

Lenovo Networking Products and Options Catalog

Bringing speed and intelligence to the network edge

Lenovo Networking
Enterprise Business Group

July 06, 2016



Contents

Overview	5
Ethernet I/O Connectivity (Transceivers & Direct Attached Cables)	5
1 Gigabit Ethernet	5
10GBase-T Ethernet	5
10 Gigabit Ethernet (SFP+).....	5
40 Gigabit Ethernet (QSFP+).....	6
Stacking	6
Switches for BladeCenter	7
BladeCenter Virtual Fabric 10G Switch Module (46C7191) – Product Guide	7
iFlow Director (46C9250) – Product Information.....	7
BladeCenter 1/10G Uplink Ethernet Switch Module (44W4404) – Product Guide	7
BladeCenter Layer 2/3 Copper Ethernet Switch Module (32R1860) – Product Guide.....	7
BladeCenter Layer 2/3 Fiber (32R1861) Ethernet Switch Module – Product Guide	7
Server Connectivity Module (39Y9324)	7
Transceivers & Cables for BladeCenter switch modules	8
Ethernet/Converged Modules for Flex Systems	9
Lenovo Flex System Fabric EN4093R 10Gb Scalable Switch - Product Guide	9
Lenovo Flex System Fabric CN4093 10Gb Converged Scalable Switch – Product Guide	9
Lenovo Flex System Fabric SI4093 System Interconnect Module – Product Guide	10
Lenovo Flex System SI4091 10Gb System Interconnect Module – Product Guide	10
Flex System EN2092 1Gb Ethernet Scalable Switch – Product Guide	10
Flex System EN4091 10Gb Ethernet Pass-Thru – Product Guide	11
Flex System Interconnect Fabric – Product Guide	11
Transceivers and Cables for Flex System Ethernet Modules	12
OEM Ethernet Offerings for Flex Systems	14
Lenovo Flex System EN4023 (Brocade) 10Gb Scalable Switch- Product Guide.....	14
Cisco Nexus B22 Fabric Extender for Flex System – Product Guide.....	14
Lenovo Flex System EN6131 40Gb Ethernet Switch – Product Guide	14
Transceivers and Cables for Flex System OEM Ethernet Modules	15
Lenovo Networking RackSwitch	16
Lenovo RackSwitch G8332 (Part # 7159BRX/HDE or 7159BFX/HCE) Product Guide	16
Lenovo RackSwitch G8296 (Part #7159GR6/HC6 or 7159GF5/HC5) Product Guide	16
Lenovo RackSwitch G8272 (Part #7159CRW/HCW or 7159CFV/HCV) Product Guide	16
Lenovo RackSwitch G8264CS (Part #7159DRX/HCK or 7159DFX/HCM) Product Guide	16
Lenovo RackSwitch G8264 (Part # 7159G64/HC3 or 715964F/HC4) Product Guide.....	16
Lenovo RackSwitch G8124E (Part # 7159BR6/HC6 or 7159BF7/HC7) Product Guide	17

Lenovo RackSwitch G8052 (Part # 7159G52/HC1 or 715952F/HC2) Product Guide.....	17
Lenovo RackSwitch G7052 (Part # 7159CAX/HCT) Product Guide.....	17
Lenovo RackSwitch G7028 (Part # 7159BAX/HCP) Product Guide.....	17
Options specific to the G7052 and G7028:	17
Transceivers and cables for RackSwitch.....	18
RackSwitch FCoE and iSCSI Supported Configuration Matrix.....	20
Fiber Channel over Ethernet	20
iSCSI (Internet Small Computer System Interface)	20
Networking Virtual Fabric Support	22
System x Adapter support with transceivers and cables	22
Recommended I/O Cables	23
1GbE Cat5e Cables	23
10GbE CAT6/6a Cables.....	23
10GBase-SR Fiber Optical Cables (also used for Fibre Channel)	23
40GbE QSFP+ MPO Optical Cable	23
40GBE QSFP+ MPO-4xLC OM3 MMF Breakout Cables	23
Recommended Power Cables	24
Air Inlet Duct - Optional	24
Rack Kits	25
Spare Parts for the RackSwitch Products	25
ServicePac Upgrades for the RackSwitch Products.....	26
Networking Software Offerings.....	28
Lenovo Networking Plug-in for VMware vRealize Orchestrator.....	28
Lenovo Networking Content Pack for VMware vRealize Log Insight.....	28
Lenovo Networking Bundle for VMware vRealize.....	28
Lenovo Networking Plug-in for OpenStack Neutron	28
Blue Medora vRealize Operations Management Pack for Lenovo Compute	29
Blue Medora vRealize Operations Management Pack for Lenovo Network.....	29
Lenovo Switch Center	30
Brocade & Lenovo Overview – Storage networking Partnership.....	31
Fibre Channel Overview.....	31
Brocade Network Advisor.....	31
VMware Solution Exchange – More Info.....	31
Lenovo Fibre Channel SAN Switch Offerings	32
Lenovo B300 FC SAN Switch (Part # 3873AR3/HC4) Product Info	32
Lenovo B6505 FC SAN Switch (3873AR4/AR5/HC5) Product Info	32
Lenovo B6510 FC SAN Switch (3873BR2/BR3/HC6) Product Info.....	32
Brocade Fibre Channel Offerings	33

Brocade 300 FC SAN Switch (Part # 3873AR1/HC1) Product Info	33
Brocade 6505 Fibre Channel Switch (3873AR2/HC2) Product Info	33
Brocade 6510 Fibre Channel Switch (3873BR1/HC3) Product Info	33
FC SAN Firmware Renewals	34
ServicePac Upgrades for the Lenovo B-Series or Brocade FC SAN Switches	34
Brocade Offerings for Flex Systems	35
Lenovo Flex System FC5022 16Gb SAN Switch – Product Guide.....	35
Transceivers and Cables for Brocades Flex System Switches	35
Brocade Switches for BladeCenter	36
Brocade 8Gb SAN Switch Modules– Product Guide	36
Software and Transceivers	36
Fiber Channel I/O Connectivity	36
8 Gigabit Fibre Channel	36
16 Gigabit Fibre Channel	36

Overview

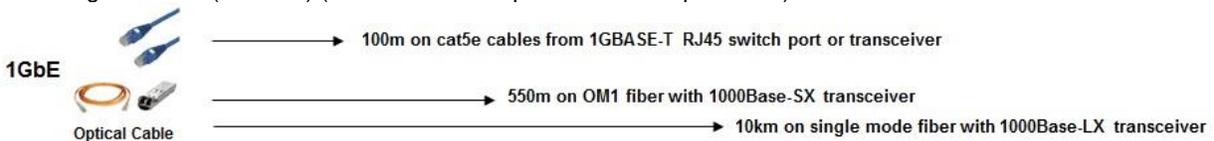
Lenovo Networking offers a large portfolio of Data Center switches, including Top of Rack switches as well as embedded switches for BladeCenter and Flex System. The following document provides details on the options available for these switches, including Part Numbers (PN).

Ethernet I/O Connectivity (Transceivers & Direct Attached Cables)

Over the past decade, a wide variety of connectivity technologies have been used for Ethernet, such as: CX4, XFP, SFP, SFP+ and QSFP+. This section is intended to help recommend cables and transceivers for Lenovo Networking switches and include part numbers for the recommended connectivity.

1 Gigabit Ethernet

The majority of clients with Gigabit Ethernet connections will use the affordable 1000BASE-T technology, which can drive distances up to 100m on category 5e cabling with RJ45 connectors (IEEE 802.3ab compliant and 0°C up to 70°C). For clients that need longer distances, the 1000BASE-SX transceiver can drive distances up to 220 meters using 62.5 μm multi-mode fiber and up to 550 meters with 50μm multi-mode fiber (850nm) (IEEE 802.3z compliant and 0°C up to 45°C). The 1000BASE-LX transceivers support distances up to 10 kilometers using 8.3/9/10 m single-mode long haul fiber (1310nm) (IEEE 802.3z compliant and 0°C up to 70°C).



10GBase-T Ethernet

10GBase-T is likely to be used by clients who value cost over latency and power. 10Gbase-T allows clients to use low cost copper CAT6/6A cables with RJ45 connections for distances up to 100m. These cables are not available from Lenovo/IBM.



10 Gigabit Ethernet (SFP+)

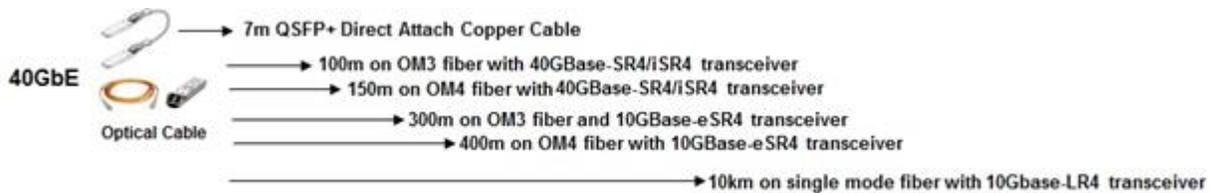
For clients wanting low latency and low power consumption, most clients will use Direct Attached Copper (DAC) SFP+ cables for in-rack cabling and distances up to 7 meters. These DAC cables are less expensive than optical connectivity, have SFP+ connectors on each end and do not need separate transceivers. Active cables do provide more 3 x more bend radius of up to 60mm. For longer distances, the 10GBASE-SR transceiver can support distances up to 300 meters over OM3 multimode fiber (MMF) or up to 400 meters over OM4 multimode fiber with LC connectors. The 10GBASE-LR transceiver can support distances up to 10 kilometers on single mode fiber with LC connectors and the 10GBASE-ER transceivers support distances up to 40 kilometers on single mode fiber cables.



40 Gigabit Ethernet (QSFP+)

While 40 Gigabit Ethernet is a newer technology, it offers lots of flexibility for clients.

- To increase the number of available 10GbE ports, clients can split out four 10GbE ports for each 40GbE port using our QSFP+ DAC Breakout Cables for distances up to 5 meters. This could be used to connect to networking switches or to server adapters which support SFP+ connectivity
 - For longer distances of up to 300m, clients can use the MPO-4xLC OM3 MMF Breakout Cables with the 40GBASE-eSR4 transceiver.
- For 40G to 40G connectivity, clients can use the affordable QSFP+ to QSFP+ DAC cables for distances up to 7 meters
 - For distances up to 100m, the 40GBASE-SR4/iSR4 QSFP+ transceiver can be used with OM3 multimode fiber with MPO connectors or up to 150m when using OM4 multimode fiber with MPO connectors. iSR4 helps eliminate any possibility of Bit Error Rates as the overdrive will not occur.
 - For distances up to 300m, the 40GBASE-eSR4 QSFP+ transceiver can be used with OM3 multimode fiber with MPO connectors or up to 400m when using OM4 multimode fiber with MPO connectors.
 - For distances up to 10km, the 40GBASE-LR4 QSFP+ transceiver can be used with single mode fiber with LC connectors.
- To leverage existing 10G cabling using LC connectors, clients can use the 40GBASE-SR QSFP+ Bi-Directional (BiDi) transceivers that support up to 100m with OM3 MMF and up to 150m with OM4 MMF cables.



Stacking

Stacking allows multiple Ethernet switches or modules to be connected and managed as one using a single IP address. This helps reduce management costs and helps offload upstream network traffic.

- RackSwitch support:
 - SFP+ G8000, G8052 (NOS 8.X), G8264
 - QSFP+ G8264
- Flex System - EN4093R, CN4093 (SFP+/QSFP+), EN4023 (VCS Fabric)



Switches for BladeCenter

BladeCenter Virtual Fabric 10G Switch Module (46C7191) – [Product Guide](#)

This switch has 10 external 10 Gigabit Ethernet ports that can support of mix of 1G/10G transceivers and/or DAC cables.

Note: For connecting this switch to another device (e.g. storage or networking) that has a 10 Gigabit Ethernet port of a different media type, like an XFP, X2, or Xenpak port, you will need to use an approved 10GBase-SR transceiver in that device. Then you will use the 10Gbase-SR SFP+ transceiver on the Virtual Fabric 10G Switch module. You can then connect the two devices with an OM3 or OM4 multimode fiber patch cable.



iFlow Director (46C9250) – [Product Information](#)

The iFlow Director is a high-throughput, low-latency, traffic load distribution system in a 10 Gbps Ethernet switch for BladeCenter H and HT. This switch has 10 external 10G Ethernet ports that can support of mix of 1G/10G transceivers and/or DAC cables.



