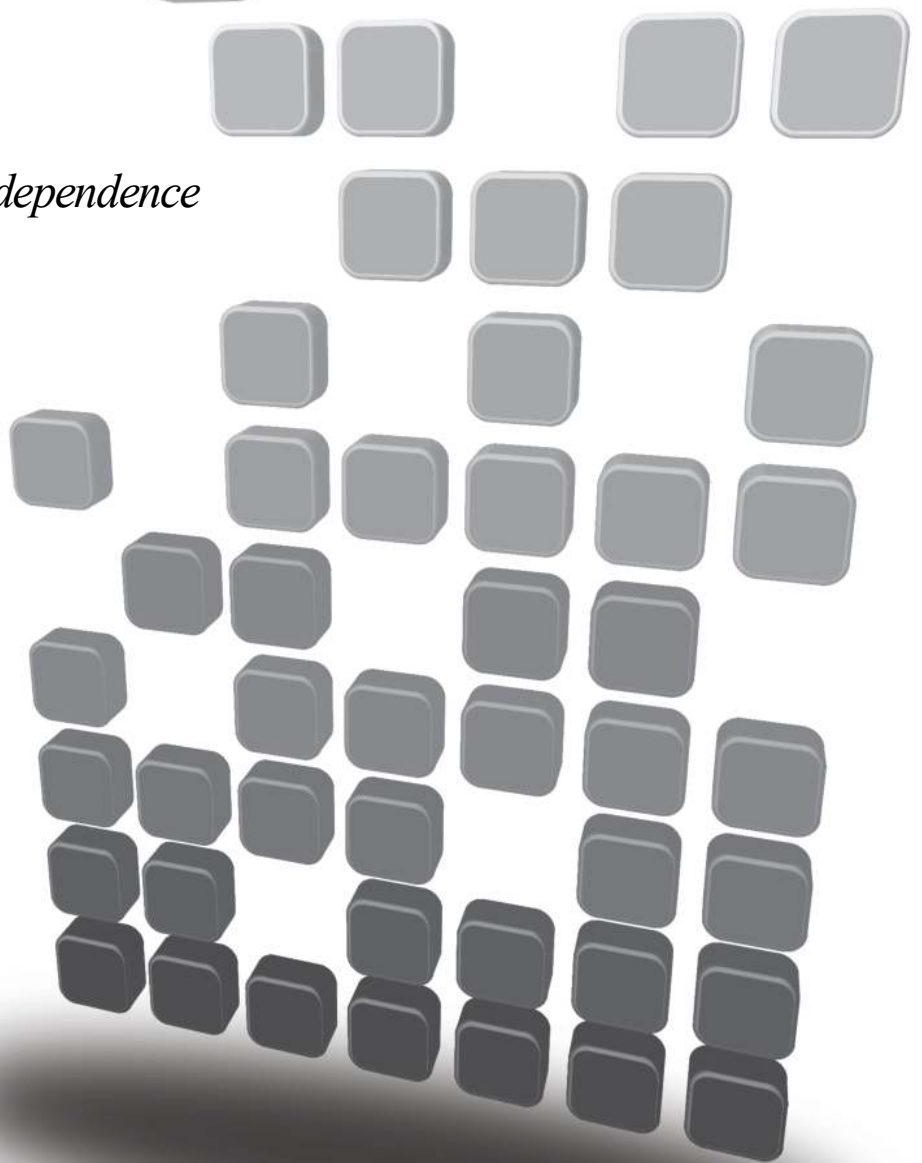


DarkStar[®]

Lighting the path to network independence

Release Notes v4.0.1



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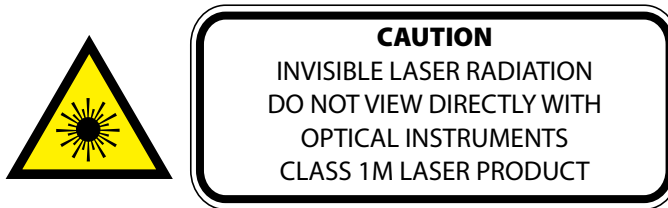
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Release Notes

This documentation highlights v4.0.1 release information for the following XKL products:

- DQT400-4
- DSM10-10
- DMD-A
- DLA

For XKL product documentation and technical support, please visit www.xkl.com.

