BRIDGING FIBRE CHANNEL SAN AND FCoE NETWORKS WITH THE OMNISWITCH 6900

APPLICATION NOTE

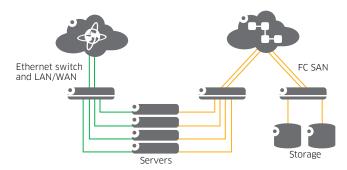Alcatel·Lucent
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EXECUTIVE SUMMARY

Data center network architects are looking for ways to expand their storage networking capabilities by extending the reach of their existing Fibre Channel (FC) storage area networks (SANs) with Fibre Channel over Ethernet (FCoE). The Alcatel-Lucent OmniSwitch® 6900 products can bridge the two networking types together and offer compelling SAN and local area network (LAN) design options. These include using FCoE to add native FCoE-capable servers to the SAN, or using FCoE to bridge together FC network islands.

CONVERGING ETHERNET AND FIBRE CHANNEL NETWORKS

SANs are an important part of many of today's mission-critical data centers. FC is one major SAN type that provides a dedicated network for storage traffic, separate from the Ethernet-based LAN network. FC provides an excellent SAN solution due to its history of reliability, high performance, low latency and lossless operation.
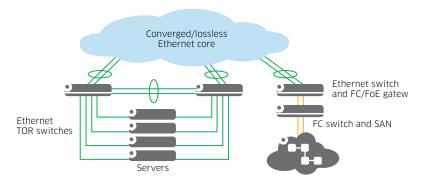
Today's growing data centers constantly need to add servers, and data centers with separate Ethernet LAN and FC SAN networks face additional cost and complexity because each server requires two sets of networking equipment, one for the LAN and one for the SAN (Figure 1).

Figure 1. Separate data and storage networks

Many data center networks are now expanding their SAN with Ethernet FCoE equipment to simplify the network and minimize cabling, complexity and cost. This approach preserves investments in FC, and avoids disrupting the existing SAN while taking advantage of the lower costs and higher bandwidth available in Ethernet (Figure 2).

Figure 2. Converged LAN and SAN with FCoE

COMBINING LAN AND SAN NETWORKS WITH THE OMNISWITCH 6900

The OmniSwitch 6900 and OmniSwitch 10K platforms support a full suite of FCoE and lossless (converged) Ethernet features. The U12E expansion card for the OS6900 has 12 SFP + ports which can be configured to support 1 gigabit Ethernet (GE) and 10GE or 2Gb, 4Gb, and 8Gb FC connections. The OS6900 can act as a gateway between the FC and FCoE network, allowing the OmniSwitch to expand any FC-based SAN without adding any new FC equipment.

NEW FCoE TO FC GATEWAY SOLUTIONS

The OmniSwitch 6900 supports three methods of connecting FC and FCoE networks: N_port proxy, F_port proxy, and E_port proxy.

The N_port proxy feature supports connecting FCoE-enabled servers to the FC SAN over converged Ethernet. When the OS6900 is connected to a FC switch by a port configured in N_port proxy mode, it will log into the FC SAN as if it were an FC host. The OS6900 will relay the log in requests it receives from the FCoE-enabled servers via Ethernet to the attached FC switch. The FC switch will see the FCoE host connections as if they originated from the OS6900 itself.

The F_port proxy feature is built to remotely connect servers with FC host bus adapter (HBA) to an FC SAN over a converged Ethernet network. The OS6900 will connect directly to attach servers through FC and emulate the operation of an FC switch. The packets from the server will be converted to FCoE format and sent to a remote FC Forwarder as if they were from an FCoE-enabled server.

The E_port proxy feature enables two FC switches to be connected to each other transparently across a converged Ethernet network. When an OS6900 is connected to an FC switch via an FC port in E_port proxy mode will convert the FC frames into FCoE format and pass them to the remote E_port proxy where they will be converted back into FC format.

CONCLUSION

The Alcatel-Lucent Enterprise Data Center Network solution has many advantages, including the ability to preserve investments in FC storage while allowing the data center to continue to expand more efficiently using a single, converged data center fabric. Benefits of this approach include:

- Reducing server cabling by running server HBA connections over Ethernet
- Reducing networks by connecting geographically dispersed FC SANs and LANs over a single Ethernet network
- Reducing location constraints: storage can be connected anywhere in the converged data center network

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