

# Datasheet

## Brocade VDX 6710 Converged Switch

Brocade® VDX™ Converged Switches are specifically designed to improve network utilization, maximize application availability, increase scalability, and dramatically simplify network architecture in virtualized data centers.

### Revolutionizing the way data center networks are built

Seeking better ways to build clouds and virtualized data centers, today's IT organizations are turning to highperformance networking solutions that increase flexibility through leading-edge technologies. The Brocade® VDX™ 6710 Converged Switch is a high-performance 1 Gigabit Ethernet (GbE) fixed port switch that provides a reliable, scalable, and flexible foundation for supporting the most demanding business applications.

It features 48 1 GbE copper interfaces and six 10 GbE SFP+ interfaces, and supports a rich set of Layer 2 features, making the Brocade VDX 6710 an ideal platform for traditional Top-of-Rack (ToR) switch deployments.

Brocade VCS™ Fabric technology enables organizations to build data center Ethernet fabrics—revolutionizing the design of Layer 2 networks and providing an intelligent foundation for cloud-optimized data centers. The Brocade VDX 6710 can be easily deployed in VCS fabric mode with an add-on software license.

### Brocade VDX 6710

- Supports existing 1 Gigabit Ethernet (GbE) data center server connectivity
- Maximizes performance through 48 wirespeed 1 GbE ports with 600 nanosecond port-to-port latency and hardware-based Inter-Switch Link (ISL) trunking
- Simplifies network architectures and enables cloud computing by delivering Brocade VCS Fabric technology
- Simplifies networking infrastructure by eliminating STP and providing multi-homed active-active server connections for Ethernet networks
- Simplifies virtualization server management by providing Virtual Machine (VM) mobility with dynamic server profile configuration



# Features and benefits

Main features	Benefits
<p><b>Comprehensive layer 2 LAN capabilities for classic ToR server deployments</b></p> <ul style="list-style-type: none"> <li>■ Comprehensive Layer 2 LAN capabilities</li> <li>■ High-bandwidth efficiency across trunks</li> <li>■ Lowest power consumption</li> <li>■ Scale-out solution for virtualized data centers</li> <li>■ Local switching</li> </ul>	<ul style="list-style-type: none"> <li>■ Supports protocols such as Link Aggregation Control Protocol (LACP) and 802.1Q</li> <li>■ Maximizes performance with hardware-based ISL trunking and wire-speed ports</li> <li>■ Features superior size and the industry's lowest power consumption—imperative in today's data centers</li> <li>■ Enables dynamic, large-scale server virtualization deployments in private and public clouds with proven scalability capabilities and Layer 2 Equal Cost Multi-Path (ECMP)</li> <li>■ Delivers high performance for intra-rack traffic in virtualized environments, providing ultra-low latency of 600 nanoseconds for the same ASIC on the switch</li> </ul>
<p><b>Ethernet storage connectivity</b></p> <ul style="list-style-type: none"> <li>■ Brocade VDX 6710 connects to iSCSI and NAS storage<sup>1</sup>, and simplifies virtualization server management.</li> <li>■ Server and storage virtualization automation support</li> <li>■ Proactive monitoring</li> </ul>	<ul style="list-style-type: none"> <li>■ Helps protect existing SAN investments by bridging SAN fabrics and Ethernet fabrics</li> <li>■ The Brocade Automatic Migration of Port Profiles (AMPP) feature enables a seamless migration.</li> <li>■ Enables to monitor the health of certain switch components and, based on the threshold set, declare each component as marginal or down</li> </ul>
<p><b>BROCADE VCS technology</b></p> <ul style="list-style-type: none"> <li>■ Brocade VCS technology offers unmatched VM awareness and automation versus traditional architectures and competitive fabric solutions, and supports storage over a unified fabric.</li> </ul>	<ul style="list-style-type: none"> <li>■ Only Brocade VCS technology, backed by a heritage of proven fabric innovations, delivers IT agility and assures reliability, with a cost-effective point of entry to allow IT organizations to transition gracefully to elastic, highly automated, mission-critical networks in their virtualized data centers.</li> </ul>
<p><b>Cloud-optimized network acquisition</b></p> <ul style="list-style-type: none"> <li>■ Brocade offers flexible network acquisition and support alternatives to meet their financial needs.</li> </ul>	<ul style="list-style-type: none"> <li>■ Enables organizations to select from purchase, lease, and Brocade Network Subscription options to align network acquisition with their unique capital requirements and risk profiles.</li> </ul>

<sup>1</sup>The 1 GbE ports do not support Data Center Bridging (DCB).

