

## Lenovo B6505 and B6510 FC SAN Switches Product Guide (withdrawn product)

The Lenovo B6505 and B6510 FC SAN Switches (Machine Type 3873) provide exceptional price/performance value by delivering market-leading 16 Gb Gen 5 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.

Designed to enable maximum flexibility and reliability, the Lenovo B6505 and B6510 are compact 1U rack-mount switches that offer 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 Lenovo B6505 offers up to 24 ports (12 ports licensed by default; the remaining 12 ports can be licensed by purchasing a 12-port license pack), and the Lenovo B6510 offers up to 48 ports (24 ports licensed by default; the remaining ports can be licensed in 12-port increments). Lenovo FC SAN switch ports support 2/4/8/16 Gbps speeds to deliver easy integration into the existing SAN environments while realizing the benefits of Gen 5 Fibre Channel connectivity. The switches offer a rich set of standard features with the options to expand their capabilities as needed.

The Lenovo B6505 and B6510 feature the EZSwitchSetup wizard and can be configured in Access Gateway Mode to simplify deployment. The switches provide 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 B6510.



Figure 1. Lenovo

B6510

### Did you know?

The Lenovo B6505 and B6510 leverage storage connectivity technologies from Brocade, the market share leader in Fibre Channel networking that is deployed in 90% of the Fortune 1000 data centers.

The Lenovo B6505 and B6510 offer 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 5 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 Lenovo B6505 and B6510 FC SAN switches offer the following features and benefits:

- Provide exceptional price/performance value, combining flexibility, simplicity, and enterprise-class functionality in a 24-port (B6505) or 48-port (B6510) switch
- Deliver up to 24 ports (B6505) or 48 ports (B6510) of 16 Gbit/sec performance in an energy-efficient, optimized 1U form factor to support the most demanding server and cloud deployments.
- Consume less than 3.3 watts (B6505) or 2.3 watts (B6510) of power per 16 Gbps port for exceptional power and cooling efficiency.
- Simplify configuration and management with easy-to-use EZSwitch Setup.
- Enable “pay-as-you-grow” scalability from single-switch fabric to full-fabric enterprise capabilities with Ports On Demand scalability from 12 or 24 to 24 or 48 ports in 12-port increments.
- Optimize fabric behavior and ensure sufficient bandwidth for mission-critical applications with advanced traffic management capabilities and adaptive networking.
- Offer dual functionality as either a full-fabric SAN switch or as an NPIV-enabled Access Gateway (requires 24 ports [B6505] or 48 ports [B6510] be licensed) that enhances fabric scalability and simplifies management.
- Protect existing device investments with auto-sensing 2 (8 Gb SFP+ modules only), 4, 8, and 16 Gbit/sec capabilities and native operation with Brocade and Brocade M-Series fabrics.
- Run Fabric OS, which delivers distributed intelligence throughout the network and enables a wide range of value-added features.
- Leverage Fabric Vision technology’s powerful monitoring, management, and diagnostic tools to simplify administration, increase uptime, and reduce costs.
- Supply 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.
- Expand fabric capabilities with optional licensed functions, including trunking, advanced monitoring and alerting, long-distance fabrics, FC-FC routing (B6510 only), and integrated 10 Gb FC (B6510 only).
- Compress and encrypt in-flight data on up to two ports for more efficient link utilization and higher security (B6510 only).
- Virtualize physical FC SAN switches and fabrics into logical entities for better flexibility, utilization, management, and efficiency (B6510 only).
- Allow organizations to seamlessly integrate Gen 5 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.
- Maximize resiliency with non-disruptive firmware upgrades and redundant hot-swap power supplies.
- Accelerate troubleshooting with built-in advanced diagnostics tools featuring ClearLink Diagnostics with D\_Ports on 16 Gb FC optics and select adapters from QLogic and Emulex.

The following figure shows the Lenovo B6505.



Figure 2. Lenovo

B6505

### Components and connectors

The following figure shows the port-side view of the Lenovo B6505.

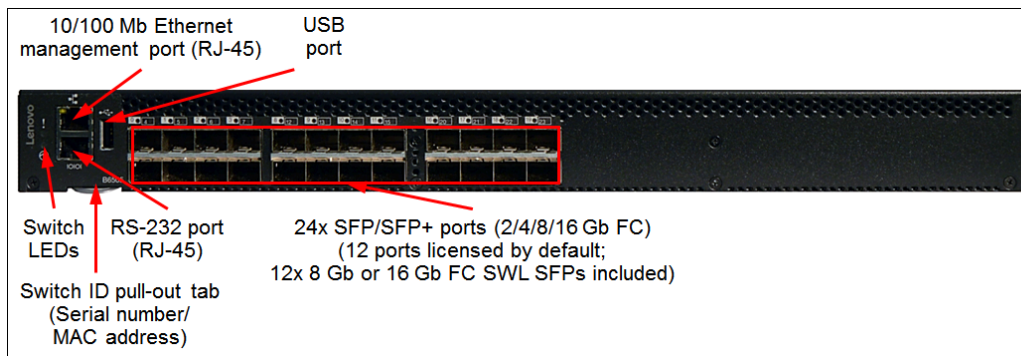


Figure 3. Lenovo B6505 port-side view

The following figure shows the port-side view of the Lenovo B6510.