1 New Features in This Release

The following features are new for **v4.0.1**:

1. DQT400-4, 4-Channel DWDM Transponder that features soft-configurable 100GE and 400GE services.

Included:

- Support for QSFP28 (SR4 & LR4), QSFP-DD (DR4) client-side transceivers. Others are available upon customer request.
- Support for 400G OpenZR+ line-side transceivers.
- Client services:
 - 100GE (CAUI-4)
 - 4x100GE (4x100GAUI-2)
 - 400GE (400GAUI-8)

Refer to section **3.3.8 encapsulation** of the *Command Reference v4.0* for command details and section **6.3.3.6 Configuring Optical Transport Service for DQT400** of the *Systems Guide v4.0* for examples.

- Expanded the `show module` command (host-side and media-side) with extended module details. Refer to section **5.22 show modules** of the *Command Reference v4.0*.

2. Amplifiers:

Included:

- 23 dBm EDFA support; has same command set as the 20dBm EDFA.
- Setpoint and Target Power per channel adjustments. Refer to section **3.1 Amplifiers** of the *Command Reference v4.0* for command details and section **6.6.3.2 EDFA Configuration Examples** of the *Systems Guide v4.0* for examples.

3. DSM10-10 Command Line Upgrades:

- The `show interfaces` commands have been changed to `show modules` commands.

4. OTDR (Optical Time Domain Reflectometer) Support:

- Any DarkStar system that supports an OSC optionally includes the OTDR feature. Refer to section **7.3 OTDR Commands** of the *Command Reference v4.0*.

5. Additional Ciphers for SSH:

Included:

- AES128-CBC, AES192-CBC, AES256-CBC
- AES128-CTR, AES192-CTR, AES256-CTR

Refer to section **4.4.6.3 Configure Remote Connections** of the *Systems Guide v4.0* for examples.

2 Caveats in This Release

The following caveats relate to DXMOS v4.0.1 behavior.

2.1 AAA Administration

The following caveats relate to AAA behavior.

2.1.1 Persistent Username/Password Prompt

When either `aaa authentication login default` or `aaa authentication enable default` are set to "none," the DarkStar system will continue to prompt for a username and password. Dismiss the prompts by pressing the Enter key.

2.1.2 AAA Authorization, Enable Mode, and Console Login

When TACACS+ database users with enable privileges log into a system via a console configured for aaa authentication and authorization, they are not immediately enabled. After login, it is necessary to type "enable." When prompted for the password, do not type anything; press the <Enter> key to continue.

2.1.3 AAA Authentication Login Default None Already Enabled

Typically, AAA authentication commands are enabled by issuing the command `aaa new-model`. However, `aaa authentication login default none` will function without being specifically enabled, exposing your DarkStar to unauthorized access.

2.1.4 Repeated Login Attempts

Repeated login attempts may cause RADIUS accounting packets to be missing the relevant user ID.

2.1.5 AAA authentication

When AAA authentication is not required, username and password prompts still appear; however, authentication is not performed.

2.2 Amplifiers

The following caveat relates to amplifier behavior.

2.2.1 The “clear amplifier” Command May Produce a Framing Error Message on the Console

A `clear amplifier` command may produce a message on the console indicating that a framing error has occurred. However, it will not impact the system's ability to operate and carry customer data.

2.2.2 The “clear amplifier edfa” Command May Trigger False Pump Bias Current Alarm

Issuing a `clear amplifier edfa` command may sometimes trigger a high pump bias current alarm. The alarm clears itself, then recurs intermittently. It is safe to disregard this alarm. Additional `clear amplifier edfa` commands typically clear the high pump bias current alarm.