BladeCenter 1/10G Uplink Ethernet Switch Module (44W4404) – [Product Guide](#)

This switch has six external 1Gb RJ-45 ports and three 10Gb SFP+ external ports that use 10G transceivers and/ or 10G DAC cables.



BladeCenter Layer 2/3 Copper Ethernet Switch Module (32R1860) – [Product Guide](#)

Supports up to six 1Gb RJ-45 ports which simply require Cat5e cables – see **Cables** section.



BladeCenter Layer 2/3 Fiber (32R1861) Ethernet Switch Module – [Product Guide](#)

Supports up to six 1Gb Fiber ports and comes standard with six 1000BASE-SX SFP Transceivers. Can also support optional, 1000BASE-LX SFP Transceivers (PN 90Y9424).



Server Connectivity Module (39Y9324)

Supports up to SIX 1Gb RJ-45 ports which simply require Cat5e cables – see **Cables** section.



Transceivers & Cables for BladeCenter switch modules

Max. number of each option supported per switch	Part Number	VF 10Gb 46C7191	iFlow 46C9250	1/10G 44W4404	L2/3 32R1861	L2/3 32R1860	SCM 39Y9324
Manufactured							Taiwan
1Gb RJ45 connections – no additional options required							
CAT5e type cabling	See I/O cables			6		6	6
1Gb Transceivers for SFP+ ports							
1000BASE-T SFP Transceiver	00AY240				6 ²		
1000BASE-T SFP Transceiver	00FE333						
1000BASE-SX SFP Transceiver	81Y1622	10	10		6 Standard		
1000BASE-LX SFP Transceiver	90Y9424				6 ¹		
10Gb Transceivers for SFP+ ports							
10GBASE-SR SFP+ Transceiver	46C3447			3			
10GBASE-LR SFP+ Transceiver	90Y9412	10	10				
10GBASE-ER SFP+ Transceiver	90Y9415						
10Gb Direct Attach Copper Cables							
0.5m Passive SFP+ DAC Cable	00D6288						
1m Passive SFP+ DAC Cable	90Y9427						
3m Passive SFP+ DAC Cable	90Y9430	10	10	3			
5m Passive SFP+ DAC Cable	90Y9433						
7m Passive SFP+ DAC Cable	00D6151						

Support statement for non-Lenovo branded Transceivers and Direct-attached (DAC) cables. Lenovo does not restrict the use of all third party products. The Lenovo guideline for support and warranty services for the use of third-party products and other non-Lenovo products is as follows:

- When a customer reports a network issue and Lenovo believes the issue can be traced to the use of third-party products by a customer or business partner, then, at Lenovo's discretion, Lenovo may withhold support under warranty or a Lenovo solution support program till the products are replaced with Lenovo supported products. If the third-party products have led to a hardware defect, the warranty will be void on the affected product.

- When an issue occurs in the network, and Lenovo concludes that the issue is not attributable to the use of third-party products by a customer or business partner, Lenovo will continue to provide support for the affected product under warranty or covered by a Lenovo solution support program.

¹ Purchased separately and must replace the SX transceiver which ships standard

² Available for the BladeCenter L2/3 Fiber Gb Switch Module ONLY (PN 32R1861)

Ethernet/Converged Modules for Flex Systems

Lenovo Flex System Fabric EN4093R 10Gb Scalable Switch - [Product Guide](#)

This module supports flexible port mapping which allows clients to reallocate internal or external ports as required or trade up for faster ports based on what they have paid for. We also offer pay as you grow scalability, allowing clients to purchase upgrades to turn on more ports as needed. The following shows the total number of ports active standard in each configuration, and the upgrades must be applied in the order shown below:

- [Base configurations](#) (Lenovo Part Number = 00FM514 [requires CMM2] / IBM Part Number = 95Y3309) supports twenty-four 10Gb connections that can be assigned as needed. The default configuration is fourteen 10Gb node ports, plus ten external 10G SFP+ Ethernet ports. These ports can support of mix of 1G/10G transceivers and/or DAC cables.
- [Base with Upgrade 1](#) (Part Number = 49Y4798) supports forty-six 10Gb connections that can be assigned as needed. The default configuration is twenty eight 10Gb node ports (2 to each node bay per module), plus ten external 10G SFP+ Ethernet ports that can support of mix of 1G/10G transceivers and/or DAC cables and two 40Gb QSFP+ external ports which support transceivers, break-out cables and/or QSFP+ to QSFP+ cables.
- [Base with Upgrade 1](#) (Part Number = 49Y4798) & [Upgrade 2](#) (Part Number = 88Y6037) supports forty-two 10Gb node ports (3 to each node bay per module), plus fourteen external 10G SFP+ ports that can support of mix of 1G/10G transceivers and/or DAC cables and two 40Gb QSFP+ external ports which support transceivers, break-out cables and/or QSFP+ cables.



Lenovo Flex System Fabric CN4093 10Gb Converged Scalable Switch – [Product Guide](#)

Ideal for clients looking for native FC connectivity to FC SAN storage using OmniPorts. Also supports flexible port mapping which allows clients to reallocate internal or external ports as required or trade up for faster ports based on what they have paid for. We also offer pay as you grow scalability, allowing clients to purchase upgrades to turn on more ports as needed. The following shows the total number of ports active standard in each configuration, and the upgrades can be done in any order:

- [Base configurations](#) (Lenovo Part Number = 00FM510 [requires CMM2] / IBM Part Number = 00D5823) supports twenty-two 10Gb connections that can be assigned as needed. The default configuration is fourteen 10Gb node ports, plus two external 10G SFP+ Ethernet ports (can support of mix of 1G/10G transceivers and/or DAC cables) and six OmniPorts which can support 10Gb Ethernet or 4/8Gb Fibre Channel.
- [Base with Upgrade 1](#) (Part Number = 00D5845) supports thirty-eight 10Gb connections that can be assigned as needed. The default configuration is twenty eight 10Gb compute node ports (2 to each node bay per module). Plus two external 10G SFP+ Ethernet ports (1/10GbE), six OmniPorts which can support 10Gb Ethernet or 4/8Gb Fibre Channel and two 40Gb QSFP+ external ports which support transceivers, break-out cables and/or QSFP+ to QSFP+ cables.
- [Base with Upgrade 2](#) (Part Number = 00D5487) supports forty-two 10Gb connections that can be assigned as needed. The default configuration is twenty eight 10Gb compute node ports (2 to each node bay per module). Plus two external 10G SFP+ Ethernet ports (1/10GbE) and twelve OmniPorts which can support 10Gb Ethernet or 4/8Gb Fibre Channel.
- [Base with Upgrade 1 & Upgrade 2](#) supports forty-two 10Gb server port (3 to each node bay per module). Plus two external 10G SFP+ Ethernet ports (1/10GbE), twelve OmniPorts which can support 10Gb Ethernet or 4/8Gb Fibre Channel and two 40Gb QSFP+ external ports which support transceivers, break-out cables and/or QSFP+ to QSFP+ cables.



Lenovo Flex System Fabric SI4093 System Interconnect Module – [Product Guide](#)

This module supports flexible port mapping which allows clients to reallocate internal or external ports as required or trade up for faster ports based on what they have paid for. We also offer pay as you grow scalability, allowing clients to purchase upgrades to turn on more ports as needed. This module can also be used when building PODs and the [Flex System Interconnect Fabric](#) solution. The following shows the total number of ports active standard in each configuration, and the upgrades must be applied in the order shown below:

- [Base configurations](#) (Lenovo Part Number = 00FM518 [requires CMM2]) supports twenty-four 10Gb connections that can be assigned as needed. The default configuration is fourteen 10Gb node ports, plus ten external 10G SFP+ Ethernet ports that can support of mix of 1G/10G transceivers and/or DAC cables
- [Base with Upgrade 1](#) (Part Number = 95Y3318) supports forty-six 10Gb connections that can be assigned as needed. The default configuration is twenty eight 10Gb node ports (2 to each node bay per module), plus ten external 10G SFP+ Ethernet ports that can support of mix of 1G/10G transceivers and/or DAC cables and two 40Gb QSFP+ external ports which support transceivers, break-out cables and/or QSFP+ to QSFP+ cables.
- [Base with Upgrade 1](#) (Part Number = 95Y3318) & [Upgrade 2](#) (Part Number = 95Y3320) supports forty-two 10Gb node ports (3 to each node bay per module), plus fourteen external 10G SFP+ ports that can support of mix of 1G/10G transceivers and/or DAC cables and two 40Gb QSFP+ external ports which support transceivers, break-out cables and/or QSFP+ cables.



Lenovo Flex System SI4091 10Gb System Interconnect Module – [Product Guide](#)

This device (Part Number = 00FE327 [requires CMM2]) comes with 10 external SFP+ 10Gb ports, each corresponding with exactly one internal 1G/10G connection, which can support of mix of 1G/10G transceivers and/or 10G active Direct Attached Copper / Twinax cables.



Flex System EN2092 1Gb Ethernet Scalable Switch – [Product Guide](#)

This module supports flexible port mapping which allows clients to reallocate internal or external ports as required or trade up for faster ports based on what is licensed. We also offer pay as you grow scalability, allowing clients to purchase upgrades to turn on more ports as needed. The following shows the total ports active standard in each configuration, upgrades can be done in any order:

- [Base configurations](#) (Part Number = 49Y4294) supports twenty-four 1Gb connections that can be assigned as needed. The default configuration is fourteen 1Gb node ports, plus ten external RJ45 1G ports which simply require Cat5e cables – see cables section.
- [Base with Upgrade 1](#) (Part Number = 90Y3562), supports forty-eight 1Gb connections that can be assigned as needed. The default configuration is twenty eight 1Gb node ports (2 to each server bay per module), plus ten external RJ45 1G ports which simply require Cat5e cables.
- [Base with Upgrade 2](#) (Part Number = 49Y4298) supports sixty-four 1Gb connections that can be assigned as needed. The default configuration is four external 10G SFP+ ports support of mix of 1G/10G transceivers and/or DAC cables



Flex System EN4091 10Gb Ethernet Pass-Thru – [Product Guide](#)

This device (Part Number = 88Y6043) comes with 14 external SFP+ 10Gb ports, each corresponding with exactly one internal 1G/10G connection, which can support a mix of 1G/10G transceivers and/or 10G active Direct Attached Copper / Twinax cables.

Flex System Interconnect Fabric – [Product Guide](#)

Flex System® Interconnect Fabric is designed to meet client needs by providing a simple Ethernet fabric cluster that accelerates deployment, simplifies management, and supports dynamic scalability, plus increases reliability, availability and security in medium-to-large POD deployments. The Flex System Interconnect Fabric offers a single point of management for up to 20 network devices and 252 compute nodes. The products supported in this offering include RackSwitch G8264CS and Flex System Fabric SI4093 System Interconnect Module.