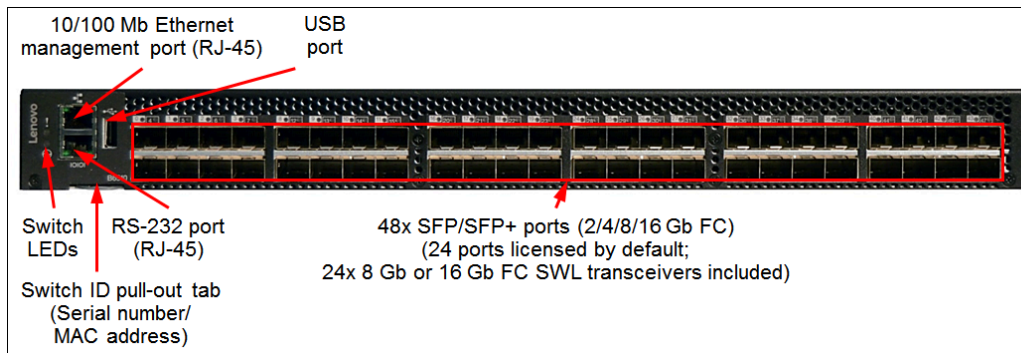


Figure 4. Lenovo B6510 port-side view

The following figure shows the non-port side view of the Lenovo B6505 and B6510.

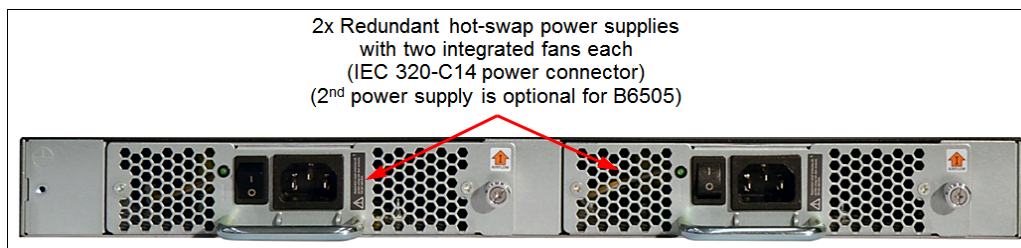


Figure 5. Lenovo B6505 and B6510 non-port-side view

## System specifications

The following table lists the Lenovo B6505 and B6510 system specifications.

Table 1. System specifications

Component	Specification
Form factor	Standalone or 1U rack mount
Ports	<ul style="list-style-type: none"> <li>B6505: Up to 24 SFP/SFP+ ports. 12 ports licensed by default; 12x 8 Gb or 16 Gb FC SWL SFP+ modules included with the switch; optional 12-port activation bundle (license pack + 8 Gb or 16 Gb FC SWL SFP+ modules).</li> <li>B6510: Up to 48 SFP/SFP+ ports. 24 ports licensed by default; up to two optional 12-port activation bundles (license pack + 8 Gb or 16 Gb FC SWL SFP+ modules).</li> </ul>
Media types	8 Gb FC and 16 Gb SFP+ transceivers: short-wave (SW), long-wave (LW), extended long-wave (ELW). 10 Gb FC SFP+ transceivers (Lenovo B6510 only; require Integrated 10G FC license): short-wave (SW), long-wave (LW).
Port speeds	2/4/8 Gbps auto-sensing, full-duplex (8 Gb FC SFP+ transceivers) 4/8/10 Gbps auto-sensing, full-duplex (10 Gb FC SFP+ transceivers; Lenovo B6510 only) 4/8/16 Gbps auto-sensing, full-duplex (16 Gb FC SFP+ transceivers)
FC port types	Full Fabric mode: FL_Port, 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, Adaptive Networking, Advanced Diagnostic Tools, Virtual Fabrics (Lenovo B6510 only), In-flight Compression (Lenovo B6510 only), In-flight Encryption (Lenovo B6510 only).
Optional features	ISL Trunking, Fabric Vision, Extended Fabric, Integrated Routing (Lenovo B6510 only), Integrated 10G FC (Lenovo B6510 only).
Performance	Non-blocking architecture with wire-speed forwarding of traffic: <ul style="list-style-type: none"> <li>2.125 Gbit/sec line speed, full duplex</li> <li>4.25 Gbit/sec line speed, full duplex</li> <li>8.5 Gbit/sec line speed, full duplex</li> <li>10.51875 Gbit/sec line speed, full duplex (Lenovo B6510 only)</li> <li>14.025 Gbit/sec line speed, full duplex</li> <li>Aggregated throughput               <ul style="list-style-type: none"> <li>B6505: 384 Gbps</li> <li>B6510: 768 Gbps</li> </ul> </li> <li>Up to 0.7 microseconds local switching latency               <ul style="list-style-type: none"> <li>Forward error correction (FEC): Adds up to 0.4 microseconds between E_Ports</li> <li>Encryption/compression: Adds up to 5.5 microseconds per node</li> </ul> </li> </ul>
Scalability	<ul style="list-style-type: none"> <li>Maximum number of switches in the fabric: 239</li> <li>Maximum frame size: 2,112-byte payload</li> <li>Maximum number of frame buffers per switch: 8,192</li> <li>Maximum number of ports per ISL trunk: 8 (Requires an optional license)</li> </ul>
Cooling	Two fans built into each power supply; 2+2 cooling redundancy with two power supplies. Non-port to port side airflow.
Power supply	Up to two redundant hot-swap 150 W AC (100 - 240 V) power supplies (IEC 320-C14 connector).
Hot-swap parts	SFP/SFP+ transceivers, power supplies with fans.
Management ports	One 10/100 Mb Ethernet port (UTP, RJ-45); one RS-232 port (RJ-45); one USB port (for additional firmware/log/configuration files storage).