### Comprehensive layer 2 LAN capabilities for classic ToR server deployments

The Brocade VDX 6710 supports a rich set of traditional Layer 2 Ethernet protocols and features, including:

- Comprehensive Layer 2 LAN capabilities: Supports protocols such as Link Aggregation Control Protocol (LACP) and 802.1Q. The Brocade VDX 6710 is also ready for IPv4/IPv6 Layer 3 routing capabilities, which can be implemented in a future Brocade Network OS release.
- High-bandwidth efficiency across trunks: Maximizes performance with hardwarebased ISL trunking and wire-speed ports with ultra-low port-to-port latency.
- Lowest power consumption: Features superior size and the industry's lowest power consumption—imperative in today's data centers.
- Scale-out solution for virtualized data centers: Enables dynamic, large-scale server virtualization deployments in private (IT customers within an enterprise) and public (external customers of managed service providers) clouds with proven scalability capabilities and Layer 2 Equal Cost Multi-Path (ECMP).
- Local switching: Delivers high performance for intra-rack traffic in virtualized environments, providing ultra-low latency of 600 nanoseconds for the same ASIC on the switch. This helps organizations design a network with no oversubscription for deterministic network performance and improved application response times, making the Brocade VDX 6710 ideal for performance-demanding environments.

### An intelligent foundation for cloud computing

Brocade VCS Fabric technology is an innovative technology that enables organizations to build high-performance cloud-optimized data centers while preserving existing network designs and cabling, and gaining active-active server connections. For scale-out fabric architectures, Brocade VCS Fabric technology allows organizations to flatten network designs, provide Virtual Machine (VM) mobility without network reconfiguration, and manage the entire fabric more efficiently. Learn more about Brocade VCS Fabric technology at [www.brocade.com/vcs](http://www.brocade.com/vcs).

### Ethernet storage connectivity

The Brocade VDX 6710 connects to iSCSI and NAS storage<sup>1</sup>, and simplifies virtualization server management.

Server and storage virtualization automation support

Brocade VCS Fabric technology offers unique features to support virtualized server and storage environments. During a VM migration, network switch ports must be dynamically configured to ensure that the VM traffic experiences consistent policies and configurations. The Brocade Automatic Migration of Port Profiles (AMPP) feature enables a seamless migration. Port profiles and MAC address mapping are created on any switch in the fabric. This mapping provides the logical flow for traffic from the source port to the destination port. As a VM migrates, the destination port in the fabric learns of the MAC move and automatically activates the port profile configuration.

Brocade VM-aware network automation provides secure connectivity and full visibility to virtualized server resources with dynamic learning and activation of port profiles. By communicating directly with VMware vCenter, it eliminates manual configuration of port profiles and supports VM mobility across VCS fabrics within a data center. In addition to providing protection against VM MAC spoofing, AMPP and VM-aware network automation enable organizations to fully align virtual server and network infrastructure resources, and realize the full benefits of server virtualization.

### Proactive Monitoring

Brocade Fabric Watch is an innovative switch health monitoring feature available on the Brocade VDX 6710. Fabric Watch monitors the health of certain switch components and, based on the threshold set, declares each component as marginal or down.

### Cloud-optimized network acquisition

Brocade helps organizations easily address their information technology requirements by offering flexible network acquisition and support alternatives to meet their financial needs. Organizations can select from purchase, lease, and Brocade Network Subscription options to align network acquisition with their unique capital requirements and risk profiles.

# Technical Details

## BROCADE VDX 6710 Feature overview

Switching bandwidth (data rate, full duplex)	216 Gbps
Port-to-port latency	600 nanoseconds
Port-to port latency 1 GbE to 1 GbE/10 GbE	1 microsecond
Form factor	1U
Dimensions and weight	Width: 44.0 cm (17.32 in.) Height: 4.37 cm (1.72 in.) Depth: 40.97 cm (16.13 in.) Weight: 8.57 kg (18.90 lb)
1 GbE RJ45 ports	48
1/10 GbE SFP+ ports	6
Power supplies	Two hot-swappable, load-sharing
Cooling fans	N+1 redundant, integrated into power supplies

