



Lenovo ThinkSystem DB610S 32Gb FC SAN Switch Product Guide

The Lenovo ThinkSystem DB610S 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 to meet the demands of growing flash-based storage environments.

Designed to enable maximum flexibility and reliability, the ThinkSystem DB610S 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 DB610S FC SAN Switch offers 24x SFP+ ports that support 4/8/16/32 Gbps speeds. The DB610S 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 DB610S 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 DB610S 32Gb FC SAN Switch.



Figure 1. Lenovo ThinkSystem DB610S 32Gb FC SAN Switch

Did you know?

The DB610S FC SAN Switch leverages storage connectivity technologies from Brocade, a leader in Fibre Channel networking.

The DB610S 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 DB610S FC SAN Switch offers the following features and benefits:

- Provides an affordable enterprise-class 32 Gb FC solution with 24 SFP+ ports to support flash-based storage environments.
- Increases performance for demanding workloads with support for 32 Gbps FC links.
- Simplifies configuration and management with easy-to-use EZSwitch Setup.
- 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 health and performance with VM Insight through integrated network sensors.
- Offers dual functionality as either a full-fabric SAN switch or as an NPIV-enabled Access Gateway (requires 24 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, and diagnostic tools.
- Expands fabric capabilities with optional licensed functions, including trunking, advanced monitoring and alerting, and long-distance fabrics.
- Allow 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.
- 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 DB610S FC SAN Switch.

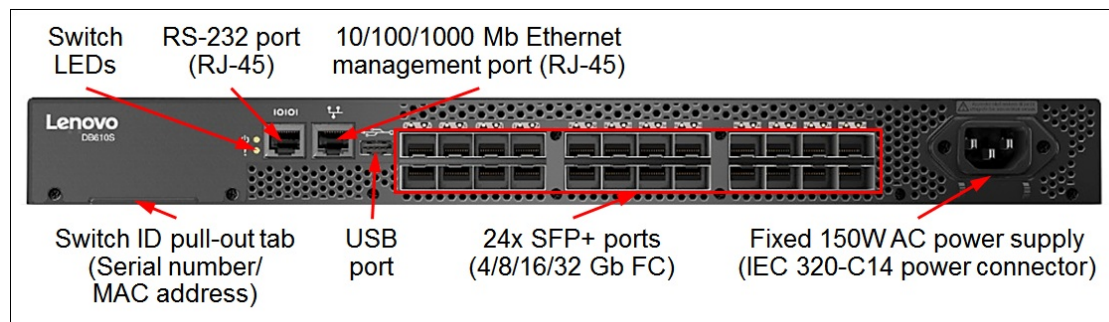


Figure 2. DB610S FC SAN Switch port-side view

The following figure shows the non-port side view of the DB610S FC SAN Switch.

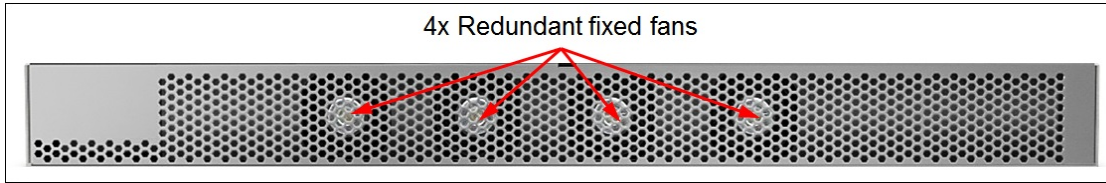


Figure 3. DB610S FC SAN Switch non-port-side view

System specifications

The following table lists the ThinkSystem DB610S system specifications.

Table 1. System specifications

| Component | Specification |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Form factor | Standalone or 1U rack mount (Machine Type 6559) |
| Ports | <p>24x SFP+ ports:</p> <ul style="list-style-type: none"> • Models HC1 and HC4: 24 ports activated and 24x 16 Gb FC SWL SFP+ transceivers included. • Model HC5: 8 ports activated and 8x 16 Gb FC SWL SFP+ transceivers included. • Models HC3 and HC6: 8 ports activated and no transceivers included. <p>Up to two optional 8-port activation license packs or bundles (8-port license pack and 8x 16 Gb FC SWL SFP+ transceivers) for Models HC3, HC5, and HC6.</p> |
| Media types | <ul style="list-style-type: none"> • 32 Gb FC SFP+ transceivers: short wavelength (SWL), long wavelength (LWL). • 16 Gb FC SFP+ transceivers: SWL, LWL, extended long wavelength (ELWL). |
| Port speeds | <ul style="list-style-type: none"> • 32 Gb FC SFP+ transceivers: 32/16/8 Gbps auto-sensing. • 16 Gb FC SFP+ transceivers: 16/8/4 Gbps auto-sensing. |
| FC port types | <ul style="list-style-type: none"> • Full Fabric mode: F_Port, M_Port (Mirror Port), E_Port, 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, Adaptive Networking, Advanced Diagnostic Tools. |
| Optional features | Enterprise Bundle (ISL Trunking, Fabric Vision, Extended Fabric). |
| Performance | <p>Non-blocking architecture with wire-speed forwarding of traffic:</p> <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 • Aggregated throughput: 768 Gbps • Up to 0.9 μs local switching latency |
| 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: 2,000 • Maximum number of ports per ISL trunk: 8x SFP+ (ISL Trunking license is included in the Enterprise Bundle) |
| Cooling | Four fixed fans with N+1 cooling redundancy. Non-port to port side airflow. |
| Power supply | One fixed 150 W AC (100 - 240 V) power supply (IEC 320-C14 connector). |
| Hot-swap parts | SFP+ transceivers. |