Transceivers and Cables for Flex System Ethernet Modules

The Flex System Ethernet modules do not include a serial management cable. However, Flex System Management Serial Access Cable, 90Y9338, is supported and contains two cables, a mini-USB-to-RJ45 serial cable and a mini-USB-to-DB9 serial cable. Either can be used for local configuration tasks and firmware updates. The following table assumes that each module has all upgrade licenses enabled:

Shows the max. number of each option supported per module	System x Part Number	CN4093	EN4093R	SI4093	SI4091	EN2092	EN4091
1Gb RJ45 connections – no additional options required							
CAT5e type cabling	See I/O cables					20	
1Gb Transceiver for SFP+ ports							
1000BASE-T SFP Transceiver	00FE333	2 ¹	14	14	10	4	14
1000BASE-SX SFP Transceiver	81Y1622						
1000BASE-LX SFP Transceiver	90Y9424						
10Gb Transceiver (SFP+/Omni Port)							
10GBASE-SR SFP+ Transceiver (85°C) ⁴	00NU536						
10GBASE-SR SFP+ Transceiver	46C3447	14	14	14	10	4	14
10GBASE-LR SFP+ Transceiver	90Y9412						
Lenovo Dual Rate 1Gb/10Gb SFP+ Transceiver	00MY034						
10Gb Direct Attach Copper Cables							
1m Passive SFP+ DAC Cable	90Y9427						
1.5m Passive SFP+ DAC Cable	00AY764						
2m Passive SFP+ DAC Cable	00AY765						
3m Passive SFP+ DAC Cable	90Y9430						
5m Passive SFP+ DAC Cable	90Y9433	14 ²	14	14		4	14
7m Passive SFP+ DAC Cable	00D6151						
1m Active SFP+ DAC Cable	00VX111				10		
3m Active SFP+ DAC Cable	00VX114						
5m Active SFP+ DAC Cable	00VX117						
40Gb Transceivers							
40GBASE-SR4 QSFP+	49Y7884	2	2	2			
40GBASE-iSR4 QSFP+	00D9865	2	2	2			
40GBASE-eSR4 QSFP+	00FE325	2	2	2			
40GBASE-LR4 QSFP+	00D6222	2	2	2			
40GBASE-SR QSFP+ BiDi ⁵	00YL631	2	2	2			
Break Out Cables 40Gb QSFP+ to 4x10G DAC SFP+ connections							
1M Passive QSFP+ to SFP+ Breakout DAC Cable	49Y7886						
3M Passive QSFP+ to SFP+ Breakout DAC Cable	49Y7887	2	2	2			
5m Passive QSFP+ to SFP+ Breakout DAC Cable	49Y7888						
40Gb QSFP+ to QSFP+ Cables							
1M Passive QSFP+ DAC Cable	49Y7890						
3M Passive QSFP+ DAC Cable	49Y7891						
5m Passive QSFP+ DAC Cable	00D5810	2	2	2			
7m Passive QSFP+ DAC Cable	00D5813						
Fibre Channel Transceivers (Omni Ports Only)							
Lenovo 8Gbps Fibre Channel SW SFP+ Transceiver ³	44X1964	12					
8Gbps Fibre Channel LW SFP+ Transceiver ³	00FM472	12					

¹ Only supported in the SFP+ ports, not in Omni Ports ² Omni ports only support up to 5m ³ Support 4/8 Gbps when a multi-rate FC transceiver is plugged in via auto detect ⁴ Designed for the CN4093 when installed in the Flex System Carrier-Grade Chassis; ⁵ 40G QSFP+ BiDi transceivers use LC-LC multimode fiber.

Support statement for non-Lenovo branded Transceivers and Direct-attached (DAC) cables. Lenovo does not restrict the use of all third party products. The Lenovo guideline for support and warranty services for the use of third-party products and other non-Lenovo products is as follows:

Lenovo Networking Products and Options Catalog

· When a customer reports a network issue and Lenovo believes the issue can be traced to the use of third-party products by a customer or business partner, then, at Lenovo's discretion, Lenovo may withhold support under warranty or a Lenovo solution support program till the products are replaced with Lenovo supported products. If the third-party products have led to a hardware defect, the warranty will be void on the affected product.

· When an issue occurs in the network, and Lenovo concludes that the issue is not attributable to the use of third-party products by a customer or business partner, Lenovo will continue to provide support for the affected product under warranty or covered by a Lenovo solution support program.

OEM Ethernet Offerings for Flex Systems

Lenovo Flex System EN4023 (Brocade) 10Gb Scalable Switch- [Product Guide](#)

Streamlines network deployment and operation using Brocade Virtual Cluster Switching (VCS) Fabric for the next generation IP. It is designed for both LAN and SAN environments, offering Layer 2 and Layer 3 features for the LAN and support for connectivity to almost any kind of SAN including FCoE, Fibre Channel, iSCSI and NAS storage. Available Features on Demand (FoD) upgrades allow purchase of additional port licenses as needed. Dynamic Ports on Demand allows for ports to be activated automatically as nodes, cables or transceivers are plugged in. The switch is also upgradeable to support Flex Ports allowing support for 16/8Gbps FC. In addition the EN4023 supports building fabrics scaling up to 48 switches or 24 chassis in a single fabric, which goes way beyond stacking. The following shows the total number of ports active standard in each configuration plus optional upgrades which can be applied in any order:

- [Base configurations](#) (Part Number = 95Y5212 / FC = ESWD) is initially licensed for twenty-four ports (internal or external 1/10GbE connectivity only).
- [Feature on Demand Upgrade 1](#) (Part Number = 95Y5158 / FC = ESWE) provides licenses for activating sixteen additional 10 GbE ports (internal or external) and two 40Gb external uplink ports. For a total of forty 1/10GbE (internal or external) and two 40Gb external uplink ports.
- [Feature on Demand Upgrade 2](#) (Part Number = 95Y5159 / FC = ESWF) provides licenses for activating 16 additional 1/10 GbE ports (internal or external). For a total of forty 1/10GbE internal or external ports.
- [Feature on Demand Upgrade 3](#) (Part Number = 47C9993/ FC = ESWG) provides licenses for activating FCoE on all ports and Flex Ports on the external ports (allows for use as 8/16Gbps FC or FCoE).
- [Base with Upgrade 1 & Upgrade 2 & Upgrade 3](#) supports forty-two 10Gb node ports (3 to each node bay per module, once adapter is available), plus fourteen external 10G SFP+ ports that can support of mix of 10G transceivers and/or DAC cables and two 40Gb QSFP+ external ports which support transceivers, plus all ports are activated for FCoE and Flex Ports (1/10GbE, 8/16Gb FC) on the external ports.
- Flex System Management Serial Access Cable Kit (Part Number 90Y9338)



Cisco Nexus B22 Fabric Extender for Flex System – [Product Guide](#)

Provides an extension of the Cisco Nexus fabric to Flex System chassis. Aggregates network connections of all Flex System nodes to upstream Cisco Nexus Switch. Adds new options for Cisco-centric networking organizations.

- Base Configuration: (Part number 94Y5350) with 14 internal 10Gb ports and eight external 10Gb SFP+ ports.
- Base Configuration with FET bundle: (Part number 94Y5355) with 14 internal 10Gb ports and eight external 10Gb SFP+ ports. Includes sixteen Cisco Fabric Extender Transceivers.



Lenovo Flex System EN6131 40Gb Ethernet Switch – [Product Guide](#)

Designed to offer the performance you need to support clustered databases, parallel processing, transactional services and high-performance embedded I/O applications, reducing task completion time and lowering cost per operation. This switch offers 14 internal and 18 external 40 Gb Ethernet ports that enable a non-blocking network design. It supports all Layer 2 functions so servers can communicate within the chassis without going to a Top-of-Rack (ToR) switch, which helps improve performance and latency. (Part Number 90Y9346)



Transceivers and Cables for Flex System OEM Ethernet Modules

The following table assumes that all EN4023 ports licenses have been enabled. Cisco B22 and EN6131 comes with all ports active.

Shows the max. number of each option supported per module	Part Number	EN4023	Cisco B22	EN6131
1Gb Transceiver for SFP+ ports				
1000BASE-T SFP Transceiver	00FE333	14		
1000BASE-SX SFP Transceiver	81Y1622			
1000BASE-LX SFP Transceiver	90Y9424			
10Gb Transceiver (SFP+/Omni Port)				
10GBASE-SR SFP+ Transceiver	46C3447	14		
10GBASE-LR SFP+ Transceiver	00D6180			
Brocade 10Gb SFP+ SR Optical Transceiver	49Y4216			
Brocade 10Gb SFP+ LR Optical Transceiver	95Y0540			
10Gb Direct Attach Copper Cables				
1m Passive SFP+ DAC Cable	90Y9427		8	
3m Passive SFP+ DAC Cable	90Y9430			
1m 10GbE Twinax Active Copper SFP+	81Y8295			
3m 10GbE Twinax Active Copper SFP+	81Y8296			
5m 10GbE Twinax Active Copper SFP+	81Y8297			
40Gb Transceivers				
40GBASE-SR4 QSFP+ Transceiver	49Y7884	2		18
Break Out Cables 40Gb QSFP+ to 4x10G DAC SFP+ connections				
1M Passive QSFP+ to SFP+ Breakout DAC Cable	49Y7886		8 ¹	2
3M Passive QSFP+ to SFP+ Breakout DAC Cable	49Y7887			
5m Passive QSFP+ to SFP+ Breakout DAC Cable	49Y7888			
40Gb QSFP+ to QSFP+ Cables				
3M FDR Infiniband Cable	90Y3470			18
1M Passive QSFP+ DAC Cable	49Y7890	2		
3M Passive QSFP+ DAC Cable	49Y7891			
5m Passive QSFP+ DAC Cable	00D5810			
7m Passive QSFP+ DAC Cable	00D5813			
8Gb Fibre Channel Transceivers				
Brocade 8Gb FC SFP+ Transceiver	88Y6416	14		
16Gb Fibre Channel Transceivers				
Brocade 16Gb FC SFP+ Transceiver	88Y6393	14		

¹ With the Cisco B22 only supports the SFP+ connections of the Break-out cable the QSFP+ ports, must connect to upstream Cisco Nexus 5500 or 6000.

Support statement for non-Lenovo branded Transceivers and Direct-attached (DAC) cables. Lenovo does not restrict the use of all third party products. The Lenovo guideline for support and warranty services for the use of third-party products and other non-Lenovo products is as follows:

- When a customer reports a network issue and Lenovo believes the issue can be traced to the use of third-party products by a customer or business partner, then, at Lenovo's discretion, Lenovo may withhold support under warranty or a Lenovo solution support program till the products are replaced with Lenovo supported products. If the third-party products have led to a hardware defect, the warranty will be void on the affected product.

- When an issue occurs in the network, and Lenovo concludes that the issue is not attributable to the use of third-party products by a customer or business partner, Lenovo will continue to provide support for the affected product under warranty or covered by a Lenovo solution support program.

Lenovo Networking RackSwitch

Lenovo RackSwitch G8332 (Part # 7159BRX/HDE or 7159BFX/HCE)

[Product Guide](#)

The G8332 is a 40 Gigabit Ethernet (GbE) aggregation switch designed for the data center, providing speed, intelligence and interoperability on a proven platform. The RackSwitch G8332 offers up to 32 x 40 QSFP+ ports, which can also provide high-density 10 GbE connectivity, with 2.56 Tbps—in a 1U footprint.



Lenovo RackSwitch G8296 (Part #7159GR6/HC6 or 7159GF5/HC5)

[Product Guide](#)

This 2U switch is designed for performance with 2.56 Tbps via 86 SFP/SFP+ (1/10Gb) ports and 10 QSFP+ (40Gb). The SFP/SFP+ ports can support a mix of 1G/10G transceivers and/ or more cost effective 10G DAC cables. The 40Gb QSFP+ ports also provide a lot of flexibility with support for: 1) port 87 & 88 can support break-out cables that allow for connection to four 10Gb connections each for up to 94 total; 2) QSFP+ to QSFP+ cables or 3) 40Gb QSFP+ transceivers.



Lenovo RackSwitch G8272 (Part #7159CRW/HCW or 7159CFV/HCV)

[Product Guide](#)

This switch is designed for performance with 1.44 Tbps via 48 SFP/SFP+ (1/10Gb) ports and 6 QSFP+ (40Gb). The SFP/SFP+ ports can support a mix of 1G/10G transceivers and/ or more cost effective 10G DAC cables. The 40Gb QSFP+ ports also provide a lot of flexibility with support for: 1) can support break-out cables that allow for connection to four 10Gb connections each for up to 72 total; 2) QSFP+ to QSFP+ cables or 3) 40Gb QSFP+ transceivers.



Lenovo RackSwitch G8264CS (Part #7159DRX/HCK or 7159DFX/HCM)

[Product Guide](#)

This switch is designed for converged environments where clients are looking for FCoE or FC connectivity with 12 Omni Ports, plus 36 10Gb SFP+ ports and four 40Gb QSFP+ ports standard. Omni Ports can support a mix of 10GbE transceivers or DAC cables, in addition to 4/8GB Fibre Channel transceivers. The SFP+ ports can support a mix of 1G/10G transceivers and/ or more cost effective 10G DAC cables. The 40Gb QSFP+ ports also provide a lot of flexibility with support for: 1) break-out cables that allow for connection to four 10Gb SFP+ connections; 2) QSFP+ to QSFP+ cables or 3) 40Gb QSFP+ transceivers.



