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# Data Sheet

## FUJITSU Server PRIMERGY BX Fibre Channel Switch 16Gbit/s 18/8 (Brocade 6545)

Next generation blade system interconnect



FUJITSU Server PRIMERGY will give you the servers you need to power any workload and changing business requirements. As business processes expand so does the need for applications. Each has its own resource footprint, so you need a way to optimize your computing to better serve your users. PRIMERGY systems will help you match your computing capabilities to your business priorities with our complete portfolio of expandable PRIMERGY tower servers for remote and branch offices, versatile rack-mount servers, compact and scalable blade systems, as well as hyper-converged scale-out servers. They convince by business proven quality with a wide range of innovations, highest efficiency cutting operational cost and complexity, provide more agility in daily operations, and integrate seamlessly to let help you concentrate on core business functions.

FUJITSU Server PRIMERGY BX blade systems are the perfect platform to build a converged infrastructure designed to reduce IT costs, time and efforts. PRIMERGY Blade Servers utilizes a modular architecture and contain in addition to the compute power, all required infrastructure and network components, storage capacity as well as management modules that helps companies to simplify their infrastructure, achieve significant cost reductions and increase flexibility.

### PRIMERGY BX Fibre Channel Switch 16Gbit/s 18/8 (Brocade 6545)

The PRIMERGY Fibre Channel 16Gbit/s 18/8 Connection Blade unleashes the full potential of high-density server virtualization, cloud architectures, and next-generation storage in a flexible, cost-effective, and easy-to-use integrated form factor. To keep pace with growing business demands, data centers are transitioning to highly virtualized, cloud environments. This approach enables organizations to consolidate and simplify their IT resources. But data centers must also keep up with the explosive data growth and dynamic changes driven by virtualized workloads. The new FC Connection Blade simplifies SAN connectivity and delivers substantial cost-savings, improved reliability, and increased flexibility to address evolving server and storage requirements for enterprise data centers. It fits into the back of the two Fujitsu PRIMERGY blade chassis, thus saving space, reduces power and cooling costs, and minimizes cabling efforts. The Connection Blade features 18 downlink ports as well as 8 uplink ports with auto-negotiation Fibre Channel speed offering low-cost access to industry-leading Storage Area Network technology while providing 'pay as you grow' scalability to meet the needs of an evolving storage environment.



# Features & Benefits

Main Features	Benefits
<b>Data Center Consolidation</b> <ul style="list-style-type: none"><li>■ The Connection Blade fits into the back of the blade chassis and thus lowering cost through shared power and cooling, fewer cables and SFPs and a reduction in space.</li><li>■ Integrates Brocade's latest Gen 5 Fibre Channel and Fabric Vision technology to simplify network management, reduce operational costs, and improve application performance</li></ul>	<ul style="list-style-type: none"><li>■ Support of highly virtualized environments through industry-leading 16 Gbit/s Fibre Channel performance. Both internal and external ports support auto-negotiation speed for flexibility and investment protection (4, 8 or 16 Gbit/s for external ports and 8 or 16 Gbit/s for internal ports).</li></ul>
<b>High Density Virtualization</b> <ul style="list-style-type: none"><li>■ Non-blocking architecture that supports aggregate bandwidth of up to 768 Gbit/s of end-to-end full duplex throughput.</li></ul>	
<b>"Pay as you grow" Scalability</b> <ul style="list-style-type: none"><li>■ The PY CB FC Switch 16Gbit/s 18/8 (Brocade 6545) is a high-performance, enterprise-class switch configurable with 14 and 26 ports.</li></ul>	
<b>Investment Protection</b> <ul style="list-style-type: none"><li>■ Auto-sensing of 2, 4, 8, and 16 Gbps port speeds</li></ul>	<ul style="list-style-type: none"><li>■ Supports frame-based trunking with up to eight 16 Gbit/s ports per ISL trunk, for a total of up to 128 Gbit/s balanced throughput. Trunking of the SAN-facing ports with external switches provides a high-bandwidth solution while lowering costs through fewer SFPs and cables. Exchange-based Dynamic Path Selection (DPS) optimizes fabric-wide performance and load balancing by automatically routing data to the most efficient available path in the fabric.</li><li>■ Provides exceptional price/performance value, combining flexibility, simplicity, and enterprise-class functionality in a 26-port Fibre Channel switch for virtualized data centers and cloud architectures.</li><li>■ Flexible product configuration options, from entry-level to enterprise-class SAN fabric services.</li><li>■ Enables fast, simple, and cost-effective scaling from 14 to 26 ports using Ports on Demand (PoD) capabilities.</li><li>■ Supports lower bandwidth components for investment protection and an upgrade license enables customers to 'pay as they grow'.</li></ul>