| Component | Specification |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Management ports | One 10/100/1000 Mb Ethernet port (UTP, RJ-45); one RS-232 port (RJ-45); 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 Network Advisor. |
| 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 (Models HC4, HC5, and HC6) or three-year (Models HC1 and HC3) firmware entitlement and support license is included. Optional one- and two-year firmware support extension licenses are available from Lenovo for Models HC1 and HC3. Firmware entitlement extension licenses for Models HC4, HC5, and HC6 are included in the warranty service upgrades for Models HC4, HC5, and HC6. |
| Dimensions | Height: 43 mm (1.7 in.); width: 429 mm (16.9 in.); depth: 307 mm (12.1 in.) |
| Weight | Empty: 4.2 kg (9.3 lb); Fully configured: 5.8 kg (12.7 lb). |

Models

The following table lists the ThinkSystem DB610S FC SAN Switch models.

Table 2. Lenovo ThinkSystem DB610S FC SAN Switch models

| Description | Part number | Machine Type-Model | Feature code |
|-----------------------------------------------------------------------------------------------------|-------------|--------------------|--------------|
| Lenovo ThinkSystem DB610S, ENT Bundle, 24 ports licensed, 24x 16Gb SWL SFPs, 1 PS, Rail Kit, 1Yr FW | 6559F1A | 6559-HC4 | B4QB |
| Lenovo ThinkSystem DB610S, ENT Bundle, 24 ports licensed, 24x 16Gb SWL SFPs, 1 PS, Rail Kit, 3Yr FW | 6559D1Y | 6559-HC1 | AVPQ |
| Lenovo ThinkSystem DB610S, 8 ports licensed, 8x 16Gb SWL SFPs, 1 PS, Rail Kit, 1Yr FW | 6559F2A | 6559-HC5 | B4QC |
| Lenovo ThinkSystem DB610S, 8 ports licensed, No SFPs, 1 PS, Rail Kit, 1Yr FW | 6559F3A | 6559-HC6 | B4QD |
| Lenovo ThinkSystem DB610S, 8 ports licensed, No SFPs, 1 PS, Rail Kit, 3Yr FW | 6559D3Y | 6559-HC3 | AVPS |

The DB610S FC SAN Switch part numbers include the following items:

- One FC SAN Switch
 - Models HC1 and HC4: With 24 ports activated and 24x 16 Gb FC SWL SFP+ transceivers included
 - Model HC5: With 8 ports activated and 8x 16 Gb FC SWL SFP+ transceivers included
 - Models HC3 and HC6: With 8 ports activated and no transceivers included
 - With 1-year (Models HC4, HC5, and HC6) or 3-year (Models HC1 and HC3) firmware entitlement
- Serial cable (DB-9/RJ-45 to RJ-45)
- Fixed rack mount kit
- EZSwitch Setup web pointer card
- Online Documentation web pointer card
- Network Advisor web pointer card

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

Port activation licenses

The DB610S FC SAN Switch Models HC1 and HC4 ship with 24 licensed ports and with 24x 16 Gb FC SWL SFP+ Transceivers. The DB610S FC SAN Switch Model HC5 ships with 8 licensed ports and with 8x 16 Gb FC SWL SFP+ Transceivers. The DB610S FC SAN Switch Model HC3 comes standard with 8 licensed ports and without any transceivers.

The remaining 16 SFP+ unlicensed ports on the Models HC3 and HC5 can be activated by purchasing and installing the Ports on Demand (POD) licenses that are available with or without SFP+ transceivers in 8-port increments.

The following table lists additional POD options for the DB610S FC SAN Switch.

Table 3. POD options for Models HC3 and HC5

| Description | Part number | Feature code | Maximum quantity supported |
|-----------------------------------------------------------------------------|-------------|--------------|----------------------------|
| Electronic authorization licenses | | | |
| Lenovo DB610S POD LICENSE, 8 PORT ON-DEMAND, no SFPs | 7S0C000DWW | B3ED | 2 |
| Paper authorization licenses and bundles | | | |
| Lenovo DB610S 8-Port SW POD License (no transceivers) | 01KP845 | AX4C | 2 |
| Lenovo DB610S 8-Port SW POD License (with 8x 16 Gbps SWL SFP+ transceivers) | 01KP846 | AVUK | 2 |

Transceivers and cables

With the flexibility of the DB610S FC SAN Switch, customers can choose the following connectivity:

- For 32 Gb FC links, customers can use 32 Gb FC SFP+ SWL optical transceivers for distances up to 100 meters on 50 μ OM4 multimode fiber optic cables. For longer distances, the 32 Gb FC LWL SFP+ optical transceivers can support up to 10 kilometers on single-mode fiber optic 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 50 μ OM4 multimode fiber optic cables. For longer distances, the 16 Gb FC LWL SFP+ optical transceivers can support up to 10 kilometers on single-mode fiber optic cables. For extended distances, the 16 Gb FC ELWL SFP+ optical transceivers can support up to 25 kilometers on single-mode fiber optic cables. These transceivers can operate at 16 Gbps, 8 Gbps, or 4 Gbps speeds.
- For the 1 GbE RJ-45 management port, customers can use UTP cables for distances up to 100 meters.

The DB610S FC SAN Switch comes with 24x (Models HC1 and HC4) or 8x (Model HC5) 16 Gb FC SWL SFP+ transceivers or without any transceivers (Models HC3 and HC6). Additional SWL, LWL, and ELWL SFP+ transceivers can be ordered for the switch, if needed.

