

Lenovo ThinkSystem DB620S 32Gb FC SAN Switch Product Guide

The Lenovo ThinkSystem DB620S FC SAN Switch provides exceptional price/performance value by delivering market-leading 32 Gb Gen 6 Fibre Channel technology and combining flexibility, simplicity, and enterprise-class functionality that supports highly virtualized environments to meet the demands of hyper-scale, private cloud storage, and growing flash-based storage environments.

Designed to enable maximum flexibility and reliability, the ThinkSystem DB620S is a compact, 1U rack-mount FC switch that offers low-cost access to industry-leading Storage Area Network (SAN) technology while providing “pay-as-you-grow” scalability to meet the needs of an evolving storage environment.

The DB620S FC SAN Switch offers 48x SFP+ ports that support 4/8/10/16/32 Gbps speeds and 4x QSFP+ ports that support 128 Gbps (4x 32 Gbps) or 4x 4/8/16/32 Gbps speeds. The DB620S FC SAN switch provides easy integration into the existing SAN environments while realizing the benefits of Gen 6 Fibre Channel connectivity, and the switch offers a rich set of standard features with the options to expand its capabilities as needed.

The DB620S FC SAN Switch features the EZSwitch Setup wizard and can be configured in Access Gateway Mode to simplify deployment. The switch provides full non-blocking performance with Ports On Demand scalability to support SAN expansion and enable long-term investment protection.

The following figure shows the Lenovo ThinkSystem DB620S 32Gb FC SAN Switch.



Figure 1. Lenovo ThinkSystem DB620S 32Gb FC SAN Switch

Did you know?

The DB620S FC SAN Switch leverages storage connectivity technologies from Brocade, a leader in Fibre Channel networking.

The DB620S FC SAN Switch offers dual functionality as either a full-fabric SAN switch or as an N_Port ID Virtualization (NPIV)-enabled Access Gateway that simplifies server connectivity.

Fabric Vision technology, an extension of Gen 6 Fibre Channel, provides unprecedented insight and visibility across the SAN with powerful built-in monitoring, management, and diagnostic tools.

With Lenovo FC SAN Switch offerings, Lenovo can be your trusted partner that offers "one stop shop" and single point of contact for delivery of leading edge technologies and innovations from Lenovo and other leading IT vendors. These offerings can satisfy the wide range of your end-to-end IT infrastructure needs, including end-user devices, servers, storage, networking, services, management software, and financing.

Key features

The ThinkSystem DB620S FC SAN Switch offers the following features and benefits:

- Provides high scalability in an ultra-dense, 1U switch with 48 SFP+ ports and 4 QSFP+ ports (each QSFP+ port has 4x 32 Gb FC links for 128 Gb FC connectivity between the DB620S FC SAN switches, or it can be broken out to four links to 4/8/16/32 Gbps SWL optics in a server HBA, storage device, or another FC switch, for a total of up to 64 connections) to support high-density server virtualization, cloud architectures, and flash-based storage environments.
- Increases performance for demanding workloads with support for 128 Gbps (4x 32 Gbps) and 32 Gbps FC links.
- Simplifies end-to-end management by automating repetitive daily management tasks.
- Enables “pay-as-you-grow” scalability from single-switch fabric to full-fabric enterprise capabilities with Ports On Demand scalability.
- Optimizes fabric behavior and ensure sufficient bandwidth for mission-critical applications with advanced traffic management capabilities and adaptive networking.
- Provides proactive, non-intrusive, real-time monitoring and alerting of VM and storage I/O health and performance with VM Insight and IO Insight through integrated network sensors.
- Leverages predefined MAPS policies to automatically identify and isolate devices that cause network performance issues.
- Offers dual functionality as either a full-fabric SAN switch or as an NPIV-enabled Access Gateway (requires 48 SFP+ ports be licensed) that enhances fabric scalability and simplifies management.
- Protects existing device investments with auto-sensing 4, 8, 16, and 32 Gbit/sec capabilities and native operation with Brocade fabrics.
- Runs Fabric OS, which delivers distributed intelligence throughout the network and enables a wide range of value-added features.
- Leverages Fabric Vision technology’s powerful monitoring, management, and diagnostic tools to simplify administration, increase uptime, and reduce costs.
- Supplies a rich set of standard features at no extra cost, including fabric services, advanced zoning, adaptive networking, full fabric and access gateway operations, integrated 10 Gb FC, and diagnostic tools.
- Expands fabric capabilities with optional licensed functions, including trunking, advanced monitoring and alerting, long-distance fabrics, and FC-FC routing.
- Compresses in-flight data on up to four ports for more efficient link utilization.
- Virtualizes physical FC SAN switches and fabrics into logical entities for better flexibility, utilization, management, and efficiency.
- Allows organizations to seamlessly integrate Gen 6 Fibre Channel networks with the next generation of flash storage – NVMe over Fibre Channel – by being NVMe-ready, without a disruptive rip and replace, to achieve faster application response times and harness the performance of solid state drives for better scalability across virtual data centers with flash storage.
- Maximizes resiliency with redundant hot-swap power supplies.
- Accelerates troubleshooting with built-in advanced diagnostics tools featuring ClearLink Diagnostics with D_Ports and select adapters from QLogic and Emulex, which helps ensure optical and signal integrity for 16 Gb and 32 Gb Fibre Channel optics and cables.

Components and connectors

The following figure shows the port-side view of the DB620S FC SAN Switch.

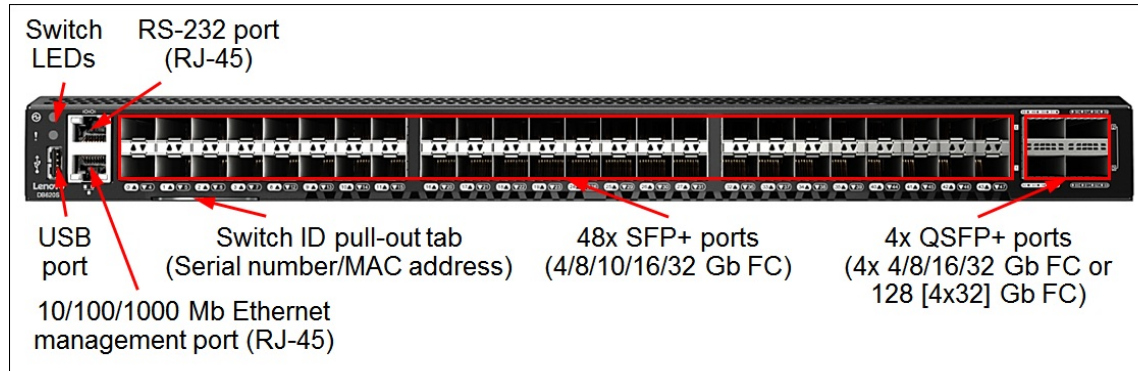


Figure 2. DB620S FC SAN Switch port-side view

RS-232 port: RS-232 port is a Mini-USB port for Models HC7, HC8, and HC9, or RJ-45 port (shown in the figure) for Models HC4, HC5, and HC6.

The following figure shows the non-port side view of the DB620S FC SAN Switch.

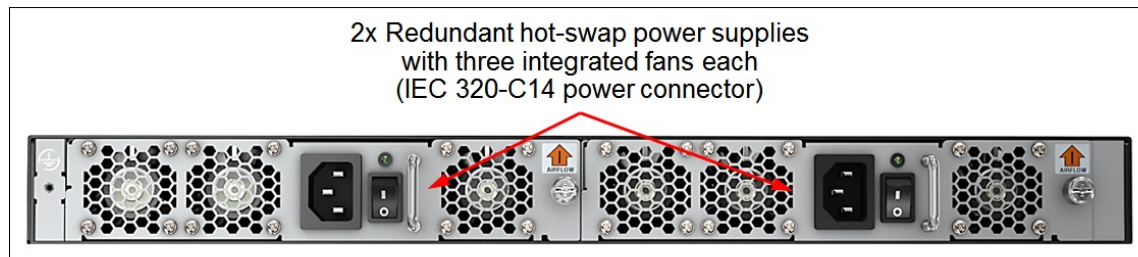


Figure 3. DB620S FC SAN Switch non-port-side view

System specifications

The following table lists the ThinkSystem DB620S system specifications.

