Lenovo Networking Products and Options Catalog

Bringing speed and intelligence to the network edge

Lenovo Networking
Data Center Group

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Contents

Overview

Lenovo Networking offers a large portfolio of Data Center switches, including Top of Rack switches as well as embedded switches for Flex System and now Campus Networking. 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).
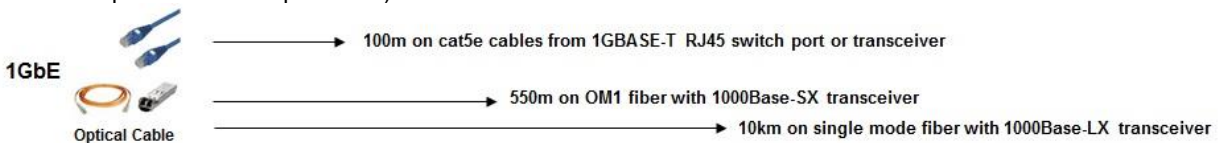
10GBase-T Ethernet

Cable:

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.

10GBASE-T SFP+ Transceiver:

The 10GBASE-T SFP+ Copper Transceiver is specifically designed for high speed communication that require 10GbE over Cat 6/6a/7 cable. It supports links up to 30m in length. Easily connect SFP+ optical ports with 10GBaseT copper ports (switch to switch, server to switch etc.).

Note: Does not support 1G

Use with:

- Flex: EN4093R, SI4093, SI4091

- TOR: G7028, G7052, G8052, G8124E, G8272, G8296

Scenario – Connecting server and/or storage appliances with 10GBASE-T RJ45 to a SFP+ network switch.
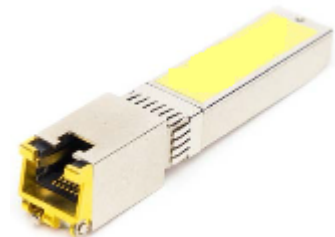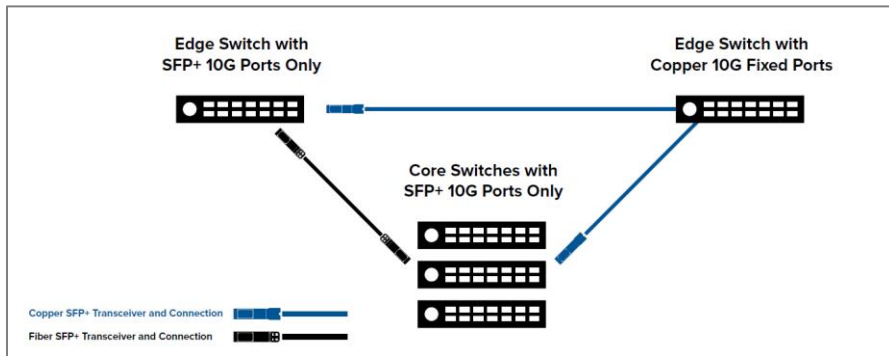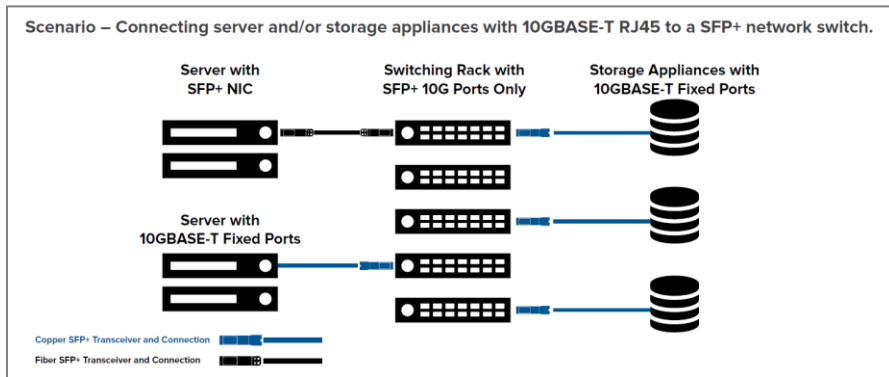
10 Gigabit Ethernet (SFP+)