2.3 Boot

The following caveats relate to boot behavior.

2.3.1 Interrupting Boot

While it is possible to interrupt Boot, it is recommended that you do not 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.

2.3.2 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.

2.4 Client, Trunk, OSC Interfaces, and Management Ethernet

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

2.4.1 Protection Switch May Be Changed on Remote System When Reload or Reboot

When the system is reloaded or rebooted, the protection switch may have been changed on the remote system. We recommend that prior to reload or reboot that you disable the protection switch on the remote system by issuing the `protection disable` command (i.e., `CONF# protection disable`). After the system is reloaded or rebooted, re-enable the protection switch on the remote system by issuing the `no protection disable` command (i.e., `CONF# no protection disable`).

2.4.2 OSC Link Sometimes Fails Between System Reloads

When the remote system is reloaded, the link to that system may need to be restored by issuing the `clear module osc` command.

2.4.3 OSC Remote Fault

The OSC interfaces in DarkStar systems do not report the far-end-faults correctly. For the OSC, a link "Down" is reported only in the receive direction on `OSC show` commands, rather than reflecting the remote fault status back to the upstream OSC interface.

If a local OSC port reports the link status as "Up," you must also check the downstream OSC port link status to confirm the path is bidirectionally functional. Any unidirectional fiber break or "laser shutdown" of a local OSC port will record a link transition only at the downstream system. Furthermore, reloading the remote DarkStar system may also cause the upstream system to report link "Down."

2.4.4 Interpretation of Reported "State Changed" and "Last Cleared" Times

When DXMOS starts (by reboot, by warm or cold reload), it sets several time values to the current time. The "State Changed" time (and others) is the difference between that recorded time and the current time. Until there is a state change event, the value reported is the time since starting.

2.4.5 Loopback Interface Should Be Off After a Module Is Cleared

When a module is cleared with the `clear module` command, the loopback interface for that module should be off. You can determine this by issuing the `show modules` command for that particular module (e.g., `show modules client 0`). If the loopback interface remains on, issue the `no loopback` command for that module (e.g., `CONF-MOD-<CLIENT [0] ># no loopback`).

2.4.6 Static Routes Will Be Deleted When Management Interface Updated

When modifying a management interface's IP address or subnet with the `ip address` command, the static routes associated with the management interface will be deleted. (The following is an example of an `ip address` command:
`CONF-MGMT-ETH [n] # ip address 192.168.0.1/24`.)

2.4.7 Changing the Subnet of the Management Ethernet Interface While It Is Active May Cause Loss of Management Network Connectivity

Changing the subnet of the management Ethernet interface with an `ip address` command while the interface is active may cause the system to disconnect from the network. This will close any open VTY connections on that network. (The following is an example of an `ip address` command: `CONF-MGMT-ETH[n]# ip address 192.168.0.1/24`.)

Resolve the problem by first disabling the management Ethernet interface with the `shutdown` command, then re-enabling it with the `no shutdown` command (i.e., `CONF-MGMT-ETH[n]# shutdown` and then `CONF-MGMT-ETH[n]# no shutdown`).

Notes:

- The `shutdown` and `no shutdown` commands will only go into effect after the `exit` command is issued. In other words, first enter `shutdown/no shutdown`, then enter `exit`.
- To avoid a possible network connection loss, change the subnet only when the interface is disabled.
- If you lose all management network connectivity to the system, you will need to connect via the serial port (CTY) to reconfigure the management network.

2.4.8 Clear Interface Command—Tx Fault

Issuing a `clear interface` on a DWDM JDSU SFP+ may sometimes leave the module in a TxFault state. If this occurs, issuing a `laser shutdown` command followed by a `no laser shutdown` command at the `CONF-INT-WAVE` prompt will restore the module to a normal operational state.

