BROCADE FS8-18 ENCRYPTION BLADE

DATA CENTER

A High-Performance Encryption Blade for the Brocade DCX Backbone Family

HIGHLIGHTS

- High-performance, scalable fabric-based encryption to enforce data confidentiality and privacy requirements
- Unparalleled encryption processing at up to 96 Gbit/sec to support heterogeneous enterprise data centers
- Choice of industry-leading key management solutions to reduce operational costs and simplify management
- Industry-standard AES-256 encryption algorithms for both disk and tape in a centralized security platform for SAN environments
- Frame Redirection technology that enables easy, non-intrusive deployment of fabric-based security services
- Plug-in encryption and compression services available to all host servers, including virtual machines, attached to data center fabrics
- Scalable performance with on-demand encryption processing power to meet regulatory mandates for securing data

Managing operational risk by protecting valuable digital assets has become increasingly critical in today's enterprise IT environments. In addition to achieving compliance with regulatory mandates and meeting industry standards for data confidentiality, IT organizations must also protect against potential litigation and liability following a reported breach.

In the context of data center fabric security, Brocade® provides advanced fabric services for Storage Area Networks (SANs) with the Brocade FS8-18 Encryption Blade for use in the Brocade DCX® Backbone family. The blade is a high-speed, highly reliable hardware device that delivers fabric-based encryption services to secure data assets either selectively or on a comprehensive basis.

The Brocade FS8-18 scales non-disruptively, providing from 48 up to 96 Gbit/sec of encryption processing power to meet the needs of the most demanding environments with flexible, on-demand performance. It also provides compression services at speeds up to 48 Gbit/sec for tape storage systems. Moreover, it is tightly integrated with industry-leading, enterprise-class key management systems that can scale to support key lifecycle services across distributed environments.

FABRIC-BASED ENCRYPTION

Most sensitive corporate data is stored in the data center, and the vast majority of data from critical applications resides in a SAN—enabling organizations to leverage the existing intelligence layer in the storage fabric. This layer provides a centralized framework in which to deploy, manage, and scale fabric-based data security solutions.

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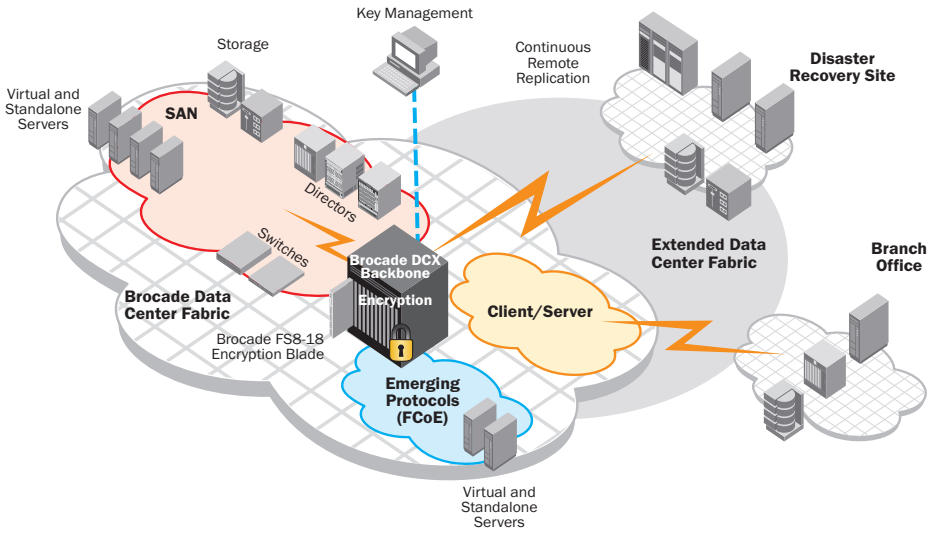
Figure 1.
The Brocade FS8-18 Encryption Blade plays a vital role in the Brocade DCF architecture.



The storage fabric enables centralized management to support nearly every aspect of the data center, from server environments and workstations to edge computing and backup environments. As a result, it is an ideal place to standardize and consolidate a holistic data-at-rest security strategy. Organizations can also implement this type of best-practice methodology in other parts of the data center, helping to protect data throughout the enterprise.