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.
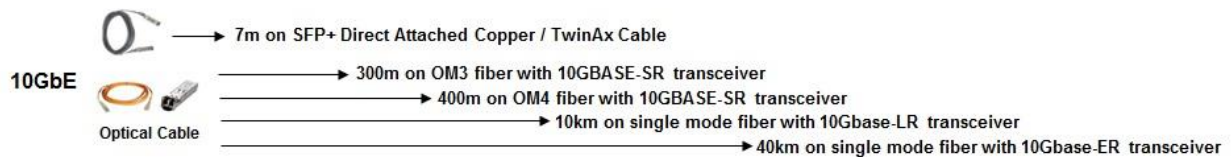
25 Gigabit Ethernet (SFP28)

The industry has been slow to adopt 40G technology at the server level. Instead, 25G is emerging as the speed and technology of choice. SFP28 ports allow break-out cables to provide speed and cabling options. The ThinkSystem NE2572 RackSwitch fills this need with 48 ports @ 25G SFP28 and 6 ports @ 100G QSFP28 and many speed and cabling options. The ThinkSystem NE2552E Flex Switch also functions in this category and uses the same cables

For 25 GbE links, customers can use SFP28 ports with 25 GbE SFP28 DAC cables for distances up to 5 meters or 25 GbE SFP28 active optical cables (AOCs) for distances up to 20 meters. The AOCs and DAC cables have SFP28 connectors on each end, and they do not need separate transceivers. For longer distances, the 25GBASE-SR SFP28 transceivers can be used for up to 70 meters on OM3 or up to 100 meters on OM4 MMF cables.

25GbE
- 5m SFP28 DAC
- 25m SFP28 AOC
- 70m on OM3 fiber-SR4 Transceiver
- 100m on OM4 MMF-SR4 Transceiver
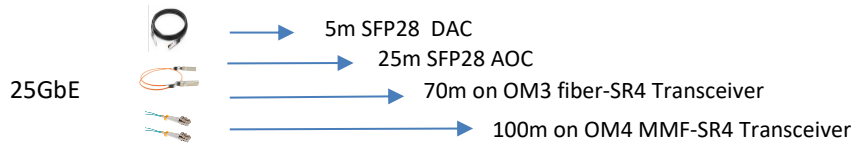
40 Gigabit Ethernet (QSFP+)

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.

40GbE
- 7m QSFP+ Direct Attach Copper Cable
- 100m on OM3 fiber with 40GBase-SR4/iSR4 transceiver
- 150m on OM4 fiber with 40GBase-SR4/iSR4 transceiver
- 300m on OM3 fiber and 10GBase-eSR4 transceiver
- 400m on OM4 fiber with 10GBase-eSR4 transceiver
- 10km on single mode fiber with 10Gbase-LR4 transceiver

Optical Cable
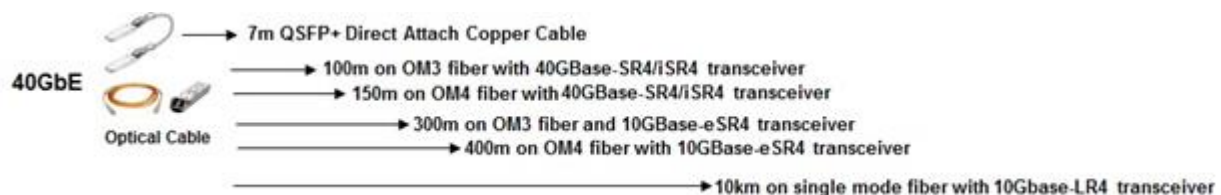
100 Gigabit Ethernet (QSPF28)

Higher speed spine switches are needed to support emerging 25GbE leaf switches. There are many cabling options available in this classification. See the ThinkSwitch NE10032 transceiver and cable chart above or go to the Product Guide for more details on the speed and cable options.

For 100 GbE links, customers can use the QSFP28 DAC cables for distances up to 5 meters or QSFP28 active optical cables (AOCs) for distances up to 20 meters. These DAC cables and AOCs have QSFP28 connectors on each end, and they do not need separate transceivers.