Component	Specification
Management interfaces	EZSwitch Setup; Web-based GUI (Web Tools); CLI; SMI-S; SNMP. Optional Brocade SANnav Management Portal and SANnav Global View, or 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, parts-only 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 HC8 and HC9) or three-year (Models HC5 and HC6) firmware entitlement and support license is included. Optional one- and two-year firmware support extension licenses are available from Lenovo for Models HC5 and HC6. Firmware entitlement extension licenses for Models HC8 and HC9 are included in the warranty service upgrades for Models HC8 and HC9.
Dimensions	Height: 43 mm (1.7 in.); width: 438 mm (17.2 in.); depth: 443 mm (17.4 in.)
Weight	<ul style="list-style-type: none"> <li>• B6505 (with one power supply, without SFPs): 7.8 kg (17.3 lb)</li> <li>• B6510 (with two power supplies, without SFPs): 9.2 kg (20.2 lb)</li> </ul>

## Models

The following table lists the Lenovo B6505 and B6510 models.

Table 2. Lenovo B6505 and B6510 models

Description	Part number	Machine Type-Model	Feature code
Lenovo B6505, 12 ports licensed, 12x 8Gb SWL SFPs, 1 PS, Rail Kit, 3 Yr FW	3873AR4	3873-HC5	ATSN
Lenovo B6505, 12 ports licensed, 12x 16Gb SWL SFPs, 1 PS, Rail Kit, 1Yr FW	3873ER1	3873-HC8	B4QJ
Lenovo B6505, 12 ports licensed, 12x 16Gb SWL SFPs, 1 PS, Rail Kit, 3 Yr FW	3873AR5	3873-HC5	ATSP
Lenovo B6510, 24 ports licensed, 24x 8Gb SWL SFPs, 2 PS, Rail Kit, 3 Yr FW	3873BR2	3873-HC6	ATSQ
Lenovo B6510, 24 ports licensed, 24x 16Gb SWL SFPs, 2 PS, Rail Kit, 1Yr FW	3873IR1	3873-HC9	B4QK
Lenovo B6510, 24 ports licensed, 24x 16Gb SWL SFPs, 2 PS, Rail Kit, 3 Yr FW	3873BR3	3873-HC6	ATSR

The Lenovo B6505 and B6510 part numbers include the following items:

- One FC SAN Switch
  - B6505: With 12 ports licensed and 12x 8 Gb or 16 Gb FC SWL SFP+ transceivers included
  - B6510: With 24 ports licensed and 24x 8 Gb or 16 Gb FC SWL SFP+ transceivers included
  - With 1-year (Models HC8 and HC9) or 3-year (Models HC5 and HC6) firmware entitlement
- Serial cable (DB-9/RJ-45 to RJ-45)
- Rubber feet for setting up the switch as a standalone unit
- Fixed rack mount kit
- EZSwitch Setup CD
- Lenovo B6505 or B6510 QuickStart Guide
- Access Gateway Quick Start Guide
- Documentation CD
- Warranty information

**Note:** The switches come standard without power cords; one or two power cables must be purchased together with the switch (see "Power supplies and cables" for details).