Most current industry solutions include either host-based software encryption, device-embedded encryption, or edge encryption—all of which provide isolated services to specific applications but typically cannot scale across extended enterprise storage environments. In contrast, Brocade delivers fabric-based encryption as part of the industry-leading Brocade Data Center Fabric (DCF) architecture and innovative Brocade Adaptive Networking services (see Figure 1).

Based on industry standards, Brocade encryption for data-at-rest provides centralized, scalable encryption and compression services that seamlessly integrate into existing Brocade Fabric OS® (FOS) and Brocade M-Enterprise OS (M-EOS) environments[1].

The Brocade fabric-based approach to data encryption scales to meet performance requirements, provides a centralized point of management for storage security and key management, and supports heterogeneous storage environments. Deployment is simple and non-disruptive: Organizations can encrypt data from any switch port without reconfiguring the fabric.

In addition, organizations can implement provisioning without shutting down applications or changing the Logical Unit Number (LUN) mapping and LUN masking configurations on the target storage arrays. The Brocade FS8-18 is managed and configured using familiar Brocade Data Center Fabric Manager (DCFM™) and CLI management tools, and is easily integrated into existing network infrastructures.

Key advantages of the Brocade FS8-18 include:

- The ability to encrypt data at wire speed
- Central management of storage and fabric-based security resources
- Transparent, online encryption of "cleartext" LUNs and rekeying of encrypted LUNs without disruption
- Data compression and integrity authentication for tape backup data
- Simplified, non-disruptive installation and configuration

HIGH-VALUE APPLICATIONS AND SOLUTION AREAS

Two of the greatest business benefits of the Brocade FS8-18 are increased productivity and reduced risk of data exposure. Other key benefits include improved backup performance while deploying encryption/compression and investment protection for existing resources.

The Brocade FS8-18 is ideal for applications such as:

- Highly sensitive IT applications with secure data-at-rest requirements
- Secure data backups for offsite tape storage and long-term archiving
- Support for heterogeneous disk and tape storage environments from a centralized point of management
- Decommissioning of disk arrays that require legal validation of the logical destruction and data shredding of devices (the Brocade FS8-18 helps decommission devices by encrypting an entire LUN and destroying the data encryption key)
- Secure replication of Virtual Tape Library (VTL) backups to remote facilities
- Scaling data center encryption services by implementing up to four Brocade FS8-18 blades in a Brocade DCX Backbone family chassis

1 *Brocade M-EOS fabrics are McDATA switches and directors running McDATA Enterprise OS in McDATA Fabric mode or McDATA Open Fabric mode.*

The Brocade FS8-18 is designed for use in the following SAN environments:

- Large-scale encryption in new data center deployments
- Plug-in storage security services for existing SAN fabrics
- Heterogeneous disk and tape storage environments
- Standalone data center backbones with encryption and compression in FOS and M-EOS fabrics
- Secure fabric-based environments that integrate with existing enterprise key management systems
- Expanding encryption environments that require protection for current data security and key management investments

INVESTMENT PROTECTION AND EFFICIENCY

The Brocade FS8-18 is the industry's most effective encryption platform in terms of power efficiency and system performance. In fact, it provides several times the encryption and compression processing power of competitive offerings while delivering a significant advantage in rack space utilization.

To help organizations protect their technology investments, the Brocade FS8-18 integrated into the Brocade DCX Backbone family chassis features forward and backward compatibility with Brocade B-Series and M-Series fabrics. By adopting an evolutionary strategy rather than a "rip-and-replace" approach, organizations can save significant time, money, and effort while minimizing disruption and risk.

Moreover, strategic relationships with Brocade Partners provide the broadest choice of integrated, best-in-class key management and security solutions. This integration enables organizations to leverage existing key management infrastructure investments and maintain current policies, procedures, and training efficiencies.

BROCADE ENCRYPTION PROFESSIONAL SERVICES

Brocade Professional Services help organizations deploy and address their management, encryption, and security processes in a holistic approach to meet compliance and regulatory requirements for encryption of data-at-rest. A unique end-to-end approach considers the solution design from an architectural, policy, and operational perspective.

Following the design phase, Brocade experts will install and configure the hardware into a new or existing fabric in a highly effective and timely manner according to best practices. Upon completion of the engagement, organizations receive full documentation of the solution. This transfer of information educates IT staff so they can better understand and assume responsibility for the solution.

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.