Table 1. System specifications

Component	Specification
Form factor	Standalone or 1U rack mount
Ports	<ul style="list-style-type: none"> ● 48x SFP+ ports: <ul style="list-style-type: none"> ○ Models HC6 and HC9: 24 ports activated and 24x 16 Gb FC SWL SFP+ transceivers included; up to two optional 12-port activation license packs or bundles (12-port license pack and 12x 16 Gb or 32 Gb FC SWL SFP+ transceivers). ○ Models HC4 and HC7: 24 ports activated and 24x 32 Gb FC SWL SFP+ transceivers included; up to two optional 12-port activation license packs or bundles (12-port license pack and 12x 16 Gb or 32 Gb FC SWL SFP+ transceivers). ○ Models HC5 and HC8: 48 ports activated and 48x 32 Gb FC SWL SFP+ transceivers included. ● 4x QSFP+ ports (require an optional activation license).

Component	Specification
Media types	<ul style="list-style-type: none"> • 128 Gb (4x 32 Gb) FC QSFP+: short wavelength (SWL), long wavelength (LWL). • 4x 16 Gb FC QSFP+: SWL. • 32 Gb FC SFP+: SWL, LWL. • 16 Gb FC SFP+: SWL, LWL, extended long wavelength (ELWL). • 10 Gb FC SFP+: SWL, LWL.
Port speeds	<ul style="list-style-type: none"> • 128 Gb (4x 32 Gb) FC SWL QSFP+: 128 Gbps, 4x 32 Gbps, or 4x 16 Gbps. • 128 Gb (4x 32 Gb) FC LWL QSFP+: 128 Gbps or 4x 32 Gbps fixed. • 4x 16 Gb FC QSFP+: 4x 16/8/4 Gbps auto-sensing. • 32 Gb FC SFP+: 32/16/8 Gbps auto-sensing. • 16 Gb FC SFP+: 16/8/4 Gbps auto-sensing. • 10 Gb FC SFP+: 10 Gbps fixed. <p>Note: With Fabric OS 9.0 and later, the 4 Gbps port speed is supported only on the F_Port and N_Port port types.</p>
FC port types	<ul style="list-style-type: none"> • Full Fabric mode: F_Port, M_Port (Mirror Port), E_Port, EX_Port (Requires an optional Integrated Routing License), D_Port (Diagnostic Port). • Access Gateway mode: F_Port and NPIV-enabled N_Port.
Data traffic types	Unicast (Class 2 and Class 3), multicast (Class 3 only), broadcast (Class 3 only).
Classes of service	Class 2, Class 3, Class F (inter-switch frames).
Standard features	Full Fabric mode, Access Gateway, Advanced Zoning, Fabric Services, 10 Gb FC, Adaptive Networking, Advanced Diagnostic Tools, Virtual Fabrics, In-flight Compression, In-flight Encryption.
Optional features	Enterprise Bundle (ISL Trunking, Fabric Vision, Extended Fabric) or Mainframe Enterprise Bundle (ISL Trunking, Fabric Vision, Extended Fabric, FICON CUP), Integrated Routing.
Performance	Non-blocking architecture with wire-speed forwarding of traffic: <ul style="list-style-type: none"> • 4GFC: 4.25 Gbit/sec line speed, full duplex • 8GFC: 8.5 Gbit/sec line speed, full duplex • 10GFC: 10.51875 Gbit/sec line speed, full duplex • 16GFC: 14.025 Gbit/sec line speed, full duplex • 32GFC: 28.05 Gbit/sec line speed, full duplex • 128GFCp: 4x 28.05 Gbit/sec line speed, full duplex • Aggregated throughput: 2 Tbps • Up to 780 ns port-to-port local switching latency (including FEC) (1 μs per node with compression)
Scalability	<ul style="list-style-type: none"> • Maximum number of switches in the fabric: 239 • Maximum frame size: 2,112-byte payload • Maximum number of frame buffers per switch: 15,360 • Maximum number of ports per ISL trunk: 8x SFP+ or 2x QSFP+ (Up to 256 Gbps; ISL Trunking license is included in the Enterprise or Mainframe Enterprise bundle)
Cooling	Three fans built into each power supply; N+N cooling redundancy with two power supplies. Non-port to port side airflow.
Power supply	Two redundant hot-swap 250 W AC (100 - 240 V) power supplies (IEC 320-C14 connector).
Hot-swap parts	SFP+/QSFP+ transceivers, power supplies with fans.
Management ports	One 10/100/1000 Mb Ethernet port (UTP, RJ-45); one RS-232 port (Mini-USB [Models HC7, HC8, and HC9] or RJ-45 [Models HC4, HC5, and HC6]); one USB port (for additional firmware/log/configuration files storage).
Management interfaces	EZSwitch Setup; Web-based GUI (Web Tools); Command Line Interface (CLI); SMI-S; SNMP; REST API. Optional Brocade SANnav Management Portal and SANnav Global View.

Component	Specification
Security features	Secure Socket Layer (SSL); Secure Shell (SSH); Secure Copy (SCP); Secure FTP (SFTP); user level security, Role-based Access Control (RBAC); LDAP, RADIUS, and TACACS+ authentication; access control lists (ACLs); IP security (IPsec)
Hardware warranty	One-year customer-replaceable unit limited warranty with 9x5 next business day parts delivered.
Service and support	Optional service upgrades are available through Lenovo Services: 9x5 next business day onsite response, 24x7 2-hour or 4-hour onsite response, 24x7 6-hour or 24-hour committed service repair, up to 5 years of warranty coverage, 1-year or 2-year post-warranty extensions, and Basic Hardware Installation Services.
Firmware entitlement	One-year (HC4, HC5, HC6, HC7, HC8, and HC9)firmware entitlement and support license is included. Firmware entitlement extension licenses for Models HC4, HC5, HC6, HC7, HC8, and HC9 are included in the warranty service upgrades.
Dimensions	Height: 44 mm (1.7 in.); width: 440 mm (17.3 in.); depth: 356 mm (14.0 in.)
Weight	Empty: 7.7 kg (17.0 lb); Fully configured: 8.5 kg (18.8 lb).

Models

The following table lists the ThinkSystem DB620S FC SAN Switch models.

Table 2. Lenovo ThinkSystem DB620S FC SAN Switch models

Description	Part number	Machine Type-Model	Feature code
ThinkSystem DB620S, 24 ports licensed, 24x 16Gb SWL SFPs, 2 PS, Rail Kit (1yr)	6415L3A	6415-HC9	BCH4
ThinkSystem DB620S, 24 ports licensed, 24x 32Gb SWL SFPs, 2 PS, Rail Kit, 1Yr FW	6415H11	6415-HC4	B4QE
ThinkSystem DB620S, 24 ports licensed, 24x 32Gb SWL SFPs, 2 PS, Rail Kit (1yr)	6415L1A	6415-HC7	BCH2
ThinkSystem DB620S, ENT Bundle, 48 ports licensed, 48x 32Gb SWL SFPs, 2 PS, Rail Kit, 1Yr FW	6415H2A	6415-HC5	B4QF
ThinkSystem DB620S, ENT Bundle, 48 ports licensed, 48x 32Gb SWL SFPs, 2 PS, Rail Kit (1yr)	6415L2A	6415-HC8	BCH3

The DB620S FC SAN Switch part numbers include the following items:

- One FC SAN Switch
 - Models HC6 and HC9: With 24 ports activated and 24x 16 Gb FC SWL SFP+ transceivers included
 - Models HC4 and HC9: With 24 ports activated and 24x 32 Gb FC SWL SFP+ transceivers included
 - Models HC5 and HC8: With 48 ports activated and 48x 32 Gb FC SWL SFP+ transceivers included
 - With 1-year (Models HC4, HC5, HC6, HC7, HC8, and HC9) firmware entitlement
- Serial cable (DB-9/RJ-45 to Mini-USB [Models HC7, HC8, and HC9] or RJ-45 [Models HC4, HC5, and HC6])
- Rubber feet for setting up the switch as a standalone unit
- Fixed rack mount kit
- EZSwitch Setup web pointer card
- Online Documentation web pointer card
- SANNav web pointer card

Note: The switch comes standard without power cords; two power cables must be purchased together with the switch (see [Power supplies and cables](#) for details).

