BROCADE FICON/MAINFRAME CAPABILITIES
FREQUENTLY ASKED QUESTIONS

Overview
Brocade®, provides the industry’s leading mainframe infrastructure offerings. With the acquisition of McDATA, Brocade now provides 95 percent of the total infrastructure used by the mainframe market, which includes FICON®, ESCON, and Bus-and-Tag equipment for local switching or remote business solutions.

The Brocade install base includes more than 23,000 SAN directors and thousands of long-distance extension devices deployed around the world. With nearly 25 years of experience in this market, Brocade offers both valued products and services to help organizations meet their critical business objectives.

Brocade experience is a key asset and differentiator in the marketplace. With Brocade Services offerings specifically designed to augment enterprise operations, 24x7x365 direct maintenance and support, and the Network Monitoring Service (NMS), Brocade provides the widest range of products and services for mainframe SAN environments.

Key Offerings
Brocade offers three SAN director platforms that support mainframe/FICON environments. The Brocade 48000, Brocade Mi10k, and Brocade M6140 are all fully qualified by IBM and other mainframe storage providers. In addition to its directors, Brocade offers FICON support through Brocade 5000, Brocade 4900, and Brocade 4100 switches.

Organizations that need long-distance capabilities can deploy the most proven capabilities in the industry. The Brocade USD-X and Brocade Edge M3000 have been supporting FICON, ESCON, and Bus-and-Tag devices over distance since 1997. With the latest architectural advances, innovative performance techniques, and variety of network interfaces supported, the Brocade USD-X and Brocade Edge M3000 are the most flexible platforms specializing in remote connectivity. Many of the performance enhancements that were designed on the Brocade USD-X and Brocade Edge M3000 are now being ported to the Brocade 7500 Router and Brocade FR4-18i Routing Blade that integrates directly into the Brocade 48000.

Moreover, Brocade offers industry-unique techniques for FICON Disk Emulation for IBM Global Mirroring (eXtended Remote Copy) along with FICON Tape Pipelining for write and read operations for IBM and SUN virtual and standalone tape offerings.
Today, Brocade offers two FICON management software packages: Brocade Enterprise Fabric Connectivity Manager (EFCM) and Brocade Fabric Manager. Brocade plans to merge these tools into a single offering that will provide all the management functions required for configuration management, performance analysis, and troubleshooting. The tools are augmented by the free Brocade SAN Health™ offering that provides FICON reports and tools that simplify FICON administration effort and time.

General Questions and Answers

FICON Protocol and Value

Q  What is FICON?
A  FICON is an I/O protocol used between IBM (and compatible) mainframes and storage arrays. It takes the higher-layer ESCON protocol and maps it into a layer 2 transport frame. It is actually mapped into the same physical layer and framing specifications as Fibre Channel but is unique to the FICON protocol. FICON and Fibre Channel protocols can reside within the same switching infrastructure.

Q  Is FICON only for mainframe environments?
A  Yes. FICON is a proprietary protocol developed by IBM for use between IBM-compatible mainframe hosts, storage, and peripheral devices such as printers and check sorters.

Q  How does FICON compare to Fibre Channel?
A  The lower layers of the FICON stack are industry-standard Fibre Channel. However, from layer 4 up FICON is unique to IBM mainframe environments. FICON does have a few notable differences. For instance, connections are “soft-wired” to addresses through the use of a file in the operating system rather than being stored in a name server table.

Q  What benefits do organizations gain by using FICON?
A  FICON offers improved capability over ESCON in the following areas:
  • Increased number of concurrent connections
  • Increased distance
  • Increased link bandwidth
  • Increased channel device address support
  • Potential of fewer devices and lower floorspace requirements
  • Improved power efficiency
  • Common use of Fibre Channel communication and topology

Brocade Switch Products Supporting FICON

Q  What Brocade products support switching of FICON?
A  Brocade products that support FICON include:
  • Brocade 48000
  • Brocade 24000
  • Brocade 12000
  • Brocade M10K
  • Brocade M6140
  • Brocade 7500
  • Brocade 5000
• Brocade 4900
• Brocade 4100
• Brocade 3900

Q What FICON data rates are supported?
A Brocade supports FICON at the data rates consistent with industry standards. Host and storage interfaces supported include 1, 2, and 4 Gbit/sec FICON interfaces. In addition to the host and storage ports, 10 Gbit/sec is supported for ISL connectivity between cascaded directors.

Q What is the maximum distance between devices that FICON supports?
A FICON supports a variety of distances depending on the interface speed and OEM Partner qualifications. In general, distances of up to 100 km are supported.

Q How many addresses per channel and channels per control unit does FICON support?
A FICON supports over 16,000 addresses per channel and more than 4,000 channels per control unit.

Q Has the Brocade FICON implementation been certified and qualified by IBM?
A IBM has certified the Brocade implementation of FICON and qualified it on the products listed previously, including CUP support. For a current list of operating system support, refer to OEM Partner compatibility information found on the respective partner Web sites.

Q Is FICON a licensed product?
A FICON support is part of all systems. However, depending on the platform, specific licenses might be required to enable some capabilities for FICON. Contact the OEM Partner for specifics on license options.

Q Does FICON require any other licenses to work?
A For Brocade Fabric OS® fabrics, all functional capabilities required to support FICON are included in the base release. For Brocade M-Enterprise OS (M-EOS) fabrics, certain licenses might be required depending on OEM Partner. For example, FICON Management Server is required to support FICON CUP in M-EOS fabrics.

Brocade Extension Products Supporting FICON
Q What Brocade products support long-distance FICON?
A Brocade has qualified several platforms for FICON over distance. Qualifications appear on OEM Partner Web sites by storage type or application. Qualified products include:
• The Brocade 48000 with the Brocade FR4-18i Routing Blade (up to 300 km) supports IP WAN attachment
• The Brocade USD-X (unlimited distances) supports IP and ATM WAN attachment
• The Brocade Edge M3000 (unlimited distances) supports IP and ATM WAN attachment
**FICON Infrastructure Management**

**Q** How is the Brocade FICON implementation managed?

**A** It is managed via standard Brocade management tools and interfaces, including:
- Fabric Manager in Brocade Fabric OS fabrics
- EFCM in Brocade M-EOS fabrics
- Command line interface
- Web Tools
- SNMP
- CUP

**FICON Interoperability**

**Q** Can Brocade B-Series and M-Series FICON directors be interconnected via ISLs?

**A** Full fabric interoperability for FICON environments is under development.

**Q** Is interoperability on the roadmap?

**A** Yes, all functional capabilities required to support FICON are on the Brocade development roadmap.

**Q** Can Brocade B-Series directors interoperate with Brocade USD-X and Brocade Edge M3000 FICON extension products?

**A** Interoperability between the Brocade USD-X, Brocade Edge M3000, and Brocade 48000 is planned. As of August 2007, the Brocade USD-X and Brocade Edge M3000 have limited interoperability with Brocade Fabric OS products. However, they are fully compatible with Brocade M-EOS directors.

**Learn More**

**Q** How do I find out more about FICON?

**A** Contact your Brocade Sales Representative or OEM Partner for details.