

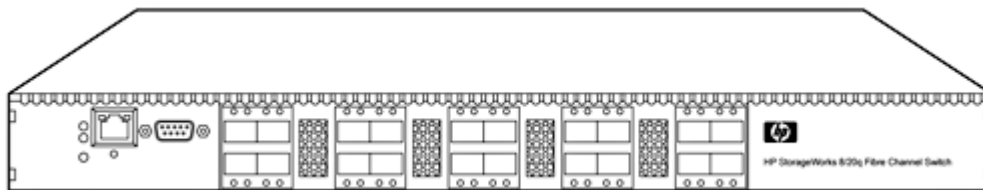
### Overview

The HP 8/20q SAN Switch offers the simplest and most affordable way to share the capacity of Fibre Channel storage devices among multiple servers. Connect as little as 2 devices or scale up to 20 Fibre Channel devices with a single switch. Mix any combination of servers, disk storage or backup storage for maximum flexibility and investment protection. The HP 8/20q also supports legacy 4Gb and 2Gb Fibre Channel SAN devices and the ability to interconnect multiple Fibre Channel switches to expand a SAN. The HP 8/20q switch interoperates with existing Brocade and Cisco switches making the H-Series 8/20q a valuable contributor to any SAN.

The HP 8/20q supports all of the HP Fibre Channel storage arrays and Fibre Channel backup solutions including:

- P2000 Series Disk Arrays (MSA family)
- P6000 Series Disk Arrays (EVA family)
- 3PAR Series Disk Arrays
- StoreVirtual 4000 Series FC (Lefthand family with Fibre Channel connectivity)
- Enterprise Backup Solutions

With the dependency on fewer storage devices in a consolidated SAN and the increasing number of virtualized servers on fewer server hardware platforms, the need to build redundancy into your SAN is paramount. The 8/20q switches and H-Series Host Bus Adapters can be configured as redundant fiber channel paths to reduce downtime associated with a single failed Fibre Channel component



HP 8/20q Fibre Channel Switch

New RoHS compliant HP Multifunction Router

**NOTE:** Restriction of Hazardous Substances Directive or RoHS is a directive adopted by the European Union that restricts the use of certain hazardous materials in the manufacture of various types of electronic and electrical equipment. The ROHS compliant products with new part numbers listed in this document are functionally equivalent to the corresponding products with old part numbers and are fully interchangeable.

### Key Features and Benefits

- Today's performance at affordable prices:
  - High performance at affordable pricing - The future is within your reach today with state-of-the-art 8 Gbps Fibre Channel technology offering the bandwidth today that you will need for support of emerging technologies. 8 Gbps speed extends the useful life of your purchase. Migrate at your own pace.
  - Enterprise-class functionality - Powerful features such as Adaptive Trunking (optimizes fabric speed), drag-and-drop zoning, I/O StreamGuard (uninterrupted dataflow), automatic firmware notifications and downloads and non-disruptive upgrades give you the winning edge and help you get the most out of your SAN.
  - Integrated end-to-end management - No need to master separate interfaces to control HP switches, HBAs and storage. Configure and monitor them all from a convenient unified dashboard.
- Simplicity at its finest:
  - Ease of deployment - Setting up your first SAN is now fast, easy and fool-proof. Eliminate the risk of expensive configuration errors with point-and-click wizards. Ensure full optimization and "best practices" with minimal training and expertise.
  - Application-based wizards - Application-based wizard enables your SAN to be quickly and easily provisioned based on published best practices. Included is a Microsoft Exchange wizard sized for a variety of typical configurations as well as a

### Overview

custom template to create your own for fast deployment of other applications.

- The 8/20q is included in an aggressively priced bundle - Ordering and deploying your first SAN couldn't be any easier or a better value. The 8Gb Simple SAN Connection Kit includes everything required for a 4-host SAN infrastructure, including 8Gb HBAs, cables and SFPs--just add your choice of HP storage!
- Built with the future in mind:
  - Scalability - Start with an 8-port switch and as your needs for FC port growth change, simply expand via four-port license keys up to 20 ports per chassis. Then link additional switches to create a larger high-performance enterprise SAN of any topology.
  - Long term value - Whether your needs involve email/database scalability, server/storage consolidation or automated backup/disaster recovery, an HP 8/20q Fibre Channel Switch can provide accelerated ROI for your company.
  - Interoperability with HP B-series and C-series fabrics using new Transparent Routing (TR) feature enables low cost SAN expansion with simplification of management at remote sites
- Gain operationally efficiencies with unique SAN management software
  - Integrated end-to-end management-server to storage
  - Microsoft Exchange wizard eliminates user error
  - Drag-and-drop zoning
  - Adaptive Trunking
  - Includes IO StreamGuard
  - Enterprise Fabric Management Suite software (EFMS) for managing and monitoring larger SANs (optional)
- Interoperability
  - TR - Seamless operation: HP B and C-series SANs
  - 8/20q and SN6000 via device port -> ISL