Port activation licenses

DB620S FC SAN Switch Models HC6 and HC9 include 24 licensed ports and 24x 16 Gb FC SWL SFP+ Transceivers, and Models HC4 and HC7 include 24 licensed ports and 24x 32 Gb FC SWL SFP+ Transceivers. The remaining 24 SFP+ unlicensed ports can be activated by purchasing and installing the Ports on Demand (POD) licenses that are available with or without SFP+ transceivers in 12-port increments. The DB620S FC SAN Switch Models HC5 and HC8 come standard with 48 licensed ports and with 48x 32 Gb FC SWL SFP+ Transceivers.

Four QSFP+ unlicensed ports on the DB620S FC SAN Switch can be activated by purchasing and installing the POD license that is available with or without QSFP+ transceivers.

The following table lists additional POD options for the DB620S FC SAN Switch.

Table 3. POD options

Description	Part number	Feature code	Maximum quantity
SFP+ POD electronic authorization licenses			
Lenovo DB620S 12-Port License (No Transceivers)	7S0C000EWW	B3EE	2
SFP+ POD paper authorization licenses and bundles			
DB620S 12-Port SW License with 12x 16 Gbps SWL SFP+ Transceivers	4M27A36844	B6C3	2
DB620S 12-Port SW License with 12x 32 Gbps SWL SFP+ transceivers	01KN760	AVG4	2
QSFP+ POD electronic authorization licenses			
Lenovo DB620S QSFP+ Port License (No Transceivers)	7S0C000FWW	B3EF	1
QSFP+ POD paper authorization licenses and bundles			
DB620S QSFP+ 4-Port SW License with 4x 128 Gbps SWL v2 transceivers	4M27A08819	B148	1

Transceivers and cables

With the flexibility of the DB620S FC SAN Switch, customers can choose the following connectivity technologies:

- QSFP+ ports
 - For 128 Gb (4x 32 Gb) FC links for connectivity between the DB620S FC SAN Switches, customers can use 128 Gb FC QSFP+ SWL optical transceivers for distances up to 100 meters on OM4 or up to 70 meters on OM3 50 μ multimode fiber (MMF) optic cables. For longer distances, the 128 Gb (4x 32 Gb) FC 2KM LWL QSFP+ optical transceivers can support up to 2 kilometers on single-mode fiber (SMF) cables. The 4x 32 Gb FC links per QSFP+ port can be configured as 128 Gbps parallel FC [round robin 66-bit block distribution across four lanes] or in a 128 Gbps ISL trunk group.
 - For 32 Gb FC links, customers can use the 128 Gb (4x 32 Gbps) SWL QSFP+ Transceiver v2 with OM4 MMF MPO-4xLC breakout cables for distances up to 100 meters or OM3 MMF MPO-4xLC breakout cables for distances up to 70 meters.
 - For 16 Gb FC links, customers can use 50 μ MMF MPO-4xLC breakout cables for connectivity to other FC SAN switches or routers (E_Port or EX_Port) by using four independent 16 Gb FC links per QSFP+ port (no ISL trunking) with the following transceivers:
 - 128 Gb (4x 32 Gb) QSFP+ SWL v2 optical transceivers running at 4x 16 Gb speeds for distances up to 125 meters on OM4 or up to 100 meters on OM3 MMF cables.
 - 4x 16 Gb FC QSFP+ SWL optical transceivers for distances up to 100 meters on OM4 or up to 66 meters on OM3 MMF cables.

- SFP+ ports
 - For 32 Gb FC links, customers can use 32 Gb FC SFP+ SWL optical transceivers for distances up to 100 meters on OM4 or up to 70 meters on OM3 50 μ MMF cables. For longer distances, the 32 Gb FC LWL SFP+ optical transceivers can support up to 10 km on SMF cables. These transceivers can operate at 32 Gbps, 16 Gbps, or 8 Gbps speeds.
 - For 16 Gb FC links, customers can use 16 Gb FC SFP+ SWL optical transceivers for distances up to 125 meters on OM4 or up to 100 meters on OM3 50 μ MMF cables. For longer distances, the 16 Gb FC LWL SFP+ optical transceivers can support up to 10 kilometers on SMF cables. For extended distances, the 16 Gb FC ELWL SFP+ optical transceivers can support up to 25 kilometers on SMF cables. These transceivers can operate at 16 Gbps, 8 Gbps, or 4 Gbps speeds.
 - For 10 Gb FC links, customers can use 10 Gb FC SFP+ SWL transceivers for distances up to 550 meters on OM4 or up to 300 meters on OM3 50 μ MMF cables, or 10 Gb FC SFP+ LWL transceivers for distances up to 10 km on SMF cables. 10 Gb FC operations allow metro connectivity by directly utilizing a fiber optic cable between sites or by creating multiple channels on an optical cable between sites, utilizing Wave Division Multiplexing (WDM) technology (the Extended Fabric feature is NOT required for long distance 10 Gb FC connectivity).
- 1 GbE RJ-45 management port: Customers can use UTP cables for distances up to 100 meters.

The DB620S FC SAN Switch comes with 24x (Models HC4 and HC7) or 48x (Models HC5 and HC8) 32 Gb FC SWL SFP+ transceivers, or 24x (Models HC6 and HC9) 16 Gb FC SWL SFP+ transceivers. Additional SWL, LWL, and ELWL SFP+ and SWL and LWL QSFP+ transceivers can be ordered for the switch, if needed.

The following table lists the supported transceiver and cable options.

Table 4. Transceivers and cables

Description	Part number	Feature code	Maximum quantity supported
QSFP+ transceivers			
Brocade 128Gb (4x32Gbps) SWL QSFP+ Transceiver v2	4M27A08820	B145	4
Brocade 128Gb (4x32Gbps) 2KM QSFP+ Transceiver	4M27A09986	B26T	4
Brocade 4x16Gb FC-Compliant SWL QSFP+ Transceiver	01KN805	AVGH	4
32 Gb FC SFP+ transceivers			
Brocade 32Gb SWL SFP+ Transceiver	01KN789	AVGC	48
Brocade 32Gb SWL SFP+ Transceiver (8-pack)	01KN793	AVGD	6
Brocade 32Gb LWL SFP+ Transceiver	01KN795	AVGE	48
Brocade 32Gb LWL SFP+ Transceiver (8-pack)	01KN799	AVGF	6
16 Gb FC SFP+ transceivers			
Brocade 16Gb SWL SFP+ Optical Transceiver	88Y6393	A22R	48
Brocade 16Gb 10km LWL SFP+ Transceiver	00MY768	ASK2	48
Brocade 16Gb 25km ELWL SFP+ Transceiver	00MY770	ASK3	48*
10 Gb FC SFP+ transceivers			
Brocade 10Gb FC SWL SFP+ Transceiver	00YH933	ATSY	48
Brocade 10Gb FC LWL SFP+ Transceiver	00YH929	ATSX	48
Optical cables for 128 Gb v2 and 4x16 Gb FC SW QSFP+ transceivers			