The following table lists the supported SFP+ options and cables.

Table 4. SFP+ transceivers and cables

| Description | Part number | Feature code | Maximum quantity supported |
|--------------------------------------------------------------------------|-------------|--------------|----------------------------|
| 32 Gb FC SFP+ transceivers | | | |
| Brocade 32Gb SWL SFP+ Transceiver | 01KN789 | AVGC | 24 |
| Brocade 32Gb SWL SFP+ Transceiver (8-pack) | 01KN793 | AVGD | 3 |
| Brocade 32Gb LWL SFP+ Transceiver | 01KN795 | AVGE | 24 |
| Brocade 32Gb LWL SFP+ Transceiver (8-pack) | 01KN799 | AVGF | 3 |
| 16 Gb FC SFP+ transceivers | | | |
| Brocade 16Gb SWL SFP+ Optical Transceiver | 88Y6393 | A22R | 24 |
| Brocade 16Gb 10km LWL SFP+ Transceiver | 00MY768 | ASK2 | 24 |
| Brocade 16Gb 25km ELWL SFP+ Transceiver | 00MY770 | ASK3 | 24* |
| OM3 optical cables for 16 Gb and 32 Gb FC SW SFP+ transceivers | | | |
| Lenovo 0.5m LC-LC OM3 MMF Cable | 00MN499 | ASR5 | 24 |
| Lenovo 1m LC-LC OM3 MMF Cable | 00MN502 | ASR6 | 24 |
| Lenovo 3m LC-LC OM3 MMF Cable | 00MN505 | ASR7 | 24 |
| Lenovo 5m LC-LC OM3 MMF Cable | 00MN508 | ASR8 | 24 |
| Lenovo 10m LC-LC OM3 MMF Cable | 00MN511 | ASR9 | 24 |
| Lenovo 15m LC-LC OM3 MMF Cable | 00MN514 | ASRA | 24 |
| Lenovo 25m LC-LC OM3 MMF Cable | 00MN517 | ASRB | 24 |
| Lenovo 30m LC-LC OM3 MMF Cable | 00MN520 | ASRC | 24 |
| OM4 optical cables for 16 Gb and 32 Gb FC SW SFP+ transceivers | | | |
| Lenovo 0.5m LC-LC OM4 MMF Cable | 4Z57A10845 | B2P9 | 24 |
| Lenovo 1m LC-LC OM4 MMF Cable | 4Z57A10846 | B2PA | 24 |
| Lenovo 3m LC-LC OM4 MMF Cable | 4Z57A10847 | B2PB | 24 |
| Lenovo 5m LC-LC OM4 MMF Cable | 4Z57A10848 | B2PC | 24 |
| Lenovo 10m LC-LC OM4 MMF Cable | 4Z57A10849 | B2PD | 24 |
| Lenovo 15m LC-LC OM4 MMF Cable | 4Z57A10850 | B2PE | 24 |
| Lenovo 25m LC-LC OM4 MMF Cable | 4Z57A10851 | B2PF | 24 |
| Lenovo 30m LC-LC OM4 MMF Cable | 4Z57A10852 | B2PG | 24 |
| 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 |

| Description | Part number | Feature code | Maximum quantity supported |
|----------------------|-------------|--------------|----------------------------|
| 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 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. DB610S FC SAN Switch cabling requirements

| Transceiver | Standard | Cable | Connector |
|--------------------------------------|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| 32 Gb Fibre Channel | | | |
| 32 Gb FC SWL SFP+ (01KN789, 01KN793) | FC-PI-6 | Up to 30 m with fiber optic cables supplied by Lenovo (see Table 4). 850 nm 50 μ multi-mode fiber optic 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 |
| 32 Gb FC LWL SFP+ (01KN795, 01KN799) | FC-PI-6 | 1310 nm 9 μ single-mode fiber optic cable: <ul style="list-style-type: none"> • 32GFC, 16GFC, 8GFC: Up to 10 km | LC |
| 16 Gb Fibre Channel | | | |
| 16 Gb FC SWL SFP+ (88Y6393) | FC-PI-5 | Up to 30 m with fiber optic cables supplied by Lenovo (see Table 4). 850 nm 50 μ multi-mode fiber optic 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 |
| 16 Gb FC LWL SFP+ (00MY768) | FC-PI-5 | 1310 nm 9 μ single-mode fiber optic 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 single-mode fiber optic cable: <ul style="list-style-type: none"> • 16GFC: Up to 25 km | LC |
| Management ports | | | |
| 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 |
| Serial port | RS-232 | DB-9/RJ-45-to-RJ-45 console cable (comes with the switch) | RJ-45 |

Firmware

The DB610S FC SAN Switch comes standard with the following features (based on Fabric OS version 8.1):

- 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.
- 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.
- 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 Network Advisor (purchased separately)
 - SNMPv1, SNMPv3, and MIBs
 - SMI-S compliant
 - Syslog
- 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)

- 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 features are available for the DB610S FC SAN Switch in the optional 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: Allows to identify, monitor, and analyze specific application flows.
 - VM Insight: Allows to monitor 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.
- Extended Fabric (EF): Extends Fibre Channel SANs beyond 10 km distance limitations for replication and backup at full bandwidth.

The following table lists ordering information for the optional features for the DB610S FC SAN Switch (one license per switch).