## BROCADE VDX 6710 Specifications

### Scalability Information<sup>1</sup>

Connector options	1 GbE RJ45 1000Base-SX and 1000Base-LX 10 GbE SR and 10 GbE LR 10 Gbps SFP+ options: 1/3/5 m direct-attached copper (Twinax) Out-of-band Ethernet management: RJ-45 (fixed) Console management: RJ-45 to RS-232 (fixed) Firmware and diagnostic: USB
Maximum VLANs	4,096
Maximum MAC addresses	32,000
Maximum port profiles (AMPP)	256
Maximum Layer 2 multicast groups	2,000
Maximum Spanning Tree instances	32
Maximum per-port priority pause level	8
Maximum LAG groups in a VCS fabric	512
Maximum members in a standard LAG	16
Maximum MAC addresses in a VCS fabric	30,000
Maximum switches in a VCS fabric	24
Maximum ECMP paths in a VCS fabric	8
Maximum trunk members for VCS fabric ports	8
Maximum switches across which a vLAG can span	4
Maximum members in a vLAG	32
Maximum jumbo frame size	9,208 bytes
Queues per port	8
DCB Priority Flow Control (PFC) classes	8
Maximum Layer 2 ACLs	1,000
Maximum ARP entries	12,000
Maximum ARP entries	2,000
Operating system	Brocade Network OS

<sup>1</sup> Please refer to the latest version of the release notes for the most up-to-date scalability numbers.

<b>Layer 2 switching features</b>	<ul style="list-style-type: none"> <li>· MAC Learning and Aging</li> <li>· Static MAC Configuration</li> <li>· Link Aggregation Control Protocol (LACP) 802.3ad/802.1AX</li> <li>· Virtual Local Area Networks (VLANs)</li> <li>· VLAN Encapsulation 802.1Q</li> <li>· Rapid Spanning Tree Protocol (RSTP) IEEE 802.1w</li> <li>· Multiple Spanning Tree Protocol (MSTP) IEEE 802.1s</li> <li>· STP IEEE 802.1D</li> </ul>	<ul style="list-style-type: none"> <li>· Per-VLAN Spanning Tree (PVST+ / PVRST+)</li> <li>· STP PortFast and PortFast BDPU Guard</li> <li>· STP Root Guard</li> <li>· Layer 2 Access Control Lists (ACLs)</li> <li>· IGMP v1/v2 Snooping</li> <li>· Pause Frames IEEE 802.3x</li> </ul>
<b>Brocade VCS Fabric technology features</b>	<ul style="list-style-type: none"> <li>· Automatic Fabric Formation</li> <li>· Distributed Fabric Services</li> <li>· Transparent LAN Services</li> <li>· Virtual Link Aggregation Group (vLAG) spanning multiple physical switches</li> <li>· Switch Beaconing</li> <li>· Distributed Configuration management</li> </ul>	<ul style="list-style-type: none"> <li>· Transparent Interconnection of Lots of Links (TRILL)</li> <li>· Equal Cost Multi-Path (ECMP)</li> <li>· Automatic Migration of Port Profiles (AMPP)</li> <li>· VM-aware network automation</li> </ul>
<b>DCB features</b>	<ul style="list-style-type: none"> <li>· Priority-based Flow Control (PFC) IEEE 802.1Qbb</li> <li>· Enhanced Transmission Selection (ETS) IEEE 802.1Qaz</li> </ul>	<ul style="list-style-type: none"> <li>· Data Center Bridging eXchange (DCBX)</li> <li>· DCBX Application Type-Length-Value (TLV) for iSCSI</li> </ul>
<b>Quality of Service (QoS)</b>	<ul style="list-style-type: none"> <li>· Eight priority levels for QoS</li> <li>· Class of Service (CoS) IEEE 802.1p</li> <li>· DSCP Trust</li> <li>· DSCP to Traffic Class Mutation</li> <li>· Random Early Discard</li> </ul>	<ul style="list-style-type: none"> <li>· Per-port QoS configuration</li> <li>· Scheduling: Strict Priority (SP), Shaped Deficit Weighted Round-Robin (SDWRR)</li> </ul>
<b>Switch health monitoring</b>	<ul style="list-style-type: none"> <li>· Fabric Watch monitoring and notification</li> </ul>	

## Management

<b>Management and control</b>	<ul style="list-style-type: none"> <li>· IPv4/IPv6 management</li> <li>· Industry-standard Command Line Interface (CLI)</li> <li>· Remote lights out management (future update)</li> <li>· In-band management</li> <li>· Link Layer Discovery Protocol (LLDP) IEEE 802.1AB</li> <li>· MIB II RFC 1213 MIB</li> <li>· Switch Beaconing</li> <li>· Switched Port Analyzer (SPAN)</li> </ul>	<ul style="list-style-type: none"> <li>· Telnet</li> <li>· SNMP v1/v2C,v3</li> <li>· sFlow RFC 3176</li> <li>· Out of Band management (standalone mode)</li> <li>· RMON-1, RMON-2</li> <li>· NTP</li> <li>· Management Access Control Lists (ACLs)</li> <li>· Role-Based Access Control (RBAC)</li> </ul>
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## Security