Description	Part number	Feature code	Maximum quantity supported
Lenovo 10m QSFP+ MPO-MPO OM3 MMF Cable	00VX003	AT2U	4
Lenovo 30m QSFP+ MPO-MPO OM3 MMF Cable	00VX005	AT2V	4
Optical breakout cables for 128 Gb v2 and 4x16 Gb FC SW QSFP+ transceivers			
Lenovo 1m MPO-4xLC OM3 MMF Breakout Cable	00FM412	A5UA	4
Lenovo 3m MPO-4xLC OM3 MMF Breakout Cable	00FM413	A5UB	4
Lenovo 5m MPO-4xLC OM3 MMF Breakout Cable	00FM414	A5UC	4
OM3 optical cables for 16 Gb and 32 Gb FC SW SFP+ transceivers			
Lenovo 0.5m LC-LC OM3 MMF Cable	00MN499	ASR5	48
Lenovo 1m LC-LC OM3 MMF Cable	00MN502	ASR6	48
Lenovo 3m LC-LC OM3 MMF Cable	00MN505	ASR7	48
Lenovo 5m LC-LC OM3 MMF Cable	00MN508	ASR8	48
Lenovo 10m LC-LC OM3 MMF Cable	00MN511	ASR9	48
Lenovo 15m LC-LC OM3 MMF Cable	00MN514	ASRA	48
Lenovo 25m LC-LC OM3 MMF Cable	00MN517	ASRB	48
Lenovo 30m LC-LC OM3 MMF Cable	00MN520	ASRC	48
OM4 optical cables for 16 Gb and 32 Gb FC SW SFP+ transceivers			
Lenovo 0.5m LC-LC OM4 MMF Cable	4Z57A10845	B2P9	48
Lenovo 1m LC-LC OM4 MMF Cable	4Z57A10846	B2PA	48
Lenovo 3m LC-LC OM4 MMF Cable	4Z57A10847	B2PB	48
Lenovo 5m LC-LC OM4 MMF Cable	4Z57A10848	B2PC	48
Lenovo 10m LC-LC OM4 MMF Cable	4Z57A10849	B2PD	48
Lenovo 15m LC-LC OM4 MMF Cable	4Z57A10850	B2PE	48
Lenovo 25m LC-LC OM4 MMF Cable	4Z57A10851	B2PF	48
Lenovo 30m LC-LC OM4 MMF Cable	4Z57A10852	B2PG	48
UTP Category 6 cables (Green) for the 1 GbE RJ-45 management port			
0.75m CAT6 Green Cable	00WE123	AVFW	1
1.0m CAT6 Green Cable	00WE127	AVFX	1
1.25m CAT6 Green Cable	00WE131	AVFY	1
1.5m CAT6 Green Cable	00WE135	AVFZ	1
3m CAT6 Green Cable	00WE139	AVG0	1
10m CAT6 Green Cable	90Y3718	A1MT	1
25m CAT6 Green Cable	90Y3727	A1MW	1
UTP Category 5e cables (Blue) for the 1 GbE RJ-45 management port			
0.6m Blue Cat5e Cable	40K5679	3801	1
1.5m Blue Cat5e Cable	40K8785	3802	1
3m Blue Cat5e Cable	40K5581	3803	1
10m Blue Cat5e Cable	40K8927	3804	1
25m Blue Cat5e Cable	40K8930	3805	1

* When using ELW SFP+ transceivers over distances over 10 km, the Extended Fabric feature that is available in the Enterprise or Mainframe Enterprise Bundle is required on a SAN switch to drive the maximum bandwidth over the extended links.

The following table lists the cabling requirements for the switch.

Table 5. DB620S FC SAN Switch cabling requirements

Transceiver	Standard	Cable	Connector
128 Gb (4x 32 Gb) Fibre Channel			
128 Gb (4x 32 Gb) FC SWL QSFP+ v2 (4M27A08820)	FC-PI-6P FC-PI-6	Up to 30 m with MPO-MPO MMF cables or up to 5 m with MPO-4xLC MMF breakout cables supplied by Lenovo (see Table 4). 850 nm 50 μ MPO-MPO MMF cable or MPO-4xLC MMF breakout cable: <ul style="list-style-type: none"> • 128GFCp: Up to 100 m (OM4) or up to 70 m (OM3). • 32GFC: Up to 100 m (OM4) or up to 70 m (OM3). • 16GFC: Up to 125 m (OM4) or up to 100 m (OM3). 	MPO
128 Gb (4x 32 Gb) FC 2km LWL QSFP+ (4M27A09986)	FC-PI-6P FC-PI-6	1310 nm 9 μ SMF cable: <ul style="list-style-type: none"> • 128GFCp, 32GFC: Up to 2 km. 	LC
32 Gb Fibre Channel			
32 Gb FC LWL SFP+ (01KN795, 01KN799)	FC-PI-6	1310 nm 9 μ SMF cable: <ul style="list-style-type: none"> • 32GFC, 16GFC, 8GFC: Up to 10 km. 	LC
32 Gb FC SWL SFP+ (01KN789, 01KN793)	FC-PI-6	Up to 30 m with LC-LC MMF cables supplied by Lenovo (see Table 4). 850 nm 50 μ MMF cable: <ul style="list-style-type: none"> • 32GFC: Up to 100 m (OM4) or up to 70 m (OM3). • 16GFC: Up to 125 m (OM4) or up to 100 m (OM3). • 8GFC: Up to 190 m (OM4) or up to 150 m (OM3). 	LC
16 Gb Fibre Channel			
16 Gb FC SWL SFP+ (88Y6393)	FC-PI-5	Up to 30 m with LC-LC MMF cables supplied by Lenovo (see Table 4). 850 nm 50 μ MMF cable: <ul style="list-style-type: none"> • 16GFC: Up to 125 m (OM4) or up to 100 m (OM3). • 8GFC: Up to 190 m (OM4) or up to 150 m (OM3). • 4GFC: Up to 400 m (OM4) or up to 380 m (OM3). 	LC
4x 16 Gb FC SWL QSFP+ (01KN805)	FC-PI-5	Up to 30 m with MPO-MPO MMF optical cables or up to 5 m with MPO-4xLC optical breakout cables supplied by Lenovo (see Table 4). 850 nm 50 μ MMF cable: <ul style="list-style-type: none"> • 16GFC: Up to 100 m (OM4) or up to 66 m (OM3). 	MPO
16 Gb FC LWL SFP+ (00MY768)	FC-PI-5	1310 nm 9 μ SMF cable: <ul style="list-style-type: none"> • 16GFC, 8GFC: Up to 10 km. • 4GFC: Up to 30 km. 	LC
16 Gb FC ELWL SFP+ (00MY770)	FC-PI-5	1310 nm 9 μ SMF cable: <ul style="list-style-type: none"> • 16GFC: Up to 25 km. 	LC
10 Gb Fibre Channel			
10 Gb FC SWL SFP+ (00YH933)	FC-10GFC	850 nm 50 μ MMF cable: <ul style="list-style-type: none"> • 10GFC: Up to 550 m (OM4) or up to 300 m (OM3). 	LC
10 Gb FC LWL SFP+ (00YH929)	FC-10GFC	1310 nm 9 μ SMF cable: <ul style="list-style-type: none"> • 10GFC: Up to 10 km. 	LC
Management ports			

Transceiver	Standard	Cable	Connector
10/100/1000 Mb Ethernet port	1000BASE-T	Up to 25 m with UTP cables supplied by Lenovo (see Table 4). UTP Category 5, 5E, and 6 up to 100 meters.	RJ-45

Firmware

The DB620S FC SAN Switch ships with the following features (based on the Fabric OS version 9.0):

Note: Models HC7, HC8, and HC9 require the Fabric OS version 9.0 or later.

- Advanced Fabric Services
 - Full Fabric mode: Enables high performance 16 Gb or 32 Gb switching in multi-switch fabric.
 - Advanced Zoning (default zoning, port/WWN zoning, broadcast zoning)
 - Dynamic fabric provisioning (DFP): Fabric-assigned port World Wide Names (FA-PWWNs).
 - Dynamic path selection (DPS): Distributes input traffic across multiple paths proportionally to the bandwidth of each path.
 - Dynamic load sharing (DLS): Distributes traffic across multiple equal paths between switches.
 - Fabric Shortest Path First (FSPF)
 - Buffer-to-Buffer (BB) credit flow control
 - Buffer credit recovery
 - Forward error correction (FEC)
 - Fabric Device Management Interface (FDMI)
 - Frame order delivery
 - Frame redirection
 - FC login services
 - Registered State Change Notification (RSCN)
 - Reliable Commit Service (RCS)
 - Simple Name Server (SNS)
 - Fibre Channel Authentication Protocol (FCAP) switch authentication
 - Management Server (MS): Assists in the auto-discovery of switch-based fabrics.
 - In-flight compression on up to 4 ports
 - Integrated 10Gb FC feature
- Adaptive Networking
 - Traffic isolation zoning (TIZ): Creates a dedicated path for traffic flowing from a specific set of source ports (F_Ports).
 - Quality of Service (QoS): SID/DID pair traffic prioritization (high, medium, low).
- Virtualization
 - N_Port ID virtualization (NPIV): Enables a single FC port to appear as multiple, distinct ports with separate port identification within the fabric.
 - Access Gateway: Leverages NPIV to connect to any fabric without adding switch domains to reduce management complexity.
 - Virtual Fabrics (Logical Switch, Logical Fabric): Allows SAN design and management at the granularity of a port.