2.4.9 2xCAUI-4 and 3x100GAUI-2 Encapsulations Are Not Supported

DXMOS 4.0.1 does not support the 2xCAUI-4 and 3x100GAUI-2 encapsulations.

2.4.10 A Plugged or Unplugged Ethernet Cable Event May Not Be Reported on Some Systems

Some systems with a built-in Ethernet switch may not detect a plugged or unplugged Ethernet cable event. Logs or traps also may not be reported. Use the `show management ethernet 0` command to check if a system includes a built-in Ethernet switch.

2.4.11 Inaccurate Rx Power Reporting of OSC/OTDR

OSC/OTDR transceiver AF6-D51FZ-LU-XK may have inaccurate Rx Power reporting for receive power numbers below -20dBm.

2.4.12 Minimum Inter-Packet Gap on Copper Ethernet Ports

For a 1GE traffic source connected to a copper Ethernet port (E0-E3), a minimum inter-packet gap of 2 microseconds is required. If the traffic source connected to a copper Ethernet port (E0-E3) is 100Mbit, a minimum inter-packet gap of 960 nanoseconds is acceptable.

2.4.13 RIP Routing Does Not Advertise Loopback Routes Under Some Conditions

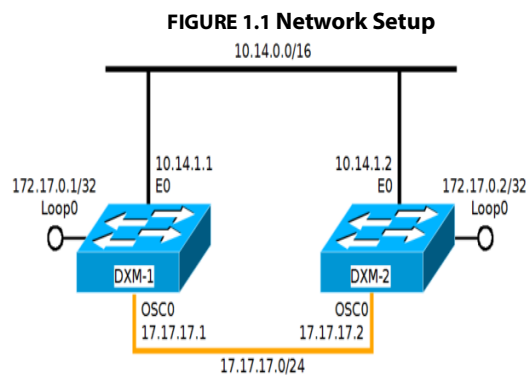
Refer to [Figure 1.1](#), which illustrates the network setup addressed by this release note. The diagram is provided for example only.

Under the following conditions:

- **if** two DarkStar systems (e.g., DXM-1 and DXM-2) are connected via copper Ethernet links (e.g., E0 on DXM-1 and E0 on DXM-2) to the same network (e.g., 10.14.0.0/16) and directly connected via an OSC Ethernet link (e.g., OSC0 on DXM-1 to OSC0 on DXM-2), creating a network loop, **and**
- **if** Routing Information Protocol (RIP) is enabled on the copper Ethernet links and on the OSC link in both systems, **and**
- **if** one of the copper Ethernet links is disabled (e.g., E0 on DXM-1), either physically or administratively, **then**

the system with the disabled copper Ethernet link (DXM-1) will switch RIP route advertisements from the copper Ethernet link (E0, 10.14.1.1) to the OSC link (OSC0, 17.17.17.1), but RIP will not advertise loopback routes (e.g., 172.17.0.1/32) via the OSC to the remote system (DXM-2). Connection attempts to those destinations from the remote system (DXM-2) will be unsuccessful.

To recover from this condition, perform a `clear rip` command on the system with the disabled copper Ethernet link (DXM-1) to re-trigger route advertisements. **Note:** This condition does not occur if the OSC link is disabled and RIP route advertisements are switched from the OSC link to the copper Ethernet link.



2.4.14 Inconsistent OSC Status Possible After Connecting External Fiber

When external fiber connections are made on a DarkStar system equipped with OSC transceiver modules, the optical signal reaching the OSC may become temporarily unstable until the fiber connection is properly seated. The instability may confuse DXMOS into reporting inconsistent OSC states. Typically, `show` commands report the OSC up, but the OSC is functionally down and not responding to Ethernet traffic. This condition can be cleared by issuing `laser shutdown` followed by `no laser shutdown` while in CONF-MOD-OSC mode.

2.4.15 Clear Counters Command Does Not Reliably Clear All Counters

The `clear counters management ethernet n` command does not reliably clear all counters. One way to work around this problem is to issue a `show management` command for that particular interface before issuing the `clear counters` command.