Table 6. Optional features

| Description | Part number | Feature code |
|-----------------------------------------------|-------------|--------------|
| Electronic authorization licenses | | |
| Lenovo DB610S Enterprise Bundle (TRK, FV, EF) | 7S0C000CWW | B3EC |

Note: The DB610S FC SAN Switch Models HC1 and HC4 come with the Enterprise Bundle license included.

Firmware entitlement is included with the DB610S FC SAN Switch and provides 3-year (Models HC1 and HC3) or 1-year (Models HC4, HC5, and HC6) firmware support. The options to extend the entitlement up to 7 years in 1-year or 2-year increments are available for Models HC1 and HC3. The firmware entitlement is included in the warranty service upgrades for Models HC4, HC5, and HC6.

The firmware entitlement and support extension options for Models HC1 and HC3 are listed in the following table.

Table 7. Firmware entitlement and support extension options for Models HC1 and HC3

| Description | Part number | Feature code |
|-------------------------------|-------------|--------------|
| DB610S FC SAN FW Renewal, 1yr | 4ZN7A08472 | B0R0 |
| DB610S FC SAN FW Renewal, 2yr | 4ZN7A08473 | B0R1 |

Management software

Lenovo offers optional Brocade Network Advisor, a fabric management application, to efficiently manage the network operations lifecycle, including monitoring, diagnostics, change management, and troubleshooting.

Lenovo offers the following Network Advisor editions:

- Network Advisor Professional Plus: A SAN management application designed for mid-sized SANs for managing up to 36 physical or virtual fabrics and up to 2,560 switch ports.
- Network Advisor Enterprise: A SAN management application designed for enterprise-class SANs for managing up to 100 physical or virtual fabrics and up to 15,000 switch ports.

Brocade Network Advisor supports the wide variety of Brocade SAN offerings, including Lenovo B300, B6505, B6510, DB610S, DB620S, DB400D, DB800D, FC5022, and more. For a complete list of supported products and edition features, refer to the Brocade Network Advisor Installation and Migration Guide:

<http://www.brocade.com/en/support/document-library/dl-segment-products-os-detail-page.bna.product.html>

The following table lists ordering information for the optional Brocade Network Advisor management application.

Table 8. Brocade Network Advisor licenses

| Description | Part number | Feature code |
|-----------------------------------------------------------------------------|-------------|--------------|
| Electronic authorization licenses | | |
| Brocade Network Advisor Professional Plus License | 7S0C000MWW | B3EM |
| Brocade Network Advisor SAN Enterprise License | 7S0C000LWW | B3EL |
| Brocade Network Advisor SAN Upgrade Professional Plus to Enterprise License | 7S0C000NWW | B3EN |

The Brocade Network Advisor licenses include 1-year software support entitlement. The options to extend entitlement for additional years of software support in 1-year increments are listed in the following table.

Table 9. Software support extension options for Brocade Network Advisor

| Description | Part number | Feature code |
|-------------------------------------------------------------------------------------------------------|-------------|--------------|
| Brocade Network Advisor Professional Plus License Support Extension, 1-Year | 7S0C000UWW | S0FC |
| Brocade Network Advisor SAN Enterprise License Support Extension, 1-Year | 7S0C000TWW | S0FB |
| Brocade Network Advisor SAN Upgrade Professional Plus to Enterprise License Support Extension, 1-Year | 7S0C000VWW | S0FD |

Fibre Channel standards

The DB610S FC SAN Switch supports the following standards:

- 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-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 DB610S FC SAN Switch ships with one fixed 150 W AC power supply that has an IEC 309-C14 connector.

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

Table 10. 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 |
| Country-specific 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 DB610S FC SAN Switch comes standard with the fixed rack mount kit that can be used for 4-post rack installations. If needed, the DB610S 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 11. Rack-mount options

| Description | Part number | Feature code | Maximum quantity supported |
|------------------------------------------|-------------|--------------|----------------------------|
| Lenovo DB610S Mid-mount (Telco) Rack Kit | 01KP847 | AX4D | 1 |

The optional mid-mount rack kit for the DB610S FC SAN Switch is shown in the following figure.

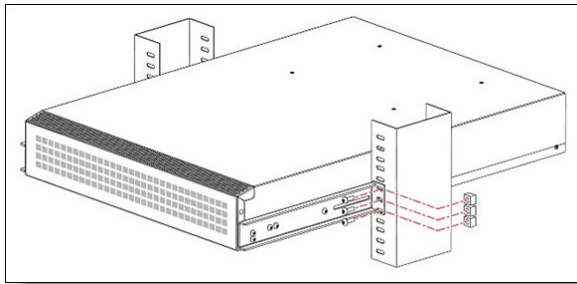


Figure 4. Lenovo DB610S Mid-mount (Telco) Rack Kit

Physical specifications

The DB610S FC SAN Switch has the following dimensions and weight (approximate):

- Height: 43 mm (1.7 in.)
- Width: 429 mm (16.9 in.)
- Depth: 307 mm (12.1 in.)
- Weight:
 - Empty: 4.2 kg (9.3 lb)
 - Fully configured: 5.8 kg (12.7 lb)

Operating environment

The DB610S 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: 56 watts
 - Typical: 64 watts
 - Maximum: 77 watts
- Heat dissipation:
 - Idle: 191 BTU per hour
 - Typical: 216 BTU per hour
 - Maximum: 262 BTU per hour
- Acoustical noise emission (maximum): 64 dB

Hardware warranty

The DB610S 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.

Some countries might have different warranty terms and conditions than the standard warranty. This is due to local business practices or laws in the specific country. Local service teams can assist in explaining country-specific terms when needed. Examples of country-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 spares parts.

