

BROCADE FS8-18 ENCRYPTION BLADE

DATA CENTER

HIGHLIGHTS

- Provides high-performance, scalable fabric-based encryption to enforce data confidentiality and privacy requirements
- Delivers unparalleled encryption processing at up to 96 Gbps using industry-standard AES-256 encryption algorithms
- Leverages a KMIP-compliant client for enterprise-wide key management, helping to reduce operational costs and simplify management
- Provides a single, centralized security platform for both disk and tape SAN environments
- Enables easy, non-intrusive deployment of fabric-based security services
- Provides plugin encryption and compression services to all host servers attached to data center fabrics
- Simplifies management through Brocade Fabric Vision technology, reducing operational costs, maximizing uptime, and optimizing application performance

Gen 5 Fibre Channel (16 Gbps) is the purpose-built, data center-proven network infrastructure for storage, delivering unmatched performance, reliability, and simplicity. The Brocade FS8-18 deployed within the Brocade DCX 8510 Backbone with Gen 5 Fibre Channel unleashes the full potential of cloud architectures by enabling secure, encrypted services in Fibre Channel-based cloud storage.

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

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® 8510 Backbone with Gen 5 Fibre Channel and Brocade DCX Backbones. 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 up to 96 Gbps 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 Gbps 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.

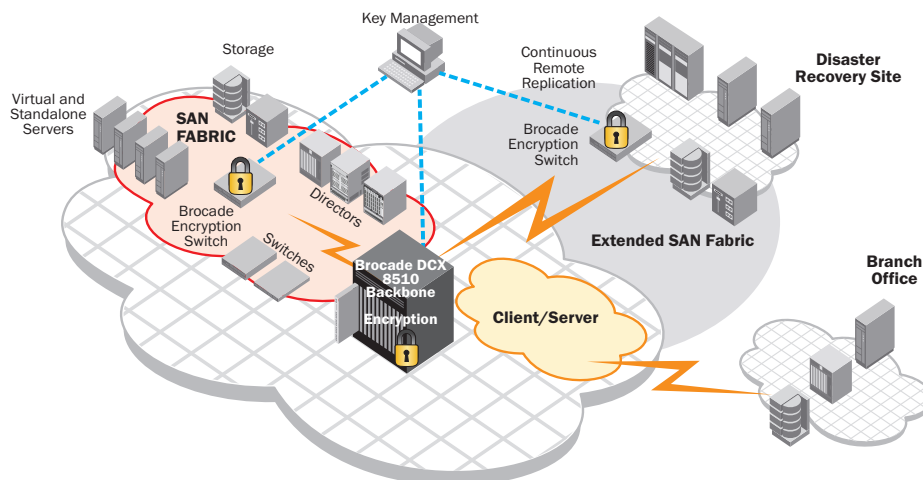
FABRIC-BASED ENCRYPTION

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 Brocade SAN fabrics.



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 for both disk- and tape-based storage devices, offering a comprehensive data-at-rest security solution for the extended enterprise (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) environments.

The Brocade fabric-based approach to data encryption scales to meet performance requirements, provides a centralized point of management for both disk and tape storage security as well as 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 management tools—including Brocade Network Advisor 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
- Concurrent support for both disk and tape encryption operations from a single device

- Transparent, online encryption of “cleartext” LUNs and rekeying of encrypted LUNs without disruption, including support for thin provisioned LUNs
- 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 single device with centralized management

- Decommissioning of disk arrays that require legal validation of the irrecoverable destruction of data (The Brocade FS8-18 enables secure decommissioning of storage devices by encrypting an entire LUN and permitting deletion of data encryption keys.)
- 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 8510 or Brocade DCX chassis

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 Brocade FOS 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 offers transparent integration of storage security services into an existing fabric, seamlessly working with current and new storage and servers. As a result, organizations can save significant time, money, and effort while minimizing disruption and risk, even as the data center infrastructure evolves.

Moreover, the Brocade KMIP-compliant key management client and 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.

SIMPLIFIED MANAGEMENT AND ROBUST NETWORK ANALYTICS

Brocade Fabric Vision technology introduces a breakthrough hardware and software solution that maximizes uptime, simplifies SAN management, and provides unprecedented visibility and insight across the storage network. Offering innovative diagnostic, monitoring, and management capabilities, the Brocade Encryption Switch with Fabric Vision technology helps administrators avoid problems, maximize application performance, and reduce operational costs. The Brocade FS8-18 supports the following Brocade Fabric Vision technology features:

- **Flow Monitor:** Provides comprehensive visibility into flows in the fabric, including the ability to automatically learn (discover) flows and non-disruptively monitor flow performance. Organizations can monitor all flows from a specific host to multiple targets/LUNs, from multiple hosts to a specific target/LUN, or across a specific ISL. They also can perform LUN-level monitoring of specific frame types to identify resource contention or congestion that is impacting application performance.
- **Monitoring and Alerting Policy Suite (MAPS):** Simplifies fabric-wide threshold configuration and monitoring. MAPS

allows organizations to leverage pre-built rule/policy-based templates. The result is a simple, two-step process for applying thresholds and alerts to ports and switches. Organizations can configure the entire fabric (or multiple fabrics) at one time using common rules and policies, or customize policies for specific ports—all through a single dialog. The integrated dashboard displays an overall switch health report, along with details on out-of-policy conditions, to help administrators quickly pinpoint potential issues.