The Lenovo B6505 comes standard with 12 licensed ports and with 12x 8 Gb or 16 Gb FC SWL SFP+ Transceivers. The remaining 12 unlicensed ports can be activated by purchasing and installing the Ports on Demand (POD) bundle that includes licenses for 12 ports and 12x 8 Gb or 16 Gb FC SWL SFP+ transceivers. By default, ports 0 through 11 are enabled on the Lenovo B6505. To enable ports 12 through 23, install a POD license key.

The Lenovo B6510 comes standard with 24 licensed ports and with 24x 8 Gb or 16 Gb FC SWL SFP+ transceivers. The remaining 24 unlicensed ports can be activated in 12-port increments by purchasing and installing the Ports on Demand (POD) bundles that include licenses for 12 ports and 12x 8 Gb or 16 Gb FC SWL SFP+ transceivers. By default, ports 0 through 23 are enabled on the Lenovo B6510. To enable ports 24 through 35, install a POD license key. To enable ports 36 through 47, install another POD license.

The following table lists additional POD bundles for the Lenovo B6505 and B6510.

Table 3. POD bundle options

Description	Part number	Feature code	Max qty supported
POD licenses for the Lenovo B6505			
Lenovo B6505 12-port license w/ 12x 8G SWL SFP+	00WF812	ATST	1
Lenovo B6505 12-port license w/ 12x 16G SWL SFP+	00WF810	ATSU	1
POD licenses for the Lenovo B6510			
Lenovo B6510 12-port license w/ 12x 8G SWL SFP+	00WF808	ATSV	2
Lenovo B6510 12-port license w/ 12x 16G SWL SFP+	00WF806	ATSW	2

If needed, the Lenovo B6505 and B6510 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 4. Rack-mount options

Description	Part number	Feature code	Max qty supported
Lenovo B65xx Mid-mount Rack Kit	00MY760	ASKL	1

The optional mid-mount rack kit for the Lenovo B6505 and B6510 is shown in the following figure.

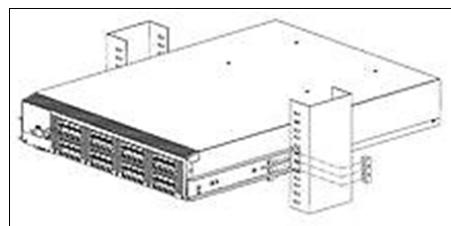


Figure 6. Lenovo B65xx Mid-mount Rack Kit

## Transceivers and cables

The Lenovo B6505 comes with 12x 8 Gb or 16 Gb FC SWL SFP+ transceivers, and the Lenovo B6510 comes with 24x 8 Gb or 16 Gb FC SWL SFP+ transceivers. The optional 12-port POD bundles for the Lenovo B6505 come with 12x 8 Gb or 16 Gb FC SWL SFP+ transceivers, and the optional 24-port POD bundles for the Lenovo B6510 come with 24x 8 Gb or 16 Gb FC SWL SFP+ transceivers. Additional SWL, LWL, and EWL SFP+ transceivers can be ordered for the switches, if needed.

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

Table 5. Supported SFP+ transceivers and optical cables

Description	Part number	Feature code	Max qty supported (6505/6510)
<b>16 Gb FC SFP+ transceivers</b>			
Brocade 16Gb SW SFP+ Optical Transceiver	88Y6393	A22R	24 / 48
Brocade 16Gb 10km LW SFP+ Transceiver	00MY768	ASK2	24 / 48
Brocade 16Gb 25km ELW SFP+ Transceiver	00MY770	ASK3	24 / 48*
<b>10 Gb FC SFP+ transceivers (Require Integrated 10G FC License)</b>			
Brocade 10Gb FC SWL SFP+ Transceiver	00YH933	ATSY	- / 8
Brocade 10Gb FC LWL SFP+ Transceiver	00YH929	ATSX	- / 8
<b>8 Gb FC SFP+ transceivers</b>			
Brocade 8Gb SW SFP+ Optical Transceiver	88Y6416	5084	24 / 48
Brocade 8Gb 10km LW SFP+ Transceiver	00MY764	ASK0	24 / 48
Brocade 8Gb 25km ELW SFP+ Transceiver	00MY766	ASK1	24 / 48*
<b>Optical cables for 8 Gb and 16 Gb FC SW SFP+ transceivers</b>			
Lenovo 0.5m LC-LC OM3 MMF Cable	00MN498	ASR5	24 / 48
Lenovo 1m LC-LC OM3 MMF Cable	00MN502	ASR6	24 / 48
Lenovo 3m LC-LC OM3 MMF Cable	00MN505	ASR7	24 / 48
Lenovo 5m LC-LC OM3 MMF Cable	00MN508	ASR8	24 / 48
Lenovo 10m LC-LC OM3 MMF Cable	00MN511	ASR9	24 / 48
Lenovo 15m LC-LC OM3 MMF Cable	00MN514	ASRA	24 / 48
Lenovo 25m LC-LC OM3 MMF Cable	00MN517	ASRB	24 / 48
Lenovo 30m LC-LC OM3 MMF Cable	00MN520	ASRC	24 / 48

\* When using ELW SFP+ transceivers over distances over 10 km, the Extended Fabric feature is required on a SAN switch to drive the maximum bandwidth over the extended links (see Table 7 for ordering information).