2.4.16 Show Version Verbose Falsely Indicates "Running-config has not been modified"

When DXMOS running configuration changes are made on a DarkStar system, the running configuration differs from the startup configuration stored in `/dxmos/config.dat` until a `write memory` command has been successfully issued. Regardless, output from the `show version verbose` command will always indicate that the running configuration has not been modified.

DXMOS will indicate differences between the current running configuration and content in `/dxmos/config.dat` when either a `reload` or a `reboot` command is issued:

```
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]
```

2.4.17 IPv4 Address Persists Following "no ip address" Command

While in `CONF-MGMT-ETH [n] #` mode, if an IPv4 address is added, removed, then followed with an `exit` command, the added IPv4 address persists in the running configuration. To correct this condition, return to `CONF-MGMT-ETH [n] #` mode, issue the `no ip address` command once again, then issue `exit`.

2.4.18 Management Ethernet Address Change with RIP Configured Requires Warm Reload

On DarkStar systems that are configured for RIP routing, changes to management Ethernet addresses on which RIP routes are advertised requires a DXMOS reboot before IP traffic will be routed.

2.4.19 RIP Configuration Changes Take Effect Upon End or Exit Command

If no RIP configuration is present, the effects of various `CONF-RIP` mode commands are not evident from the output of `CONF-RIP# do show running-config rip` or `CONF-RIP# show rip`. Changes to the RIP configuration are not applied to the DarkStar running configuration until you enter `exit` or `end` while in `CONF-RIP` mode.

2.4.20 Reported Sensor Temperature

The command `show environment temperature` reports the current working temperature, various threshold temperature settings, and a fan control threshold temperature for every temperature sensor within a DarkStar system. Different systems support different sets of sensors and will display different output.

DarkStar systems control the fan speed to maintain temperatures below their threshold value. If one or more temperatures exceed their fan control threshold for an extended period of time, the fan will run at maximum speed. Sensors that are not used to control the fan speed will display a target value of "none."

2.4.21 Duplicate Management Interface IP Address

When DXMOS detects the same IP address being assigned to a second enabled management interface, that conflict must be resolved and DXMOS rebooted to gain access to the affected interface.

2.4.22 Removing Management Interface IP Address

Removing the IP address of a management interface by means of the command `no ip address` leaves the unusable direct or connected route visible in the `show ip route` command. It is more effective to use the command `no management ethernet n` while an IP address is associated with the interface; that will remove the entire entry from the `show ip route` command's database.

2.4.23 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-MGMT-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.

2.4.24 Multiple Routes to a Destination

When configuring IP routes, multiple routes to a destination must be input with the smallest metric first. Subsequently, adding further routes to the destination with a metric smaller than or equal to that of existing routes is not allowed. Routes must be single-path; multi-path routing is not supported.

2.5 Management Access

The following caveats relate to management network access.

2.5.1 Re-create Static Routes Following Management IPv4 Address Change

When the IPv4 address assigned to a management network interface is modified, DXMOS may ignore static route entries. To resolve this, remove and re-create any static route entries associated with the management network interface. Alternatively, re-starting DXMOS after saving the running-config (i.e., running configuration) will re-create the static routes associated with each interface.

2.5.2 Some SSH Connections May Hang

When an SSH client is connected to a DarkStar system via a long network route, it may hang or disconnect when you execute a command that generates a large amount of output (e.g., `show version verbose`). If you experience such problems, try an alternate SSH client and/or modify your client settings.

2.5.3 Disabling Telnet May Block Future Telnet Connection Attempts

If an active Telnet session is present when the `CONF-VTY mode no transport input all` command is issued, future attempts to connect through Telenet are refused. This condition persists even if a `CONF-VTY mode transport input all` or `transport input telnet` command is subsequently issued. The only way to clear this condition is to reboot DXMOS.