### Models

#### What's new

New RoHS HP 8/20q Fibre Channel Switch

**NOTE:** Restriction of Hazardous Substances Directive or RoHS is a directive adopted by the European Union that restricts the use of certain hazardous materials in the manufacture of various types of electronic and electrical equipment. The ROHS compliant products with new part numbers listed in this document are functionally equivalent to the corresponding products with old part numbers and are fully interchangeable.

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<b>HP 8/20q Fibre Channel Switch</b>	HP 8/20q Fibre Channel Switch (8 switch ports active)	AQ233B*
	HP 8/20q Fibre Channel Switch (16 switch ports active)	AK242B*
	HP 8/20q 4-port Upgrade LTU	T5463A

\*#0D1 may appear after this part number on your sales order when factory integration is indicated.

### Product Highlights

#### Configuration support

The 8/20q Fibre Channel Switch will interoperate with other HP H-series Fibre Channel Switches running the firmware version defined in the SAN Design Guide:

<http://www.hp.com/go/sandesignguide>

The 8/20q Fibre Channel Switch will also interoperate with HP B-series and C-series fabrics using Transparent Routing (TR) technology. For details and supported firmware versions, refer to the SAN Design Guide:

<http://www.hp.com/go/sandesignguide>

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#### High-availability features

- Hot-swappable 8 Gbps SFP+ optical transceivers
- Non-Disruptive Code Load and Activation (NDCLA)
- Non-Disruptive Port License Activation
- Two switches for redundancy

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#### Security features

- User Security
  - User Accounts
  - RADIUS Authentication
- Connection security
  - SSH (CLI)
  - SSL (EFS and SMI-S)
- Device security
  - FC-SP DH-CHAP
  - FC-GS-4 CT Authentication

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#### Manageability

- SAN Connection Manager (SCM) (included)
- QuickTools (Included)
- Command Line Interface (Included)
- Enterprise Fabric Management Suite (EFMS)
- HP Systems Insight Manager
- SMI-S v1.1 provider
- GS-4 Management Server (including FDMI)
- SNMP
- FTP
- TFTP
- RADIUS

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#### Scalability

- All topologies supported: cascade, ring, and mesh
- Up to six Inter-Switch links (ISLs) per switch
- Supports up to 30 switches in a fabric
- Adaptive trunking, intelligent path selection
- The 8/20q Fibre Channel Switch scales the maximum limits defined in the SAN Design Guide:  
<http://www.hp.com/go/sandesignguide>

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#### Cabinet Support

- 22U, 36U, and 42U; 5000, 9000, 10,000 series cabinets and Intelligent Series racks

### Product Highlights

#### Disk Array Support

- HP P2000 G3 MSA
- HP MSA2000fc and MSA2000fc G2
- HP MSA1000 and MSA1500 (active/active failover only)
- P6000/EVA, P6300, P6500
- HP StoreVirtual 4000 Series with Fibre Channel Connectivity
- HP EVA4400, EVA6400, EVA8400
- HP EVA4100, EVA6100, EVA8100
- HP EVA4000, EVA6000, EVA8000
- HP P9000/XP, P9500, XP10000, XP20000, XP12000, XP24000
- HP 3PAR StoreServ 7000 Series , F-Class , T-Class, V-Class (P10000)

**NOTE:** SAN Connection Manager software integration and array provisioning are available with P6000/EVA and P2000/MSA. All other supported storage devices provide hardware connect support to the switch/HBA. Refer to SPOCK (<http://www.hp.com/storage/spock>) for the most recent interoperability support matrix

#### Server Support

- HP ProLiant ML, DL series servers
- HP Integrity servers
- HP BladeSystem c-Class ProLiant server blades
- HP BladeSystem c-Class Integrity server blades

#### H-series Solutions

The following HP products combine with HP H-series switches to provide unique, and comprehensive end-to-end solutions that are powerfully simple to manage.