The following table lists the cabling requirements for the switch.

Table 6. Lenovo B6505 and B6510 cabling requirements

Transceiver	Cable	Connector
<b>16 Gb Fibre Channel</b>		
16 Gb FC SW SFP+ Module	Up to 30 m with fiber optic cables supplied by Lenovo (see Table 2); OM4 (up to 125 m at 16 Gbps; up to 150 m at 8 Gbps; up to 400 m at 4 Gbps) or OM3 (up to 100 m at 16 Gbps; up to 150 m at 8 Gbps; up to 380 m at 4 Gbps) multimode fiber optic cables	LC
16 Gb FC LW SFP+ Module	1310 nm single-mode fiber optic cable (9 μ) up to 10 km	LC
16 Gb FC ELW SFP+ Module	1310 nm single-mode fiber optic cable (9 μ) up to 25 km	LC
<b>10 Gb Fibre Channel</b>		
10 Gb FC SW SFP+ Module	Up to 30 m with fiber optic cables supplied by Lenovo (see Table 2); up to 550 m with OM4 or up to 300 m with OM3 multimode fiber optic cables	LC
10 Gb FC LW SFP+ Module	1310 nm single-mode fiber optic cable (9 μ) up to 10 km	LC
<b>8 Gb Fibre Channel</b>		
8 Gb FC SW SFP+ Module	Up to 30 m with fiber optic cables supplied by Lenovo (see Table 2); OM3 multimode fiber optic cables (up to 150 m at 8 Gbps; up to 380 m at 4 Gbps; up to 500 m at 2 Gbps)	LC
8 Gb FC LW SFP+ Module	1310 nm single-mode fiber optic cable (9 μ) up to 10 km	LC
8 Gb FC ELW SFP+ Module	1310 nm single-mode fiber optic cable (9 μ) up to 25 km	LC
<b>Management ports</b>		
10/100 Mb Ethernet port	UTP Category 5, 5E, and 6 up to 100 meters	RJ-45
RS-232 serial port	DB-9/RJ-45-to-RJ-45 console cable (comes with the switch)	RJ-45

## Firmware

The Lenovo B6505 and B6510 come standard with the following features:

- Advanced Fabric Services
  - Full Fabric mode: Enables high performance 8 Gb or 16 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 equivalent paths between switches.
  - Fabric Shortest Path First (FSPF)
  - Buffer-to-Buffer (BB) credit flow control
  - Enhanced BB credit loss recovery
  - 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 two ports (Lenovo B6510 only)
  - In-flight encryption on up to two ports (Lenovo B6510 only)
- Adaptive Networking
  - Bottleneck detection: Identifies devices attached to the fabric that are slowing down traffic.
  - Ingress rate limiting: Restricts the speed of traffic from a particular device to the switch port.
  - 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 traffic prioritization
- 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 (Lenovo B6510 only).
- Management
  - IPv4 and IPv6 addressing
  - Firmware upload and download
  - Hot code load and activation
  - 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)
  - 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)
  - Administrative Domains: Partition the fabric into logical groups and allocate administration of these groups to different user accounts
  - IP Security (IPsec)
  - IP filtering
  - HTTPS
  - Secure Copy (SCP)
  - Secure RPC
  - Secure FTP (SFTP)
  - Secure Shell (SSH) v2
  - Secure Sockets Layer (SSL)
  - Federal Information Processing Standards (FIPS) 140-2 L2-compliant
- Advanced Diagnostic Tools
  - Power-on self-test (POST)
  - MAPS basic monitoring: Monitors system resources and overall switch health status.
  - Event logging
  - Environmental monitoring
  - FCping
  - Pathinfo (FC traceroute)
  - Non-disruptive daemon restart
  - Port mirroring
  - Port fencing: Disables a port if specified error conditions are met.
  - RAS trace logging
  - ClearLink Diagnostics with Diagnostic Port (D\_Port) (16 Gb optics only): Helps ensure optical and signal integrity for Gen 5 Fibre Channel optics and cables.
  - Optics health monitoring
  - Power monitoring
  - Rolling Reboot Detection (RRD)

The following optional features are available for the Lenovo B6505 and B6510:

- ISL Trunking: Allows frame-based consolidation of up to 8 inter-switch links (ISLs) into fault-tolerant and load-balanced trunks with bandwidth of up to 128 Gbps.
- Fabric Vision
  - 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.
  - Top Talkers: Provide real-time information about the top bandwidth-consuming flows passing through a specific port in the network.
- Extended Fabric: Extends Fibre Channel SANs beyond 10 km distance limitations for replication and backup at full bandwidth.
- Integrated Routing (Lenovo B6510 only): The FC-FC routing service provides Fibre Channel routing between two or more fabrics without merging those fabrics.
- Integrated 10G FC License (Lenovo B6510 only): Allows 10 Gb FC operations on up to eight 16 Gb FC ports for 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 license is *NOT* required for long distance 10 Gb FC connectivity).

