Datasheet
Brocade 6505
Fibre Channel switch

OPERATIONAL CONTEXT

Fibre Channel continues to be the reference technology when it comes to the need for reliable and efficient data transport. Regardless whether you are in the data center or in consolidated storage environments, Fibre Channel (FC) products are found in environments in which a dropout might rapidly develop into a thread for company existence.

FC technology offers an automated infrastructure with guaranteed data transmission. Typically this storage network is well protected against unwanted access and is rarely changed over its life cycle. Sophisticated management software largely automates administration today with regards to monitoring and capacity management. This keeps operating cost down - a key topic in today's data centers which is also addressed by the low energy consumption of the device.

The new Fibre Channel 16 Gbps speed level provides the bandwidth new technologies increasingly expect to show what they are made of. Today higher storage network bandwidth is needed from:

- faster end devices such as virtualized server, high-end storage arrays (often with SSD's) and backup devices.
- the sum of all end devices in a fabric which require a significant higher bandwidth in absolute terms
- new architectures like cloud and streaming.

PRODUCT STRUCTURE AND FUNCTIOANLITY

The SAN switch 6505 will be offered in two versions, each coming with 12 ports released. One version is populated with 12 SFP+ FC16 Gbps the other version is unpopulated leaving room for a flexible configuration.

The maximum number of 24 ports can be achieved by installing one port-on-demand (PoD) license (pay-as-you-grow concept). The ports are released for use of SFP+ FC 8 Gbps and FC16 Gbps (SFP FC4 Gbps will not be accepted).

The device has a fixed setting for the port speed set. It supports FC 2/4/8/16 Gbps. For short ranges Short Wave SFP+ can be used (providing an LC- interface for multi-mode cabling meeting at least OM3 specification. For longer distances Long Wave SFP's are offered which cover 10 km or 25 km. SFP's for longer distances are available within projects. The 24 ports work with 384 Gbps internal bandwidth, there is no oversubscription. The device software contains new functions. These functions simplify configuration and deployment and allow for faster troubleshooting. Different from its predecessor this device has all ports enabled for both end-device-link and inter-switch-link functionality.

Within Fibre Channel Technology ports are equipped with a dedicated functionality which might be changed into a completely different functionality by simply switching into another port type. This is used by some new functions provided by this device generation. Both FC8G and FC16G require a more careful handling of cables. This is supported by the new D-port (diagnostic port) functionality.

A D-Port allows for a systematic check of the link and the components contributing to the link's function. D-Port functionality is currently available for SFP+ FC16 Gbps. Another new function which is called mirror- or M-port provides the duplication of data streams which can be used to analyze data streams in an uninterrupted and unchanged operating environment.

The switch comes with the established set of fabric software for small to medium storage networks.

MOUNTING

The switch needs one HU within an IT rack and is shipped with a mounting kit. It comes with back-to-front-airflow (port-side exhaust).

BLADE-SERVER AND MULTIVENDOR SAN

With activation of the Access Gateway Mode the switch is reset to basic Fibre Channel functionality. More or less all fabric functionality is disabled. In succession FC switches which consolidate the number of server ports needed to enter the storage network (e.g. for Blade Server) no longer have a Domain ID, an important criteria because otherwise the permitted size of the storage network might be exceeded soon. Access Gateway Mode simplifies the integration into 3rd party fabrics. Before Access Gateway Mode can be entered all switch ports have to be activated.

OPERATION

The EZSwitchSetup assistent simplifies SME-fabric deployment.

For fabric administration Brocade offers the Brocade Network Advisor (BNA). The SAN version of this product is available as „BNA Professional Plus" version (for up to ~ 2500 ports) and as „BNA Enterprise" version(for up to ~ 9000 ports). BNA is a cross-platform product which contains building blocks for SAN, IP and DCB networks.

Fujitsu has a comprehensive offer of maintenance packages, a rich choice of professional services and cost saving concepts for IT operation, among them the administration of customer environments and complete managed IT offers.

Green Product
This product cleared our company's original evaluation standard which followed global environmental measures.