- Management
 - IPv4 and IPv6 addressing
 - Firmware upload and download
 - Network Time Protocol (NTP) v3
 - EZ Switch Setup Wizard
 - Command line interface (CLI)
 - Web Tools
 - Brocade SANnav Management Portal and SANnav Global View (purchased separately)
 - SNMPv1, SNMPv3, and MIBs
 - SMI-S compliant
 - Syslog
 - REST API
- Security
 - Local switch user accounts
 - LDAP, RADIUS, TACACS+ user authentication
 - Role-based access control (RBAC)
 - IP Security (IPsec)
 - IP filtering
 - HTTPS
 - Secure Copy (SCP)
 - Secure RPC
 - Secure FTP (SFTP)
 - Secure Shell (SSH) v2
 - Secure Sockets Layer (SSL)
 - In-flight encryption on up to 4 ports
 - Federal Information Processing Standards (FIPS) 140-2 L2-compliant
- Advanced Diagnostic Tools
 - Power-on self-test (POST)
 - Event logging
 - Environmental monitoring
 - FCping
 - Pathinfo (FC traceroute)
 - Non-disruptive daemon restart
 - Flow mirroring
 - RAS trace logging
 - ClearLink Diagnostics with Diagnostic Port (D_Port)
 - SFP and cable health assessment
 - Power monitoring
 - Rolling Reboot Detection (RRD)

The following optional features are available for the DB620S FC SAN Switch:

- Enterprise Bundle
 - ISL Trunking (TRK): Allows frame-based consolidation of up to 8 inter-switch links (ISLs) into fault-tolerant and load-balanced trunks with bandwidth of up to 256 Gbps.
 - Fabric Vision (FV)
 - Monitoring and Alerting Policy Suite (MAPS): Provides a policy-based, fabric-wide threshold monitoring and alerting tool.
 - Flow Vision: Identifies, monitors, and analyzes specific application flows.
 - VM Insight: Seamlessly monitors health and performance of individual Virtual Machines (VMs) to quickly identify abnormal VM behavior and enable administrators to proactively facilitate troubleshooting and fault isolation, helping to ensure performance and operational stability.
 - IO Insight: Proactively monitors I/O performance and behavior to gain deep insight into issues and ensure service levels by non-disruptively and non-intrusively gathering

I/O statistics for storage traffic and applying this information within a policy-based monitoring and alerting suite to configure thresholds and alarms.

- Fabric Performance Impact (FPI) Monitoring: Leverages predefined MAPS policies to automatically identify and isolate devices that cause network performance issues by detecting different latency severity levels, and to alert administrators.
 - Extended Fabric (EF): Extends Fibre Channel SANs beyond 10 km distance limitations for replication and backup at full bandwidth.
- Mainframe Enterprise Bundle: Includes all features of the Enterprise Bundle plus Control Unit Port (CUP). The Control Unit Port provides an in-band management interface that the FICON host (Mainframe) can use for managing and monitoring the FC SAN switch.
- Integrated Routing: The FC-FC routing service provides Fibre Channel routing between two or more fabrics without merging those fabrics.

The following table lists ordering information for the optional licensed features for the DB620S FC SAN Switch (one license per switch).

Table 6. Optional licensed features

Description	Part number	Feature code
Electronic authorization licenses		
Lenovo DB620S Integrated Routing	7S0C000HWW	B3EH
Lenovo DB620S Enterprise Bundle (TRK, FV, EF)	7S0C000GWW	B3EG
Lenovo DB620S Mainframe Enterprise Bundle (TRK, FV, EF, CUP)	7S0C000JWW	B3EJ

Notes:

- The Enterprise Bundle and Mainframe Enterprise are mutually exclusive, that is, either Enterprise Bundle or Mainframe Enterprise Bundle can be licensed on a switch, but not both.
- The DB620S FC SAN Switch Models HC5 and HC8 come with the Enterprise Bundle license included.

Firmware entitlement is included with the DB620S FC SAN Switch and provides 1-year (Models HC4, HC5, HC6, HC7, HC8, and HC9) firmware support. The firmware entitlement is included in the warranty service upgrades for Models HC4, HC5, HC6, HC7, HC8, and HC9.

The Integrated Routing feature (7S0C000HWW) and the Mainframe Enterprise Bundle (7S0C000JWW) come with their own 1-year firmware support entitlement. The options to extend entitlement for additional years of firmware support for the Integrated Routing feature and the Mainframe Enterprise Bundle are listed in the following table.

Table 7. Firmware support extension options for Integrated Routing and Mainframe Enterprise Bundle

Description	Part number	Feature code
Lenovo DB620S Mainframe Enterprise Bundle Support Extension, 2-Years	7S0C000RWW	S0F9
Lenovo DB620S Mainframe Enterprise Bundle Support Extension, 4-Years	7S0C000YWW	S0FG
Lenovo DB620S Integrated Routing Support Extension, 2-Years	7S0C000QWW	S0F8
Lenovo DB620S Integrated Routing Support Extension, 4-Years	7S0C000XWW	S0FF

Management software

Lenovo offers the following optional fabric management tools for Brocade-based SAN infrastructures:

- [Brocade SANnav Management Portal and SANnav Global View](#)

Brocade SANnav Management Portal and SANnav Global View

Lenovo offers optional Brocade SANnav Management Portal and SANnav Global View that provide comprehensive visibility into the SAN environment, allow administrators to quickly identify, isolate, and correct problems, and accelerate administrative tasks by simplifying and automating workflows.

SANnav Management Portal is a next-generation SAN management application with a simple browser-based user interface (UI) and with a focus on streamlining common workflows, such as configuration, zoning, deployment, monitoring, troubleshooting, reporting, and analytics.

Lenovo offers the following SANnav Management Portal editions:

- SANnav Management Portal Base: Designed for mid-sized SANs to manage up to 600 SAN switch ports only (SAN director ports can only be managed with the Enterprise edition).
- SANnav Management Portal Enterprise: Designed for enterprise-class SANs to manage up to 15 000 SAN switch and director ports.

SANnav Management Portal supports all Brocade SAN switches and platforms that run the Fabric OS version 7.4 or above, including Lenovo B300, B6505, B6510, DB610S, DB620S, DB400D, DB800D, and FC5022.

With SANnav Global View, administrators can quickly visualize the health, performance, and inventory of multiple SANnav Management Portal instances using a simple, intelligent dashboard and can easily navigate from a global view down to local environments to investigate points of interest. SANnav Global View is designed to manage up to six SANnav Management Portal instances.

For more information, refer to the SANnav Management Portal documentation:

<http://www.broadcom.com/products/fibre-channel-networking/software/sannav-management-portal#documentation>

The following table lists ordering information for the optional SANnav Management Portal and SANnav Global View management tools.

Table 9. SANnav Management Portal and SANnav Global View licenses

Description	Part number	Feature code
SANnav Management Portal electronic authorization licenses		
Brocade SANnav Mgmt Portal Base Edition - 1YR License 600 ports	7S0C0010WW	S1K6
Brocade SANnav Mgmt Portal Base Edition - 3YR License 600 ports	7S0C0013WW	S1K8
Brocade SANnav Mgmt Portal Base Edition - 5YR License 600 ports	7S0C001KWW	S4MB
Brocade SANnav Mgmt Portal Enterprise Edition - 1YR License 15K ports	7S0C0011WW	S1K7
Brocade SANnav Mgmt Portal Enterprise Edition - 3YR License 15K ports	7S0C0014WW	S1K9
Brocade SANnav Mgmt Portal Enterprise Edition - 5YR License 15K ports	7S0C001LWW	S4MC
SANnav Global View electronic authorization licenses		
Brocade SANnav Global View - 1YR License	7S0C0012WW	S1D8
Brocade SANnav Global View - 3YR License	7S0C0015WW	S1D9
Brocade SANnav Global View - 5YR License	7S0C001JWW	S4MA

The SANnav licenses are subscription-based with 1-year or 3-year software entitlement and support.

