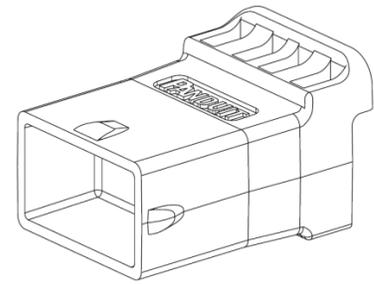# PANDUIT®

LC Transceiver Dust Cap Application Note

Understanding the LC Transceiver Dust Cap
Panduit P/N LCTRDC

Purpose

The purpose of this document is to describe the Panduit LC Transceiver Dust Cap (LCTRDC) and the best practices associated with its implementation.

Background

LAN and SAN switches have historically been designed with fiber switch blades having a port capacity range from 8-ports up to 48-ports per blade. To accommodate for this design, Panduit has come up with a hydra type cabling system that allows for multiple LC connectors to be consolidated into one MTP (multi-array) connector.

The hydra cabling assembly is used to easily connect network segments and minimize LAN and SAN switch patch cord congestion as with the traditional patch cable approach, to provide design flexibility, reduce deployment time, improve reliability and simplify high density switch cabling deployments. The hydra also allows for easier cable manageability in the horizontal and vertical space along with reducing negative thermal cabinet issues and installation costs.

Cable management becomes an issue if not all LC ports are utilized in the switch at the time of the hydra cable deployment. This situation is created if transceivers are not all purchased at the same time and a "pay as you grow" approach is utilized.
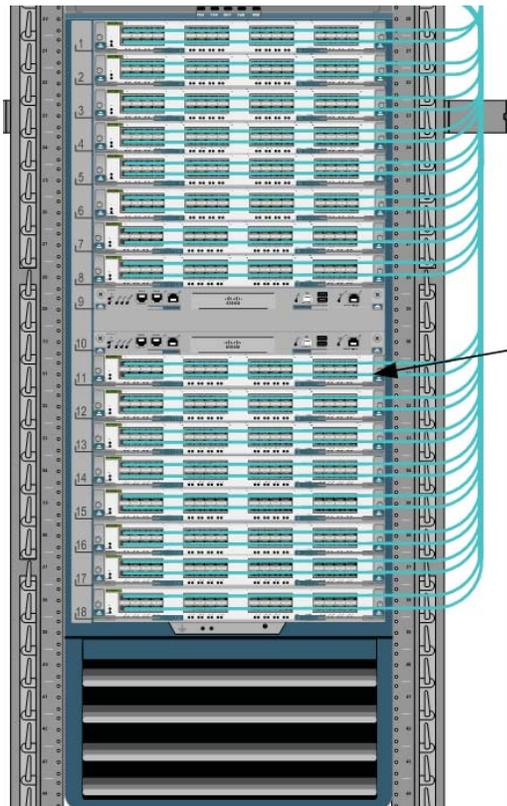
Hydra cable assemblies consolidate LC connectivity into one multi-array adapter (Example showing a Nexus 7018)

As shown below in Figure 1, a switch blade is installed utilizing 6-port fiber hydras for the connectivity. Currently, the only way to manage the unused LC connectors is to support them with the cabling that is already connected to the switch ports and Velcro ties. This can cause unnecessary stress on the connected fibers, along with causing installers to manipulate working fibers when new transceivers are installed risking outages. In addition, the unused connectors also leave the front of the switch looking sloppy and unmanageable.
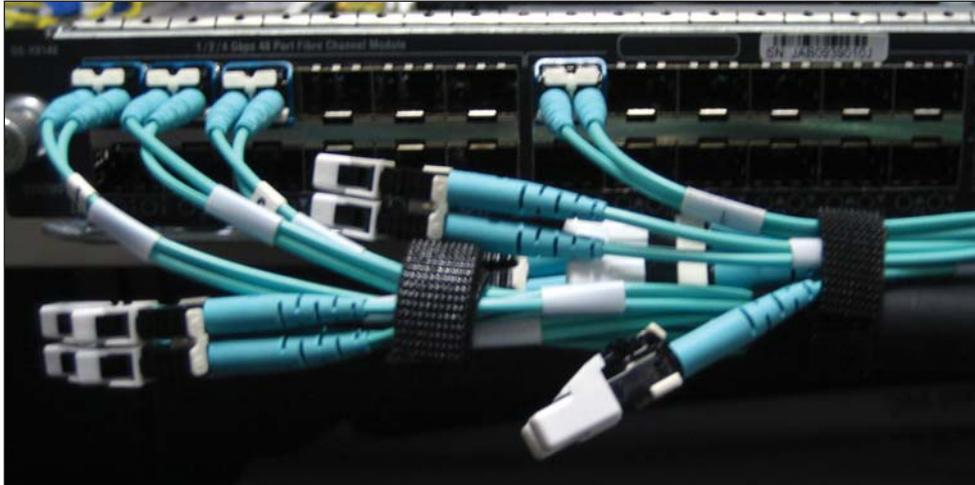
Figure 1. Fiber Switch Blade not utilizing all LC connectors on the hydra cable