For longer distances, the 100GBASE-SR4 QSFP28 transceivers support distances up to 70 meters on OM3 or up to 100 meters on OM4 MMF cables. The 100GBASE-LR4 QSFP28 transceiver can be used for distances up to 10 kilometers on SMF LC cables.

100Gb

- 5m QSFP28
- 20m QSFP28
- 70m on OM3 fiber-SR4
- 100m on OM4 MMF-SR4
- 10km on 100GBASE-LR4 QSFP28 transceiver on SMF LC
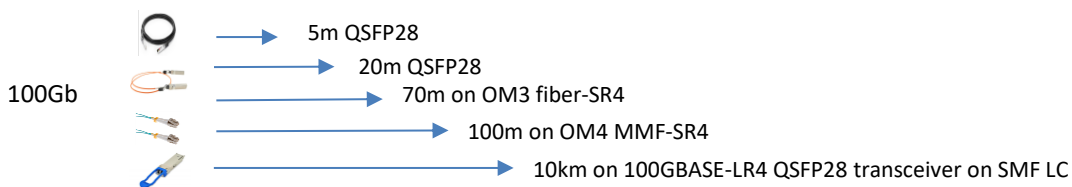
Stacking

Stacking allows multiple Ethernet switches or modules to be connected and managed as one using a single IP address, making all port resources in the stack available as if a single switch. This helps reduce management costs and helps offload upstream network traffic.

- RackSwitch support:

    o SFP+ G8000, G8052, G8264

    o QSFP+ G8264

- Flex System - EN4093R, CN4093 (SFP+/QSFP+), EN4023 (VCS Fabric)

- Campus switch support

    o SFP+ CE0128PB/TB Switch

    o SFP+ CE0152PB/TB Switch

Ethernet Modules for Flex Systems

Lenovo ThinkSystem NE2552E Flex Switch - [Product Guide](#)

Lenovo ThinkSystem QLogic Flex Ethernet Adapter(s) - [Product Guide](#)

The Lenovo ThinkSystem NE2552E Flex Switch is part of the Lenovo Flex System embedded blade solution family, paired with ThinkSystem QLogic Ethernet adapters, providing the high-speed network connectivity needed for Data Warehouse, SAP, Cloud, and Virtual Desktop solutions.

The NE2552E has the following ports:

- Internal: 28x 10Gb / 25Gb or 14x 50Gb
- External: 8x 10Gb SFP+ or 25Gb SFP28, 4x 40Gb QSFP+ or 100Gb QSFP28 (breakout to 2x 50Gb or 4x 25Gb or 4x 10Gb)
- 10/100/1000 Base-T management port external

It is paired with the Qlogic 25G Ethernet Adapters:

- ThinkSystem QLogic QL45214 Flex 25Gb 4-port Ethernet Adapter
- ThinkSystem QLogic QL45212 Flex 50Gb 2-port Ethernet Adapter
- ThinkSystem QLogic QL45262 Flex 50Gb 2-port Ethernet Adapter with iSCSI/FCoE

Unlike other Flex options, the NE2552E is a fixed port configuration where all ports and features are included and active.

It supports XClarity Administrator and Ansible for management

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 of mix of 1G/10G transceivers and/or 10G active Direct Attached Copper / Twinax cables.

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 to 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	NE2552E	SI4093	SI4091	EN2092	EN4091
1Gb RJ45 connections – no additional options required								
CAT5e type cabling	Cables						20	
1Gb Transceiver for SFP+ ports								
1000BASE-T (RJ-45) SFP Transceiver (no 10/100 Mbps support)	00FE333							
1000BASE-SX SFP Transceiver	81Y1622	2[1]	14		14	10	4	14
1000BASE-LX SFP Transceiver	90Y9424							
10Gb Transceiver (SFP+/Omni Port)								
10GBASE-SR SFP+ Transceiver (85°C) [4]	00NU536							