2.5.4 Console Output

After 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.

2.5.5 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.

2.5.6 SSH Message

During SSH connections, the message `server_request_session: channel_new failed` or the message `VTY allocation request failed on channel0` may be printed to the console. They can safely be ignored.

2.5.7 Command History Retention

If a user issues enable-mode (#) commands, and then exits enable mode but does not exit the console session, the enable mode command history may be visible for a period at the console. Explicitly exiting the console session removes the command history. You can explicitly exit the console session with an `exit`, `logout`, or `do logout` command.

2.6 Monitoring

The following caveats relate to monitoring DarkStar systems and networks.

2.6.1 Ping Fails to Resolve a Domain Name

The ping program on DXMOS will accept a hostname or a fully qualified domain name (FQDN) argument. If a domain name is provided, then ping will interpret it as a fully qualified domain name and will not attempt to resolve the domain name by searching higher level domains identified by `ip domain-name entries` in the running-config.

2.6.2 TFTP Using an IPv6 Link-Local Address May Fail After a "management loopback" Interface Is Enabled

When you specify a TFTP IPV6 address for a particular "management loopback" interface (e.g., `CONF-MGMT-LOOP[0]# ipv6 address fd10:15:1::234/64`) and enable that interface (e.g., `CONF-MGMT-LOOP[0]# no shutdown`), the TFTP using a link-local address may fail (i.e., put/get would not work). However, the "management loopback" interface-configuration will not affect TFTP using a unique local address.

2.6.3 User-supplied description for a management loopback is forgotten upon reboot

For example, the string *virtual interface*, as specified by `CONF-MGMT-LOOP[0]# description virtual interface`, will no longer appear after the system reboots.

2.6.4 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.

2.7 SNMP

The following caveats relate to SNMP behavior.

2.7.1 SNMP Get Requests on Transceivers Will Be Reported Via SNMP Object Identifiers Under the XKLTransportTable Group

SNMP get requests on transceivers will be reported via SNMP object identifiers under the `xklTransportTable` group defined in the `xkl.mib` file (i.e., `XKL-MIB::xklTransportTable` or `.1.3.6.1.4.1.21150.1.1.3`). In other words, all transceiver objects can be retrieved by an SNMP walk on the `XKL-MIB::xklTransportTable` group; or a specific transceiver object can be queried by SNMP get on a corresponding object identifier under the `xklTransportTable` group. Refer to the `xkl.mib` file (on the [XKL website](#)) for SNMP object identifiers and object names mapped to the transceiver objects.

2.7.2 SNMP Trap Indicates "Down" when EDFA Case Temp Is High

In the unlikely situation where an Erbium-Doped Fiber Amplifier (EDFA) case temperature is sufficiently elevated, an SNMP trap may be generated indicating that the EDFA is down. Elevated case temperature alone is not sufficient to cause an EDFA to shut down, so it is likely the case that the EDFA remains up and functioning.

The cause of the high temperature should be investigated. Possible causes include elevated ambient operating conditions, cooling fan failure, clogged vent holes, and so forth.

2.7.3 Loopback Reporting

The loopback interface is not reported by SNMP.

2.7.4 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.

2.7.5 ifInUnknownProtos SNMP Metric

The SNMP metric `ifInUnknownProtos` is not currently reliable in counting Layer-3 packets that DarkStar systems do not support.

2.7.6 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.

2.7.7 Duplicate IP Address Warning

Under some circumstances, DXMOS may not issue a warning if a duplicate IPv6 address is assigned to an Ethernet port.