Some of the possible issues that exist if the LCTRDC is not used are:

- Possible contamination entering the switch blade due to the lack of a dust cap protecting the unused transceiver cages
- Unmanageability of the unused duplex LC connectors on the hydra cables
- Possible outages when turning up new transceivers from having to sort through unused duplex LC connectors
- Additional stress added to the live fibers in the switch which the unused fibers are using for cable management

Solution

To rectify this situation, Panduit has designed the LCTRDC, the LC Transceiver Dust Cap. This dust cap helps manage the unused LC connectors and assists with cable management until those transceivers are installed.

The LCTRDC, constructed with an electro-erosion finish, is in compliance with TIA/EIA 640-10A (FOCIS-10a) Fiber Optic Connector Intermateability Standard, Transceiver specifications per SFP (SFF-8074i) Multi-Source Agreement and SFF-8472 (revision 10.0). Being in compliance with this standard and agreements enables the dust cap to fit into any SFP transceiver cage in a switch blade that is not used and allows for the patching of any unused duplex LC connectors assigned to that switch blade.
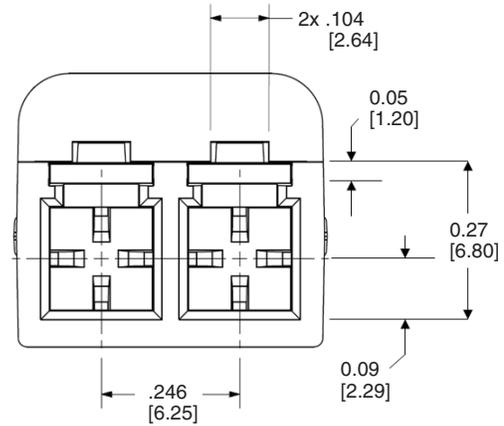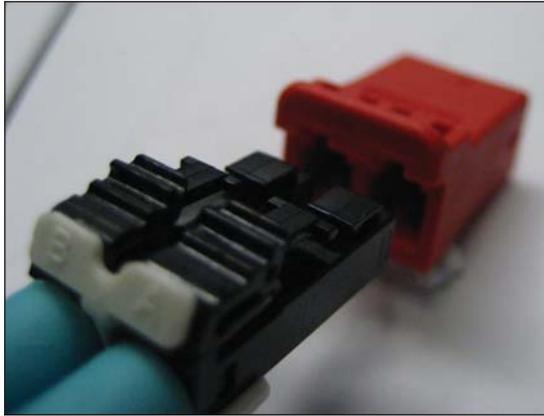
**Figure 2.** LCTRDC meets FOCIS-10a specifications

The LCTRDC not only acts as a dust cap for the unused LC connector end face and provides a quality cable management solution, but it also protects the internal electronics of the equipment filling any unused transceiver cage. This is an alternative to leaving the transceiver cage un-utilized and open, allowing the internal electronics of the switch blade to be exposed to contaminants.
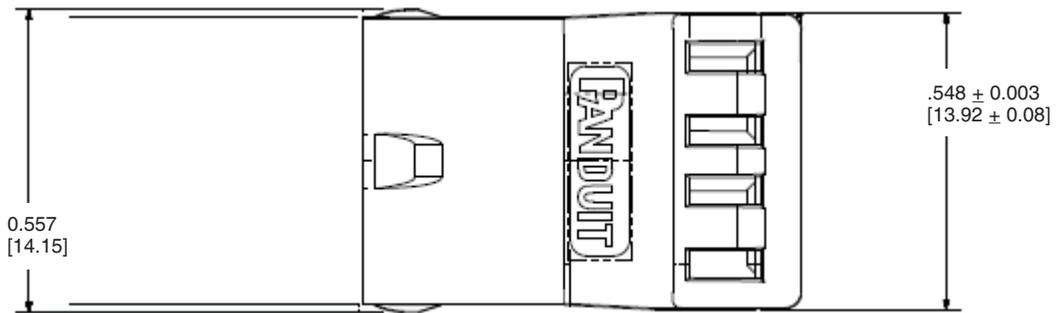
Figure 3. LCTRDC meets SFQ Transceiver MSA Specification