Also available are Lenovo Services warranty maintenance upgrades and post-warranty maintenance agreements, with a well-defined scope of services, including service hours, response time, term of service, and service agreement terms and conditions.

Lenovo warranty service upgrade offerings are country-specific. Not all warranty service upgrades are available in every country. For information about Lenovo warranty service upgrade offerings that are available in your country or area, refer to the following resources:

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

In general, the following Lenovo warranty service upgrades are available:

- Warranty and maintenance service upgrades:
 - 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 countries)
 - Advanced Service: 24x7 service coverage with 2-hour onsite response or 6-hour committed repair (available only in select countries)
- Basic Hardware Installation Services
Lenovo experts can seamlessly manage the physical installation of your server, storage, or networking hardware. Working at a time convenient for you (business hours or off shift), the technician will unpack and inspect the systems on your 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 your team to focus on other priorities.

For service definitions, country-specific details, and service limitations, please 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>

Regulatory compliance

The DB610S FC SAN Switch conforms to the following regulations:

- Electromagnetic compatibility
 - CISPR 22
 - CNS 13438
 - EN 55024
 - EN 55032
 - EN 61000-3-2
 - EN 61000-3-3
 - FCC Part 15, Subpart B
 - GB 9254
 - ICES-003
 - KN 32
 - KN 35
 - VCCI
- Safety
 - CNS 14336-1
 - EN/UL/CSA/IEC 60950-1
 - GB 4943.1
- Environmental: RoHS

Fibre Channel SAN switches

The following table lists the FC SAN switches 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 storage configuration support *must* be verified through the interoperability matrix for a particular storage system that can be found on the Lenovo Data Center Support web site:

<http://datacentersupport.lenovo.com>

Table 12. FC SAN switches

| Description | Part number |
|-----------------------------------------------------------------------------------------------------|-------------|
| Rack-mount switches - 8 Gb FC | |
| Lenovo B300, 8 ports activated, 8x 8Gb SWL SFPs, 1 PS, Rail Kit | 3873AR3 |
| Lenovo B300, E_Port License included, 8 ports activated, 8x 8Gb SWL SFPs, 1 PS, Rail Kit | 3873AR6 |
| Rack-mount switches - 16 Gb FC | |
| Lenovo B6505, 12 ports licensed, 12x 16Gb SWL SFPs, 1 PS, Rail Kit, 1Yr FW | 3873ER1 |
| Lenovo B6510, 24 ports licensed, 24x 16Gb SWL SFPs, 2 PS, Rail Kit, 1Yr FW | 3873IR1 |
| Lenovo B6510, 24 ports licensed, 24x 16Gb SWL SFPs, 2 PS, Rail Kit, 3Yr FW | 3873BR3 |
| Rack-mount switches - 32 Gb FC | |
| Lenovo ThinkSystem DB620S, 24 ports licensed, No SFPs, 2 PS, Rail Kit, 1Yr FW | 6415G3A |
| Lenovo ThinkSystem DB620S, 24 ports licensed, 24x 32Gb SWL SFPs, 2 PS, Rail Kit, 1Yr FW | 6415H11 |
| Lenovo ThinkSystem DB620S, 24 ports licensed, 24x 32Gb SWL SFPs, 2 PS, Rail Kit, 3Yr FW | 6415G11 |
| Lenovo ThinkSystem DB620S, ENT Bundle, 48 ports licensed, 48x 32Gb SWL SFPs, 2 PS, Rail Kit, 1Yr FW | 6415H2A |
| Rack-mount directors - 32 Gb FC | |
| Lenovo ThinkSystem DB400D 32Gb FC Director, ENT. Feature set, 4 Blade slots, 8U, 1Yr FW | 6684D2A |
| Lenovo ThinkSystem DB400D 32Gb FC Director, ENT. Feature set, 4 Blade slots, 8U, 3Yr FW | 6684B2A |
| Lenovo ThinkSystem DB800D 32Gb FC Director, ENT. Feature set, 8 Blade slots, 14U, 1Yr FW | 6682D1A |
| Embedded switches - Gen 5 16 Gb FC | |
| Lenovo Flex System FC5022 16Gb SAN Scalable Switch | 88Y6374 |
| Lenovo Flex System FC5022 24-port 16Gb SAN Scalable Switch (includes two 16 Gb SFPs) | 00Y3324 |
| Lenovo Flex System FC5022 24-port 16Gb ESB SAN Scalable Switch | 90Y9356 |

For more information, see the list of Product Guides in the following categories:

- Rack-mount SAN switches:
<http://lenovopress.com/storage/switches/rack#rt=product-guide>
- Blade Storage Modules:
<http://lenovopress.com/servers/blades/storagemodule#rt=product-guide>

External storage systems

The following table lists the external storage systems that are currently offered by Lenovo that can be used in Lenovo FC SAN storage solutions.