Fibre Channel standards

The DB620S FC SAN Switch supports the following standards:

- 10GFC INCITS 364-2003 + Amendment 1
- FA FCMGMT-MIB
- FC-BB-2 INCITS 372-2003
- FC-BB-3 INCITS 414-2006
- FC-BB-4 INCITS 419-2008
- FC-BB-5 INCITS 462-2010 + Amendment 1
- FC-BB-6 INCITS 509-2014
- FC-DA INCITS TR-36-2004
- FC-DA-2 INCITS TR-49-2012
- FC-FS INCITS 373-2003
- FC-FS-2 ANSI/INCITS 424-2006
- FC-FS-3 INCITS 470-2011
- FC-FS-4 INCITS 488 rev 1.41
- FC-GS-4 ANSI INCITS 387-2004
- FC-GS-5 ANSI INCITS 427-2007
- FC-GS-6 INCITS 463-2010
- FC-GS-7 INCITS 510
- FC-GS-8 INCITS 548 rev 11.01
- FC-IFR INCITS 475-2011
- FC-LS INCITS 433: 2007
- FC-LS-2 INCITS 477-2011
- FC-LS-3 INCITS 487
- FC-MI-2 ANSI/INCITS TR-39-2005
- FC-MI-3 INCITS TR-48-2012
- FCP ANSI X3.269-1996
- FCP-2 INCITS 350-2003
- FCP-3 INCITS 416-2006
- FCP-4 INCITS 481-2012
- FC-PI-3 INCITS 460-2012
- FC-PI-4 INCITS 450-2009
- FC-PI-5 INCITS 449-2011
- FC-PI-6 INCITS 512-2015
- FC-PI-6P INCITS 533-2016
- FC-SB ANSI X3.271-1996
- FC-SB-2 INCITS 374-2001
- FC-SB-3 INCITS 374-2003 + Amendment 1
- FC-SB-4 INCITS 466-2011
- FC-SB-5 INCITS 485-2014
- FC-SB-6 INCITS 544
- FC-SP INCITS 426-2007
- FC-SP-2 INCITS 496-2012 + Amendment 1
- FC-SW-3 INCITS 384-2004
- FC-SW-4 INCITS 418-2006
- FC-SW-5 INCITS 461-2010
- FC-SW-6 INCITS 511
- FC-SW-7 INCITS 547 rev 1.04
- FC-TAPE INCITS TR-24-1999
- FC-VI INCITS 357-2002
- MIB-FA INCITS TR-32-2003
- RFC 2837 Fabric Element MIB
- RFC 4338 Transmission of IPv6, IPv4, and ARP over FC

- SNIA Storage Management Initiative Specification (SMI-S) Version 1.03 ISO standard IS24775-2006 (replaces ANSI INCITS 388: 2004)
- SNIA Storage Management Initiative Specification Version 1.1
- SNIA Storage Management Initiative Specification Version 1.2
- SNIA Storage Management Initiative Specification Version 1.4
- SNIA Storage Management Initiative Specification Version 1.5
- SNIA Storage Management Initiative Specification Version 1.6

Power supplies and cables

The DB620S FC SAN Switch ships with two redundant hot-swap 250 W AC power supplies. Each power supply has an IEC 309-C14 connector.

The switch comes standard without a power cord; two rack power cables or line cords must be ordered together with the switch (see the following table).

Table 12. Power cord options

Description	Part number	Feature code
Rack power cables		
1.5m, 10A/100-250V, C13 to IEC 320-C14 Rack Power Cable	39Y7937	6201
1.8m, 10A/100-250V, 2xC13PM to IEC 320-C14 Rack Power Cable	None*	6568
2.8m, 10A/100-250V, C13 to IEC 320-C14 Rack Power Cable	4L67A08366	6311
2.8m, 10A/100-250V, C13 to IEC 320-C20 Rack Power Cable	39Y7938	6204
4.3m, 10A/100-250V, C13 to IEC 320-C14 Rack Power Cable	39Y7932	6263
Line cords		
10A/125V C13 to NEMA 5-15P 4.3m line cord	39Y7931	6207
10A/250V C13 to NEMA 6-15P 2.8m line cord	46M2592	A1RF
Argentina 10A/250V C13 to IRAM 2073 2.8m line cord	39Y7930	6222
Australia/NZ 10A/250V C13 to AS/NZ 3112 2.8m line cord	39Y7924	6211
Brazil 10A/125V C13 to NBR 6147 2.8m line cord	39Y7929	6223
China 10A/250V C13 to GB 2099.1 2.8m line cord	39Y7928	6210
Denmark 10A/250V C13 to DK2-5a 2.8m line cord	39Y7918	6213
European 10A/230V C13 to CEE7-VII 2.8m line cord	39Y7917	6212
India 10A/250V C13 to IS 6538 2.8m line cord	39Y7927	6269
Israel 10A/250V C13 to SI 32 2.8m line cord	39Y7920	6218
Italy 10A/250V C13 to CEI 23-16 2.8m line cord	39Y7921	6217
Japan 12A/125V C13 to JIS C-8303 2.8m line cord	46M2593	A1RE
Korea 12A/250V C13 to KETI 2.8m line cord	39Y7925	6219
South Africa 10A/250V C13 to SABS 164 2.8m line cord	39Y7922	6214
Switzerland 10A/250V C13 to SEV 1011-S24507 2.8m line cord	39Y7919	6216
Taiwan 10A/250V C13 to CNS 10917-3 2.8m line cord	00CG265	A53E
Taiwan 15A/125V C13 to CNS 10917-3 2.8m line cord	00CG267	A53F
United Kingdom 10A/250V C13 to BS 1363/A 2.8m line cord	39Y7923	6215

* Available for factory-built custom configurations and solutions only.

Rack installation

The DB620S FC SAN Switch comes standard with the fixed rack mount kit that can be used for 4-post rack installations. If needed, the DB620S FC SAN Switch can be mounted in a 2-post rack cabinet by using the optional mid-mount rack kit that is listed in the following table.

Table 13. Rack-mount options

Description	Part number	Feature code	Maximum quantity supported
Lenovo DB620S Mid-mount Rack Kit	01KN770	AVG7	1

The optional mid-mount rack kit for the DB620S FC SAN Switch is shown in the following figure.

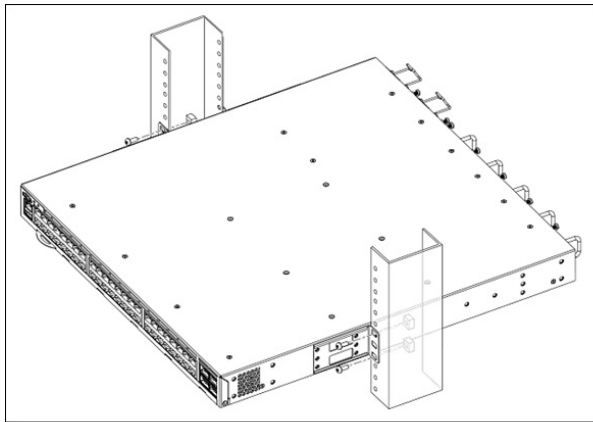


Figure 4. Lenovo DB620S Mid-mount Rack Kit

In addition, in order for the DB620S 32Gb FC SAN Switch to meet FIPS 140-2 Level 2 Physical Security requirements the tamper-evident seals must be installed (see the following table for ordering information).

Table 14. Tamper-evident security seals

Description	Part number	Feature code	Maximum quantity supported
Brocade FIPS 140-2 High Security Labels and Seals	01KN785	AVGB	1

Physical specifications

The DB620S FC SAN Switch has the following dimensions and weight (approximate):

- Height: 44 mm (1.7 in.)
- Width: 440 mm (17.3 in.)
- Depth: 356 mm (14.0 in.)
- Weight:
 - Empty: 7.7 kg (17.0 lb)
 - Fully configured: 8.5 kg (18.8 lb)

Operating environment

The DB620S FC SAN Switch is supported in the following environment:

- Air temperature:
 - Operating: 0°C to 40°C (32°F to 104°F)
 - Non-operating: -25°C to +70°C (-13°F to 158°F)
- Maximum altitude:
 - Operating: 3,000 m (9,842 ft)
 - Non-operating: 12,000 m (39,370 ft)
- Humidity:
 - Operating: 10% to 85% non-condensing
 - Non-operating: 10% to 90% non-condensing
- Electrical power:
 - Voltage range: 100 V AC - 240 V AC (nominal)
 - Frequency: 50 Hz / 60 Hz (nominal)
 - Power consumption:
 - Idle: 155 watts
 - Typical: 192 watts
 - Maximum: 204 watts
- Heat dissipation:
 - Idle: 529 BTU per hour
 - Typical: 655 BTU per hour
 - Maximum: 696 BTU per hour
- Acoustical noise emission: 65 dB

Warranty and support

The DB620S FC SAN Switch has a one-year customer-replaceable unit (CRU) limited warranty with standard call center support during normal business hours and 9x5 Next Business Day Parts Delivered.

Lenovo's additional support services provide a sophisticated, unified support structure for a customer's data center, with an experience consistently ranked number one in customer satisfaction worldwide.