- HP BladeSystem c-Class chassis
- HP Virtual Connect Fibre Channel module for the HP BladeSystem c-Class enclosure
- HP Virtual Connect Enterprise Manager (VCEM)
- HP SAN Connection Manager (SCM)
- HP Enterprise Virtual Array (P6000/EVA), or Modular Storage Array (P2000/MSA)
- HP Command View EVA Software & HP P6000 Command View Software
- HP Continuous Access EVA Software
- HP P6000 Continuous Access Software
- HP FC HBAs for the HP BladesySystem c-Class Enclosure
- HP H-series Fibre Channel switches (SN6000 and 8/20q)
- HP MPX200 Multifunction Router (H-series switches and FCIP gateway for remote replication)

#### Operating System Support

- Microsoft Windows Server 2012 x64
- Microsoft Windows Server 2012 x64 Hyper-V
- Microsoft Windows Server 2008
- Microsoft Windows Server 2003 SP2 and R2
- Microsoft Windows Storage Server 2003
- VMware ESX v3.5 U1 and v3.5 U2, 4.0
- Red Hat Enterprise Linux (RHEL) 4.5, 4.6, 5, 5.1, 5.2
- SUSE Linux Enterprise Server (SLES) 9 SP3 and SP4, 10 SP1 and SP2
- HP-UX 11.23, 11.31

For support details, see the SAN Design Guide: <http://www.hp.com/go/sandesignguide>

### Product Highlights

#### Enterprise Backup Support (EBS)

- MSL6000 with LTO4 drives
- MSL2024, MSL4048, and MSL8096 with LTO4 drives
- EML-e Series with LTO4 drives
- HP 6000 Virtual Library System
- HP 9000 Virtual Library System
- HP 12000 Virtual Library System EVA Gateway

#### QuickTools (included)

On-board graphical user interface that resides on each switch allows administrators to access basic switch element management functionality using the switch's IP address.

### Optional Software

#### HP Enterprise Fabric Management Suite (EFMS)

HP Enterprise Fabric Management Suite (EFMS) software is a set of simple, affordable and powerful fabric management tools for HP H-series fabrics. A management interface provides performance and fabric monitoring as well as configuration tools for H-series fabrics. Users are licensed, per site, geographic location, or campus, to manage an unlimited number of switches and fabrics from a single, fully integrated application.

Enterprise Fabric Management Suite also provides maintenance, isolation and troubleshooting capabilities for SAN administrators who require advanced tools. Included with EFMS is a comprehensive set of real-time diagnostic tools for monitoring and troubleshooting Fibre Channel Fabrics. Determine if a device is responding, trace the path in the fabric, as well as monitor the health of SFP and XPAK transceivers.

Reference URL: [www.hp.com/go/EFMS](http://www.hp.com/go/EFMS)

- **Performance Monitoring** provides easy-to-configure/easy-to-use graphs for monitoring the performance of your Fibre Channel SAN. Troubleshoot fabric problems and identify performance bottlenecks before they become an issue. Historical performance data can be exported to spreadsheets or databases for analysis.
- **Extended Credit Wizard** steps the user through a simple and easy to use interface, allowing the user to quickly configure ports to support situations when long distance communication is required.
- **Fabric Tracker** allows the user to view two saved configurations and compare the differences. Periodically take a snap-shot of the fabric configuration to see what has changed from yesterday, a week ago, a month ago, or from the day of installation.
- **Fabric Monitoring** enables the user to configure thresholds and alarms per switch port to alert operations when unexpected error rates, traffic levels, or anomalies occur in the fabric. Enterprise Fabric Management Suite can be configured to send alerts, through SNMP for full integration into existing enterprise monitoring applications.
- **Auto Filtering** takes the time and labor out of finding useful switch and port statistics- health, operation, and environmental statistics are a mouse click away. Filter switch data using buttons that group data into logical sets. Quickly find critical switch information such as power, cooling, health and the associated IP network status.
- **Fabric Zoning** provides simple drag and drop zoning with fast and easy activation. Unmatched flexibility with support of multiple zoning types: Port WWN Zoning, Node WWN Zoning, FCID Zoning, Hard Zoning, Soft Zoning.
- **Device Management** is a mouse click away through the topology view. Configure IP network properties, upgrade firmware, view and modify switch properties easily. Setup and configuration of devices in the fabric is made simple and fast.
- **Configuration and Zoning Wizards** makes a switch that is already easy to configure and zone even easier. Prompts guide the user through screens to quickly configure and zone a switch.
- **Switch and Fabric Event Monitoring along with Alerting** provide the user with views of monitored