Note: Information provided in this section is for ordering reference purposes only. End-to-end storage configuration support *must* be verified through the interoperability matrix for a particular storage system that can be found on the Lenovo Data Center Support web site:

<http://datacentersupport.lenovo.com>

Table 13. External storage systems: DE Series

| Description | Part number | |
|-------------------------------------------------------|-------------|------------|
| | Worldwide | Japan |
| Lenovo ThinkSystem DE Series Storage | | |
| Lenovo ThinkSystem DE2000H FC Hybrid Flash Array LFF | 7Y70A002WW | 7Y701002JP |
| Lenovo ThinkSystem DE2000H FC Hybrid Flash Array SFF | 7Y71A001WW | 7Y711004JP |
| Lenovo ThinkSystem DE4000H FC Hybrid Flash Array 4U60 | 7Y77A001WW | 7Y771001JP |
| Lenovo ThinkSystem DE4000H FC Hybrid Flash Array LFF | 7Y74A001WW | 7Y74A001JP |
| Lenovo ThinkSystem DE4000H FC Hybrid Flash Array SFF | 7Y75A002WW | 7Y75A002JP |
| Lenovo ThinkSystem DE4000F FC All Flash Array SFF | 7Y76A001WW | 7Y76A001JP |
| Lenovo ThinkSystem DE6000H FC Hybrid Flash Array 4U60 | 7Y80A001WW | 7Y801001JP |
| Lenovo ThinkSystem DE6000H FC Hybrid Flash Array SFF | 7Y78A001WW | 7Y781001JP |
| Lenovo ThinkSystem DE6000F FC All Flash Array SFF | 7Y79A001WW | 7Y79A001JP |

Table 14. External storage systems: DM Series

| Description | Part number |
|-----------------------------------------------------------------------|-------------|
| Lenovo ThinkSystem DM Series Storage | |
| Lenovo ThinkSystem DM3000H Hybrid Storage Array (2U12 LFF, CTO only) | 7Y42CTO1WW |
| Lenovo ThinkSystem DM3000H 48TB (12x 4TB HDDs) (Universal SFP+) | 7Y420001EA* |
| Lenovo ThinkSystem DM5000H Hybrid Storage Array (2U24 SFF, CTO only) | 7Y57CTO1WW |
| Lenovo ThinkSystem DM5000H 11.5TB (12x 960GB SSDs) (Universal SFP+) | 7Y570001EA* |
| Lenovo ThinkSystem DM5000H 29TB (24x 1.2TB 10K HDDs) (Universal SFP+) | 7Y570003EA* |
| Lenovo ThinkSystem DM5000F Flash Storage Array (2U24 SFF, CTO only) | 7Y41CTO1WW |
| Lenovo ThinkSystem DM7000H Hybrid Storage Array (3U, CTO only) | 7Y56CTO1WW |
| Lenovo ThinkSystem DM7000F Flash Storage Array (3U, CTO only) | 7Y40CTO1WW |

* Available only in EMEA.

Table 15. External storage systems: DS Series

| Description | Part number | | |
|-------------------------------------------------------------|-------------|---------|---------|
| | Worldwide | Japan | PRC |
| Lenovo ThinkSystem DS Series Storage | | | |
| Lenovo ThinkSystem DS2200 LFF FC/iSCSI Dual Controller Unit | 4599A31 | 4599A3J | 4599A3C |
| Lenovo ThinkSystem DS2200 SFF FC/iSCSI Dual Controller Unit | 4599A11 | 4599A1J | 4599A1C |
| Lenovo ThinkSystem DS4200 LFF FC/iSCSI Dual Controller Unit | 4617A31 | 4617A3J | 4617A3C |
| Lenovo ThinkSystem DS4200 SFF FC/iSCSI Dual Controller Unit | 4617A11 | 4617A1J | 4617A1C |
| Lenovo ThinkSystem DS6200 SFF FC/iSCSI Dual Controller Unit | 4619A11 | 4619A1J | 4619A1C |

| Description | Part number | | |
|-------------------------------------------------------------------------|-------------|---------|---------|
| | Worldwide | Japan | PRC |
| DS6200F 12x 400GB 10DWD SSDs, 1x 8Gb FC SFP, 512 Snapshots, Replication | 4619A1F | 4619J1F | 4619C1F |
| DS6200F 12x 800GB 3DWD SSDs, 1x 8Gb FC SFP, 512 Snapshots, Replication | 4619A2F | 4619J2F | 4619C2F |
| DS6200F 12x 1.6TB 3DWD SSDs, 1x 8Gb FC SFP, 512 Snapshots, Replication | 4619A3F | 4619J3F | 4619C3F |
| DS6200F 12x 3.84TB 1DWD SSDs, 1x 8Gb FC SFP, 512 Snapshots, Replication | 4619A4F | 4619J4F | 4619C4F |

Table 16. External storage systems: V Series and Storwize for Lenovo

| Description | Part number |
|---------------------------------------------------------|-------------|
| Lenovo Storage V Series | |
| Lenovo Storage V3700 V2 LFF Control Enclosure | 6535C1D |
| Lenovo Storage V3700 V2 SFF Control Enclosure | 6535C2D |
| Lenovo Storage V3700 V2 XP LFF Control Enclosure | 6535C3D |
| Lenovo Storage V3700 V2 XP SFF Control Enclosure | 6535C4D |
| Lenovo Storage V5030 LFF Control Enclosure 3Yr S&S | 6536C12 |
| Lenovo Storage V5030 LFF Control Enclosure 5Yr S&S | 6536C32 |
| Lenovo Storage V5030 SFF Control Enclosure 3Yr S&S | 6536C22 |
| Lenovo Storage V5030 SFF Control Enclosure 5Yr S&S | 6536C42 |
| Lenovo Storage V5030F SFF Control Enclosure 3Yr S&S | 6536B1F |
| Lenovo Storage V5030F SFF Control Enclosure 5Yr S&S | 6536B2F |
| Lenovo Storage V7000 SFF Control Enclosure 3Yr S&S PRC | 6538R11^ |
| Lenovo Storage V7000 SFF Control Enclosure 5Yr S&S PRC | 6538R21^ |
| Lenovo Storage V7000F SFF Control Enclosure 3Yr S&S PRC | 6538R1G^ |
| Lenovo Storage V7000F SFF Control Enclosure 5Yr S&S PRC | 6538R2G^ |
| IBM Storwize for Lenovo | |
| IBM Storwize V7000 SFF Control Enclosure, 3YR SWMA | 6195C32† |
| IBM Storwize V7000 SFF Control Enclosure, 3YR SWMA, LA | 6195C3L‡ |
| IBM Storwize V7000 SFF Control Enclosure, 5YR SWMA | 6195C52† |
| IBM Storwize V7000 SFF Control Enclosure, 5YR SWMA, LA | 6195C5L‡ |

^ Available only in PRC.