Shows the max. number of each option supported per module	System x Part Number	CN4093	EN4093R	NE2552E	SI4093	SI4091	EN2092	EN4091
		14						
SFP+ 10Gb Transceivers								
10GBASE-SR SFP+ Transceiver	46C3447	14	14		14	10	4	14
Lenovo 10Gb SFP+ ER Transceiver (10GBASE-ER)	90Y9415							
Lenovo Dual Rate 1Gb/10Gb SFP+ Transceiver	00MY034	14		8				
Lenovo 10GBaseT SFP+ Transceiver	7G17A03130		14		14	14		
10GBASE-LR SFP+ Transceiver	00FE331	14						
SFP+ 10Gb DAC								
Lenovo 0.5m Passive SFP+ DAC Cable	00D6288							
1m Passive SFP+ DAC Cable	90Y9427							
1.5m Passive SFP+ DAC Cable	00AY764							
2m Passive SFP+ DAC Cable	00AY765			8				
3m Passive SFP+ DAC Cable	90Y9430	14[2]	14		14	10	4	14
5m Passive SFP+ DAC Cable	90Y9433							
7m Passive SFP+ DAC Cable	00D6151							
1m Active SFP+ DAC Cable	00VX111							
3m Active SFP+ DAC Cable	00VX114							
5m Active SFP+ DAC Cable	00VX117							
SFP+ active optical cables - 10 GbE								
Lenovo 1m SFP+ to SFP+ Active Optical Cable	00YL634							
Lenovo 3m SFP+ to SFP+ Active Optical Cable	00YL637							
Lenovo 5m SFP+ to SFP+ Active Optical Cable	00YL640			8				
Lenovo 7m SFP+ to SFP+ Active Optical Cable	00YL643							
Lenovo 15m SFP+ to SFP+ Active Optical Cable	00YL646							
Lenovo 20m SFP+ to SFP+ Active Optical Cable	00YL649							
SFP28 Transceivers – 25GbE								
Lenovo 25GBASE-SR SFP28 Transceiver	7G17A03537			8				
SFP28 active optical cables - 25 GbE								
Lenovo 3m 25G SFP28 Active Optical Cable	7Z57A03541							
Lenovo 5m 25G SFP28 Active Optical Cable	7Z57A03542							
Lenovo 10m 25G SFP28 Active Optical Cable	7Z57A03543			8				
Lenovo 15m 25G SFP28 Active Optical Cable	7Z57A03544							
Lenovo 20m 25G SFP28 Active Optical Cable	7Z57A03545							
SFP28 passive direct-attach copper cables - 25 GbE								
Lenovo 1m Passive 25G SFP28 DAC Cable	7Z57A03557							
Lenovo 3m Passive 25G SFP28 DAC Cable	7Z57A03558			8				
Lenovo 5m Passive 25G SFP28 DAC Cable	7Z57A03559							
40Gb Transceivers								
40GBASE-SR4 QSFP+	49Y7884							
40GBASE-iSR4 QSFP+	00D9865							
40GBASE–eSR4 QSFP+	00FE325	2	2	4	2			
40GBASE-LR4 QSFP+	00D6222							
40GBASE-SR QSFP+ BiDi[5]	00YL631							
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	4	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	2	2	4	2			
5m Passive QSFP+ DAC Cable	00D5810							
7m Passive QSFP+ DAC Cable	00D5813							
Fibre Channel Transceivers (Omni Ports Only)								
Lenovo 8Gbps Fibre Channel SW SFP+ Transceiver[3]	44X1964	12						