The following table lists ordering information for the optional features for the Lenovo B6505 and B6510 (one license per switch).

Table 7. Optional features

Description	Part number	Feature code
Electronic authorization licenses for Lenovo B6505		
Lenovo B300/6505 S/W, ISL Trunking	7S0C0001WW	B3E1
Lenovo B300/6505 S/W, Fabric Vision	7S0C0002WW	B3E2
Lenovo B300/6505 S/W, Extended Fabric	7S0C0003WW	B3E3
Lenovo B300/6505 S/W, Enterprise Bundle (TRK, FV, EF)*	7S0C0004WW	B3E4
Paper authorization licenses for Lenovo B6505		
Lenovo B300/6505 S/W, ISL Trunking	00MY787	ASK7
Lenovo B300/6505 S/W, Fabric Vision	00MY788	ASK8
Lenovo B300/6505 S/W, Extended Fabric	00MY789	ASK9
Lenovo B300/6505 S/W, Enterprise Bundle (TRK, FV, EF)*	00MY790	ASKB
Electronic authorization licenses for Lenovo B6510		
Lenovo B6510 S/W, ISL Trunking	7S0C0007WW	B3E7
Lenovo B6510 S/W, Fabric Vision	7S0C0008WW	B3E8
Lenovo B6510 S/W, Extended Fabric	7S0C0006WW	B3E6
Lenovo B6510 S/W, Enterprise Bundle (TRK, FV, EF)*	7S0C000BWW	B3EB
Lenovo B6510 S/W, Integrated Routing	7S0C0009WW	B3E9
Lenovo B6510 S/W, Integrated 10G FC License	7S0C000AWW	B3EA
Paper authorization licenses for Lenovo B6510		
Lenovo B6510 S/W, ISL Trunking	00MY778	ASKC
Lenovo B6510 S/W, Fabric Vision	00MY779	ASKD
Lenovo B6510 S/W, Extended Fabric	00MY780	ASKF
Lenovo B6510 S/W, Enterprise Bundle (TRK, FV, EF)*	00MY781	ASKJ
Lenovo B6510 S/W, Integrated Routing	00MY776	ASKG
Lenovo B6510 S/W, Integrated 10G FC License	00MY777	ASKH

\* Enterprise Bundle includes ISL Trunking, Fabric Vision, and Extended Fabric licenses.

Firmware entitlement is included with the Lenovo B6505/B6510 and provides 3-year (Models HC5 and HC6) or 1-year (Models HC8 and HC9) firmware support. The options to extend the entitlement up to 7 years in 1-year or 2-year increments are available for Models HC5 and HC6. The firmware entitlement is included in the warranty service upgrades for Models HC8 and HC9.

The Integrated 10G FC License (7S0C000AWW) comes with its own 1-year firmware support entitlement. The options to extend entitlement for additional years of firmware support for the Integrated 10G FC feature are listed in the following table.

Table 8. Firmware support extension options for Integrated 10G FC License

Description	Part number	Feature code
Lenovo B6510 S/W, Integrated 10G FC Support Extension, 2-Years	7S0C000PWW	S0F7
Lenovo B6510 S/W, Integrated 10G FC Support Extension, 4-Years	7S0C000WWW	S0FE

Ordering information for the firmware entitlement and support extension options for Models HC5 and HC6 is listed in the following table.

Table 9. Firmware entitlement and support extension options for Models HC5 and HC6

Description	Part number	Feature code
Firmware entitlement and support extension for Lenovo B6505 (Model HC5)		
Lenovo B6505 FC SAN FW Renewal, 1-Year	00YH952	ATW7
Lenovo B6505 FC SAN FW Renewal, 2-Year	00YH953	ATW8
Firmware entitlement and support for Lenovo B6510 (Model HC6)		
Lenovo B6510 FC SAN FW Renewal, 1-Year	00YH960	ATW9
Lenovo B6510 FC SAN FW Renewal, 2-Year	00YH961	ATWA

## Management software

Lenovo offers optional Brocade SANnav™ Management Portal and SANnav Global View software license subscriptions 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 subscriptions:

- 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 DB610S, DB620S, DB630S, DB400D, DB710S, DB720S, DB730S, DB820S, DB800D, Brocade Directors X7 and X8. SANNav Version 3.X to manage Gen 8 switches.

