

Brocade and Corning: Benefits of Port Replication in a SAN Environment

HIGHLIGHTS

- Enables a flexible data center cabling infrastructure, where any device can be connected to any other device via a central patching area
- Eliminates risk of damage to director ports by moving the move, add, and change activities away from the director itself to the central patching area
- Provides an intuitive port replication platform that reduces the risk of an incorrect host or storage device being disconnected, or the wrong director port being accessed
- Enables SAN directors to be precabled during initial installation, creating a clean, manageable environment at the director

Port Replication offers Flexibility, Reduced Risk, and Improved Data Center Operations

The Storage Area Network (SAN) is a high-density fiber environment, as each SAN-connected server or storage device typically has dedicated fiber connectivity to both A and B fabrics. With the continued growth in SAN networks—driven by virtualized environments, flash-based storage, and private cloud architectures—it is critical to plan and implement a cabling infrastructure that supports this high-density environment with both the flexibility and operational manageability required to provide fast and reliable delivery. Emerging and evolving critical workloads and high-density virtualization continue to push the limits of SAN infrastructure. Cabling design decisions can impact the performance and operations of data center production, so it is important to consider both the initial installation as well as the future operational requirements of the infrastructure.

When unstructured cabling implementations are used to provide connectivity between SAN director and hosts or storage, several issues can occur. In these types of deployments, cable paths often are not well defined, and there can be extreme congestion, as well as cable management challenges, within the cable pathways and within the racks or cabinets. The cable management and congestion challenges can lead to issues with reliability, operational activities for troubleshooting and Moves, Adds, and Changes (MACs) which can limit system

growth and scalability as well. Additionally, having all connectivity hardwired directly into the devices (without patch panels) adds risk to the production environment when MACs are needed and limits the flexibility of the infrastructure for growth or future technology changes.

The Brocade and Corning Solution

Networks continue to evolve in order to adapt to the rapid growth and change in the server and storage infrastructure. The Brocade® DCX® 8510 Backbone platform

utilizes Gen 5 Fibre Channel to deliver scalability, flexibility, and reliability for these next-generation Input/Output (I/O) and bandwidth-intensive applications. With the constant growth and MACs within a data center SAN, flexibility, cable management, and operational impact are critical considerations when designing the cabling infrastructure. Corning and Brocade help customers consider these factors, so that they can deploy solutions in their data centers that address these needs.

Port replication is an approach to structured cabling that maximizes network flexibility by replicating the SAN director ports in a central patching area. This creates a centralized pool of director ports that can be utilized for connectivity to any of the hosts or storage devices in the data center.

When implementing port replication, MTP trunk assemblies are deployed from the SAN director cabinet to the central patching area. It is recommended to deploy a trunk whose fiber count matches the blade port count. For example, when cabling FC16-48 blades for the Brocade DCX 8510, the use of 96-fiber trunks is recommended. Each 96-fiber trunk maps to a single FC16-48, 48-port blade. When a blade needs to be removed or refreshed, only the cabling for this blade is handled, and there is no impact or risk to the ports on other blades in production.

Precabing of each of the director blades is recommended in order to take full advantage of the value of port replication.

By precabing and replicating the ports in a central patch area, the optics are never touched during daily operations and MACs, as this activity occurs at the central patch area. By doing this, the risk of damage to the optics is eliminated, and cable management can be optimized for the patching area. Using MTP-LC staggered harnesses, rather than individual LC jumpers, for precabing of the SAN director reduces the amount of cable bulk and congestion at the director cabinet, thereby improving cable management in this space as well.

EDGE™ Port Replication Housing for the Brocade DCX 8510

When designing the structured cabling and connectivity at the central patching area, it can be advantageous to consider operational impact on the data center. All of the MACs for the SAN occur at this

location, and therefore it is imperative that this solution is optimized for ease of use. Landing the structured cabling at the central patching area in a patch panel that mimics the layout of the Brocade DCX 8510 can make patching and MACs easier to manage. Figure 2 illustrates the structured cabling link from a SAN director to a central patching area, with an EDGE Port Replication Housing deployed in the central patching area (see Figure 1).

The EDGE Port Replication Housing solution is a modular, chassis-based patch panel that mirrors the Brocade DCX 8510 physical footprint. The Port Replication Housing can be configured to map to either horizontal or vertical blade orientations to support cabling of the Brocade DCX 8510-4 and Brocade DCX 8510-8, respectively.