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Shows the max. number of each option supported per module	System x Part Number	CN4093	EN4093R	NE2552E	SI4093	SI4091	EN2092	EN4091
8Gbps Fibre Channel LW SFP+ Transceiver[3]	00FM472	■						
QSFP28 transceivers - 100 GbE								
Lenovo 100GBASE-SR4 QSFP28 Transceiver	7G17A03539			4				
Lenovo 100GBASE-LR4 QSFP28 Transceiver	7G17A03540							
Optical cables for 100 GbE QSFP28 SR4 transceivers								
Lenovo 5m MPO-MPO OM4 MMF Cable	7Z57A03567			4				
Lenovo 7m MPO-MPO OM4 MMF Cable	7Z57A03568							
Lenovo 10m MPO-MPO OM4 MMF Cable	7Z57A03569							
Lenovo 15m MPO-MPO OM4 MMF Cable	7Z57A03570							
Lenovo 20m MPO-MPO OM4 MMF Cable	7Z57A03571			4				
Lenovo 30m MPO-MPO OM4 MMF Cable	7Z57A03572							
QSFP28 active optical cables - 100 GbE								
Lenovo 1m 100G QSFP28 Active Optical Cable	4Z57A10844							
Lenovo 3m 100G QSFP28 Active Optical Cable	7Z57A03546							
Lenovo 5m 100G QSFP28 Active Optical Cable	7Z57A03547			4				
Lenovo 10m 100G QSFP28 Active Optical Cable	7Z57A03548							
Lenovo 15m 100G QSFP28 Active Optical Cable	7Z57A03549							
Lenovo 20m 100G QSFP28 Active Optical Cable	7Z57A03550							
QSFP28 active optical breakout cables - 100 GbE to 4x 25 GbE								
Lenovo 3m 100G to 4x25G Breakout Active Optical Cable	7Z57A03551							
Lenovo 5m 100G to 4x25G Breakout Active Optical Cable	7Z57A03552							
Lenovo 10m 100G to 4x25G Breakout Active Optic Cable	7Z57A03553			4				
Lenovo 15m 100G to 4x25G Breakout Active Optic Cable	7Z57A03554							
Lenovo 20m 100G to 4x25G Breakout Active Optic Cable	7Z57A03555							
QSFP28 direct attach copper cables - 100 GbE								
Lenovo 1m Passive 100G QSFP28 DAC Cable	7Z57A03561							
Lenovo 3m Passive 100G QSFP28 DAC Cable	7Z57A03562							
Lenovo 5m Passive 100G QSFP28 DAC Cable	7Z57A03563							
QSFP28 direct attach copper breakout cables - 100 GbE								
Lenovo 1m 100G QSFP28 to 4x25G SFP28 Breakout DAC Cable	7Z57A03564							
Lenovo 3m 100G QSFP28 to 4x25G SFP28 Breakout DAC Cable	7Z57A03565			4				
Lenovo 5m 100G QSFP28 to 4x25G SFP28 Breakout DAC Cable	7Z57A03566							
OM3 optical cables for 10 GbE SR SFP+, 25 GbE SR SFP28, and 40 GbE SR QSFP+ BiDi transceivers								
Lenovo 0.5m LC-LC OM3 MMF Cable	00MN499							
Lenovo 1m LC-LC OM3 MMF Cable	00MN502							
Lenovo 3m LC-LC OM3 MMF Cable	00MN505							
Lenovo 5m LC-LC OM3 MMF Cable	00MN508							
Lenovo 10m LC-LC OM3 MMF Cable	00MN511			12				
Lenovo 15m LC-LC OM3 MMF Cable	00MN514							
Lenovo 25m LC-LC OM3 MMF Cable	00MN517							
Lenovo 30m LC-LC OM3 MMF Cable	00MN520							
OM4 optical cables for 10 GbE SR SFP+, 25 GbE SR SFP28, and 40 GbE SR QSFP+ BiDi transceivers								
Lenovo 0.5m LC-LC OM4 MMF Cable	4Z57A10845							
Lenovo 1m LC-LC OM4 MMF Cable	4Z57A10846							
Lenovo 3m LC-LC OM4 MMF Cable	4Z57A10847							
Lenovo 5m LC-LC OM4 MMF Cable	4Z57A10848							
Lenovo 10m LC-LC OM4 MMF Cable	4Z57A10849			12				
Lenovo 15m LC-LC OM4 MMF Cable	4Z57A10850							
Lenovo 25m LC-LC OM4 MMF Cable	4Z57A10851							
Lenovo 30m LC-LC OM4 MMF Cable	4Z57A10852							

[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:

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 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. EN6131 comes with all ports active.

