-dump.exe
```

Note that `dump.exe` files may be excessively large. XKL does not recommend preserving copies of `/dump/dump.exe` files on DarkStar systems.

In the event `/dump.exe` exits and DXMOS crashes, DarkStar systems may pause software operation and you may see console output similar to the following:

```
? Bad request size, 0, at malloc. Called from PC = 000010213073  
$0B>>XBREAK#+1] CALL 235304
```

To restore normal operation, proceed with the following steps at the system console:

1. Issue `CTRL+C`.
2. At the `XKL-2%` prompt, issue `.b <Enter>`.

[#15031210898]

4.5.3 TFTP Large File Support

`Upgrade.exe` requires a TFTP server that supports large files. Early versions of the TFTP protocol had a file size limit of 32MB. For DXMOS 3.1 and later, remote upgrade requires a TFTP server supporting block number wraparound. If your TFTP server does not provide this support, the TFTP client will fail to open files that exceed 32MB. [1503129770]

4.5.4 Clock Summer-Time Default Timezone Truncates Display

When `clock summer-time` is set to `on`, and `clock timezone` is set to `0 0` (the default setting), the output of the `show clock` command is truncated and does not display the four-digit year correctly. [#9716]

```
localhost CONF# do show clock  
  
21:04:07 UTC Wed Sep 2 2015  
localhost CONF# clock summer-time on  
localhost CONF# clock timezone 0 0  
localhost CONF# do show clock
```

22:04:24 DAYLIGHT Wed Sep 2 20

4.5.5 External Equipment can Interfere with Virtualight

In some circumstances, some types of equipment connected to client interfaces may cause an initial flapping of the interface. We have seen some examples where an external traffic generator may interact with the Virtualight feature, resulting in client interface flapping. You can eliminate the flapping by removing the client source, or by disabling the Virtualight feature using the `no virtualight` command, available in `CONF-INT-CLIENT [n] mode`. [#9611]

4.6 Hardware

The following caveat is related to hardware on DarkStar systems. `show linesshow lines`

4.6.1 Power Message

It is possible when unplugging the power supplies to see the message `Power Supply n has no power` twice in rapid succession. [#1303111]

4.6.2 Nuisance Rx Power Alerts Reported on Certain OSC Transceivers

Certain Source Photonics OSC transceivers incorrectly report RX power fluctuations when there is no RX power. The incorrectly reported RX power periodically crosses the RX low power threshold within the transceiver, causing erroneous DXMOS warning notifications. The DXMOS notifications occur with a higher frequency when the OSC's transmitter is disabled.

These power fluctuations were not evident on DarkStar systems running DXMOS v3.2.2 or earlier. In DXMOS v3.2.3, Rx power fluctuations are monitored against the transceiver's Rx power warning and alarm thresholds. In the event an OSC transceiver's power fluctuates across these thresholds, Rx power alert messages will be evident on the console. See section 3.4 of the DarkStar Release Notes v3.2.3 for further information regarding Rx power alerts.

Fluctuations in Rx power reporting are most often witnessed when certain transceiver modules are not receiving upstream optical power. XKL recommends leaving the upstream OSC transceiver's laser enabled by way of the "configure-interface-OSC mode" `no laser shutdown` command.

4.7 Loopbacks

The following caveats are related to loopbacks.

4.7.1 Older Teleoptix XFP Modules Incapable of Electrical Loopback

Teleoptix XFP modules manufactured in 2008 incorrectly claim to be capable of electrical loopback, however, loopback with these modules is not possible. The command `show interface` will report the module `mfg date` information in 6-digit year-month-day format with an optional 2-digit ending number that signifies the lot in which it was produced. [#1303112]

4.7.2 XFP Loopback Modes Disrupts Traffic on Warm Reload

If `loopback [electrical|optical]` test modes are configured on the transport interfaces, a warm reload of DXMOS may exhibit a short interruption to traffic passing through those interfaces. [#1303113]

4.8 Management Ethernet and OSC Interfaces

The following caveats relate to management Ethernet and OSC interface behavior.

4.8.1 Removing Management Interface IP Address

Removing the IP address of a management interface with `no ip addr` will leave the inactive direct/connected route in the output report of the `show ip route` command. However, removing the interface with `no interface ethernet n` while the IP address is present should remove the entire entry from the `show ip route` output. [#1303150]

4.8.2 Use of Default Routes

You can link DXMs together in a routing table via the configure-mode `ip route` commands. If there is only a default route (IPv4: subnet mask /0) to an interface, and you have not defined a more specific route, then routing can fail to that interface following `CONF-INT-ETH[n]# shutdown` and `no shutdown` commands. The problem occurs only if there are three or more DXMs in the route; for example, `ping` commands may fail between the first and last DXMs in the table. The issue is avoided by using only specific routes in the `CONF# ip route` command. [#1303114]

4.8.3 SSH Sessions and System Performance

An active SSH session may impact system performance. The impact may also increase in proportion to the number of active sessions. For time-consuming operations such as TFTP transfers of large files, minimizing the number of active SSH sessions may improve system performance. [#1303116]

4.8.4 Duplicate IPv6 Addresses Can Cause Errors