### Product Highlights

- events and alerts that can also be configured and sent to management applications through SNMP.
- **mPort Technology** provides users with the flexibility to decide which licensed ports are active (SN6000 or 8/20q with less than 20 enabled device ports) . De-activate one to four of the high-speed stacking ports of the SN6000 and enable the equivalent number of device ports. The administrator decides which ports are active based on their fabric needs.
  - **Robust On-Line Help** features provide step by step instructions through an embedded Help function.
  - **Fibre Channel Fabric Ping** is an essential tool for troubleshooting fabric problems. FC Ping verifies that a functional path exists between two ports and provides round trip information. Administrators can determine which ports and devices are responding - allowing the administrator to quickly identify issues.
  - **Fibre Channel Trace Route** provides insight about the fabric and assists with troubleshooting congestion. FC Trace Route traces the route through the Fibre Channel network and displays path information between a source and destination device in order to determine the path of communication between the two devices. Knowing this aids the administrator in making decisions about fabric performance and problem resolution. FC Ping used in conjunction with FC Trace Route gives the administrator a powerful tool to pinpoint fabric connectivity problems and diagnose performance issues.
  - **Digital Diagnostics Monitoring** provides SFP and XPAK transceiver data and health status that SAN administrators depend on. Increase uptime of the SAN by proactively monitoring the vitals of transceivers. Set policies and trigger alarms based on power, temperature, voltage and current of the transceiver. Predict potential failures or isolate existing problems in the fabric with this simple, yet powerful, tool.

### Service and Support, HP Care Pack, and Warranty Information

#### Warranty

(1-1-1) Hardware Warranty - One-year on-site warranty, normal business hours, next business day response, installation not included.

Software Warranty - HP warrants only that the software media will be free of physical defects for a period of ninety (90) days from delivery.

**NOTE:** During the warranty period HP will provide standard business hours, standard business days telephone support for firmware and embedded non-saleable software.

#### HP Care Pack Services

##### **For increased uptime, productivity and ROI -HP Care Pack packaged services for Storage**

These days, you need to get the most out of your storage investment-you can't afford not to. When you buy HP storage products and solutions, it's also a good time to think about what levels of service and support you may need. To help take the worry out of deploying, designing, maintaining, and managing your environment, we've designed a portfolio of service options that are as: flexible, reliable and scalable as your storage. Unlike storage-only vendors, we take a holistic approach to your entire environment, bridging storage, servers, blades, software and network infrastructures with our HP Care Pack packaged services for Storage.

##### **Protect your business beyond the warranty**

When it comes to robustness and reliability, standard warranties on today's computing equipment have matured just as the technologies have matured. Good news on some fronts-but also a source of potential problems and subsequent consequences that come from depending on standard warranties alone. Standard warranty protects against product defects and some causes of downtime- but not the business. By using a standard approach to warranty uplifts, such as HP Care Pack Services, you can reduce downtime risks and be more certain of operational consistency for both mission-critical and standard business computing. Simply put, HP Care Pack Services normalize the warranty of combined products - helping you proactively guard against unplanned downtime.

##### **Extending warranties with HP Care Pack Services**

For cost-effective upgrading or extending your standard warranty, HP Care Pack Services offer a suite of standard reactive hardware and software support services that are sold separately, or combined as with our Support Plus and Support Plus 24 services. The portfolio also provides a combination of proactive and reactive services, such as Proactive 24 Service and Critical Service. In addition, with HP Proactive Select we offer an innovative approach to service delivery that gives you the flexibility to acquire the specific proactive services you need today, then add services as your needs evolve. HP Proactive Select offers a broad set of technical or per-event type service options - including server, storage, and network, SAN device, and software, environment, installation and education services. Services that you can mix and match depending on your specific requirements, from preliminary planning and equipment delivery to installation, configuration, integration, and testing, through every level of ongoing support. Our HP Care Pack packaged services for Storage assures help when you need it most. And for many products, post-warranty HP Care Pack Services are available when your original warranty has expired.

