

BROCADE EXTENDED FABRICS



STORAGE AREA NETWORK

Special Features to Extend SAN Connectivity Distance

HIGHLIGHTS

- Provides switched fabric connectivity (up to 3400 kilometers) to move more data over longer distances at a lower cost
- Extends all of the scalability, reliability, and performance benefits of Fibre Channel SANs beyond traditional distance limitations
- Enables an innovative disaster recovery approach for reliable, fast data transfer to remote backup facilities
- Protects investments by operating with 1, 2, 4, and 8 Gbit/sec Brocade fixed and modular Fibre Channel solutions
- Maximizes bandwidth by leveraging dark fiber and leading-edge Dense Wave Division Multiplexing (DWDM) technology—providing more links over longer distances
- Enhances business continuance by facilitating strategic applications such as wide area data replication, high-speed remote backup, and remote storage centralization

Fibre Channel-based networking technology has revitalized the reliability and performance of server and storage environments—providing a robust infrastructure to meet the most demanding business requirements. In addition to improving reliability and performance, Fibre Channel provides the capability to distribute server and storage connections over distances up to 30 kilometers using enhanced long-wave optics and dark fiber—enabling SAN deployment in campus environments.

However, today's organizations often require SAN deployment over distances well beyond 30 kilometers to support distributed facilities and stricter business continuance requirements. To address these extended-distance SAN requirements, Brocade® offers the innovative Extended Fabrics software.

A BETTER WAY TO EXTEND CONNECTIVITY

Brocade Extended Fabrics is an optional licensed feature for Brocade SAN switches and directors, enabling organizations to leverage the increased availability of DWDM equipment in major metropolitan areas. The most effective configuration for implementing extended-distance SAN fabrics is to deploy Fibre Channel switches at each location in the SAN. Each switch handles local interconnectivity and multiplexes traffic across long-distance DWDM links while the Extended Fabrics software enables SAN management over extended distances.

In this type of configuration, the Extended Fabrics software enables:

- **Fabric interconnectivity over Fibre Channel at longer distances:** Inter-Switch Links (ISLs) or Inter-Fabric Links (IFLs) use dark fiber or DWDM connections to transfer data. As Fibre Channel speeds increase, the maximum distance decreases for each switch. However, the latest Brocade 8 Gbit/sec technology sets a new benchmark for extended distances—up to 3400 kilometers at 1 Gbit/sec and 425 kilometers at 8 Gbit/sec—to move more data over longer distances at a lower cost.
- **Simplified management over distance:** Each device attached to the SAN appears as a local device, an approach that simplifies deployment and administration.
- **A comprehensive management environment:** All management traffic flows through internal SAN connections, so the fabric can be managed from a single administrator console using Brocade Enterprise Fabric Connectivity Manager (EFCM), Fabric Manager, or the Web Tools switch management utility.

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ADVANCED BUFFERING FOR HIGHER PERFORMANCE

Extended Fabrics software is ideal for deploying a single extended fabric over dark fiber or DWDM-based Metropolitan Area Networks (MANs). These extended-distance connections use standard switch ports that provide E_Port interconnectivity over extended long-wave transceivers, Fibre Channel repeaters, or DWDM connections. This design provides high bandwidth at long distances, improving scalability with simplified management.

In addition, Extended Fabrics software optimizes switch buffering to ensure the highest possible performance on ISLs. When Extended Fabrics is installed, the ISLs (E_Ports) are configured with a large pool of buffer credits. The enhanced switch buffers help ensure that data transfer can occur at full bandwidth to efficiently utilize the connection over the extended links. As a result, organizations can use Extended Fabrics to implement strategic applications such as synchronous or asynchronous data replication, high-speed remote backup, continuous data protection, virtual tape libraries, cost-effective remote storage centralization, and improved business continuance.

MAXIMIZING INVESTMENTS

To help optimize technology investments, Brocade and its partners offer complete solutions that include education, support, and services. For more information, contact a Brocade sales partner or visit www.brocade.com.

EXTENDED FABRICS

Connection type	Native Fibre Channel
Line speed	1, 2, 4, and 8 Gbit/sec
Maximum distance for Brocade 5100 Switch	Up to 3400 km at 1 Gbit/sec Up to 1700 km at 2 Gbit/sec Up to 850 km at 4 Gbit/sec Up to 425 km at 8 Gbit/sec
Maximum distance for Brocade 5300 Switch	Up to 600 km at 1 Gbit/sec Up to 300 km at 2 Gbit/sec Up to 150 km at 4 Gbit/sec Up to 75 km at 8 Gbit/sec
Maximum distance for Brocade 300 Switch	Up to 984 km at 1 Gbit/sec Up to 492 km at 2 Gbit/sec Up to 246 km at 4 Gbit/sec Up to 123 km at 8 Gbit/sec
Maximum distance for Brocade 8 Gbit/sec blades	Up to 2792 km at 1 Gbit/sec Up to 1396 km at 2 Gbit/sec Up to 698 km at 4 Gbit/sec Up to 349 km at 8 Gbit/sec
Interconnect distance	Extended long-wave transceivers; Fibre Channel repeaters, DWDM

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