Lenovo RackSwitch G8264 (Part # 7159G64/HC3 or 715964F/HC4)

[Product Guide](#)

This switch is designed for performance with 48 SFP/SFP+ (1/10Gb) ports and four QSFP+ (40Gb) ports standard. The SFP+ ports can support a mix of 1G/10G transceivers and/ or more cost effective 10G DAC cables. The 40Gb QSFP+ ports also provide a lot of flexibility with support for: 1) break-out cables that allow for connection to four 10Gb SFP+ connections; 2) QSFP+ to QSFP+ cables or 3) 40Gb QSFP+ transceivers.



Lenovo Networking Products and Options Catalog

Lenovo RackSwitch G8124E (Part # 7159BR6/HC6 or 7159BF7/HC7) [Product Guide](#)

This switch comes with 24 SFP/SFP+ (1/10Gb) ports which can support of mix of 1G/10G transceivers and/or 10G DAC cables.



Lenovo RackSwitch G8052 (Part # 7159G52/HC1 or 715952F/HC2) [Product Guide](#)

Supports 48 RJ45 1G ports and four SFP/SFP+ (1/10GbE) ports, plus a mix of 1G/10G transceivers and/or 10G DAC cables. Support for stacking on with NOS 8.X or later.



Lenovo RackSwitch G7052 (Part # 7159CAX/HCT) [Product Guide](#)

Supports 48 RJ45 1G ports and four SFP/SFP+ (1/10GbE) ports, plus a mix of 1G/10G transceivers and/or 10G DAC cables.



Lenovo RackSwitch G7028 (Part # 7159BAX/HCP) [Product Guide](#)

Supports 24 RJ45 1G ports and four SFP/SFP+ (1/10GbE ports), plus a mix of 1G/10G transceivers and/or 10G DAC cables.



Options specific to the G7052 and G7028:

- **Lenovo RackSwitch G7000 Redundant Power Supply** (can support redundant power for up to four G7028/G7052's) – 00AY123
- **Lenovo RackSwitch G7000 1.8m DC to DC RPS Power Cable** (2 come standard with the RPS above, these are options for the connecting the third and fourth G7028/G7052) – 00AY121

Transceivers and cables for RackSwitch

Maximum number of each option supported per switch.	Par Number	G8332	G8316	G8296	G8272	G8264CS	G8264T	G8264	G8124E	G8052	G8000	G7052	G7028
1Gb RJ45 connections – no additional options required													
CAT5e type cabling	Page 19									48	44	48	24
SFP 1Gb Transceivers for SFP/SFP+ Ports													
1000BASE-T SFP	00FE333												
1000BASE-SX SFP	81Y1622			86	48	36 ¹		48	24	4	6 ⁷	4	4
1000BASE-LX SFP	90Y9424												
SFP+ 10Gb Transceivers													
Lenovo Dual Rate 1Gb/10Gb SFP+	00MY034												
10GBASE-SR SFP+	46C3447			86	48	48		48	24	4	4	4	4
10GBASE-LR SFP+	90Y9412			38 ⁹									
10GBASE-LR SFP+	00D6180					48							
10GBASE-ER SFP+	90Y9415			8 ⁹	10	6 ²		6 ²	6 ²	4	4		
SFP+ 10Gb Direct Attach Copper Cables													
0.5m Passive	00D6288												
1m Passive	90Y9427												
1.5m Passive	00AY764												
2m Passive	00AY765												
3m Passive	90Y9430												
5m Passive	90Y9433			86	48	48		48	24	4		4	4
7m Passive ⁶	00D6151										4		
1m Active SFP+ DAC Cable	00VX111												
3m Active SFP+ DAC Cable	00VX114												
5m Active SFP+ DAC Cable	00VX117												
QSFP+ 40Gb Transceivers & Options													
Mellanox QSFP to SFP+ adapter	00D9676	32	16										
40GBASE-SR4 QSFP+	49Y7884												
40GBASE-eSR4 QSFP+	00FE325						4	4					
40GBASE-iSR4 QSFP+	00D9865	32	16	10	6	4		4					
40GBASE-LR4 QSFP+ ⁵	00D6222						4						
40GBASE-SR QSFP+ BiDi ¹³	00YL631	8 ¹⁰		4 ¹¹	4 ¹²	4		4					
Passive QSFP+ to SFP+ Breakout Cable - SFP+ connections													
1M breakout	49Y7886												
3M breakout	49Y7887	24 ³	16	2 ⁸	6	4	4	4					
5m breakout	49Y7888												
40Gb QSFP+ MPO-4xLC MMF Breakout Cable													
1m	00FM412												
3m	00FM413	24 ³	16	2 ⁸	6	4	4	4					
5m	00FM414												
Passive QSFP+ Direct Attached Copper Cables													
1M QSFP+ Passive	49Y7890												
3M QSFP+ Passive	49Y7891												
5m QSFP+ Passive	00D5810	32	16	10	6	4	4	4					
7m QSFP+ Passive	00D5813												
SFP+ Fibre Channel Transceivers (Omni Ports Only)													
8Gbps FC SW SFP+ ⁴	44X1964					12							
8Gbps FC LW SFP+ ⁴	00FM472												

¹ Only supported in the SFP+ ports, not in Omni Ports; ² Support up to 6 ER per switch ³ G8332 only supports break-out cables in ports 2-25; ⁴ Support 4/8 Gbps when a multi-rate FC transceiver is plugged in via auto detect; ⁵ Uses LC-LC SMF fibre cables up to 10Km; ⁶ Not supported on Omni ports; ⁷ G8000 has two SFP ports standard and up to 4 SFP+ ports optional; ⁸ G8296 is limited to breaking out only two QSFP+ ports port 87 & 88; ⁹ Max of 8 ER transceivers supported in "top" SFP+ ports 49-86, ER & LR not supported on "Bottom" SFP+ ports (1-48); ¹⁰ G8332 only supports 40G BiDi transceivers in ports 25-32; ¹¹ G8296 only supports 40G BiDi transceivers in ports 88,90,92,94; ¹² G8272 only supports 40G BiDi transceivers in ports 49,50,53,54; ¹³ 40G QSFP+ BiDi transceivers use LC-LC multimode fiber.

Support statement for non-Lenovo branded Transceivers and Direct-attached (DAC) cables. Lenovo does not restrict the use of all third party products. The Lenovo guideline for support and warranty services for the use of third-party products and other non-Lenovo products is as follows:

Lenovo Networking Products and Options Catalog

· When a customer reports a network issue and Lenovo believes the issue can be traced to the use of third-party products by a customer or business partner, then, at Lenovo's discretion, Lenovo may withhold support under warranty or a Lenovo solution support program till the products are replaced with Lenovo supported products. If the third-party products have led to a hardware defect, the warranty will be void on the affected product.

· When an issue occurs in the network, and Lenovo concludes that the issue is not attributable to the use of third-party products by a customer or business partner, Lenovo will continue to provide support for the affected product under warranty or covered by a Lenovo solution support program.

RackSwitch FCoE and iSCSI Supported Configuration Matrix

Fiber Channel over Ethernet

Converged Network Adapter	FCoCEE Transit switch	FCoE TOR	FC SAN Fabric	Win2008	WS2012	ESX 4	ESX 5	RHEL 5	RHEL 6	SLES 10	SLES 11	SVC	SVC/N7KV5KV3K	DS3K/DS5K	DS8K	XIV	Tape	SVC/N7K/ V5KV3K FCoE Dir Attach		
				X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Emulex VFA2, VFA3, VFA 3r (Adapter PN + FOD Key PN) VFA2 PCIe: 49Y7950 + 49Y4274 VFA2 Integrated: 49Y7940 + 49Y4274 VFA2 PCIe: 95Y3751 + (included) VFA3 Mezz: 90Y6456 + 90Y5178 VFA3 PCIe: 95Y3762 + 95Y3760 VFA 3r Mezz: 00Y7730 + 90Y5178 VFA3r PCIe: 00D8540 + 95Y3760	G8124E or None	Cisco Nexus 5548UP / 5596UP	Cisco	X		X	X	X	X	X	X	X	X	X	X	X	X	X		
	G8124E or None	Brocade VDX6730	Brocade	X			X		X		X	X	X	X	X	X	X	X		
	G8124E or None	G8264CS	Brocade	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
			Cisco	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
	None			X		X		X		X									X	
	G8264 or None	G8264CS	None		X		X		X		X								X	
Qlogic 8200 CNA (Adapter PN + FOD Key PN) PCIe: 90Y4600 + 00Y5624 Mezz: 90Y6454 + 90Y5179	G8124E or None	Cisco Nexus 5548UP / 5596UP	Cisco	X		X	X	X	X	X	X	X	X	X	X	X	X	X		
	G8124E or None	Brocade VDX6730	Brocade	X			X		X		X	X	X	X	X	X	X	X		
	G8124E or None	G8264CS	Brocade	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Cisco			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		

Not all configurations supported. Reference System Storage Interoperation Center (SSIC) for full listing of supported FCoE & iSCSI Configurations <http://www-03.ibm.com/systems/support/storage/ssic/interoperability.wss>

iSCSI (Internet Small Computer System Interface)

Adapter (Technical Description)	Part #	SW	HW	DS3K	DS5K	XIV	DS8K	SVC	V7000
		iSCSI	iSCSI						
Emulex 2x10 GbE VFA 2 for BM x3750 M4 – Server Unique	88Y7429	Y	Y	H/S	H/S	H/S	H	H	H
Emulex 2x10GbE VFA 3r - PCIe	00D8540	Y	Y	H/S	H/S	H/S	H	H	H
Emulex 2x10 GbE VFA 3r - Mezz	00Y7730	Y	Y	H/S	H/S	H/S	H	H	H
Qlogic 8200 2x10 Gbe SFP+ - Mezz	90Y6454	Y	Y	H/S	H/S	H/S	H	H	H
Qlogic 8200 2x10GbE SFP+ VFA – PCIe	90Y4600	Y	Y	H/S	H/S	H/S	H	H	H
Intel X520 2x10GbE SFP+ - Mezz	49Y7980	Y		S	S	S			
Intel x520 2x10GbE SFP+ - PCIe	49Y7960	Y		S	S	S			
Intel x540 2x10GbaseT - PCIe	49Y7970	Y		S	S	S			
Intel X540 2x10GbaseT - Mezz	49Y7990	Y		S	S	S			
Mellanox CX3 40GbE / FDR VPI – in Ethernet mode - PCIe	00D9550	Y		S	S	S			
Mellanox CX3 2x10GbE Adapter - PCIe	00D9690	Y		S	S	S			
Solarflare SFN5162F MR 2x10GbE SFP+ - PCIe	47C9952	Y		S	S	S			
Solarflare SFN7122 2x10GbE SFP+ - PCIe	47C9977	Y		S	S	S			

Lenovo Networking Products and Options Catalog

Emulex 2x10G BaseT Adapter for IBM x3750 M4 – Server Unique Option	88Y7427	Y		S	S	S			
Broadcom NetXtreme 2x10GbE SFP+ - Mezz	44T1360	Y		S	S	S			
Broadcom NetXtreme 2x10GbE SFP+ - PCIe	94Y5180	Y		S	S	S			
Broadcom NetXtreme 2x10G Base-T - PCIe	44T1370	Y		S	S	S			
Intel X540 2x10GBaseT – ML2	00D1994	Y		S	S	S			
Broadcom NetXtreme II 2x10GbaseT – ML2	00D2026	Y		S	S	S			
Intel I350-T4 4xGbE – ML2	00D1998	Y		S	S	S			
Broadcom NetXtreme I 2xGbE - PCIe	90Y9370	Y		S	S	S			
Broadcom NetXtreme I -4xGbE - PCIe	90Y9352	Y		S	S	S			
Broadcom NetXtreme II 2xGbE - PCIe	42C1780	Y		S	S	S			
Intel I340 4xGbE – PCIe	49Y4240	Y		S	S	S			
Intel I340-T2 2xGbE – PCIe	49Y4230	Y		S	S	S			
Intel I350 4xGbE – PCIe	00AG520	Y		S	S	S			
Intel I350 2xGbE – PCIe	00AG510	Y		S	S	S			
Intel I350 1xGbE SR Optic	00AG500	Y		S	S	S			
Intel X710 2x10 GbE SFP+ - PCIe	81Y3520	Y		S	S	S	S	S	S
Broadcom NetXtreme II ML2 Dual Port 10GbE SFP+	00D2028	Y		S	S	S	S	S	S
Intel X710 ML2 4x10 GbE SFP+	94Y5200	Y		S	S	S	S	S	S
Mellanox ConnectX-3 Pro ML2 2x40GbE/FDR VPI	00FP650	Y		S	S	S	S	S	S

