

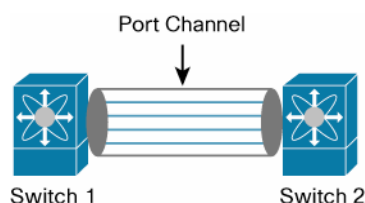
Cisco MDS 9000 Family Delivers Enterprise-Class SAN Availability with PortChannel

Enterprise-Class SAN Availability Requirements

In today's enterprise-class SAN environment, high availability is no longer an option but a requirement. The enterprise-class SAN environment must be highly scalable, flexible, simple to deploy, resilient, and offer predictable robust performance.

One means of delivering high availability at the network level is aggregation of multiple physical Inter-Switch Links (ISLs) into a single logical interface. This aggregation allows customers to provide link redundancy, greater aggregated bandwidth, and load balancing. Cisco calls this technology PortChannel; competitors call it trunking. Figure 1 shows an example of using PortChannel to aggregate four physical links into a single logical interface between two switches.

Figure 1. PortChannel to Aggregate Four Physical Links into a Single Logical Interface



This document highlights five facts that customers must know before deploying PortChannel or trunking.

Five Facts about Cisco MDS 9000 Family PortChannel

Fact 1: MDS PortChannel Provides Higher Availability and Greater Flexibility than Competition

The Cisco® MDS 9000 Family PortChannel can be configured to logically bundle physical links from any ports on any Cisco MDS 9000 Family Fibre Channel Switching Modules with no restrictions. This feature allows customers to deploy highly available solutions with great flexibility: in case of port, ASIC, or even module failure, the stability of the network will not be affected because the logical PortChannel will still be active, with just a reduction in the overall bandwidth.

The competitive trunking solution is instead restricted to utilize only the ports within the same port group on the same module. Customers are therefore required to carefully determine which ports belong to which port group to enable the trunk. More importantly, the entire trunk will fail if just the ASIC behind the utilized port group fails. The competitive approach does not deliver a highly available solution, nor is easy and flexible to deploy.

Fact 2: MDS PortChannel Offers Greater Resiliency than Competition

Each ISL in a MDS PortChannel is treated in the same way to enhance high availability and robustness: a failure of any link will not affect the overall PortChannel stability.

The competitive trunking solution relies on the concept of master and slave links, in which one ISL within a trunk is a master, and others are slaves. If the master link fails, the entire trunk will fail; a new master will be selected, taking the trunk offline for a period of time and hence creating network disruption. Our competitor comprehended this serious problem and fixed it for E-port trunking, but not for EX-port trunking, in which the trunk is used for routing.

Fact 3: MDS PortChannel Delivers Three Times the Aggregated Bandwidth of Competition

The MDS PortChannel solution offers greater scalability by supporting up to 16 ISLs per PortChannel and aggregating 1-, 2-, 4-, 8-, or 10-Gbps Fibre Channel links. This feature allows aggregation of up to 20,400 MB of application throughput per PortChannel for exceptional scalability.

The competitive trunking solution supports up to only 8 ISLs per trunk for 1-, 2-, 4-, and 8-Gbps Fibre Channel links, but not for 10-Gbps Fibre Channel. These constraints limit the scalability of the trunk to only 6,800 MB, one-third the capacity delivered by the MDS PortChannel solution. The restriction to a maximum of 8 ISLs per trunk is the result of a limitation of the competitive internal architecture.

Fact 4: MDS PortChannel Outperforms Competition over Long Distances

The MDS PortChannel solution does not show any performance degradation over long distances, nor has specific cabling requirements. MDS PortChannel uses flow-based load balancing and can deliver predictable and robust performance independent of covered distances.

The competitive solution instead recommends a distance variance of 30 meters or less among ISLs within a trunk. If the distance variance is greater than 30 meters, undesired and degraded performance will occur. For example, if a trunk has a distance of 100 kilometers, the competitive trunking solution allows a cable length variance of only 0.03 percent!

Fact 5: MDS PortChannel Is Free

Cisco considers high availability essential in today's data center environment and offers the MDS PortChannel free of charge as part of the Cisco NX-OS Software. Because it does not require a special license, the PortChannel can be deployed immediately to enhance network availability and robustness.

The competitive solution requires customers to purchase a trunking license to enable this critical feature, also creating unneeded deployment complications.

Summary

Customers must understand the following five facts when considering PortChannel or trunking deployment:

- MDS PortChannel provides higher availability and greater flexibility than competition
- MDS PortChannel offers greater resiliency than competition
- MDS PortChannel delivers three times the aggregated bandwidth of competition
- MDS PortChannel outperforms competition over long distances
- MDS PortChannel is free

The Cisco MDS 9000 Family with PortChannel is the only platform to deliver enterprise-class SAN high availability and resiliency with highly scalable, predictable, and robust performance and ease of deployment.

For More Information

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