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 20 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. After a client has an active SANnav license, Lenovo offers a “license extension/renewal”. This offering provides our clients the flexible to extend their subscription down to a specific end date. This allows clients the ability to align to your company’s budget or align with warranty of your FC SAN switches/directors. Please engage directly with your Lenovo sales representative for more details.

Table 10. SANnav Management Portal and SANnav Global View subscription licenses

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

The SANnav licenses are subscription-based with 1-year, 3-year, or 5-year software entitlement and

support.

## Fibre Channel standards

The Lenovo B6505 and B6510 support the following standards:

- FC-AL-2 INCITS 332-1999
- 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-FLA INCITS TR-20-1998
- FC-FS INCITS 373-2003
- FC-FS-2 ANSI/INCITS 424-2006
- FC-FS-3 INCITS 470-2011
- FC-GS-4 ANSI INCITS 387-2004
- FC-GS-5 ANSI INCITS 427-2007
- FC-GS-6 INCITS 463-2010
- FC-IFR INCITS 475-2011
- FC-LS INCITS 433: 2007
- FC-LS-2 INCITS 477-2011
- 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 INCITS 352-2002
- FC-PI-2 INCITS 404-2005
- FC-PI-3 INCITS 460-2012
- FC-PI-4 INCITS 450-2009
- FC-PI-5 INCITS 449-2011
- FC-PLDA INCIT S TR-19-1998
- 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-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-TAPE INCITS TR-24-1999
- FC-VI INCITS 357-2002
- INCITS 332:1999/AM 1-2003
- INCITS 332:1999/AM 2-2006
- MIB-FA INCITS TR-32-2003
- RFC 4044 Fibre Channel Management 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 (SMI-S) Version 1.1
- SNIA Storage Management Initiative Specification (SMI-S) Version 1.2

- SNIA Storage Management Initiative Specification (SMI-S) Version 1.4

## Power supplies and cables

The Lenovo B6505 and B6510 support up to two redundant hot-swap 150 W AC power supplies. Each power supply has an IEC 309-C14 connector. The Lenovo B6505 comes standard with one power supply, and the Lenovo B6510 comes standard with two power supplies. The following table lists ordering information for the optional power supply for the Lenovo B6505.

Table 11. Power supply for the Lenovo B6505.

Description	Part number	Feature code
Lenovo B6505 Redundant Power Supply	00MY807	ASKT

The switches come standard without a power cord; one or two rack power cables or line cords must be ordered together with the switch depending on the quantity of power supplies in the switch (see the following table).

Table 12. Part numbers and feature codes for ordering power cords

Description	Part number	Feature code
<b>Rack power cables</b>		
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	None*	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
<b>Line cords</b>		
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.

## Physical specifications

The Lenovo B6505 and B6510 have the following dimensions and weight (approximate):

- Height: 43 mm (1.7 in.)
- Width: 438 mm (17.2 in.)
- Depth: 443 mm (17.4 in.)
- Weight (without SFPs):
  - Lenovo B6505 (with one power supply): 7.8 kg (17.3 lb)
  - Lenovo B6510 (with two power supplies): 9.2 kg (20.2 lb)

## Operating environment

The Lenovo B6505 and B6510 are 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% at 40°C (104°F)
  - Non-operating: 10% to 90% at 70°C (158°F)
- Electrical power:
  - Voltage range: 100 V AC - 240 V AC (nominal)
  - Frequency: 50 Hz - 60 Hz (nominal)
  - Power consumption:
    - Lenovo B6505:
      - Idle: 60 watts
      - Maximum: 80 watts
    - Lenovo B6510:
      - Idle: 72 watts
      - Typical: 110 watts
      - Maximum: 123 watts
- Heat dissipation:
  - Lenovo B6505 (maximum): 338 BTU per hour
  - Lenovo B6510 (typical): 375 BTU per hour
  - Lenovo B6510 (maximum): 420 BTU per hour
- Acoustical noise emission: 70 dB

## Warranty and support

The Lenovo B6505's and B6510's hardware has a one-year Customer Replaceable Unit (CRU), parts-only 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://lenovolocator.com/>

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

- Lenovo Statement of Limited Warranty for Infrastructure Solutions Group (ISG) 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 Lenovo B6505 and B6510 conform to the following regulations:

- Electromagnetic compatibility
  - FCC Part 15, Subpart B (Class A)
  - EN 55022 (Class A)
  - EN 55024
  - ICES-003 (Class A)
  - VCCI (Class A)
  - KN22 and KN24
  - GB 9254-2008
  - CNS 13438
  - CISPR22
- Safety
  - UL/CSA 60950-1
  - EN 60950-1
  - IEC 60950-1
  - GB 4943.1-2011
  - CNS 14336-1:99
  - EU RoHS