† Available worldwide except Latin America.

‡ Available only in Latin America.

For more information, see the list of Product Guides in the following categories:

- Lenovo DE Series, DM Series, DS Series, and V Series storage:
<http://lenovopress.com/storage/san/lenovo#rt=product-guide>
- IBM Storwize for Lenovo storage:
<http://lenovopress.com/storage/san/ibm#rt=product-guide>

Rack cabinets

The following table lists the rack cabinets that are offered by Lenovo that can be used in Lenovo FC SAN solutions.

Table 17. Rack cabinets

| Description | Part number |
|---------------------------------------------------------------------------|-------------|
| 25U S2 Standard Rack (1000 mm deep; 2 sidewall compartments) | 93072RX |
| 25U Static S2 Standard Rack (1000 mm deep; 2 sidewall compartments) | 93072PX |
| 42U S2 Standard Rack (1000 mm deep; 6 sidewall compartments) | 93074RX |
| 42U 1100mm Enterprise V2 Dynamic Rack (6 sidewall compartments) | 93634PX |
| 42U 1100mm Enterprise V2 Dynamic Expansion Rack (6 sidewall compartments) | 93634EX |
| 42U 1200mm Deep Dynamic Rack (6 sidewall compartments) | 93604PX |
| 42U 1200mm Deep Static Rack (6 sidewall compartments) | 93614PX |
| 42U Enterprise Rack (1105 mm deep; 4 sidewall compartments) | 93084PX |
| 42U Enterprise Expansion Rack (1105 mm deep; 4 sidewall compartments) | 93084EX |

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 that can be used in Lenovo FC SAN solutions.

Table 18. Power distribution units

| Description | Part number |
|-------------------------------------------------------------------------------------------|-------------|
| 0U Basic PDUs | |
| 0U 36 C13/6 C19 24A/200-240V 1 Phase PDU with NEMA L6-30P line cord | 00YJ776 |
| 0U 36 C13/6 C19 32A/200-240V 1 Phase PDU with IEC60309 332P6 line cord | 00YJ777 |
| 0U 21 C13/12 C19 32A/200-240V/346-415V 3 Phase PDU with IEC60309 532P6 line cord | 00YJ778 |
| 0U 21 C13/12 C19 48A/200-240V 3 Phase PDU with IEC60309 460P9 line cord | 00YJ779 |
| Switched and Monitored PDUs | |
| 0U 20 C13/4 C19 Switched and Monitored 24A/200-240V/1Ph PDU w/ NEMA L6-30P line cord | 00YJ781 |
| 0U 20 C13/4 C19 Switched and Monitored 32A/200-240V/1Ph PDU w/ IEC60309 332P6 line cord | 00YJ780 |
| 0U 18 C13/6 C19 Switched / Monitored 32A/200-240V/346-415V/3Ph PDU w/ IEC60309 532P6 cord | 00YJ782 |
| 0U 12 C13/12 C19 Switched and Monitored 48A/200-240V/3Ph PDU w/ IEC60309 460P9 line cord | 00YJ783 |
| 1U 9 C19/3 C13 Switched and Monitored DPI PDU (without line cord) | 46M4002 |
| 1U 9 C19/3 C13 Switched and Monitored 60A 3Ph PDU with IEC 309 3P+Gnd cord | 46M4003 |
| 1U 12 C13 Switched and Monitored DPI PDU (without line cord) | 46M4004 |
| 1U 12 C13 Switched and Monitored 60A 3 Phase PDU with IEC 309 3P+Gnd line cord | 46M4005 |
| Ultra Density Enterprise PDUs (9x IEC 320 C13 + 3x IEC 320 C19 outlets) | |
| Ultra Density Enterprise C19/C13 PDU Module (without line cord) | 71762NX |
| Ultra Density Enterprise C19/C13 PDU 60A/208V/3ph with IEC 309 3P+Gnd line cord | 71763NU |