H/S (Blue) = iSCSI HW and SW enabled / H (Yellow) = iSCSI HW only / S (Orange) = iSCSI SW Only

All System x 1Gb & 10Gb adapters and switches will support SW iSCSI Initiator - IBM tested Configurations with OS and IBM Storage target support

Networking Virtual Fabric Support

For those looking for details on what Virtual Fabric Adapters are supported in Virtual NIC mode (vNIC 1 or UFP mode) can be found at [Server Proven Web site](#)

System x Adapter support with transceivers and cables

	Part Number	Emulex						Mellano x	Solarflare		
		II LOM 49Y7940	VFA II 49Y7950	VFA III 95Y3762	VFA IIIr 00D8540	VFA III embed 90Y6456	VFA IIIr embed 00Y7730	CX-3 00D9690	5162F 47C9952	6122F 47C9960	7122F 47C9977
1000BASE-T SFP Transceivers											
Lenovo	00FE333	x	x	x	x	-	-	-	-	-	-
10GBASE-SR SFP+ Transceivers											
Lenovo	46C3447	x	x	x	x	x	x	x	x	x	x
Qlogic	49Y4218	x	x	x	x	x	x	x	x	x	x
Brocade	49Y4216	x	x	x	x	x	x	x	x	x	x
Lenovo Passive SFP+ DAC Cables											
0.5m	00D6288	x	x	x	x	x	x	x	x	x	x
1m	90Y9427	x	x	x	x	x	x	x	x	x	x
1.5m	00AY764	x	x	x	x	x	x	x	x	x	x
2m	00AY765	x	x	x	x	x	x	x	x	x	x
3m	90Y9430	x	x	x	x	x	x	x	x	x	x
5m	90Y9433	x	x	x	x	x	x	x	x	x	x
7m	00D6151	-	-	-	-	-	-	x	-	-	-
Lenovo Active SFP+ DAC Cables											
1m	00VX111	x	x	x	x	x	x	x	x	x	x
3m	00VX114	x	x	x	x	x	x	x	x	x	x
5m	00VX117	x	x	x	x	x	x	x	x	x	x

	Part Number	Broadcom				Intel	Qlogic	
		NetXtreme 94Y5180	NetXtreme 00D2028	Single Port 00D9700	Dual Port 44T1360	x520 49Y7960 49Y7980	Dual Port 90Y6454	8200 90Y4600
10GBASE-SR SFP+ Transceivers								
Lenovo	46C3447	x	x	x	x	x	x	x
Qlogic	49Y4218	x	x	x	x	x	x	x
Brocade	49Y4216	x	x	x	x	x	x	x
Lenovo Passive SFP+ DAC Cables								
0.5m	00D6288	x	x	x	x	x	x	x
1m	90Y9427	x	x	x	x	x	x	x
1.5m	00AY764	x	x	x	x	x	x	x
2m	00AY765	x	x	x	x	x	x	x
3m	90Y9430	x	x	x	x	x	x	x
5m	90Y9433	x	x	x	x	x	x	x
7m	00D6151	x	x	x	X	x	x	x
Lenovo Active SFP+ DAC Cables								
1m	00VX111	x	x	x	x	x	x	x
3m	00VX114	x	x	x	x	x	x	x
5m	00VX117	x	x	x	x	x	x	x

For [more information](#) on System x Adapters

Recommended I/O Cables

1GbE Cat5e Cables

These Blue Cat5e cables should be used when using ports/transceivers that have RJ-45 connections:

Brand / Length	0.6 m PN	1.5m PN	3m PN	10m PN	25m PN
Part Number	40K5679	40K8785	40K5581	40K8927	40K8930

10GbE CAT6/6a Cables

Lenovo does not sell these cables but they are easily available from our channel partners and are recommended when using switches with 10Gbase-T ports like the RackSwitch G8264T.

10GBase-SR Fiber Optical Cables (also used for Fibre Channel)



These transceivers can utilize a variety of multimode (MMF) fiber cables with LC connectors at the transceiver side.

LC-LC OM3	1m	3m	5m	10m	15m	25m	30m
Part Number	00MN502	00MN505	00MN508	00MN511	00MN514	00MN517	00MN520

Maximum distance is determined by the type of fiber used. The following are recommendations not sold by Lenovo. 62.5 micron 200MHz*km distances up to 33 meters, 50 micron 400MHz*km distances up to 66 meters, 50 micron 500MHz*km distances up to 82 meters, 50 micron 2000MHz*km distances up to 300 meters

40GbE QSFP+ MPO Optical Cable

QSFP+ MPO Optical Cables orderable through Lenovo can be used for distances up to 30 meters, or up to 100m using industry OM3 cables. The recommended cables for QSFP+ (49Y7884) are:

40GbE QSFP+ MPO Optical Cable	10m	30m
Part Number	90Y3519 / 00VX003	90Y3521 / 00VX005

40GBE QSFP+ MPO-4xLC OM3 MMF Breakout Cables

The QSFP+ eSR4 and SR4* transceivers can leverage these cables which breakout into four OM3 multimode fiber (MMF) cables with LC duplex connectors to support up to 100m (SR4), 300m eSR4). Valid Configuration:



- MPO-4xLC <==== up to **100m** (OM3) with SR4 or **300m** with eSR4 ====> 4xLC-MPO
- MPO-4xLC (connected to 4x SFP+ SR) up to **300m** (OM3) using **QSFP+ eSR4 only**, * This configuration isn't supported with QSFP+ SR4.

40GbE QSFP+ MPO-4xLC OM3 MMF Breakout Cable	1m	3m	5m
Part Number	00FM412	00FM413	00FM414

Recommended Power Cables

The RackSwitch and Brocade FC products do not ship with power cables standard. Order two cables for your country.

	Part Number
Power Cord Europe AC plug 10A/250 V;	39Y7917
Power Cord Europe (Denmark) 10A/250 V;	39Y7918
Power Cord Europe (Switzerland) 10A/250 V;	39Y7919
Power Cord Europe (Israel) 10A/250 V; OPT	39Y7920
Power Cord Europe (Italy / Chili) AC plug 10A/250V	39Y7921
Power Cord Europe (South Africa) 10A/250 V;	39Y7922
Power Cord UK 13A/250 V; OPT	39Y7923
Power Cord Australia/New Zealand 10A/250V	39Y7924
Power Cord Korea 10A/250 V; OPT	39Y7925
Power Cord India 10A/250 V; OPT	39Y7927
Power Cord China 16A/250 V; OPT	39Y7928
Power Cord Brazil 16A/250 V; OPT	39Y7929
Power Cord Uruguay/Argentina 16A/250 V;	39Y7930
Power Cord US / Canada	39Y7931
2.8 m, 10A/250 V, C13 to NEMA 6-15P (NA)	46M2592
Power Cord Japan 2.8M AC plug 12A/125V;	46M2593
4.3m, 10A/100-250V, C13 to IEC 320-C14 Rack Power Cable	39Y7932
1.5m, 10A/100-250V, C13 to IEC 320-C14 Rack Power Cable	39Y7937
2.8m, 10A/100-250V, C13 to IEC 320-C20 Rack Power Cable	39Y7938
Power Cord Taiwan AC plug 10A/250V, 2.8M;	00CG265
Power Cord Taiwan AC plug 15A/125V; 2.8M;	00CG267

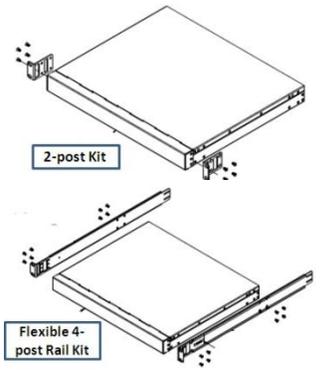
Air Inlet Duct - Optional

The following air inlet ducts extended the depth of the RackSwitch, enhancing the seal required to prevent pre-heated air recirculation within the rack helping to better manage cold aisle airflow with a direct path to the switch. It is designed to install in industry standard 19 inch EIA compliant racks. This option is not something required, and only used in unique scenarios were clients need additional assistance managing air flow. Also these air inlet ducts requires the use of the Adjustable 19" 4 Post Rail Kit (PN 00D6185 or 00MY163).

	G7028/52	G8000	G8052	G8124E	G8264	G8264T	G8264CS	G8272	G8296	G8316	G8332
Air Inlet Duct for 487 mm RackSwitch (PN 00FM507)								X			
Air Inlet Duct for 2U 483 mm RackSwitch (PN 00MY160)									X		
Air Inlet Duct for 483 mm RackSwitch (PN 00D6060)					X	X	X			X	X
Air Inlet Duct for 442 mm RackSwitch (PN 00D6061)			X								
Air Inlet Duct for 382 mm RackSwitch (PN 00D6062)	X	X		X							

Rack Kits

- All RackSwitch products ship with 2-post rack kits, which are included in an accessory box, inside of the main switch box. (No additional purchase is required)
- Lenovo Adjustable 19" 4-Post Rail Kit (1U) can be purchased separately (Part Number 00D6185) which can be adjusted to fit a variety of server racks with a depth between 27 and 32 inches.
- For NeXtScale clients in order to close the cabinet doors, we have the Lenovo Recessed 19" 4-post Rail Kit (Part # 00CG089) which is recessed approximately six inches and provides functionality of a drawer which allows for the front-to-rear RackSwitch offerings to be pulled out of the rack and serviced without disconnecting cables.
- For clients using a 2U RackSwitch – the Lenovo Adjustable/Recessed 19" 4-Post Rail Kit (2U) can be purchased separately (Part Number 00MY163) which can be adjusted to fit a variety of server racks with a depth between 27 and 32 inches or used in a NeXtScale rack which is recessed approximately six inches and provides functionality of a drawer which allows for the front-to-rear RackSwitch offerings to be pulled out of the rack and serviced without disconnecting cables



Spare Parts for the RackSwitch Products

While the RackSwitch products do come standard with all the necessary fans and power supplies for redundancy, some clients have expressed the desire to have spare parts available for easy hot-swap replacement. In addition, we also have made the console cable kit available.

Spare Parts	G8052	G8264	G8264T	G8264CS	G8272	G8296	G8316	G8332
Fan Assembly								
Hot-Swap, Rear-to-Front Fan Assembly Spare (PN 00D6071)	X	X	X	X			X	X
Hot-Swap, Front-to-Rear Fan Assembly Spare (PN 00D6073)	X	X	X	X			X	X
Lenovo Hot-Swap, Front-to-Rear Fan Assembly (G8272) (PN 00FM440)					X			
Lenovo Hot-Swap, Rear-to-Front Fan Assembly (G8272) (PN 00FM441)					X			
Lenovo Hot-Swap, Front-to-Rear 2U Fan Assembly (PN 00AY180)						X		
Lenovo Hot-Swap, Rear-to-Front 2U Fan Assembly (PN 00AY184)						X		
Power Supply								
Lenovo RackSwitch Hot-Swap, Rear-to-Front 450W Power Supply (PN 49Y7938)	X	X					X	
Lenovo RackSwitch Hot-Swap, Front-to-Rear 450W Power Supply (PN 49Y7937)	X	X					X	
Lenovo RackSwitch Hot-Swap, Rear-to-Front 460W Power Supply (PN 00FM443)					X			
Lenovo RackSwitch Hot-Swap, Front-to-Rear 460W Power Supply (PN 00FM442)					X			
Lenovo RackSwitch Hot-Swap, Front-to-Rear 550W CFF Power Supply (PN 00D5961)				X				X
Lenovo RackSwitch Hot-Swap, Front-to-Rear 750W CFF Power Supply (PN 00D5857)			X					
Lenovo RackSwitch Hot-Swap, Front-to-Rear 750W CFF Power Supply (PN 00MY174)						X		
Lenovo RackSwitch Hot-Swap, Rear-to-Front 750W CFF Power Supply (PN 00D5858)			X	X		X		X
Miscellaneous								
Console Cable Kit Spare (System x PN 90Y9462)	X	X	X	X	X	X	X	X

ServicePac Upgrades for the RackSwitch Products

All Lenovo RackSwitch (MTM 7159) come with 3-year hardware warranty, with Next Business Day (NBD), 9x5, Customer Replaceable Unit (CRU) warranty service in addition to a three year of software license. ServicePac® offerings are available (in select countries) for hardware warranty upgrade options, below are the United States offerings.