Shows the max. number of each option supported per module	Part Number	EN4023	EN6131
1Gb Transceiver for SFP+ ports			
1000BASE-T SFP Transceiver	00FE333		
1000BASE-SX SFP Transceiver	81Y1622	14	
1000BASE-LX SFP Transceiver	90Y9424		
10GBASE-SR SFP+ Transceiver	46C3447		
10GBASE-LR SFP+ Transceiver	00D6180	14	
Brocade 10Gb SFP+ SR Optical Transceiver	49Y4216		
Brocade 10Gb SFP+ LR Optical Transceiver	95Y0540		
1m Passive SFP+ DAC Cable	90Y9427		
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		
40GBASE-SR4 QSFP+ Transceiver	49Y7884	2	18
1M Passive QSFP+ to SFP+ Breakout DAC Cable	49Y7886		
3M Passive QSFP+ to SFP+ Breakout DAC Cable	49Y7887		2
5m Passive QSFP+ to SFP+ Breakout DAC Cable	49Y7888		
3M FDR Infiniband Cable	90Y3470		
1M Passive QSFP+ DAC Cable	49Y7890	2	
3M Passive QSFP+ DAC Cable	49Y7891		18
5m Passive QSFP+ DAC Cable	00D5810		
7m Passive QSFP+ DAC Cable	00D5813		
Brocade 8Gb FC SFP+ Transceiver	88Y6416	14	
Brocade 16Gb FC SFP+ Transceiver	88Y6393	14	

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 CE Series Campus Networking

Lenovo CE0128TB Switch
Product Guide

(3-year warranty Part # 7Z340011WW or MTM 7Z34CTO1WW)
(LLW Part # 7Z360011WW or MTM 7Z36CTO1WW)

The Lenovo CE0128TB Switch is a 1/10 Gb Ethernet (GbE) switch that delivers a compact, high-density, cost-effective GbE solution for network environments where space and power are at a premium. Featuring a small, 1U footprint, this switch is designed for access-layer deployments in branches, retail and workgroup environments, and campus networks. It can also be used as a management network switch in the data center infrastructures.

The CE0128TB switch offers 24x 10/100/1000BASE-T (RJ-45) fixed ports and 4x SFP+ ports that support 1 GbE and 10 GbE optical transceivers, 10 GbE active optical cables (AOCs), and 10 GbE direct attach copper (DAC) cables. The switch supports a wide range of L2 and L3 features that provide performance, availability, security, and manageability for campus networks.

Lenovo CE0128PB Switch
 Product Guide

(3-year warranty Part # 7Z340012WW or MTM 7Z34CTO2WW)
(LLW Part # 7Z360011WW or MTM 7Z36CTO1WW)

The Lenovo CE0128PB Switch is a 1/10 Gb Ethernet (GbE) switch with Power over Ethernet (PoE) that delivers a compact, high-density, cost-effective GbE solution for network environments where space and power are at a premium. Featuring a small, 1U footprint, this switch is designed for access-layer deployments in branches, retail and workgroup environments, and campus networks. It can also be used as a management network switch in the data center infrastructures.

The CE0128PB switch offers 24x 10/100/1000BASE-T (RJ-45) fixed ports with Power over Ethernet (PoE) for powering attached network devices, such as such as telephones, video cameras, IEEE 802.11ac WLAN access points, and videophones. The switch also offers 4x SFP+ ports that support 1 GbE and 10 GbE optical transceivers, 10 GbE active optical cables (AOCs), and 10 GbE direct attach copper (DAC) cables. The switch supports a wide range of L2 and L3 features that provide performance, availability, security, and manageability for campus networks.

Lenovo CE0152TB Switch
 Product Guide

(3-year warranty Part # 7Z350021WW or MTM 7Z35CTO1WW)
(LLW Part # 7Z370021WW or MTM 7Z37CTO1WW)

The Lenovo CE0152TB Switch is a 1/10 Gb Ethernet (GbE) switch that delivers a compact, high-density, cost-effective GbE solution for network environments where space and power are at a premium. Featuring a small, 1U footprint, this switch is designed for access-layer deployments in branches, retail and workgroup environments, and campus networks. It can also be used as a management network switch in the data center infrastructures.

The CE0152TB switch offers 48x 10/100/1000BASE-T (RJ-45) fixed ports and 4x SFP+ ports that support 1 GbE and 10 GbE optical transceivers, 10 GbE active optical cables (AOCs), and 10 GbE direct attach copper (DAC) cables. The switch supports a wide range of L2 and L3 features that provide performance, availability, security, and manageability for campus networks.