When the LCTRDC is used, (see Figure 4) all of the transceiver cages are filled and all of the LC fiber connectors are installed into the intended switch ports which allows for much easier cable management along with a much cleaner installation.

When an additional transceiver needs to be installed, the individual LCTRDC that fills that particular cage just needs to be removed and replaced with the transceiver. None of the other cabling or cable management needs to be manipulated in any manner. This not only saves on installation time by not having to search through a group of connectors, but it also minimizes the chance of an outage with unnecessary manipulation of the existing fibers.
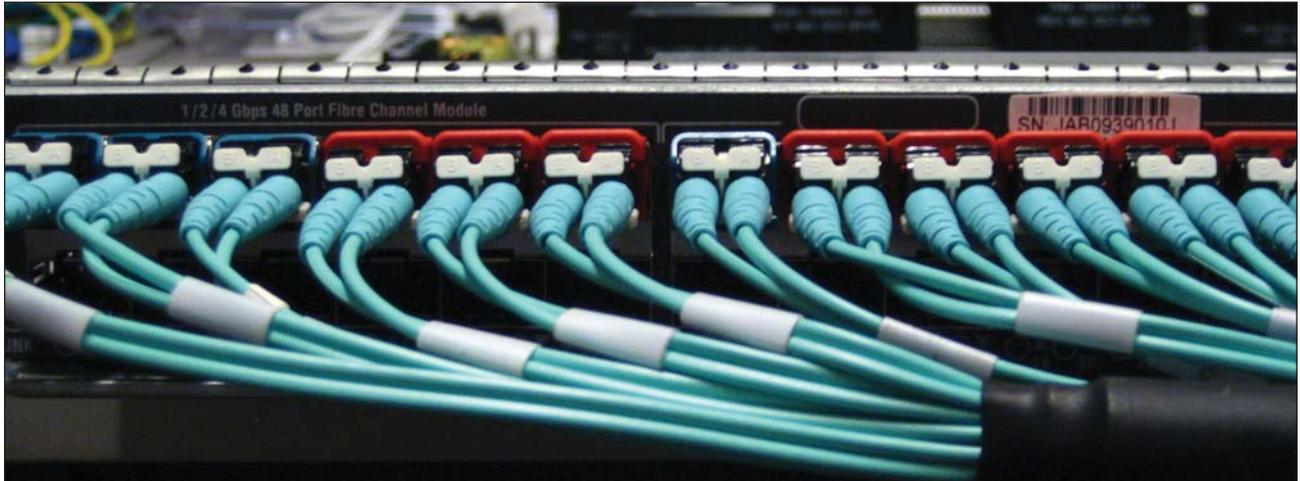
Figure 4. Fiber Switch Blade utilizing the LCTRDC

The benefits of using the LCTRDC are:

- Acts as a dust cap for both the transceiver cage and the LC connectors
- Manageability of all the duplex LC connectors associated with the hydras
- Easy identification of duplex LC connectors when additional transceivers are added

Summary

The LC Transceiver Dust Cap (LCTTRDC) not only acts as a dust cap for the unused LC connectors supporting a "pay as you grow" switch deployment, but also acts as a dust protectant for the switch blade by occupying the empty space that would normally be filled by the transceiver. Additionally, the use of the LCTRDC assists with cable management giving the installation a much cleaner look and allows for easier port additions by minimizing the search for the proper unused connector pair and unnecessary manipulation of existing fibers.

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www.panduit.com • cs@panduit.com • 800-777-3300   WW-FBAN02   7/2011

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