# Technical details

## PRIMERGY BX Fibre Channel Switch 16Gbit/s 18/8 (Brocade 6545)

<b>Connection type</b>	SAN Connection Blade 16Gb Fibre Channel Switch with 4x 16Gb SWL SFP+ modules included
	The following licenses are included in the 14 port and 26 port basic unit: Access Gateway Brocade Full Fabric Brocade Adaptive Networking Brocade Enhanced Group Management
<b>Supported system units</b>	PRIMERGY BX400 S1, PRIMERGY BX900 S2
<b>Max. number per BX unit</b>	3 in PRIMERGY BX400 S1, 4 in PRIMERGY BX900 S2
<b>Supported Server Blades</b>	all PRIMERGY BX9xx and BX25xx Server Blades
<b>Supported Mezzanine Cards</b>	PRIMERGY BX FC Mezz Card 8 Gbit/s 2 port (MC-FC82E) PRIMERGY BX FC Mezz Card 16 Gbit/s 2 port (MC-FC162E)
<b>Upgrade options</b>	- Port License upgrade from 14 to 26 ports (only for 14 port unit) - Brocade ISL Trunking - Brocade Fabric Vision - Brocade Extended Fabric - Brocade Enterprise Bundle (includes ISL Trunking, Extended Fabric, Fabric Vision)

## Interfaces

<b>Down-link ports</b>	18 x 8/16 Gbit/s FC
<b>Up-link ports</b>	8 x Universal SFP+ Port types: 16 Gbit/s, 8 Gbit/s or 4 Gbit/s full duplex, auto-sensing D_Port (ClearLink Diagnostic Port), E_Port, EX_Port, F_Port and M_Port (Mirror Port) Optional port type control in Brocade Access Gateway mode: F-Port and NPIV-enabled N_Port
<b>Management ports</b>	Internal : 1x serial port (RS-232 via mid plane) 2x 10/100 Mb Ethernet (via mid plane) Note: Only one 10/100 Mb Ethernet port is active at the same time

## Supported Interface Modules / Cables

Order code	Application	Type / mode	Connector / cable Length
S26361-F3873-E109	Fibre Channel 8 Gbit/s	SFP+ / MMF (SWL)	LC-style / max. 190 m
S26361-F3873-E208	Fibre Channel 8 Gbit/s	SFP+ / SMF (LWL)	LC-style / max. 10 km
S26361-F3873-E116	Fibre Channel 16 Gbit/s	SFP+ / MMF (SWL)	LC-style / max. 125 m
S26361-F3873-E216	Fibre Channel 16 Gbit/s	SFP+ / SMF (LWL)	LC-style / max. 10 km
Interface Module notes	Only Brocade certified SFP+ modules are supported Max. distance varies according to FC speed and cable type		

## Technical specifications

<b>Fibre Channel features</b>	Scalability: Max. 239 switches Certified: 56 domains, 19 hops; larger fabrics on request ISL trunking: Up to eight 16Gb ports per ISL trunk for up to 128Gb (optional) Full bandwidth: 516Gb: 26 ports x 16Gb (data rate) Fabric delay: 700ns for locally switched ports Frame size: max. 2112 bytes payload Frame buffers: 8192 dynamically allocated FC service classes: Class 2, 3, class F (inter-switch frames)
<b>Fibre Channel notes</b>	Brocade provides links to a number of Fibre Channel standards organizations. These organizations provide a variety of Fibre Channel documents that you can view and download. Access the links to these organizations at: <a href="http://www.brocade.com/products-solutions/technology-architecture/standards-leadership/index.page">http://www.brocade.com/products-solutions/technology-architecture/standards-leadership/index.page</a>
<b>Performance</b>	768 Gbit/s end-to-end full duplex aggregate bandwidth
<b>Interoperability</b>	Brocade 3xxx, 4xxx, 5xxx, 6xxx and Director family switches Access Gateway Mode supports Brocade and Cisco fabrics