BROCADE FS8-18 ENCRYPTION BLADE SPECIFICATIONS

Systems Architecture	
Fibre Channel ports	16 ports, universal (F/FL/E/EX/M)
Ethernet ports	Two redundant 1000Base Ethernet ports for clustering and I/O synchronization during rekeying operation
Smart cards	Master key recovery cards and system card
Compression for tape	Hardware-based data compression prior to encryption
Compatibility	IEEE 1619 standard-based mode (disk and tape) DataFort-compatible mode (disk and tape)
Data rekeying	Online or offline conversion of data from cleartext to ciphertext; manual or automated rekeying sessions
Crypto scalability	Up to 256 target devices; 1024 host ports per device
Crypto engine	Maximum 96 Gbit/sec hardware processing for disk* Maximum 48 Gbit/sec hardware processor for tape with compression*

Fibre Channel performance	1.063 Gbit/sec line speed, full duplex; 2.125 Gbit/sec line speed, full duplex; 4.25 Gbit/sec line speed, full duplex; 8.5 Gbit/sec line speed, full duplex; auto-sensing of 1, 2, 4, and 8 Gb port speeds; optionally programmable to fixed port speed; speed matching between 1, 2, 4, and 8Gb ports
System scalability	Up to four Brocade FS8-18 blades per Brocade DCX Backbone family chassis
ISL Trunking	Frame-based trunking with up to eight 8Gb ports per ISL trunk; up to 64 Gbit/sec throughput per ISL trunk
Maximum frame size	2112-byte payload for Fibre Channel
Classes of service	Class 2 (unencrypted traffic), Class 3 (encrypted and unencrypted), and Class F (inter-switch frames)
Data traffic types	Fabric switches supporting unicast, multicast (255 groups), and broadcast

BROCADE FS8-18 ENCRYPTION BLADE SPECIFICATIONS (CONTINUED)

Media types	8Gb: Utilizes Brocade hot-pluggable SFP+, LC connector; Short-Wavelength Laser (SWL); distance depends on fiber-optic cable and port speed
Fabric services	Simple Name Server (SNS), Registered State Change Notification (RSCN), NTP v3, Reliable Commit Service (RCS), Dynamic Path Selection (DPS), Brocade Advanced Zoning (default zoning, port/WWN zoning, broadcast zoning), N_Port ID Virtualization (NPIV), FDMI, Management Server, FSPF, Enhanced Group Management, IPFC, Frame Redirection, Port Fencing, BB credit recovery Optional fabric services: Fabric Watch, Extended Fabrics, ISL Trunking, Advanced Performance Monitoring, Adaptive Networking (per-data flow QoS, Ingress Rate Limiting, Traffic Isolation, Fabric Dynamics Profiling, and Integrated Routing)
FIPS certification	FIPS 140-2 Level-3 Validated Cryptographic Module
Management	
Administrator roles	Administrator, fabric administrator, security administrator, recovery officer
Key management	NetApp LKM 4.0 or later; RSA Key Manager Appliance 1.6; HP SKM 1.1; Thales Encryption Manager for Storage 1.0
Mechanicals	
Size	Width: 3.60 cm (1.41 in) Height: 41.11 cm (16.19 in) Depth: 27.98 cm (11.02 in) Occupies one slot in a Brocade DCX Backbone chassis
System weight	5.5 kg (12.0 lbs) without SFPs

Environmentals	
Temperature	Operating: 0 to 40° C (32 to 104° F) Non-operating: –25 to 70° C (–13 to 158° F)
Altitude	Operating: Up to 3,000 meters (9,842 feet) Storage: Up to 12 kilometers (39,370 feet)
Shock	Operating: 20 g, 6 ms half-sine Non-operating: half sine, 33 g 11 ms, 3/eg Axis
Power	
AC input range	40 to 50 VAC
Maximum power	235 watts
Configurations	
Base crypto model	Brocade FS8-18 Encryption Blade: 16 Fibre Channel ports, 48 Gbit/sec* maximum hardware encryption processing
Crypto engine processing upgrades	96 Gbit/sec* maximum hardware disk encryption processing upgrade for all Brocade FS8-18 Encryption Blades in a Brocade DCX Backbone family chassis

** Actual encryption performance levels vary based upon user configuration and environment.*

For information about supported SAN standards, visit www.brocade.com/sanstandards

For information about switch and device interoperability, visit www.brocade.com/interoperability

For information about hardware regulatory compliance, visit www.brocade.com/regulatorycompliance

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