If you are experiencing strange behavior with Ethernet interface addresses, you may have mistakenly defined an IPv6 link-local address that is already in use. DXMOS only displays a warning message the first time an interface is enabled. If you do not correct the duplicate address at this time, you may see unexpected results if the address is already in use by another node when the link is enabled. You can avoid such conflicts by not specifying duplicate IPv6 addresses. [#9585]

4.9 Management Access

The following caveats relate to management network access.

4.9.1 Command Changes

The `show controllers` command is no longer supported. Instead, use `show interface int verbose`. The shortcut `show con` now resolves unambiguously to the `show connections` command. This change reduces duplication in the CLI.

The `ip proxy-arp` command is no longer supported.

The `show flash-config` command is no longer supported, since references to backup configuration files are deprecated. [#1303117]

4.9.2 Console Output

Upon completion of commands that print large amounts of text to the console, it is possible that the system prompt will not be fully displayed upon completion. Pressing <Enter> will refresh the prompt to its normal state. [#1303119]

4.9.3 SSH Message

During ssh connections, the message "server_request_session: channel_new failed" or the message "VTY allocation request failed on channel 0" may be printed to the console. They can safely be ignored. [#1303120]

4.10 Monitoring

The following caveats relate to monitoring DarkStar systems and networks.

4.10.1 Debug Reporting Errors

Enabling debug output in scenarios that generate large amounts of debug output may result in messages containing many dropped characters after a saturation level to the output buffer is reached. Turning off debug modes with `undebug all` will return the system to normal. [#1303122]

4.10.2 System Events Log to Console

DXMOS supports the 'monitor' keyword when configuring the console and VTY lines. However, the keyword has no effect. [#1303281]

4.11 Optical Modules

The following caveats are related to the performance and management of optical modules.

4.11.1 Raman Restart After APR Event

A Raman amplifier in Automatic Gain Control (AGC) mode correctly shuts down automatically on an Automatic Power Reduction (APR) event, but requires user action to restart when the APR condition is resolved. Use `shutdown` and `no shutdown` commands to restart the amplifier. [#1303125]

4.11.2 Raman Amplifier Status Reporting

For a Raman amplifier in AGC mode, DXMOS may misreport the amplifier status when the input power level changes. Amplifier operation is unaffected by the misreporting. [#1303126]

4.11.3 Upgrading Software Causes OSC to Reset

While installing a software upgrade to a DarkStar system, the management optical supervisory channel (OSC) will go down for a brief period of time. This may cause connected DarkStar systems to report their OSC link is down, however this condition does not signify loss of optical power, amplification, or any loss of customer traffic. [#1303127]

4.11.4 XFP Auxiliary Values

Auxiliary values reported by XFP modules are dependent on vendor settings and vary in reliability/what is being reported between vendors and specific modules. [#1303128]

4.11.5 Resetting JDSU Modules

Certain JDSU SFP+ modules fall into a TxFault state when a signal is not present. This can most likely occur during a cold reload. To get a module out of the TxFault state, issue a `laser shutdown` command, followed by `no laser shutdown` from the interface's configure mode. [15031210685 & 15031210860]

4.11.6 Laser Attenuation During Temporary Installation

It is possible to temporarily connect a pair of DarkStar systems side-by-side for familiarization or training purposes, and to connect the long-haul line band lasers conveniently with a few feet of fiber. The long-haul lasers are pre-configured with high Tx power and you should use fixed attenuators on the link to avoid overloading these transceivers and damaging the equipment. See the DarkStar Installation Guide or Optical Specification for suitable attenuator values. [1503128560]

4.12 SNMP

The following caveats relate to SNMP behavior.

4.12.1 Loopback Reporting

The loopback interface is not reported by SNMP. [#1303130]

4.12.2 SNMP Trap Logging

During system start up, SNMP traps and syslog messages may not be received because the network routes required to send the traps are not yet initialized. [#1303131]

4.12.3 ifInUnknownProtos SNMP Metric

The SNMP metric `ifInUnknownProtos` is not currently reliable in counting layer 3 packets that DarkStar systems do not support. [#1303132]

4.12.4 SNMP Diagnostic Queries

Although infrequent, SNMP queries used to gather diagnostic information may report incorrect data for certain OID values. For this reason, it is preferable to use the command line to gather critical diagnostic information. However, in general, SNMP results are still useful for determining long-term system patterns and trends. [#1303133]

4.12.5 SNMP May Report Non-existent EDFA Modules

On DarkStar systems with one or more empty EDFA positions, SNMP may report amplifier string names for empty positions as "edfa *n*", "edfa west *n*", or "edfa east *n*", where '*n*' is an integer between 0 and 3, suggesting the presence of amplifier where none exists. This has no effect on proper reporting for EDFA modules actually installed in the system. [#9580]

4.13 Undocumented Commands

The following commands are functional in v3.2.3 and are documented below.

4.13.1 app switch

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

Syntax:

```
# [no] app switch transport-identifier1 transport-identifier2 [force]
```

Parameter	Function
<i>transport-identifier1</i>	Specifies by interface the APP group to switch. <i>On redundant systems:</i> client <i>n</i> or wave {east west} <i>n</i> <i>On non-redundant systems:</i> {client wave} <i>n</i>
<i>transport-identifier2</i>	Specifies the target interface. <i>On redundant systems:</i> client <i>n</i> or wave {east west} <i>n</i> <i>On non-redundant systems:</i> {client wave} <i>n</i>
force	Overrides a locked APP group.

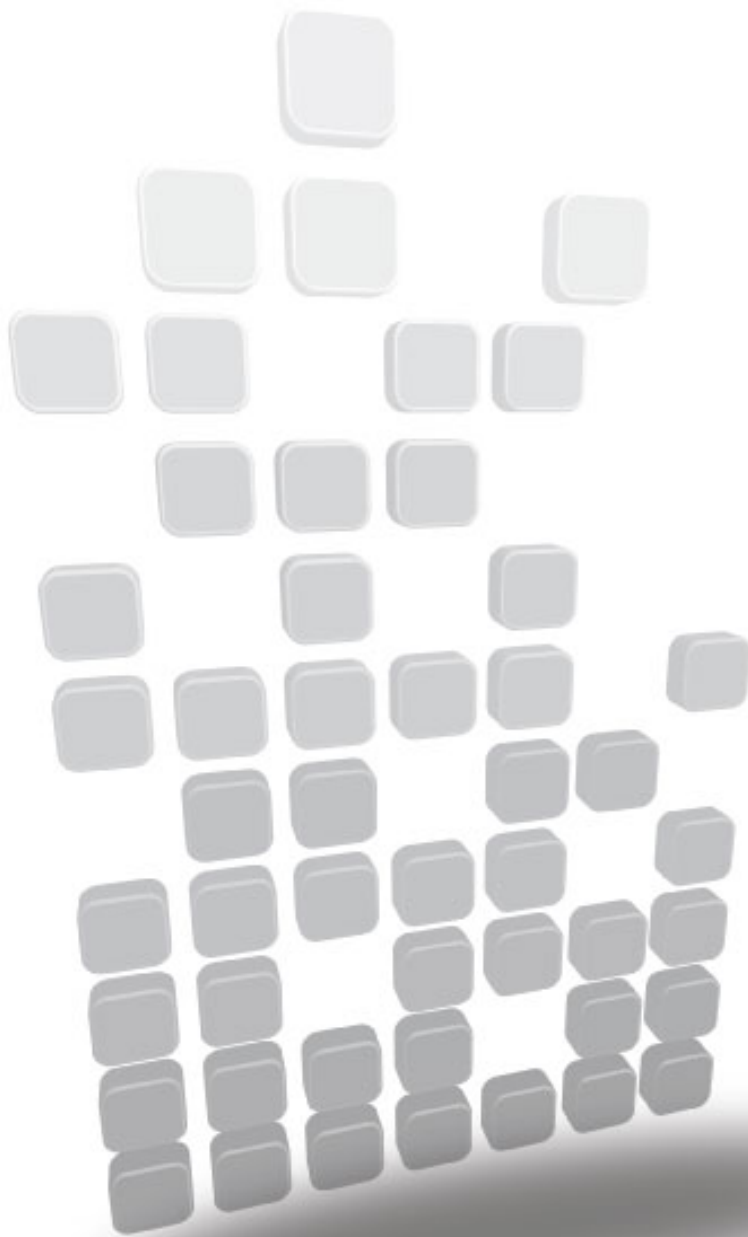
4.13.2 identify

Flashes the LEDs on an interface or system. Enables a remote operator to identify a specific interface or system to a rack-side technician for installation or maintenance purposes.

Syntax:

```
# [no] identify [interface client interface number | system]
```

Parameter	Function
interface client <i>interface number</i>	Specifies the interface you wish to identify.
system	Flashes the LEDs on the system.
no	Cancels the LED indication.



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