- Port-based Network Access Control IEEE 802.1X
- RADIUS
- TACACS+
- Secure Shell (SSHv2)
- BPDU Drop
- Lightweight Directory Access Protocol (LDAP)
- Secure Control Protocol

## Mechanical

<b>Enclosure</b>	Front-to-rear, rear-to-front airflow; 1U, 19-inch EIA-compliant; power from non-port side
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## Environmental

<b>Temperature</b>	Operating: 0°C to 40°C (32°F to 104°F) Non-operating and storage: -25°C to 70°C (-13°F to 158°F)
<b>Humidity</b>	Operating: 10% to 85% non-condensing Non-operating and storage: 10% to 90% non-condensing
<b>Altitude</b>	Operating: Up to 3000 meters (9842 feet) Non-operating and storage: Up to 12 kilometers (39,370 feet)
<b>Shock</b>	Operating: 20 g, 6 ms half-sine Non-operating and storage: Half-sine, 33 g 11 ms, 3/eg Axis
<b>Vibration</b>	Operating: 0.5 g sine, 0.4 grms random, 5 to 500 Hz Non-operating and storage: 2.0 g sine, 1.1 grms random, 5 to 500 Hz
<b>Airflow</b>	Maximum: 60 CCFM Nominal: 44 CFM
<b>Heat dissipation</b>	443.5 BTU/hr

## Power

<b>Power supplies</b>	Two internal, redundant, field-replaceable, load-sharing AC power supplies
<b>Power inlet</b>	C13
<b>Input voltage</b>	100 V to 240 V ~5 A - 2.5 A
<b>Input line frequency</b>	47 to 63 Hz
<b>Inrush current</b>	50 amps max
<b>Maximum current</b>	3.5 amps max (54-port switch)

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### Power

Maximum power consumption	130 W
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### Safety Compliance

- Bi-Nat UL/CSA 60950-1 Second Edition
  - CAN/CSA-C22.2 No. 60950-1 Second Edition
  - EN 60950-1 Second Edition
  - IEC 60950-1 Second Edition
  - GB4943-2001 and GB9254-1998
  - CNS 14336(94)
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### EMC

- FCC Class A
  - ICES A
  - VCCI-A
  - CE
  - C
  - BSMI
  - GOST
  - KC Class A
  - CCC
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### Immunity

- ANSI C63.4
  - ICES-003 Class A
  - CISPR22 and JEIDA (Harmonics)
  - EN55022 and EN55024
  - EN55022 or CISPR22 or AS/NZS CISPR22
  - CNS 13438(95)
  - 51318.22-99 and 51318.24-99
  - KN22 and KN24
  - GB17625.1-2003
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### Environmental Regulatory Compliance

- RoHS-6 (with lead exemption) Directive 2002/95/EC
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### Standards Compliance

Brocade VDX 6710 products conform to the following Ethernet standards:

- IEEE 802.1D Spanning Tree Protocol
  - IEEE 802.1s Multiple Spanning Tree
  - IEEE 802.1w Rapid reconfiguration of Spanning Tree Protocol
  - IEEE 802.3ad Link Aggregation with LACP
  - IEEE 802.3ae 10G Ethernet
  - IEEE 802.1Q VLAN Tagging
  - IEEE 802.1p Class of Service Prioritization and Tagging
  - IEEE 802.1v VLAN Classification by Protocol and Port
  - IEEE 802.1AB Link Layer Discovery Protocol (LLDP)
  - IEEE 802.3x Flow Control (Pause Frames)
  - IEEE 802.3ab 1000BASE-T
  - IEEE 802.3z 1000BASE-X
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# More information

## Fujitsu OPTIMIZATION Services

In addition to Brocade VDX 6710 Converged 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/](http://www.fujitsu.com/global/services/computing/)

- PRIMERGY: Industrial standard server
- SPARC Enterprise: UNIX server
- PRIMEQUEST: Mission-critical IA server
- ETERNUS: Storage system
- BS2000 mainframes

### Software

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

- Interstage: Application infrastructure software
- Systemwalker: System management software

## More information

Learn more about Brocade VDX 6710 Converged switch, please contact your Fujitsu sales representative, Fujitsu business partner, or visit our website.  
[www.fujitsu.com/eternus/](http://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/](http://www.fujitsu.com/global/about/environment/)



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