The following Lenovo support services are available:

- **Premier Support** provides a Lenovo-owned customer experience and delivers direct access to technicians skilled in hardware, software, and advanced troubleshooting, in addition to the following capabilities:
 - Direct technician-to-technician access through a dedicated phone line.
 - 24x7x365 remote support.
 - Single point of contact service.
 - End to end case management.
 - 3rd Party collaborative software support.
 - Online case tools and live chat support.
 - On-demand remote system analysis.
- **Warranty Upgrades (Preconfigured Support)** are available to meet the on-site response time targets that match the criticality of your systems:
 - 1, 3, or 5 years of warranty service coverage.
 - 1-year or 2-year post-warranty extensions.
 - **Foundation Service:** 9x5 service coverage with next business day onsite response.
 - **Essential Service:** 24x7 service coverage with 4-hour onsite response or 24-hour committed repair (available only in select regions).
 - **Advanced Service:** 24x7 service coverage with 2-hour onsite response or 6-hour committed

repair (available only in select regions).

- **Managed Services**

Lenovo Managed Services provide continuous 24x7 remote monitoring (plus 24x7 call center availability) and proactive management of a customer's data center using state of the art tools, systems, and practices by a team of highly skilled and experienced Lenovo services professionals.

Quarterly reviews check error logs, verify firmware and operating system device driver levels, and software as needed. Lenovo will also maintain records of latest patches, critical updates, and firmware levels, to ensure customer's systems are providing business value through optimized performance.

- **Technical Account Management (TAM)**

A Lenovo Technical Account Manager helps customers optimize operations of their data centers based on a deep understanding of customer's business. Customers gain direct access to a Lenovo TAM, who serves as their single point of contact to expedite service requests, provide status updates, and furnish reports to track incidents over time. Also, a TAM helps proactively make service recommendations and manage service relationship with Lenovo to make certain that customer's needs are met.

- **Health Check**

Having a trusted partner who can perform regular and detailed health checks is central to maintaining efficiency and ensuring that customer systems and business are always running at their best. Health Check supports Lenovo-branded server, storage, and networking devices, as well as select Lenovo-supported products from other vendors that are sold by Lenovo or a Lenovo-Authorized Reseller.

Some regions might have different warranty terms and conditions than the standard warranty. This is due to local business practices or laws in the specific region. Local service teams can assist in explaining region-specific terms when needed. Examples of region-specific warranty terms are second or longer business day parts delivery or parts-only base warranty.

If warranty terms and conditions include onsite labor for repair or replacement of parts, Lenovo will dispatch a service technician to the customer site to perform the replacement. Onsite labor under base warranty is limited to labor for replacement of parts that have been determined to be field-replaceable units (FRUs). Parts that are determined to be customer-replaceable units (CRUs) do not include onsite labor under base warranty.

If warranty terms include parts-only base warranty, Lenovo is responsible for delivering only replacement parts that are under base warranty (including FRUs) that will be sent to a requested location for self-service. Parts-only service does not include a service technician being dispatched onsite. Parts must be changed at customer's own cost and labor and defective parts must be returned following the instructions supplied with the spare parts.

Lenovo support services are region-specific. Not all support services are available in every region. For information about Lenovo support services that are available in a specific region, refer to the following resources:

- Service part numbers in Data Center Solution Configurator (DCSC):
<http://dcsc.lenovo.com/#/services>
- Lenovo Services Availability Locator
<https://lenovocator.com/>

For service definitions, region-specific details, and service limitations, refer to the following documents:

- Lenovo Statement of Limited Warranty for Data Center Group (DCG) Servers and System Storage
<http://pcsupport.lenovo.com/us/en/solutions/ht503310>
- Lenovo Data Center Services Agreement
<http://support.lenovo.com/us/en/solutions/ht116628>

Services

Lenovo Services is a dedicated partner to customer success. Lenovo's goal for customers is to reduce capital outlays, mitigate IT risks, and accelerate time to productivity.

Here is a more in-depth look at what Lenovo can do for their customers:

- **Asset Recovery Services**

Asset Recovery Services (ARS) helps customers recover the maximum value from their end-of-life equipment in a cost-effective and secure way. On top of simplifying the transition from old to new equipment, ARS mitigates environmental and data security risks associated with data center equipment disposal. Lenovo ARS is a cash-back solution for equipment based on its remaining market value, yielding maximum value from aging assets and lowering total cost of ownership for customers.

- **Assessment Services**

An assessment helps solve customer IT challenges through an onsite, multi-day session with a Lenovo technology expert. Lenovo performs a tools-based assessment which provides a comprehensive and thorough review of a company's environment and technology systems. In addition to the technology-based functional requirements, the consultant also discusses and records the non-functional business requirements, challenges, and constraints. Assessments help organizations, no matter how large or small, get a better return on their IT investment and overcome challenges in the ever-changing technology landscape.

- **Design Services**

Professional Services consultants perform infrastructure design and implementation planning to support customer's strategy. The high-level architectures provided by the assessment service are turned into low level designs and wiring diagrams, which are reviewed and approved prior to implementation. The implementation plan will demonstrate an outcome-based proposal to provide business capabilities through infrastructure with a risk-mitigated project plan.

- **Basic Hardware Installation**

Lenovo experts can seamlessly manage the physical installation of customer's server, storage, or networking hardware. Working at a time convenient for the customer (business hours or off shift), the technician will unpack and inspect the systems on customer site, install options, mount in a rack cabinet, connect to power and network, check and update firmware to the latest levels, verify operation, and dispose of the packaging, allowing customers to focus on other priorities.

- **Deployment Services**

When investing in new IT infrastructures, customers need to ensure that their business will see quick time to value with little to no disruption. Lenovo deployments are designed by development and engineering teams who know Lenovo products and solutions better than anyone else, and Lenovo technicians own the process from delivery to completion. Lenovo will conduct remote preparation and planning, configure and integrate systems, validate systems, verify and update appliance firmware, train on administrative tasks, and provide post-deployment documentation. Customer's IT teams leverage Lenovo skills to enable IT staff to transform with higher level roles and tasks.

- **Integration, Migration, and Expansion Services**

Integration, Migration, and Expansion Services allow to move existing physical and virtual workloads easily, or to determine technical requirements to support increased workloads while maximizing performance. These services include tuning, validation, and documenting ongoing run processes, and they leverage migration assessment planning documents to perform necessary migrations.

Some service options may not be available in every country. For more information about Lenovo service offerings that are available in a specific country or area, contact a local Lenovo sales representative or business partner.

Regulatory compliance

The DB620S FC SAN Switch conforms to the following regulations:

- Electromagnetic compatibility
 - FCC Part 15, Subpart B (Class A)
 - EN 55022 (CE mark) (Class A)
 - EN 55024 (CE mark)
 - ICES-003 (Canada) (Class A)
 - AS/NZ 55022 (Australia) (Class A)
 - VCCI (Japan) (Class A)
 - EN 61000-3-2
 - EN 61000-3-3
 - EN 61000-6-1
- Safety
 - UL/CSA 60950
 - EN 60950
 - IEC 60950
- Environmental: EU RoHS

External storage systems

Lenovo offers the ThinkSystem DE Series and ThinkSystem DM Series external storage systems for high-performance storage. See the DE Series and DM Series product guides for specific controller models, expansion enclosures and configuration options:

- ThinkSystem DE Series Storage
<https://lenovopress.com/storage/thinksystem/de-series#rt=product-guide>
- ThinkSystem DM Series Storage
<https://lenovopress.com/storage/thinksystem/dm-series#rt=product-guide>

External backup units

The following table lists the external backup options that are offered by Lenovo that can be used in Lenovo FC SAN solutions.

Note: Information provided in this section is for ordering reference purposes only. End-to-end LTO Ultrium configuration support for a particular tape backup unit *must* be verified through the System Storage Interoperation Center (SSIC):

<http://www.ibm.com/systems/support/storage/ssic>

Table 15. External Fibre Channel backup options

Part number	Description
External tape backup libraries	
6741A1F	IBM TS4300 3U Tape Library-Base Unit
Fibre Channel backup drives for TS4300 Tape Library	
01KP935	LTO 6 FH Fibre Channel Drive
01KP933	LTO 6 HH Fibre Channel Drive
01KP938	LTO 7 FH Fibre Channel Drive
01KP936	LTO 7 HH Fibre Channel Drive
01KP954	LTO 8 FH Fibre Channel Drive
01KP952	LTO 8 HH Fibre Channel Drive

For more information, see the list of Product Guides in the Tape Autoloaders and Libraries category:

<https://lenovopress.com/storage/tape/library>

Rack cabinets

The following table lists the supported rack cabinets.