##### **HP Storage Services: Offering reliability, flexibility and value-just like your storage**

HP Storage Services offers a full spectrum of customer care, from technology support to complex migrations to complete completely managed services. HP Factory Express provides customization, integration and deployment services for turnkey solutions. HP Education offers flexible, comprehensive training on storage networking, disk storage systems, and storage software to help your IT staff get the most out of your investments. And HP Financial solutions extend innovative financing and asset management programs to cost-effective buy, manage and eventually retire your older equipment.



### Service and Support, HP Care Pack, and Warranty Information

HP Storage Services, the trusted business technology experts who manage your technology in action, because when technology works, business works. <http://www.hp.com/services/storage>

**NOTE:** Care Pack Services availability may vary by product and country.

HP Care Pack Services are sold by HP and HP Authorized Service Partners:

- Services for customers purchasing from HP or an enterprise reseller are quoted using HP order configuration tools.
- Customers purchasing from a commercial reseller can find HP Care Pack Services at <http://www.hp.com/go/lookuptool>

Recommended Services	Recommended HP Care Pack Services for optimal satisfaction with your HP product.
	<p><b>3-Year HP Support Plus 24</b> For a higher return on your storage investment, HP Support Plus 24 provides integrated hardware and software support services designed specifically for your technology. Available 24x7, this 3-year combined reactive support option delivers onsite hardware support and over-the-phone software support around-the-clock. Leverage the full strength of HP Technology Services - customers can trust the services professionals at HP to work collaboratively with them, putting our strategic and technical know-how to work across their entire infrastructure.</p> <ul style="list-style-type: none"> <li>• Improve uptime with responsive hardware and software services</li> <li>• Enjoy consistent service coverage across geographically dispersed sites</li> <li>• Update HP software at a predictable cost</li> <li>• Increase customer satisfaction-with no interoperability gaps</li> </ul> <p><a href="http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-6638EN.pdf">http://h20195.www2.hp.com/V2/GetPDF.aspx/5981-6638EN.pdf</a></p>
	<p><b>HP SAN Solution Service for SANs</b> For customers who are building a new SAN or expanding their existing one, we offer the HP Enhanced Implementation Service for SANs. This provides complete design and implementation services for Fibre Channel, FCOE, FCIP, SAS and iSCSI SAN connectivity components. Covering all major SAN connectivity technologies including virtual as well as physical hosts, no competitor offers a more complete end to end SAN design and implementation service, ensuring comprehensive optimal SAN connectivity tailored to your specific environment.</p> <ul style="list-style-type: none"> <li>• Ensures optimal SAN connectivity tailored to your specific environment.</li> <li>• Allows your IT resources to stay focused on their core tasks and priorities</li> <li>• Reduces implementation time, impact and risk to your storage environment</li> <li>• Helps ensure a successful implementation for complex deployments by providing HP project management</li> </ul> <p><a href="http://h20195.www2.hp.com/v2/GetPDF.aspx/5981-8527EN.pdf">http://h20195.www2.hp.com/v2/GetPDF.aspx/5981-8527EN.pdf</a></p>
	<p><b>HP Assessment Services for SANs</b> The HP Assessment Service for SANs offers customized technical and operational guidance to customers employing HP storage subsystems and the interconnecting storage area network (SAN) infrastructure. In a typical engagement, HP or one of our authorized business partners will perform a detailed discovery using HP's proprietary toolset to gain an understanding of</p>