	G7028	G7052	G8052	G8124E	G8264
3 year Onsite Repair 9x5 Next Business Day	00WW534	00WW535	00WW821	00WW533	00WW531
3 year Onsite Repair 9x5 4 Hour Response	00GW061	00WW536	00WW822	91Y7320	91Y6551
3 year Onsite Repair 24x7 4 Hour Response	00GW062	00NT255	00WW816	91Y7321	91Y6552
3 year Onsite Repair 24x7 2 Hour Response	00GW063	00WW537	00WW823	91Y7322	91Y6553
4 year Onsite Repair 9x5 Next Business Day	00GW064	00NT256	00WW817	91Y7323	91Y6554
4 year Onsite Repair 9x5 4 Hour Response	00GW065	00WW538	00WW824	91Y7324	91Y6555
4 year Onsite Repair 24x7 4 Hour Response	00GW066	00NT257	00WW818	91Y7325	91Y6556
4 year Onsite Repair 24x7 2 Hour Response	00GW067	00WW539	00WW825	9177326	91Y6557
5 year Onsite Repair 9x5 Next Business Day	00GW068	00NT258	00WW819	91Y7327	91Y6558
5 year Onsite Repair 9x5 4 Hour Response	00GW069	00NT259	00WW826	91Y7328	91Y6559
5 year Onsite Repair 24x7 4 Hour Response	00GW070	00WW540	00WW820	91Y7329	91Y6560
5 year Onsite Repair 24x7 2 Hour Response	00GW071	00WW541	00WW827	91Y7330	91Y6561
	G8264CS	G8272	G8296	G8832	
3 year Onsite Repair 9x5 Next Business Day	00WW530	00WW781	00WW801	00WW841	
3 year Onsite Repair 9x5 4 Hour Response	91Y6532	00WW782	00WW802	00WW842	
3 year Onsite Repair 24x7 4 Hour Response	91Y6533	00WW776	00WW796	00WW836	
3 year Onsite Repair 24x7 2 Hour Response	91Y6534	00WW783	00WW803	00WW843	
4 year Onsite Repair 9x5 Next Business Day	91Y6535	00WW777	00WW797	00WW837	
4 year Onsite Repair 9x5 4 Hour Response	91Y6536	00WW784	00WW804	00WW844	
4 year Onsite Repair 24x7 4 Hour Response	91Y6537	00WW778	00WW798	00WW838	
4 year Onsite Repair 24x7 2 Hour Response	91Y6538	00WW785	00WW805	00WW845	
5 year Onsite Repair 9x5 Next Business Day	91Y6539	00WW779	00WW799	00WW839	
5 year Onsite Repair 9x5 4 Hour Response	91Y6540	00WW786	00WW806	00WW846	
5 year Onsite Repair 24x7 4 Hour Response	91Y6541	00WW780	00WW800	00WW840	
5 year Onsite Repair 24x7 2 Hour Response	91Y6542	00WW787	00WW807	00WW847	

Remote Technical Support for 7159 MTM's	
RTS for SAN Infrastructure & Networking Devices 1 year	00VL548
RTS for SAN Infrastructure & Networking Devices 3 year	00VL549

It is important to note that embedded switches for Flex Systems and BladeCenter take on the warranty or upgrade of the chassis they are installed in.

Lenovo Networking Products and Options Catalog

Most IBM branded RackSwitch's (7309 or 8036 MTM's) come with 3-year hardware warranty, with Next Business Day (NBD), 9x5, Customer Replaceable Unit (CRU) warranty service in addition to a three year of software upgrades. The G8316 and G8332 only come with a 1-year hardware warranty, with Next Business Day (NBD), 9x5, Customer Replaceable Unit (CRU) warranty service in addition to a one year of software upgrades. IBM ServicePac® offerings are available (in select countries) for hardware warranty upgrade options.

(MTM 7309)	G7028	G7052	G8000	G8124E	G8052 G8264T G8264CS	G8264
3 year Onsite Repair 9x5 4 Hour Response	00GW061	00WW536	91Y7301	91Y7320	91Y6532	91Y6551
3 year Onsite Repair 24x7 4 Hour Response	00GW062	00NT255	91Y7302	91Y7321	91Y6533	91Y6552
3 year Onsite Repair 24x7 2 Hour Response	00GW063	00WW537	91Y7303	91Y7322	91Y6534	91Y6553
4 year Onsite Repair 24x7 Next Business Day	00GW064	00NT256	91Y7304	91Y7323	91Y6535	91Y6554
4 year Onsite Repair 9x5 4 Hour Response	00GW065	00WW538	91Y7305	91Y7324	91Y6536	91Y6555
4 year Onsite Repair 24x7 4 Hour Response	00GW066	00NT257	91Y7306	91Y7325	91Y6537	91Y6556
4 year Onsite Repair 24x7 2 Hour Response	00GW067	00WW539	91Y7307	91Y7326	91Y6538	91Y6557
5 year Onsite Repair 24x7 Next Business Day	00GW068	00NT258	91Y7308	91Y7327	91Y6539	91Y6558
5 year Onsite Repair 9x5 4 Hour Response	00GW069	00WW540	91Y8309	91Y7328	91Y6540	91Y6559
5 year Onsite Repair 24x7 4 Hour Response	00GW070	00NT259	91Y7310	91Y7329	91Y6541	91Y6560
5 year Onsite Repair 24x7 2 Hour Response	00GW071	00WW541	91Y7311	91Y7330	91Y6542	91Y6561
(MTM 8036)	G8316	G8332				
1 year Onsite Repair 9x5 4 Hour Response	91Y9710	00GW429				
1 year Onsite Repair 24x7 4 Hour Response	91Y9711	00GW430				
1 year Onsite Repair 24x7 2 Hour Response	91Y9712	00GW431				
2 year Onsite Repair 9x5 Next Business Day	91Y9713	00GW432				
2 year Onsite Repair 9x5 4 Hour Response	91Y9714	00GW433				
2 year Onsite Repair 24x7 4 Hour Response	91Y9715	00GW434				
2 year Onsite Repair 24x7 2 Hour Response	91Y9716	00GW435				
3 year Onsite Repair 9x5 Next Business Day	91Y9703	00GW422				
3 year Onsite Repair 9x5 4 Hour Response	91Y9704	00GW423				
3 year Onsite Repair 24x7 4 Hour Response	91Y9705	00GW424				
3 year Onsite Repair 24x7 2 Hour Response	91Y9706	00GW425				
5 year Onsite Repair 9x5 Next Business Day	00WW548	00WW550				
5 year Onsite Repair 9x5 4 Hour Response	00WW549	00WW551				
5 year Onsite Repair 24x7 4 Hour Response	91Y9707	00GW426				
5 year Onsite Repair 24x7 2 Hour Response	91Y9708	00GW427				

Remote Technical Support for 7309 and 8036 MTM's	
RTS for SAN Infrastructure & Networking Devices 1 year	00VL548
RTS for SAN Infrastructure & Networking Devices 3 year	00VL549

Networking Software Offerings

Lenovo Networking Plug-in for VMware vRealize Orchestrator

The Lenovo Networking Plug-in for VMware vRealize Orchestrator enables network administrators to easily and quickly deploy new networking services for cloud based enterprise and SMB networks. Integrated with this Lenovo Networking plug-in is an extensive catalog of Workflows and Actions designed to enable the vast majority of new network service provisioning actions to be executed using only vRealize Orchestrator.

This comprehensive collection of Lenovo Networking developed tools utilizes network configuration best practices for convenience, reliability and rapid service orchestration. Enabling networking capability is part of a Lenovo investment to support VMware cloud ecosystems and allow resource configuration using a single workflow to create a virtual machine, provision server resources and configure the associated switch network - thereby greatly reducing the effort required to deploying a new service. [Download software](#)

Lenovo Networking Content Pack for VMware vRealize Log Insight

The VMware vRealize Log Insight product delivers automated log management through log analytics, aggregation and search capabilities. The Lenovo Networking Pack for vRealize Log Insight enables the VMware Log Insight product to analyze the system logs and events issued by numerous instances of Lenovo RackSwitch and Flex System networking equipment. This content pack and associated user guide can be easily downloaded from the VMware Cloud Management Marketplace website. With this pack, administrators are provided with quick access to Lenovo Networking equipment trending information and consolidated log information that yields quicker resolution of issues as they occur and provides predictive capabilities for a number of equipment conditions. [Download software](#)

Lenovo Networking Bundle for VMware vRealize

The Lenovo Networking Bundle for VMware vRealize is a Subscription and Support offering to support the Lenovo Networking Plug-in for VMware vRealize Orchestrator and Lenovo Networking Content Pack for VMware vRealize Log Insight. This Bundle features two unit sizes of 1 switch and 250 switches and three different time coverage increments available (1, 3 & 5 years). These offerings are sold through normal Lenovo Sales channels and are distributed through IBM Passport Advantage. The Network Bundle covers the Orchestrator plug-in and Log-insight content pack with a single license. Terms of Service include response provided by next business day. Support is provided during business hours (Monday – Friday). A valid license provides entitlement to software updates and patches during the contract period.

Lenovo Networking Bundle for VMware vRealize	Number of Switches Supported	Price	PID	US/AP/Can Part Numbers	EMEA/LA Part Numbers
1 Year Subscription & Support	1 Switch Supported	\$85 USD	5641-NV1	00YC220	00YC226
1 Year Subscription & Support	250 Switches Supported	\$21,250 USD	5641-NV1	00YC221	00YC227
3 Year Subscription & Support	1 Switch Supported	\$150 USD	5641-NV3	00YC222	00YC228
3 Year Subscription & Support	250 Switches Supported	\$37,500 USD	5641-NV3	00YC223	00YC229
5 Year Subscription & Support	1 Switch Supported	\$195 USD	5641-NV5	00YC224	00YC230
5 Year Subscription & Support	250 Switches Supported	\$48,750 USD	5641-NV5	00YC225	00YC231

Lenovo Networking Plug-in for OpenStack Neutron

The Lenovo Networking Plug-in for OpenStack Neutron enables network administrators to deploy new networking services for OpenStack based enterprise and SMB networks. Integrated with this Lenovo Networking plug-in is a catalog of tools designed to enable a substantial number of new network service provisioning actions to be executed for OpenStack based data centers. [Download software](#)

Lenovo Networking Products and Options Catalog

Blue Medora vRealize Operations Management Pack for Lenovo Compute

The Blue Medora vRealize Operations Management Pack for Lenovo Compute extends VMware vRealize Operations (vROps) by enabling customers to gain comprehensive visibility and insights into the performance and health of their Lenovo Compute workloads running on VMware.

With the Management Pack for Lenovo Compute, administrators are able to manage, monitor, and troubleshoot their entire Lenovo Compute environment within a single console. The Management Pack for Lenovo Compute monitors Lenovo rack servers and flex devices remotely. It connects with either the XClarity user interface or Lenovo Compute hardware directly to retrieve data regarding resources. [More information / Download a trial version](#)

Blue Medora vRealize Operations Management Pack for Lenovo Network

The Blue Medora vRealize Operations Management Pack for Lenovo Network extends VMware vRealize Operations (vROps) by enabling customers to gain comprehensive visibility and insights into the performance, capacity, and health of their Lenovo Network workloads running on VMware.