Features and benefits

Main features	Benefits
Market-leading throughput with an affordable switch form factor	■ Exceptional price/performance ratio for growing SAN workload
16 G Fibre Channel	■ Meets the demands of virtualized environments and high speed peripherals such as SSD's and capabilities of highly virtualized environments
Flexible ports on demand	■ "Pay-as-you-grow" scalability ■ 12 Port on Demand licenses enable for 24 port usage
Enterprise-class availability features	■ Single PSU / fan with option for redundant PSU / fan upgrade ■ Redundant components (PSU, fans provide improved uptime and hitless operation when repair is needed
Link-testing capabilities	■ Port-to-Port check for link testing (for cables and structured
Full fabric enabled	■ Improved usability and simplified configuration
Access gateway support	■ Enables large Blade Server farms (Switches in AG mode do not need a Fibre Channel Domain ID) ■ Allows attachment to Cisco SAN's

Technical details

Systems Architecture

Fibre Channel ports	Switch mode (default): 12- and 24-port configurations (12-port increment through Ports on Demand [PoD] license); universal (E, F, M, D, EX) ports Brocade Access Gateway default port mapping: 16 F_Ports, 8 N_Ports
Scalability	Full fabric architecture with a maximum of 239 switches
Certified maximum	6000 active nodes; 56 switches, 19 hops in Brocade Fabric OS® fabrics; 31 switches, three hops in Brocade M-EOS fabrics; larger fabrics certified as required
Performance	Auto-sensing of 2, 4, 8, and 16 Gbps port speeds
ISL Trunking	Frame-based trunking with up to eight 16 Gbps ports per ISL trunk; up to 128 Gbps per ISL trunk. Exchange-based load balancing across ISLs with DPS included in Fabric OS. There is no limit to how many trunk groups can be configured in the switch.
Aggregate bandwidth	384 Gbps end-to-end full duplex
Fabric latency	Latency for locally switched ports is 700 ns; Forward Error Correction (FEC) adds 400 ns between E_Ports (enabled by default).
Maximum frame size	2112 byte payload
Frame buffers	8192 dynamically allocated
Classes of service	Class 2, Class 3, Class F (inter-switch frames)
Port types	D_Port (Diagnostic Port), E_Port, EX_Port, F_Port, M_Port (Mirror Port); self-discovery based on switch type (U_Port); optional port type control Brocade Access Gateway mode: F_Port and NPIV-enabled N_Port
Data traffic types	Fabric switches supporting unicast
Media types	Hot-pluggable, industry-standard Small Form-Factor Pluggable (SFP+), LC connector; Short-Wavelength (SWL), Long-Wavelength (LWL); Extended Long-Wavelength (ELWL); distance depends on fiber optic cable and port speed. Supports SFP+ (8 and 16 Gbps) optical transceivers.
Fabric services *Note: Some fabric services do not apply or are unavailable in Brocade Access Gateway mode.*	Brocade Advanced Performance Monitoring (including Top Talkers for E_Ports, F_Ports, and Fabric mode); Brocade Adaptive Networking (Ingress Rate Limiting, Traffic Isolation, QoS); Bottleneck Detection; Brocade Advanced Zoning (default zoning, port/WWN zoning, broadcast zoning); Dynamic Fabric Provisioning (DFP); Dynamic Path Selection (DPS); Brocade Extended Fabrics; Enhanced BB credit recovery; Brocade Fabric Watch; FDMI; Frame Redirection; Frame-based Trunking; FSPF; IPoFC; Brocade ISL Trunking; Management Server; NPIV; NTP v3; Port Fencing; Registered State Change Notification (RSCN); Reliable Commit Service (RCS); Server Application Optimization (SAO); Simple Name Server (SNS)

Management

Supported management software	HTTP, SNMP v1/v3 (FE MIB, FC Management MIB), SSH; Auditing, Syslog; Brocade Advanced Web Tools, Advanced Performance Monitoring, Brocade Fabric Watch; Brocade Network Advisor SAN Enterprise or Brocade Network Advisor SAN Professional/Professional Plus; Command Line Interface (CLI); SMI-S compliant; Administrative Domains; trial licenses for add-on capabilities; Fujitsu ETERNUS SF Storage Cruiser
Security	DH-CHAP (between switches and end devices),FCAP switch authentication; FIPS 140-2 L2-compliant, HTTPS, IPsec, IP filtering, LDAP with IPv6, Port Binding, RADIUS, User-defined Role-Based Access Control (RBAC), Secure Copy (SCP), Secure RPC, SFTP, SSH v2, SSL, Switch Binding, Trusted Switch