### Service and Support, HP Care Pack, and Warranty Information

	<p>the configuration of your storage devices and SAN topology. The findings from this process will be compared to HP best practices and industry standards as defined by IT Service Management (ITSM) disciplines. The results of the evaluation will be quickly and efficiently processed into information you can leverage. This information, in the form of a comprehensive HP SAN Assessment report, will be summarized by HP or one of our authorized business partners with recommendations that are intended to improve availability levels and ongoing management of your storage and SAN environment.</p> <ul style="list-style-type: none"> <li>● Recommendations to optimize your customer's SAN based on comprehensive discovery information</li> <li>● Decrease the potential for unplanned downtime and encourage higher productivity by exposing single points of failure and other potential SAN configuration issues</li> <li>● Clear documentation allows for optimal SAN management, more efficient future SAN implementations and lower IT staff involvement</li> <li>● Service requires no SAN downtime and is easily adapted as a periodic review to help keep SANs performing efficiently as business evolves</li> </ul> <p><a href="http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA1-2941ENW.pdf">http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA1-2941ENW.pdf</a></p>
<p><b>Optional Services</b></p>	<p><b>Optional HP Care Pack Services that will enhance your HP product experience.</b></p> <p><b>3-Year HP Proactive 24</b></p> <p>As an alternative to our recommended support level, for customers who want improved SAN availability and access to a wide range of proactive and reactive services:</p> <p>HP Proactive 24 Service for SANs is an integrated hardware and software support service that combines proactive problem prevention with responsive 24x7 assistance for rapid problem resolution.</p> <p>A collaborative relationship with HP Services strengthens your IT team and gives you direct access to our technical expertise as issues arise.</p> <p>Improve IT staff skills, increase SAN productivity.</p> <p>Proactive 24 Service for SANs can help you:</p> <ul style="list-style-type: none"> <li>● Enhance the skills and efficiency of your IT staff through knowledge transfer, shared best practices in storage management, and hands-on assistance</li> <li>● Improve SAN availability through access to a wide range of proactive and reactive services</li> <li>● Boost productivity through effective change management, configuration assistance, and performance optimization</li> <li>● Increase the return on your SAN investment</li> <li>● Enhance your overall operational effectiveness</li> </ul> <p>Expert single-point-of-contact assistance 24x7</p> <ul style="list-style-type: none"> <li>● An assigned HP Services account manager is your primary contact for proactive services and access to HP's diverse technical resources. Your</li> </ul>

### Service and Support, HP Care Pack, and Warranty Information

account manager works closely with your IT staff to understand your goals, document the components of your infrastructure, recommend changes to improve performance and stability, and monitor ongoing operations through HP's industry-leading remote monitoring and support tools.

<http://h20195.www2.hp.com/v2/GetPDF.aspx/4AA0-1614ENUC.pdf>

#### eSupport

HP eSupport is a portfolio of technology-based services that assist you with managing your business environment - from the desktop to the data center.

##### Support Portal

The HP support portal provides one-stop access to the information, tools and services you need to manage the daily operations of your IT environment.

Features include:

- Access to self-solve tools (including search technical knowledge base)
- Efficient logging and tracking of support cases
- Collaboration with other business and IT professionals
- Download of patches and drivers
- Access to diagnostic tools
- Proactive notification of relevant information

Access to certain features of the support portal requires an HP service agreement. To access the support portal, visit <http://www.hp.com/support>

#### Customer Technical Training

Consider education as an integral part of your strategy to get the best return on investment for your HP storage solution. HP offers a variety of training courses on storage software, networking, archiving and disk storage systems. Our classes are available in many delivery modalities from traditional instructor-led courses at one of our 80 training centers worldwide to on-site training customized to your needs or online. [www.hp.com/learn/storage](http://www.hp.com/learn/storage)

#### HP Services Awards

HP Services continues to be recognized for service and support excellence by customers, partners, industry organizations and publications around the world. Recent honors and award reflect our services team's dedications, technical expertise, professionalism and uncompromising commitment to customer satisfaction. For a list of all our awards, please visit <http://h20219.www2.hp.com/services/cache/433028-0-0-225-121.htm>

#### Additional Services Information

For more information about HP Care Pack Services for Storage, please visit: <http://www.hp.com/services/storage>

### Configuration Information

#### Step 1 – Base Configuration

Select one:

Model Name	Model Description	Part Number
HP 8/20q 8 port active Fibre Channel Switch	20-device port Fibre Channel Switch with 8 active ports, SAN Connection Manager software, country-specific power cord, serial cable, licenses, rack mount kit, and docs. <b>NOTE:</b> Requires optical transceivers listed below.	AQ233B
HP 8/20q 16 port active Fibre Channel Switch	20-device port Fibre Channel Switch with 16 active ports, SAN Connection Manager software, country-specific power cord, serial cable, licenses, rack mount kit, and docs. <b>NOTE:</b> Requires optical transceivers listed below.	AK242B