- **Bottleneck Detection:** Identifies and alerts administrators to device or ISL congestion as well as abnormal levels of latency in the fabric. This feature works in conjunction with Brocade Network Advisor to automatically monitor and detect network congestion and latency in the fabric, providing visualization of bottlenecks in a connectivity map and product tree while helping to identify exactly which devices and hosts are impacted by a bottlenecked port.
- **Integration into Brocade Network Advisor:** Provides customizable health and performance dashboard views to pinpoint problems faster, simplify SAN configuration and management, and reduce operational costs.
- **Critical diagnostic and monitoring capabilities:** Help ensure early problem detection and recovery.

- **Non-intrusive and non-disruptive monitoring on every port:** Provides an end-to-end view of the entire fabric using capabilities integrated into hardware, allowing sophisticated monitoring without imposing additional burden on switches with frequent polling activity.

BROCADE ENCRYPTION PROFESSIONAL SERVICES

Brocade Professional Services helps 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.

BROCADE GLOBAL SERVICES

Brocade Global Services has the expertise to help organizations build scalable, efficient cloud infrastructures. Leveraging 15 years of expertise in storage, networking, and virtualization, Brocade Global Services delivers world-class professional services, technical support, network monitoring services, and education, enabling organizations to maximize their Brocade investments, accelerate new technology deployments, and optimize the performance of networking infrastructures.

MAXIMIZING INVESTMENTS

To help optimize technology investments, Brocade and its partners offer complete solutions that include professional services, technical support, and education. 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; F, FL, E, EX, and M ports
Ethernet ports	Two redundant 1000BaseT Ethernet ports for clustering and I/O synchronization during rekeying operation
Smart cards	Master key recovery, quorum authorization, and system recovery operations
Compression for tape	Hardware-based data compression prior to encryption
Encryption modes	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; support for thin provisioned LUNs (check encryption interoperability matrix for support details)
Crypto scalability	Up to 256 target devices and initiators per encryption engine
Crypto engine	Maximum 96 Gbps hardware processing for disk* Maximum 48 Gbps hardware processing for tape with compression*
Fibre Channel performance	1.063 Gbps line speed, full duplex; 2.125 Gbps line speed, full duplex; 4.25 Gbps line speed, full duplex; 8.5 Gbps line speed, full duplex; auto-sensing of 1, 2, 4, and 8 Gbps port speeds; optionally programmable to fixed port speed; speed matching between 1, 2, 4, and 8 Gbps 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 8 Gbps ports per ISL trunk; up to 64 Gbps 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
Media types	8 Gbps: 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, Bottleneck Detection, Adaptive Networking (QoS, Ingress Rate Limiting, Traffic Isolation, Fabric Dynamics Profiling) Optional fabric services: Brocade Fabric Watch, Extended Fabrics, ISL Trunking, Advanced Performance Monitoring, Integrated Routing, Flow Monitor, and Monitoring and Alerting Policy Suite (MAPS)
FIPS certification	FIPS 140-2 Level-3 Validated Cryptographic Module

Management	
Administrator roles	Administrator, fabric administrator, security administrator, recovery officer
Key management	NetApp Lifetime Key Manager (LKM); SafeNet KeySecure k460; RSA Data Protection Manager (DPM) Appliance; HP Secure Key Manager (SKM)/Enterprise Secure Key Manager (ESKM); Thales e-Security keyAuthority (TEKA); IBM Tivoli Key Lifecycle Manager (TKLM); Brocade KMIP-compliant client for supported key management systems

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 lb) without SFPs

Environmentals	
Temperature	Operating: 0° C to 40° C (32° F to 104° F) Non-operating: -25° C to 70° C (-13° F to 158° F)
Altitude	Operating: Up to 3000 meters (9842 feet) Storage: Up to 12 kilometers (39,370 feet)
Shock	Operating: 20 g, 6 ms half-sine Non-operating: 33 g 11 ms half-sine, 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 Gbps* maximum encryption processing
Crypto engine performance upgrade	96 Gbps* maximum 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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