2.8 Hardware

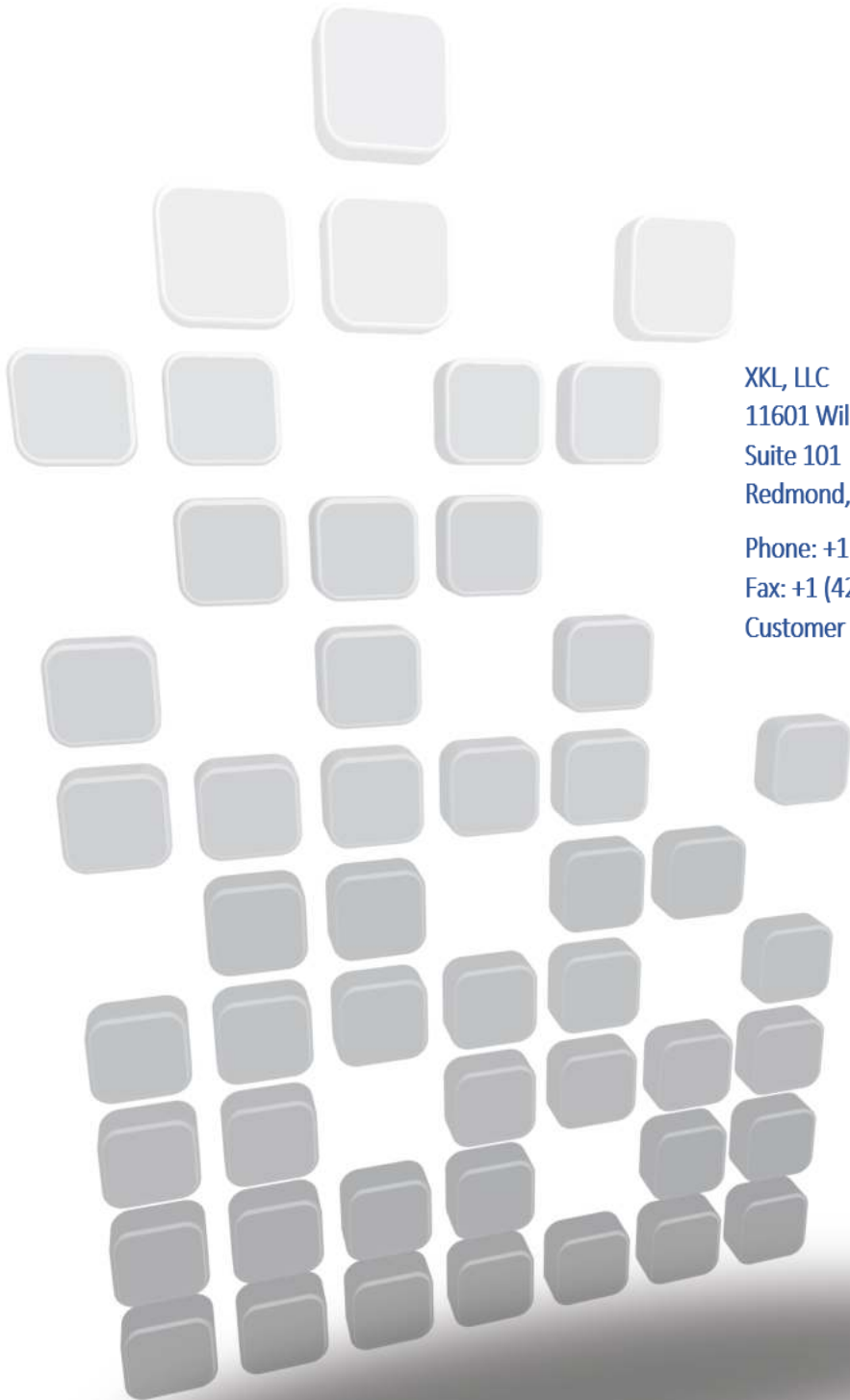
The following caveats relate to hardware on DarkStar systems and networks.

2.8.1 OSC Module Hot Swap (Removal/Insertion) Not Noted in Syslog

When an OSC module is removed or inserted, messages display on the console. However, the event is not clearly recorded in the syslog. Instead, the event is recorded as either "Link Up" or "Link Down."

2.8.2 Power Supply Message

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



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