With the Management Pack for Lenovo Network, administrators are able to manage, monitor, and troubleshoot their entire Lenovo Network environment within a single console. The Management Pack for Lenovo Network monitors Lenovo rack switches remotely. It connects via SNMP v2c to Lenovo Network hardware to retrieve data regarding resources. [More Information / Download a trial version](#)

Lenovo Networking Products and Options Catalog

Lenovo Switch Center

Lenovo Switch Center v8.1 provides remote monitoring and management of Ethernet and converged switches from Lenovo. It is designed to simplify and centralize the management of your BladeCenter®, Flex System™ and RackSwitch Ethernet and converged switches from Lenovo Networking. [Download trial software](#)

Numbers to use for ordering one-year software subscription and support are: 5641-N81 (System x – SEO – order number)		
Number of Switches	US, Canada, AP and Japan	Latin America and EMEA
20	00KH167	00KH185
50	00KH168	00KH186
100	00KH169	00KH187
250	00KH170	00KH188
500	00KH171	00KH189
1000	00KH172	00KH190

Numbers to use for ordering three-year software subscription and support are: 5641-N83 (System x – SEO – order number)		
Number of Switches	US, Canada, AP and Japan	Latin America and EMEA
20	00KH173	00KH191
50	00KH174	00KH192
100	00KH175	00KH193
250	00KH176	00KH194
500	00KH177	00KH195
1000	00KH178	00KH196

Numbers to use for ordering five-year software subscription and support are: 5641-N85 (System x – SEO – order number)		
Number of Switches	US, Canada, AP and Japan	Latin America and EMEA
20	00KH179	00KH197
50	00KH180	00KH198
100	00KH181	00KH199
250	00KH182	00KH200
500	00KH183	00KH201
1000	00KH184	00KH202

Brocade & Lenovo Overview – Storage networking Partnership

Brocade and Lenovo have partnered to deliver reliable, cost-effective Fibre Channel and Converged fabric architectures. Lenovo server platforms integrate Brocade offerings—and the partners' solutions are found in enterprise data centers worldwide. The Flex System Cloud solution and the Flex System Solution for Oracle RAC support scalable, high-performance cloud storage infrastructures.

The Brocade–Lenovo partnership brings our joint customers unrivaled networking solutions that are designed to exceed the most stringent requirements for performance, availability, and management—both today and into the future. Together, Lenovo and Brocade help customers to: Support critical business applications through virtualized servers and storage; Achieve Flex Server Fibre Channel over Ethernet connectivity with self-healing Ethernet networks; Enjoy enhanced storage management capabilities through advanced Brocade Fabric Vision technology and Optimize workloads such as analytics apps through integrated server and high-speed storage networks

Brocade offers a large portfolio of Data Center storage switches, including Top of Rack Fibre Channel switches as well as embedded Ethernet, Convergence and Fibre Channel switches for BladeCenter and Flex System. The following provides details on the options available for these switches, including Part Numbers (PN).

Fibre Channel Overview

With Brocade Fibre Channel technology-based backbones and switches, you've got the firepower to deliver high-performance connectivity across the campus or across the globe. Scale your network on demand—move more data more places—as you keep costs of ownership reined in.

Fibre Channel (FC) is deployed in 90 percent of the Fortune 1000 data centers making it the de facto standard for storage networking in the data center. Brocade has a dominant share of that fibre channel market with over 70 percent and was the industry leader in launching Gen 5 Fibre Channel which delivers unmatched reliability, scalability and 16 Gbps performance which are especially critical for unleashing the full potential of high-density server virtualization, cloud architectures and Flash storage.

In addition Brocade offers "SAN Health", a free utility available ([Download](#)) that allows you to create: Comprehensive documentation; Performance graphs; Detailed topology diagrams and Highlighting of potential problems or concerns (performance, end of service life etc...). SAN Health supports any Brocade, McData, and Cisco MDS SAN switches. It is extremely easy to setup and run, and only takes a few minutes to give you a comprehensive view of the customer SAN storage environment from hosts, OS, HBAs, switches, and storage devices attached to the fabric.

Brocade Network Advisor

Brocade Network Advisor is the full network-lifecycle tool that brings all your information together into one simple, easy to use command-and-control application. Just turn it on and start working—all of Brocade's best practices are built in. [More Information](#) [Free Trial](#)

VMware Solution Exchange – [More Info](#)

Some of the solutions include: Brocade SAN Content Pack for vRealize Log Insight; Brocade IP Analytics Pack for VMware vRealize Operations; Brocade Virtual Traffic Manager (vTM) Plugin for vRealize Orchestrator; Management Pack for Storage Devices ; Brocade and VMware Joint Validated VDI Solution; Brocade Virtual Traffic Manager and Brocade SAN Analytics Management Pack

Lenovo Fibre Channel SAN Switch Offerings

The following products help Lenovo build solutions allowing fibre channel connectivity from our servers/bladed chassis and our fibre channel storage offerings ([S3200](#), [S3200](#) and [IBM Storwize](#)) allowing us to build end to end solutions. See [Quick Reference guide](#) for a quick comparison.

Lenovo B300 FC SAN Switch (Part # 3873AR3/HC4) [Product Info](#)

This switch provides an affordable, flexible foundation for entry-level SANs and an edge switch for core-to-edge SAN environments. It ships as an 8-port FC switch, with eight 8Gbps SWL SFP transceivers and supports scalability to 16 or 24 ports using the Lenovo B300 8 Port Software License Pack which includes eight 8Gbps SWL SFP transceivers (POD – PN 00WF814).



Lenovo B6505 FC SAN Switch (3873AR4/AR5/HC5) [Product Info](#)

This switch provides exceptional price/performance value, combining flexibility (supporting 2, 4, 8 or 16 Gbps), simplicity, and enterprise-class functionality with 12 ports standard (AR4 includes 12 x 8Gbps SWL transceivers and AR5 includes 12 x 16Gbps SWL transceivers). The optional Lenovo B6505 12 Port Software License Pack (POD) include twelve transceivers 8Gbps with part # 00WF812 and 16Gbps with part # 00WF810) to scale up to 24-ports. Optional dual redundant hot-swappable power supply part number 00MY807. Includes support for D-Port.



Lenovo B6510 FC SAN Switch (3873BR2/BR3/HC6) [Product Info](#)

This switch provides exceptional price/performance value, combining flexibility (supporting 2, 4, 8 or 16 Gbps), and enterprise-class functionality with 24 ports standard (BR2 includes 24 x 8Gbps SWL transceivers and BR3 includes 24 x 16Gbps SWL transceivers). The optional Lenovo B6510 12 Port Software License Pack (POD) include twelve 8Gbps SWL transceivers with part # 00WF808 and 16Gbps with part # 00WF806) to scale up to 48-ports. Includes redundant power supplies, plus support for D-Port & FICON.



Shows the max. number of each option supported:	Part #	B300	B6505	B6510
8Gb Transceiver (SFP+/Omni Port) – leverage LC-LC OM3 cables				
Brocade 8GB SW SFP Transceiver	88Y6416			
Brocade 8GB 10KM LW SFP Transceiver	00MY764	24	24	48
Brocade 8GB 25KM ELW SFP Transceiver	00MY766			
16Gb Transceiver (SFP+/Omni Port) – leverage LC-LC OM3 cables				
Brocade 16GB SW SFP Transceiver	88Y6393			
Brocade 16GB 10KM LW SFP Transceiver	00MY768		24	48
Brocade 16GB 25KM ELW SFP Transceiver	00MY770			
Software Licenses				
Lenovo B300/6505 S/W, ISL Trunking	00MY787	X	X	
Lenovo B300/6505 S/W, Fabric Vision	00MY788	X	X	
Lenovo B300/6505 S/W, Extended Fabric	00MY789	X	X	
Lenovo B300 S/W, Full Fabric (EPORT Upgrade)	00MY810	X		
Lenovo B300/6505 S/W, Enterprise Bundle (TRK, FV, EF)	00MY790	X	X	
Lenovo B6510 S/W, ISL Trunking	00MY778			X
Lenovo B6510 S/W, Fabric Vision	00MY779			X
Lenovo B6510 S/W, Extended Fabric	00MY780			X
Lenovo B6510 S/W, Integrated Routing	00MY776			X
Lenovo B6510 S/W, Enterprise Bundle (TRK, FV, EF)	00MY781			X
Lenovo B6510 S/W, Integrated 10G FC	00MY777			X
Brocade 10Gb FC SWL SFP	00YH933			X
Brocade 10Gb FC LWL SFP	00YH929			X
Rail Kits – all come standard with a fixed 4-port Kit				
Lenovo B300 Slide Rack mount kit	00MY794	X		
Lenovo B65xx mid-mount rack kit	00MY760		X	X

OM3 - 50µ (2000 mHz) Multimode up to 150m for 8GB FC and up to 100m for 16Gb FC.

Power cables sold separately see the power cords listed earlier.

Brocade Fibre Channel Offerings

The following products help Lenovo build solutions allowing fibre channel connectivity from our servers/bladed chassis and our fibre channel storage offerings ([S3200](#), [S3200 and IBM Storwize](#)) allowing us to build end to end solutions. See [Quick Reference guide](#) for a quick comparison.

Brocade 300 FC SAN Switch (Part # 3873AR1/HC1) [Product Info](#)

This switch provides an affordable, flexible foundation for entry-level SANs and an edge switch for core-to-edge SAN environments. It ships as an 8-port FC switch, and supports scalability to 16 or 24 ports using the Brocade 300 8 Port Software License Pack (POD – PN 00MT455).



Brocade 6505 Fibre Channel Switch (3873AR2/HC2) [Product Info](#)

This switch provides exceptional price/performance value, combining flexibility (supporting 2, 4, 8 or 16 Gbps), simplicity, and enterprise-class functionality with 12 ports standard and the option (Brocade 6505 12 Port Software License Pack (POD) part number 00MT457) to scale up to 24-ports. Optional dual redundant hot-swappable power supply part number 00MY807. Includes support for D-Port.



Brocade 6510 Fibre Channel Switch (3873BR1/HC3) [Product Info](#)

This switch provides exceptional price/performance value, combining flexibility (supporting 2, 4, 8 or 16 Gbps), and enterprise-class functionality with 24 ports standard and the option (Brocade 6510 12 Port Software License Pack (POD) part number 00MT459) to scale up to 48-ports. Includes support for D-Port & FICON.



Shows the max. number of each option supported:	Part Number	300 Switch	6505 Switch	6510 Switch
8Gb Transceiver (SFP+/Omni Port) – leverage LC-LC OM3 cables				
Brocade 8GB SW SFP Transceiver	88Y6416			
Brocade 8GB 10KM LW SFP Transceiver	00MY764	24	24	48
Brocade 8GB 25KM ELW SFP Transceiver	00MY766			
16Gb Transceiver (SFP+/Omni Port) – leverage LC-LC OM3 cables				
Brocade 16GB SW SFP Transceiver	88Y6393			
Brocade 16GB 10KM LW SFP Transceiver	00MY768		24	48
Brocade 16GB 25KM ELW SFP Transceiver	00MY770			
Software Licenses				
Brocade 300/6505 S/W, ISL Trunking	00MY787	X	X	
Brocade 300/6505 S/W, Fabric Vision	00MY788	X	X	
Brocade 300/6505 S/W, Extended Fabric	00MY789	X	X	
Brocade 300 S/W, Full Fabric (EPORT Upgrade)	00MY810	X		
Brocade 300/6505 S/W, Enterprise Bundle (TRK, FV, EF)	00MY790	X	X	
Brocade 6510 S/W, ISL Trunking	00MY778			X
Brocade 6510 S/W, Fabric Vision	00MY779			X
Brocade 6510 S/W, Extended Fabric	00MY780			X
Brocade 6510 S/W, Integrated Routing	00MY776			X
Brocade 6510 S/W, Enterprise Bundle (TRK, FV, EF)	00MY781			X
Rail Kits – all come standard with a fixed 4-port Kit				
Brocade FC SAN 300 Slide Rack mount kit	00MY794	X		
Brocade FC SAN 65xx mid-mount rack kit	00MY760		X	X

OM3 - 50µ (2000 mHz) Multimode up to 150m for 8GB FC and up to 100m for 16Gb FC.

Power cables sold separately see the power cords listed earlier.

Lenovo Networking Products and Options Catalog

FC SAN Firmware Renewals

Lenovo branded come with 3-year firmware entitlement, while the Brocade branded come with 1-year firmware entitlement. Additional years can be combined for beyond 3 years.