Table 16. Rack cabinets

Part number	Description
93072RX	25U Standard Rack
93072PX	25U Static S2 Standard Rack
93634PX	42U 1100mm Dynamic Rack
93634EX	42U 1100mm Dynamic Expansion Rack
93604PX	42U 1200mm Deep Dynamic Rack
93614PX	42U 1200mm Deep Static Rack
93084EX	42U Enterprise Expansion Rack
93084PX	42U Enterprise Rack
93074RX	42U Standard Rack

For specifications about these racks, see the Lenovo Rack Cabinet Reference, available from:

<https://lenovopress.com/lp1287-lenovo-rack-cabinet-reference>

For more information, see the list of Product Guides in the Rack cabinets category:

<https://lenovopress.com/servers/options/racks>

Power distribution units

The following table lists the power distribution units (PDUs) that are offered by Lenovo.

Table 17. Power distribution units

Part number	Description
0U Basic PDUs	
00YJ776	0U 36 C13/6 C19 24A/200-240V 1 Phase PDU with NEMA L6-30P line cord
00YJ777	0U 36 C13/6 C19 32A/200-240V 1 Phase PDU with IEC60309 332P6 line cord
00YJ778	0U 21 C13/12 C19 32A/200-240V/346-415V 3 Phase PDU with IEC60309 532P6 line cord
00YJ779	0U 21 C13/12 C19 48A/200-240V 3 Phase PDU with IEC60309 460P9 line cord
Switched and Monitored PDUs	
00YJ780	0U 20 C13/4 C19 Switched and Monitored 32A/200-240V/1Ph PDU w/ IEC60309 332P6 line cord
00YJ781	0U 20 C13/4 C19 Switched and Monitored 24A/200-240V/1Ph PDU w/ NEMA L6-30P line cord
00YJ782	0U 18 C13/6 C19 Switched / Monitored 32A/200-240V/346-415V/3Ph PDU w/ IEC60309 532P6 cord
00YJ783	0U 12 C13/12 C19 Switched and Monitored 48A/200-240V/3Ph PDU w/ IEC60309 460P9 line cord
46M4002*	1U 9 C19/3 C13 Switched and Monitored DPI PDU (without line cord)
46M4003*	1U 9 C19/3 C13 Switched and Monitored 60A 3 Phase PDU with IEC 309 3P+Gnd line cord
46M4004*	1U 12 C13 Switched and Monitored DPI PDU (without line cord)
46M4005*	1U 12 C13 Switched and Monitored 60A 3 Phase PDU with IEC 309 3P+Gnd line cord
Ultra Density Enterprise PDUs (9x IEC 320 C13 + 3x IEC 320 C19 outlets)	
71762NX	Ultra Density Enterprise C19/C13 PDU Module (without line cord)
71763NU	Ultra Density Enterprise C19/C13 PDU 60A/208V/3ph with IEC 309 3P+Gnd line cord
C13 Enterprise PDUs (12x IEC 320 C13 outlets)	
39M2816	DPI C13 Enterprise PDU+ (without line cord)
39Y8941	DPI Single Phase C13 Enterprise PDU (without line cord)
C19 Enterprise PDUs (6x IEC 320 C19 outlets)	
39Y8948	DPI Single Phase C19 Enterprise PDU (without line cord)
39Y8923	DPI 60A 3 Phase C19 Enterprise PDU with IEC 309 3P+G (208 V) fixed line cord
Front-end PDUs (3x IEC 320 C19 outlets)	
39Y8938	DPI 30amp/125V Front-end PDU with NEMA L5-30P line cord
39Y8939	DPI 30amp/250V Front-end PDU with NEMA L6-30P line cord
39Y8934	DPI 32amp/250V Front-end PDU with IEC 309 2P+Gnd line cord
39Y8940	DPI 60amp/250V Front-end PDU with IEC 309 2P+Gnd line cord
39Y8935	DPI 63amp/250V Front-end PDU with IEC 309 2P+Gnd line cord
NEMA PDUs (6x NEMA 5-15R outlets)	
39Y8905	DPI 100-127V PDU with Fixed NEMA L5-15P line cord
Line cords for PDUs that ship without a line cord	
40K9611	DPI 32a Line Cord (IEC 309 3P+N+G)
40K9612	DPI 32a Line Cord (IEC 309 P+N+G)
40K9613	DPI 63a Cord (IEC 309 P+N+G)
40K9614	DPI 30a Line Cord (NEMA L6-30P)

Part number	Description
40K9615	DPI 60a Cord (IEC 309 2P+G)
40K9617	DPI Australian/NZ 3112 Line Cord
40K9618	DPI Korean 8305 Line Cord

* Not available in USA and Canada

For more information, see the Lenovo Press documents in the PDU category:

<https://lenovopress.com/servers/options/pdu>

Uninterruptible power supply units

The following table lists the uninterruptible power supply (UPS) units that are offered by Lenovo.

Table 18. Uninterruptible power supply units

Part number	Description
55941AX	RT1.5kVA 2U Rack or Tower UPS (100-125VAC)
55941KX	RT1.5kVA 2U Rack or Tower UPS (200-240VAC)
55942AX	RT2.2kVA 2U Rack or Tower UPS (100-125VAC)
55942KX	RT2.2kVA 2U Rack or Tower UPS (200-240VAC)
55943AX	RT3kVA 2U Rack or Tower UPS (100-125VAC)
55943KX	RT3kVA 2U Rack or Tower UPS (200-240VAC)
55945KX	RT5kVA 3U Rack or Tower UPS (200-240VAC)
55946KX	RT6kVA 3U Rack or Tower UPS (200-240VAC)
55948KX	RT8kVA 6U Rack or Tower UPS (200-240VAC)
55949KX	RT11kVA 6U Rack or Tower UPS (200-240VAC)
55948PX	RT8kVA 6U 3:1 Phase Rack or Tower UPS (380-415VAC)
55949PX	RT11kVA 6U 3:1 Phase Rack or Tower UPS (380-415VAC)
55943KT†	ThinkSystem RT3kVA 2U Standard UPS (200-230VAC) (2x C13 10A, 2x GB 10A, 1x C19 16A outlets)
55943LT†	ThinkSystem RT3kVA 2U Long Backup UPS (200-230VAC) (2x C13 10A, 2x GB 10A, 1x C19 16A outlets)
55946KT†	ThinkSystem RT6kVA 5U UPS (200-230VAC) (2x C13 10A outlets, 1x Terminal Block output)
5594XKT†	ThinkSystem RT10kVA 5U UPS (200-230VAC) (2x C13 10A outlets, 1x Terminal Block output)

† Only available in China and countries in the Asia Pacific region.

For more information, see the list of Product Guides in the UPS category:

<https://lenovopress.com/servers/options/ups>

Related publications and links

For more information, see the following resources:

- Lenovo FC SAN Switches product page
<https://www3.lenovo.com/us/en/data-center/storage/storage-area-network/fibre-channel-switches/c/san-fibre-channel-switches>
- Lenovo ThinkSystem DB620S FC SAN Switch product publications
<http://datacentersupport.lenovo.com/us/en/products/storage/fibre-channel-switches/db620s-fc-switch/documentation>
 - *Hardware Installation Guide*
 - *Fabric OS Access Gateway Administration Guide*
 - *Fabric OS Administration Guide*
 - *Fabric OS Extension Configuration Guide*
 - *Fabric OS Troubleshooting and Diagnostics Guide*
 - *Fabric OS Command Reference*
 - *Fabric OS Message Reference*
 - *Fabric OS MIB Reference*
 - *Web Tools Administration Guide*
 - *Flow Vision Configuration Guide*
 - *Monitoring and Alerting Policy Suite Configuration Guide*
- Lenovo Data Center Support for the ThinkSystem DB620S FC SAN Switch:
<http://datacentersupport.lenovo.com/us/en/products/storage/fibre-channel-switches/db620s-fc-switch/6415>

Related product families

Product families related to this document are the following:

- [Rack SAN Switches](#)
- [DB Series SAN Switches](#)

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