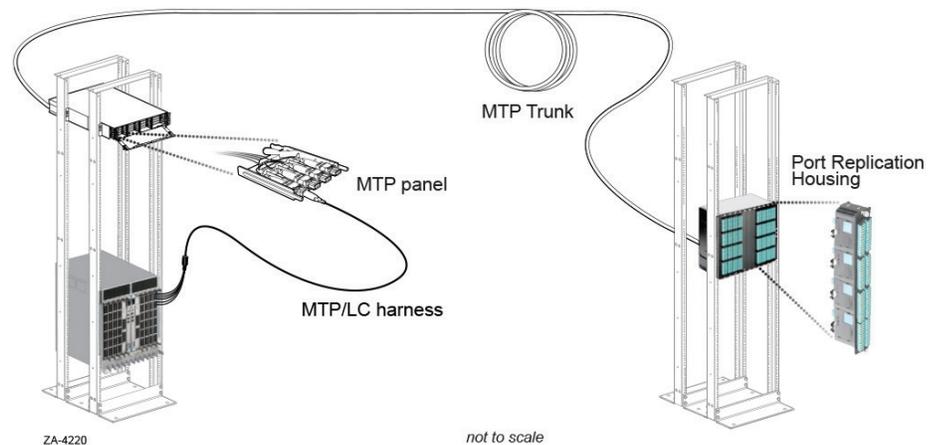


Figure 1. Cabling from the Brocade DCX 8510 to the central patching area with Port Replication Housing.

For the Brocade DCX 8510-4, the Port Replication Housing can support replication of two directors within the housing footprint, matching the horizontal blade configuration of the Brocade DCX 8510-4. When replicating the Brocade DCX 8510, the Port Replication Housing is configured to be cabled in a vertical orientation to mirror the footprint of a fully populated Brocade DCX 8510 Backbone (see Figure 2).

When a site services technician or vendor goes to the central patching area to make a MAC, the location of the “replicated” director port they are looking for is in the same place as if they were looking at the director itself. This intuitive layout reduces risk of the incorrect host or storage device being taken down, or the wrong director port being accessed.

Summary

With the increasing growth and scale of SANs, deployment and management of the data center optical cabling infrastructure is critical. The Brocade DCX 8510 platform provides scalability and flexibility to the SAN fabric, and the cabling infrastructure that supports these fabrics must do the same. Using port replication via cross-connect in a central patching area enables scalability of the infrastructure with the flexibility of any-port-to-any-port connectivity. Deployment of the structured cabling with the EDGE Port Replication Housing provides this functionality with the additional operational benefits of mirroring the layout of the director itself, reducing risk in a critical production environment.

Learn More

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Brocade networking solutions help organizations transition smoothly to a world where applications and information reside anywhere. Innovative Ethernet and storage networking solutions for data center, campus, and service provider networks help reduce complexity and cost while enabling virtualization and cloud computing to increase business agility. Learn more at www.brocade.com.

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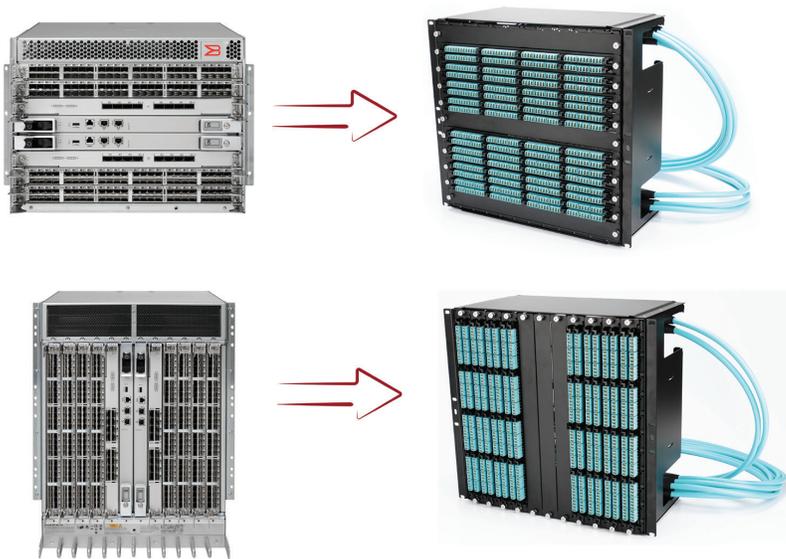


Figure 2. Cabling of EDGE Port Replication Housing for the Brocade DCX 8510 Platform.

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