#### Step 2 – Additional Options

<b>Port Upgrades</b>	HP 8/20q 4-Port Upgrade LTU	T5463A
<b>8Gb Optical Transceivers (SFP+)</b>	HP 8 Gbps Short Wave FC SFP+	AJ718A
<b>4Gb Optical Transceivers (SFP)</b>	HP 4 Gbps Short Wave FC SFP	A7446B
<b>8Gb Long Wave Optical Transceiver (SFP+)</b>	HP 8Gb Long Wave 10km Fibre Channel SFP+ 1 Pack Transceiver	AW584A

#### Optical cables

##### HP PremierFlex OM4 Fibre Optic cables

1m PremierFlex OM4 LC/LC Multi-Mode Optical Cable	QK732A
2m PremierFlex OM4 LC/LC Multi-Mode Optical Cable	QK733A
5m PremierFlex OM4 LC/LC Multi-Mode Optical Cable	QK734A
15m PremierFlex OM4 LC/LC Multi-Mode Optical Cable	QK735A
30m PremierFlex OM4 LC/LC Multi-Mode Optical Cable	QK736A
50m PremierFlex OM4 LC/LC Multi-Mode Optical Cable	QK737A
10m PremierFlex OM4 MPO/MPO 8 fiber Multi-Mode Optical Cable	QK729A
50m PremierFlex OM4 MPO/MPO 8 fiber Multi-Mode Optical Cable	QK731A

##### OM3 LC-LC type cables

.5 m LC-LC Multi-Mode OM3 Fibre Channel Cable	AJ833A
1 m LC-LC Multi-Mode OM3 Fibre Channel Cable	AJ834A
2 m LC-LC Multi-Mode OM3 Fibre Channel Cable	AJ835A
5 m LC-LC Multi-Mode OM3 Fibre Channel Cable	AJ836A
15 m LC-LC Multi-Mode OM3 Fibre Channel Cable	AJ837A
30 m LC-LC Multi-Mode OM3 Fibre Channel Cable	AJ838A
50 m LC-LC Multi-Mode OM3 Fibre Channel Cable	AJ839A

#### Optional Software

HP H-series Enterprise Fabric Management Suite LTU paper	TC321A
HP H-series Enterprise Fabric Management Suite E-LTU electronic	TC321AAE
HP Intelligent Infrastructure Analyzer Software v2 LTU	TC472A
HP Intelligent Infrastructure Analyzer Software v2 E-LTU	TC472AAE

### Technical Specifications

<b>Fibre Channel Standards And Revisions</b>	Physical Interface (FC-PI-3, FC-PI-4) Line Services (FC-LS) Framing & Signaling (FC-FS-3) Generic Services (FC-GS-6) Switch Fabric (FC-SW-5), except for enhanced zoning Arbitrated Loop-2 Rev. 7.0 (FC-AL-2) Fibre Channel Device Attach (FC-DA) Fibre Channel Methodologies for Interconnects (FC-MI-2) Tape Technical Report (FC-Tape) Virtual Interface Architecture Mapping (FC-VI) Fabric Element MIB Specification (RFC 2837) Fibre Alliance MIB Specification (Version 4.0) Security Protocols (FC-SP)
<b>Fibre Channel ports</b>	20 universal device ports
<b>Scalability</b>	Full fabric architecture: <a href="http://www.hp.com/go/SANDesignGuide">http://www.hp.com/go/SANDesignGuide</a>
<b>Certified maximum</b>	Refer to SAN Design Guide: <a href="http://www.hp.com/go/SANDesignGuide">http://www.hp.com/go/SANDesignGuide</a>
<b>Interoperability</b>	<b>H-series fabric</b> <ul style="list-style-type: none"><li>● HP 8/20q Fibre Channel Switch</li><li>● HP SN6000 Stackable 8Gb Fibre Channel Switch</li></ul> <b>HP B-series fabric</b> <sup>1</sup> using Transparent Router feature <b>HP C-series fabric</b> <sup>1</sup> using Transparent Router feature <sup>1</sup> Refer to the SPOCK data base for supported B-series and C-series switches: <a href="http://www.hp.com/storage/spock">http://www.hp.com/storage/spock</a>
<b>Performance</b>	8 Gbit/sec line speed, full duplex
<b>Switch core</b>	Non-blocking
<b>Form Factor</b>	1U
<b>Fabric latency</b>	<0.2µ sec., cut-through routing
<b>Maximum frame size</b>	2148 bytes (2112 byte payload)
<b>Classes of service</b>	Class 2, Class 3, Class F (inter-switch frames) connectionless Fibre Channel protocol support
<b>Port types</b>	FL_Port, F_Port, and E_Port; G_Port, GL_port (auto-configuring)
<b>Data traffic types</b>	Fabric switches support unicast and broadcast
<b>Media types</b>	8 Gbps Small Form-Factor Pluggable Plus (SFP+) optical transceivers
<b>Laser</b>	Distance using short-wave 8 Gbps optical transceivers at 2 Gbps, 4 Gbps, and 8 Gbps connection speed: 8 Gbps: OM4 fiber: 190m OM3 fiber: 150 m OM2 fiber: 50 m 4 Gbps: OM4 fiber: 400m OM3 fiber: 270 m OM2 fiber: 150 m