<i>Worldwide Offerings</i>	B300/300	B6505/6505	B6510/6510
1 year Firmware Renewal	00YH944	00YH952	00YH960
2 year Firmware Renewal	00YH945	00YH953	00YH961

ServicePac Upgrades for the Lenovo B-Series or Brocade FC SAN Switches

All Lenovo B-Series or Brocade Top-of-Rack switches come with 1-year hardware warranty, with Next Business Day (NBD), 9x5, Customer Replaceable Unit (CRU) warranty service. ServicePac® offerings are available (in select countries) for hardware warranty upgrade options. US only – Other Countries – [Click Here](#).

US Offerings	B300/300	B6505/ 6505	B6510/6510
3 year Onsite Repair 9x5 Next Business Day	00VL466	00VL477	00VL488
3 year Onsite Repair 24x7 4 Hour Response	00VL467	00VL478	00VL489
3 year Onsite Repair 24x7 2 Hour Response	00VL468	00VL479	00VL490
5 year Onsite Repair 24x7 4 Hour Response	00VL469	00VL480	00VL491
5 year Onsite Repair 24x7 2 Hour Response	00VL470	00VL481	00VL492
Maintenance Agreement PAC's			
1 year Onsite Repair 9x5 Next Business Day	00VL471	00VL482	00VL493
1 year Onsite Repair 24x7 4 Hour Response	00VL472	00VL483	00VL494
1 year Onsite Repair 24x7 2 Hour Response	00VL473	00VL484	00VL495
2 year Onsite Repair 9x5 Next Business Day	00VL474	00VL485	00VL496
2 year Onsite Repair 24x7 4 Hour Response	00VL475	00VL486	00VL497
2 year Onsite Repair 24x7 2 Hour Response	00VL476	00VL487	00VL498
Remote Technical Services			
	Lenovo B300/B6505/6510 or Brocade 300 / 6505 / 6510		
1 Year – RTS for SAN Infrastructure and Networking Devices	00VL548		
3 Year – RTS for SAN Infrastructure and Networking Devices	00VL449		

Brocade Offerings for Flex Systems

Lenovo Flex System FC5022 16Gb SAN Switch – [Product Guide](#)

The FC5022 16Gb SAN Switch offerings are a Gen 5 Fibre Channel (FC) high-density, with up to 48-ports that operate at 16 and 8 Gbps FC speeds and are used in the Lenovo Flex System chassis. Each module provide up to 28 internal ports to compute nodes by way of the Flex midplane and up to 20 external SFP+ ports. The FC5022 SAN switch modules deliver unmatched scalability and flexibility for Lenovo Flex System users wanting to connect directly into 8 or 16 Gbps FC storage, or to an upstream storage area network (SAN). Plus the FC5022 can be configured in Access Gateway mode using NPIV for simple upstream connectivity or in Full Fabric mode for more advance switching as part of the larger fibre channel fabric. The switch offers end-to-end 16 Gb with backwards compatibility to 8 Gb and 4 Gb to the SAN connectivity. Monitoring and management are simplified using end-to-end Brocade tools, such as Web Tools and the Brocade Network Advisor (BNA – sold separately through Brocade channels).The FC5022 comes in three different models and can be upgraded to support more ports as clients require;



- **Entry FC5022 12-port model** (Part Number = 88Y6374 / FC 3770) is initially licensed for twelve ports (internal or external) ideal for clients looking for entry-cost for partial chassis deployments. (Support upgrade 1 or upgrade 2 in any order. No transceivers included.
- **FC5022 24-port model** (Part Number = 00Y3324 / FC ESW5) is initially licensed for twenty-four ports (internal or external) ideal for clients looking for entry-cost for full chassis deployments. Includes two 16Gbps FC SWL SFP+ transceivers.
- **Enterprise FC5022 ESB 24-port model** (Part Number = 90Y9356 / FC 3771) is initially licensed for twenty-four ports (internal or external) and includes software features like ISL Trunking, Fabric Vision, Advanced Performance Monitoring, Fabric Watch, Extended Fabrics and Server Application Optimization standard. No transceivers included.
- **Feature on Demand Upgrade 1** (Part Number = 88Y6382 / FC 3772) provides a license for activating another twelve ports (internal or external) of the Entry FC5022 12-port model (88Y6374) only
- **Feature on Demand Upgrade 2** (Part Number = 88Y6386 / FC 3773) provides a license for activating another twenty ports (internal or external) and can be applied to any models above.
- **ISL Trunking License** - Provides the ability to aggregate multiple physical links into one logical link for enhanced network performance and fault tolerance. This is the only frame-based load balancing solution for FC SAN networks. An alternative load balancing method is using Exchange-based load balancing. (Part Number 00Y3322 / FC ESW4)

Transceivers and Cables for Brocades Flex System Switches

The following table assumes that all EN4023 and FC5022 ports licenses have been enabled.

Shows the max. number of each option supported per module	Part Number	FC5022
8Gb Fibre Channel Transceivers		
Brocade 8Gb FC SWL SFP+ Transceiver	88Y6416	20**
Brocade 8GB 10KM LW SFP Transceiver *	00MY764	
Brocade 8GB 25KM ELW SFP Transceiver *	00MY766	
16Gb Fibre Channel Transceivers		
Brocade 16Gb FC SWL SFP+ Transceiver	88Y6393	20**
Brocade 16GB 10KM LW SFP Transceiver *	00MY768	
Brocade 16GB 25KM ELW SFP Transceiver *	00MY770	

* These options are officially supported by Brocade and are part of the Lenovo portfolio for sells with the Brocade 300, 6505 and 6510. Plans are in place to update configurators and Lenovo support documents but this could take a while to be reflected.

** When using ELW SFPs over distances over 10km, Brocade’s Extended Fabric feature upgrade is recommended to drive maximum bandwidth over the extended links and this feature is included in the FC5022 ESB switch module (90Y9357). The ELW SFPs can be used with the 88Y6375 and 00Y3325 switches but the maximum bandwidth supported over these long distances diminish as the length increases. Please see the Fabric OS Admin guides for more details.

Brocade Switches for BladeCenter

Brocade 8Gb SAN Switch Modules– [Product Guide](#)

The Brocade 8 Gb SAN Switch Modules deliver embedded Fibre Channel switching with the Fibre Channel throughput performance (8 Gbps). Brocade offers 3 different models and can be upgraded to support more ports as clients require:

- **Entry 10-port model** (Part Number = 44X1921 / FC 5481) is initially licensed for ten ports (internal or external) ideal for clients looking for entry-cost for partial chassis deployments and can be upgraded to 20-ports in future via 10-port upgrade (Part Number 32R1822).
- **20-port model** (Part Number = 44X1920 / FC 5481) supports 14 internal ports and 6 internal ports ideal for clients looking for entry-cost for full chassis deployments.
- **Enterprise 20-port model** (Part Number = 42C1828 / FC 5764) supports 14 internal ports and 6 internal ports ideal for clients looking for entry-cost for full chassis deployments and includes software features like ISL Trunking, Adaptive Networking, Advanced Performance Monitoring, Fabric Watch, Extended Fabrics and Server Application Optimization standard.



Software and Transceivers

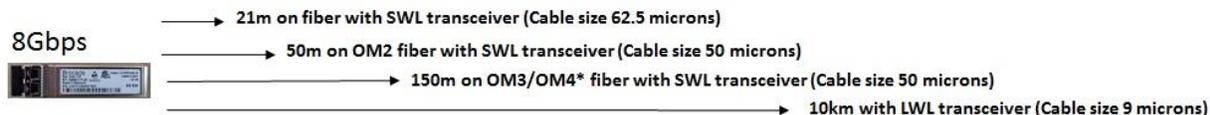
Software License	Part number	Supported
Adaptive Networking - Features including fabric Quality of Service and Ingress Rate Limiting	45W0510	X
Advanced Performance Monitor (APM) - Increases end-to-end visibility into the fabric and enables more accurate performance reporting	45W0508	X
Extended Fabrics - Enables native FC connectivity for distances over 10 km	45W0505	X
Fabric Watch (FW) - Enables proactive monitoring of critical switch ops & automatically alerts users when configurable thresholds crossed	45W0504	X
Inter-Switch Link (ISL) Trunking - Enables higher utilization of links with hardware-based frame-by-frame load balancing versus exchange-based	26K5607	X
8Gb Fibre Channel Transceivers		
Brocade 8Gb FC SFP+ Transceiver	88Y8416	8

Fiber Channel I/O Connectivity

Fibre Channel has gone through a number of enhancements over the years, as we have moved from 1Gbps – 2Gbps – 4Gbps to what is more common today of 8 and 16Gbps Fibre Channel. Brocade switches sold by Lenovo do have backward support for previous generation speeds, details can be found in technical documentation. This section is intended to help recommend cables and transceivers for Lenovo’s Brocade switches based on distances required.

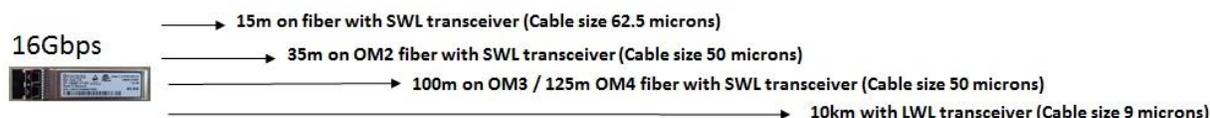
8 Gigabit Fibre Channel

Short Wave Length (SWL) and OM3 850nm cabling are the most common and provides sufficient distances within the data center of up to 150 meters. Clients wanting to leverage OM4 fibre, Gen 5 products can support with SWL transceivers. For those needing longer distances, the Long Wave Length (LWL) transceiver and 9 meter micron cabling can drive distances up to 10 kilometers using 9 micron single-mode long haul fiber (1310nm).



16 Gigabit Fibre Channel

Short Wave Length (SWL) and OM3 850 nm cabling provides sufficient distances within the data center of 100 to 125 meters (OM3 / OM4). For those needing longer distances, the Long Wave Length (LWL) transceiver and 9 meter micron cabling can drive distances up to 10 kilometers using 9 micron single-mode long haul fiber (1310nm).



For More Information

Lenovo Networking

<http://www.lenovo.com/networking>

Legal Information

© 2016 Lenovo. All rights reserved.

Availability: Offers, prices, specifications and availability may change without notice. Lenovo is not responsible for photographic or typographic errors. **Warranty:** For a copy of applicable warranties, write to: Warranty Information, 500 Park Offices Drive, RTP, NC, 27709, Attn: Dept. ZPYA/B600. Lenovo makes no representation or warranty regarding third-party products or services. **Trademarks:** Lenovo, the Lenovo logo, ThinkServer are trademarks or registered trademarks of Lenovo. Microsoft and Windows are registered trademarks of Microsoft Corporation. Intel, the Intel logo, Intel Core, Core Inside, Xeon and Xeon Inside are registered trademarks of Intel Corporation in the U.S. and other countries. Other company, product, and service names may be trademarks or service marks of others. Visit <http://www.lenovo.com/lenovo/us/en/safecomp.html> periodically for the latest information on safe and effective computing.

IBM x86 products are now products of Lenovo in the U.S. and other countries. Learn more at ibm.com/lenovo-acquisition

Other company, product and service names may be trademarks or service marks of others.

Lenovo reserves the right to change specifications or other product information without notice. References in this publication to Lenovo

products or services do not imply that Lenovo intends to make them available in all countries in which LENOVO operates. LENOVO PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Some jurisdictions do not allow disclaimer of express or implied warranties in certain transactions; therefore, this statement may not apply to you.

This publication may contain links to third party sites that are not under the control of or maintained by LENOVO. Access to any such third party site is at the user's own risk and LENOVO is not responsible for the accuracy or reliability of any information, data, opinions, advice or statements made on these sites. LENOVO provides these links merely as a convenience and the inclusion of such links does not imply an endorsement.

Information in this presentation concerning non-LENOVO products was obtained from the suppliers of these products, published announcement material or other publicly available sources. LENOVO has not tested these products and cannot confirm the accuracy of performance, compatibility or any other claims related to non-LENOVO products. Questions on the capabilities of non-LENOVO products should be addressed to the suppliers of those products.