## Fibre Channel SAN switches

The following table lists the FC SAN switches that are offered by Lenovo that can be used with the Lenovo B6505 and B6510 in 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 13. FC SAN switches

Description	Part number
Rack-mount switches - 8 Gb FC	
Lenovo B300, 8 ports activated w/ 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 ThinkSystem DB610S, 8 ports licensed, 8x 16Gb SWL SFPs, 1 PS, Rail Kit, 1Yr FW	6559F2A
Lenovo ThinkSystem DB610S, ENT Bundle, 24 ports licensed, 24x 16Gb SWL SFPs, 1 PS, Rail Kit, 1Yr FW	6559F1A
Lenovo ThinkSystem DB620S, 24 ports licensed, 24x 16Gb SWL SFPs, 2 PS, Rail Kit, 1Yr FW	6415J1A
Rack-mount switches - 32 Gb FC	
Lenovo ThinkSystem DB610S, 8 ports licensed, No SFPs, 1 PS, Rail Kit, 1Yr FW	6559F3A
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, 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 FC SAN modules for Flex System - 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>
- Embedded SAN switches  
<http://lenovopress.com/storage/switches/embedded>

## 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 14. 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 15. 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 16. 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

Description	Part number		
	Worldwide	Japan	PRC
Lenovo ThinkSystem DS6200 SFF FC/iSCSI Dual Controller Unit	4619A11	4619A1J	4619A1C
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 17. External storage systems: V Series and Storwize for Lenovo

Description	Part number
<b>Lenovo Storage V Series</b>	
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^
<b>IBM Storwize for Lenovo</b>	
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>

## 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 18. External backup options

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

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

<https://lenovopress.com/servers/options/backup#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 19. 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:

<http://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 20. Power distribution units

Description	Part number
<b>0U Basic PDUs</b>	
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
<b>Switched and Monitored PDUs</b>	
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
<b>Ultra Density Enterprise PDUs (9x IEC 320 C13 + 3x IEC 320 C19 outlets)</b>	
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
<b>C13 Enterprise PDUs (12x IEC 320 C13 outlets)</b>	
DPI C13 Enterprise PDU+ (without line cord)	39M2816
DPI Single Phase C13 Enterprise PDU (without line cord)	39Y8941
<b>C19 Enterprise PDUs (6x IEC 320 C19 outlets)</b>	
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
<b>Front-end PDUs (3x IEC 320 C19 outlets)</b>	
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
<b>Universal PDUs (7x IEC 320 C13 outlets)</b>	
DPI Universal 7 C13 PDU (with 2 m IEC 320-C19 to C20 rack power cord)	00YE443
<b>NEMA PDUs (6x NEMA 5-15R outlets)</b>	
DPI 100-127V PDU with fixed NEMA L5-15P line cord	39Y8905
<b>Line cords for PDUs that ship without a line cord</b>	
DPI 30a Line Cord (NEMA L6-30P)	40K9614
DPI 32a Line Cord (IEC 309 P+N+G)	40K9612

Description	Part number
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 Power Distribution Units category:  
<http://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 21. Uninterruptible power supply units

Description	Part number
<b>Worldwide models</b>	
RT1.5kVA 2U Rack or Tower UPS (100-125VAC) (8x NEMA 5-15R 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 NEMA 5-20R 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
<b>ASEAN, HTK, INDIA, and PRC models</b>	
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>

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## Related publications and links

For more information, see the following resources:

- Lenovo B6505 FC SAN Switch product page  
<https://www3.lenovo.com/us/en/data-center/storage/storage-area-network/fibre-channel-switches/Lenovo-B6505-Fibre-Channel-Switch/p/WMD00000005>
- Lenovo B6510 FC SAN Switch product page  
<https://www3.lenovo.com/us/en/data-center/storage/storage-area-network/fibre-channel-switches/Lenovo-B6510-Fibre-Channel-Switch/p/WMD00000006>
- Lenovo B6505 and B6510 FC SAN Switch product publications:  
<http://www.broadcom.com/products/fibre-channel-networking/switches/6505-switch#documentation>  
<http://www.broadcom.com/products/fibre-channel-networking/switches/6510-switch#documentation>
  - Hardware Installation Guide
  - Access Gateway Administrator's Guide
  - EZSwitchSetup Administrator's Guide
  - Fabric OS Administrator's Guide
  - Flow Vision Administrator's Guide
  - Monitoring and Alerting Policy Suite Administrator's Guide
  - Web Tools Administrator's Guide
  - Fabric OS Troubleshooting and Diagnostics Guide
  - Fabric OS Command Reference
  - Fabric OS Message Reference
  - Fabric OS MIB Reference

## Related product families

Product families related to this document are the following:

- [Rack SAN Switches](#)

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