### Technical Specifications

2 Gbps:	OM3 fiber: 500 m OM2 fiber: 300 m
Distance using short-wave 4Gb optical transceivers at 2Gb and 4Gb connection speed:	
4 Gbps:	OM3 fiber: 270 m OM2 fiber: 150 m
2 Gbps:	OM3 fiber: 500 m OM2 fiber: 300 m

#### Fabric services

Simple name server  
Hardware based zoning  
Registered State Change Notification (RSCN)  
I/O StreamGuard™  
Multi-chassis in-order delivery  
Automatic path selection  
FDMI support

#### Options

8 Gbps SFP+ and 4 Gbps SFP optical transceivers, device port upgrade license (4-port increments), Enterprise Fabric Management Suite software

#### Supported software

SAN Connection Manager, QuickTools, Enterprise Fabric Management Suite (EFMS)

#### Management access

10/100 Ethernet Base T (RJ-45), serial port (RS-232 with DB9), in-band (Fibre Channel)

#### Diagnostics

Power-on self test POST

#### Front-to-back airflow

RoHS compliant

#### Dimensions

<b>Width</b>	17 in (43.2 cm)
<b>Height</b>	1.7 in (4.32 cm)
<b>Depth</b>	18.75 in (47.6 cm)
<b>Weight</b>	14 lb (6.4 kg)

#### Environment

<b>Temperature</b>	<b>Operating</b>	32° to 113° F (0° to 45° C)
	<b>Non-operating</b>	-40° to 158° F (-40° to 70° C)
<b>Humidity</b>	<b>Operating</b>	15% to 80% non-condensing at 104° F (40° C)
	<b>Non-operating</b>	5% to 90% , non condensing at 149° F (65° C)
<b>Altitude</b>	<b>Operating</b>	0 to 10,000 ft.
	<b>Non-Operating</b>	0 to 50,000 ft.
<b>Shock</b>	<b>Operating</b>	4 G, 11 ms, 20 repetitions
	<b>Non-Operating</b>	30 G, 13 ms, trapezoidal
<b>Vibration</b>	<b>Operating</b>	5-500-5 Hz, random, 0.21 G, 10 minutes
	<b>Non-operating</b>	5-500 Hz, random, 2.09 G, 10 minutes

#### Power consumption

<b>Supported power range</b>	<b>Operational</b>	100 to 240 VAC
<b>Frequency</b>		50 to 60 Hz
<b>Heat output</b>		60 watts nominal
		70 watts typical maximum

#### Emissions

FCC subpart B section 15 - Class A (United States)  
ICES-003, Issue 4:2004 - Class A (Canada)  
AS/NZS CISPR22 - Class A (Australia/New Zealand)  
VCCI V-3/2006.04 - Class A (Japan)

### Technical Specifications

CISPR/EN 55022:1998 + A1:2000 and A2:2003 - Class A (EU)  
EN 61000-3-2: 2000 + A2: 2005  
EN 61000-3-3: 1995 + A1: 2001  
KN22 with RRL notice No. 2005-85 - Class A (Korea)

### Safety

US: UL Listed, UL 60950-1  
CANADA, CSA C22.2 No. 60950-1 - cUL Listed  
Europe: EN60950-1  
CB Scheme-IEC 60950-1  
European Union CE  
German GS Mark through UL/DEMKO  
DEMKO  
VCCI-A  
Russia: GOST R

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