| Description | Part number |
|------------------------------------------------------------------------------|-------------|
| C13 Enterprise PDUs (12x IEC 320 C13 outlets) | |
| DPI C13 Enterprise PDU+ (without line cord) | 39M2816 |
| DPI Single Phase C13 Enterprise PDU (without line cord) | 39Y8941 |
| C19 Enterprise PDUs (6x IEC 320 C19 outlets) | |
| DPI Single Phase C19 Enterprise PDU (without line cord) | 39Y8948 |
| DPI 60A 3 Phase C19 Enterprise PDU with IEC 309 3P+G (208 V) fixed line cord | 39Y8923 |
| Front-end PDUs (3x IEC 320 C19 outlets) | |
| DPI 30amp/125V Front-end PDU with NEMA L5-30P line cord | 39Y8938 |
| DPI 30amp/250V Front-end PDU with NEMA L6-30P line cord | 39Y8939 |
| DPI 32amp/250V Front-end PDU with IEC 309 2P+Gnd line cord | 39Y8934 |
| DPI 60amp/250V Front-end PDU with IEC 309 2P+Gnd line cord | 39Y8940 |
| DPI 63amp/250V Front-end PDU with IEC 309 2P+Gnd line cord | 39Y8935 |
| Universal PDUs (7x IEC 320 C13 outlets) | |
| DPI Universal 7 C13 PDU (with 2 m IEC 320-C19 to C20 rack power cord) | 00YE443 |
| NEMA PDUs (6x NEMA 5-15R outlets) | |
| DPI 100-127V PDU with fixed NEMA L5-15P line cord | 39Y8905 |
| Line cords for PDUs that ship without a line cord | |
| DPI 30a Line Cord (NEMA L6-30P) | 40K9614 |
| DPI 32a Line Cord (IEC 309 P+N+G) | 40K9612 |
| DPI 32a Line Cord (IEC 309 3P+N+G) | 40K9611 |
| DPI 60a Cord (IEC 309 2P+G) | 40K9615 |
| DPI 63a Cord (IEC 309 P+N+G) | 40K9613 |
| DPI Australian/NZ 3112 Line Cord (32A) | 40K9617 |
| DPI Korean 8305 Line Cord (30A) | 40K9618 |

For more information, see the list of Product Guides 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 that can be used in Lenovo FC SAN solutions.

Table 19. Uninterruptible power supply units

| Description | Part number |
|------------------------------------------------------------------------------------------------|-------------|
| Worldwide models | |
| RT1.5kVA 2U Rack or Tower UPS (100-125VAC) (8x NEMA5-15R 12A outlets) | 55941AX |
| RT1.5kVA 2U Rack or Tower UPS (200-240VAC) (8x IEC 320 C13 10A outlets) | 55941KX |
| RT2.2kVA 2U Rack or Tower UPS (100-125VAC) (8x NEMA 5-20R 16A outlets) | 55942AX |
| RT2.2kVA 2U Rack or Tower UPS (200-240VAC) (8x IEC 320 C13 10A, 1x IEC 320 C19 16A outlets) | 55942KX |
| RT3kVA 2U Rack or Tower UPS (100-125VAC) (6x NEMA5-20R 16A, 1x NEMA L5-30R 24A outlets) | 55943AX |
| RT3kVA 2U Rack or Tower UPS (200-240VAC) (8x IEC 320 C13 10A, 1x IEC 320 C19 16A outlets) | 55943KX |
| RT5kVA 3U Rack or Tower UPS (200-240VAC) (8x IEC 320 C13 10A, 2x IEC 320 C19 16A outlets) | 55945KX |
| RT6kVA 3U Rack or Tower UPS (200-240VAC) (8x IEC 320 C13 10A, 2x IEC 320 C19 16A outlets) | 55946KX |
| RT8kVA 6U Rack or Tower UPS (200-240VAC) (4x IEC 320-C19 16A outlets) | 55948KX |
| RT11kVA 6U Rack or Tower UPS (200-240VAC) (4x IEC 320-C19 16A outlets) | 55949KX |
| RT8kVA 6U 3:1 Phase Rack or Tower UPS (380-415VAC) (4x IEC 320-C19 16A outlets) | 55948PX |
| RT11kVA 6U 3:1 Phase Rack or Tower UPS (380-415VAC) (4x IEC 320-C19 16A outlets) | 55949PX |
| ASEAN, HTK, INDIA, and PRC models | |
| ThinkSystem RT3kVA 2U Standard UPS (200-230VAC) (2x C13 10A, 2x GB 10A, 1x C19 16A outlets) | 55943KT |
| ThinkSystem RT3kVA 2U Long Backup UPS (200-230VAC) (2x C13 10A, 2x GB 10A, 1x C19 16A outlets) | 55943LT |
| ThinkSystem RT6kVA 5U UPS (200-230VAC) (2x C13 10A outlets, 1x Terminal Block output) | 55946KT |
| ThinkSystem RT10kVA 5U UPS (200-230VAC) (2x C13 10A outlets, 1x Terminal Block output) | 5594XKT |

For more information, see the list of Product Guides in the Uninterruptible Power Supply Units category:

<http://lenovopress.com/servers/options/ups#rt=product-guide>

Lenovo Financial Services

Lenovo Financial Services reinforces Lenovo's commitment to deliver pioneering products and services that are recognized for their quality, excellence, and trustworthiness. Lenovo Financial Services offers financing solutions and services that complement your technology solution anywhere in the world.

We are dedicated to delivering a positive finance experience for customers like you who want to maximize your purchase power by obtaining the technology you need today, protect against technology obsolescence, and preserve your capital for other uses.

We work with businesses, non-profit organizations, governments and educational institutions to finance their entire technology solution. We focus on making it easy to do business with us. Our highly experienced team of finance professionals operates in a work culture that emphasizes the importance of providing outstanding customer service. Our systems, processes and flexible policies support our goal of providing customers with a positive experience.

We finance your entire solution. Unlike others, we allow you to bundle everything you need from hardware and software to service contracts, installation costs, training fees, and sales tax. If you decide weeks or months later to add to your solution, we can consolidate everything into a single invoice.

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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 Storage DB610S FC SAN Switch product publications, available from the Brocade Document Library:](http://www.brocade.com/en/support/document-library/dl-segment-products-os-detail-page.brocadeg610switch.product.html)
 - *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*
- [How to download firmware for Lenovo B and DB Series switches:](http://go.brocade.com/x0L0000S2lg0GwG00ZAGBB4)

Related product families

Product families related to this document are the following:

- [Rack SAN Switches](#)

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