Management(Continued)

Management access	10/100 Mbps Ethernet (RJ-45), in-band over Fibre Channel, serial port (RJ-45), and one USB port
Diagnostics	D_Port offline diagnostics, including electrical/optical loopback, link traffic/latency/distance; POST and embedded online/offline diagnostics, including environmental monitoring, FCping and Pathinfo (FC traceroute), frame viewer, non-disruptive daemon restart port mirroring (SPAN port), optics health monitoring, power monitoring, RAStrace logging, and Rolling Reboot Detection (RRD)

Mechanicals

Enclosure	Back-to-front airflow; power from back, 1U
Size	Width: 437.64 mm (17.23 in.)
	Height: 43.18 mm (1.7 in.)
	Depth: 443.23 mm (17.45 in.)
System weight	7.82 kg (17.25 lb) with one power supply, without transceivers
	9.16 kg (20.19 lb) with two power supply FRUs,without transceivers

Environments

Temperature	Operating: 0℃ to 40℃
	Non-operating: -25℃ to 70℃
Humidity	Operating:
	10% to 85% (non-condensing)
	Non-operating:
	10% to 90% (non-condensing)
Altitude	Operating: up to 3000 meters
	Storage: up to 12 km
Shock	Operating:
	20G, 6 ms half-sine
	Non-operating:
	33G, 11 ms, Half sine
Vibration	Operating: 0.5 g sine,
	0.4 grms random, 5 to 500 Hz
	Non-operating: 2.0 g sine,
	1.1 grms random, 5 to 500 Hz
Heat dissipation	24 ports at 338 BTU/hr

Power

Power supply	Base switch includes a single, hot-swappable power supply with integrated system cooling fans. Optional dual redundant hot-swappable power supply.
AC input	85 V to 264 V ~5 A to 2.5 A
Input line frequency	47 to 63 Hz
Power consumption	80 watts with all 24 ports populated with 16 Gbps SWL optics
	60 watts for empty chassis with no optics

Safety

The 6505 complies with the following safety certifications:	Bi-Nat UL/CSA 60950-1 2nd Ed or latest
	EN60950-1: 2006+A11:2009
	IEC60950-1: 2005 or latest
	GB4943-2001 and GB9254-1998 or latest(DCX 8510 Power supplies)
	CNS 14336(94) or latest

More information

Fujitsu platform solutions

In addition to Brocade 6505 Fibre Channels switch, Fujitsu provides a range of platform solutions. They combine reliable Fujitsu products with the best in services, know-how and worldwide partnerships.

Dynamic Infrastructures

With the Fujitsu Dynamic Infrastructures approach, Fujitsu offers a full portfolio of IT products, solutions and services, ranging from clients to datacenter solutions, Managed Infrastructure and Infrastructure-as-a-Service. How much you benefit from Fujitsu technologies and services depends on the level of cooperation you choose. This takes IT flexibility and efficiency to the next level.

Computing products

www.fujitsu.com/global/services/computing/
- PRIMERGY: Industry standard server
- SPARC Enterprise: UNIX server
- PRIMEQUEST: Mission-critical IA server
- ETERNUS: Storage system

Software

www.fujitsu.com/software/
- Interstage: Application infrastructure software
- Systemwalker: System management software

More information

Learn more about Brocade 6505 Fibre Channels switch, please contact your Fujitsu sales representative, Fujitsu business partner, or visit our website.
www.fujitsu.com/eternus/

Fujitsu green policy innovation

Fujitsu Green Policy Innovation is our worldwide project for reducing burdens on the environment. Using our global know-how, we aim to resolve issues of environmental energy efficiency through IT. Please find further information at:
www.fujitsu.com/global/about/environment/

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