**Technical specifications**

<b>Management</b>	HTTP, SNMP v1/v3 (FE MIB, FC Management MIB), SSH; Auditing, Syslog; Brocade Advanced Web Tools, APM, 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
<b>Security</b>	AES-GCM-256 encryption on ISLs DH-CHAP (between switches and end devices), FCAP switch authentication FIPS 140-2 L2-compliant, HTTPS, IPsec, IP filtering, LDAP with IPv6, OpenLDAP, Port Binding, RADIUS, TACACS+, User-defined Role-Based Access Control (RBAC), Secure Copy (SCP), Secure RPC, SFTP, SSH v2, SSL, Switch Binding, Trusted Switch

**Dimensions / Weight**

<b>Dimensions (W x D x H)</b>	192.6 x 267.9 x 27.9 mm
<b>Weight</b>	ca. 1.5 kg

**Environment**

<b>Temperature note</b>	See corresponding PRIMERGY BX System Unit
<b>Operating environment</b>	FTS 04230 – Guideline for Data Center (installation specification)
<b>Operating environment link</b>	<a href="http://docs.ts.fujitsu.com/dl.aspx?id=e4813edf-4a27-461a-8184-983092c12dbe">http://docs.ts.fujitsu.com/dl.aspx?id=e4813edf-4a27-461a-8184-983092c12dbe</a>

**Electrical values**

<b>Active power (max. configuration)</b>	55 W
<b>Heat emission (max. configuration)</b>	198.0 kJ/h (187.7 BTU/h)
<b>Electrical value notes</b>	Without SFP/SFP+ modules

**Compliance**

<b>Germany</b>	GS
<b>Europe</b>	CE Class A *
<b>USA/Canada</b>	ULc/us FCC Class A
<b>Global</b>	CB RoHS WEEE
<b>Japan</b>	VCCI:V3 Class A + JIS 61000-3-2
<b>Australia/New Zealand</b>	C-Tick
<b>Taiwan</b>	BSMI
<b>Compliance notes</b>	In combination with corresponding PRIMERGY BX system unit There is general compliance with the safety requirements of all European countries and North America. National approvals required in order to satisfy statutory regulations or for other reasons can be applied for on request. * Warning: This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.
<b>Compliance link</b>	<a href="http://globalsp.ts.fujitsu.com/sites/certificates">http://globalsp.ts.fujitsu.com/sites/certificates</a>

## More information

### Fujitsu OPTIMIZATION Services

In addition to Fujitsu PRIMERGY BX Fibre Channel Switch 16Gbit/s 18/8 (Brocade 6545), Fujitsu provides a range of platform solutions. They combine reliable Fujitsu products with the best in services, know-how and worldwide partnerships.

### Fujitsu Portfolio

Built on industry standards, Fujitsu offers a full portfolio of IT hardware and software products, services, solutions and cloud offering, ranging from clients to datacenter solutions and includes the broad stack of Business Solutions, as well as the full stack of Cloud offerings. This allows customers to select from alternative sourcing and delivery models to increase their business agility and to improve their IT operation's reliability.

### Computing Products

[www.fujitsu.com/global/products/computing/](http://www.fujitsu.com/global/products/computing/)

### Software

[www.fujitsu.com/software/](http://www.fujitsu.com/software/)

### More information

Learn more about Fujitsu PRIMERGY BX Fibre Channel Switch 16Gbit/s 18/8 (Brocade 6545), please contact your Fujitsu sales representative or Fujitsu Business partner, or visit our website.  
<http://www.fujitsu.com/primergy>

### 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 contribute to the creation of a sustainable environment for future generations through IT. Please find further information at <http://www.fujitsu.com/global/about/environment>



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