Lenovo CE0152PB Switch

 Product Guide

(3-year warranty Part # 7Z350022WWor MTM 7Z35CTO2WW)
(LLW Part # 7Z370022WW or MTM 7Z37CTO2WW)

The Lenovo CE0152PB Switch is a 1/10 Gb Ethernet (GbE) switch with Power over Ethernet (PoE) that delivers a compact, high-density, cost-effective GbE solution for network environments where space a power are at a premium. Featuring a small, 1U footprint, this switch is designed for access-layer deployments in branches, retail and workgroup environments, and campus networks. It can also be used as a management network switch in the data center infrastructures.

The CE0152PB switch offers 48x 10/100/1000BASE-T (RJ-45) fixed ports with Power over Ethernet (PoE) for powering attached network devices, such as such as telephones, video cameras, IEEE 802.11ac WLAN access points, and videophones. The switch also offers 4x SFP+ ports that support 1 GbE and 10 GbE optical transceivers, 10 GbE active optical cables (AOCs), and 10 GbE direct attach copper (DAC) cables. The switch supports a wide range of L2 and L3 features that provide performance, availability, security, and manageability for campus networks.

Lenovo ThinkSystem RackSwitch Family - Top of Rack

Lenovo ThinkSystem NE0152T RackSwitch

(Part # 7Y810011WW or MTM 7Y81CTO1WW) Product Guide

The Lenovo ThinkSystem NE0152T RackSwitch is a 1U rack-mount Gigabit CNOS Ethernet switch that delivers line-rate performance with feature-rich design that supports virtualization, high availability, and enterprise class Layer 2 and Layer 3 functionality in a cloud management environment.

Lenovo ThinkSystem NE0152TO RackSwitch - ONIE

(Part # 7Z320O11WW or MTM 7Z32CTO1WW) Product Guide

The Lenovo ThinkSystem NE0152TO RackSwitch is a 1U rack-mount Gigabit ONIE Ethernet switch that delivers line-rate performance with feature-rich design that supports virtualization, high availability, and enterprise class Layer 2 and Layer 3 functionality in a cloud management environment. As an ONIE switch, it has no CNOS operating system supported. It ships with the ONIE boot loader; a small standards based O/S for loading disaggregated network switch software. Cumulus Linux / NetQ currently offered as the OS option. CNOS not supported on ONIE Switches. More 3rd party OS options planned.

Lenovo ThinkSystem NE1032 RackSwitch

 (Part # 7159A1X/HD1 or 7159A2X/HD2) Product Guide

The Lenovo ThinkSystem NE1032 RackSwitch is a 1U rack-mount 10 Gb Ethernet switch that delivers lossless, low-latency performance with feature-rich design that supports virtualization, Converged Enhanced Ethernet (CEE), high availability, and enterprise class Layer 2 and Layer 3 functionality. The switch delivers line-rate, high-bandwidth switching, filtering, and traffic queuing without delaying data. The NE1032 RackSwitch has 32x SFP+ ports that support 1 GbE and 10 GbE optical transceivers, active optical cables (AOCs), and direct attach copper (DAC) cables. The switch helps consolidate server and storage networks into a single fabric, and it is an ideal choice for virtualization, cloud, and enterprise workload solutions.

Lenovo ThinkSystem NE1032T RackSwitch

(Part # 7159B1X/HD3 or 7159B2X/HD4) Product Guide

The Lenovo ThinkSystem NE1032T RackSwitch is a 1U rack-mount 10 Gb Ethernet switch that delivers lossless, low-latency performance with feature-rich design that supports virtualization, high availability, and enterprise class Layer 2 and Layer 3 functionality. The switch delivers line-rate, high-bandwidth switching, filtering, and traffic queuing without delaying data. The NE1032T RackSwitch has 24x 1/10 Gb Ethernet (RJ-45) fixed ports and 8x SFP+ ports that support 1GbE and 10 GbE optical transceivers, active optical cables (AOCs), and direct attach copper (DAC) cables. The switch helps consolidate server and storage networks into a single fabric, and it is an ideal choice for virtualization, cloud, and enterprise workload solutions.

Lenovo ThinkSystem NE1072T RackSwitch

 (Part # 7159C1X/HD5 or 7159C2X/HD6) Product Guide

The Lenovo ThinkSystem NE1072T RackSwitch that uses 10 Gb SFP+ and 40 Gb QSFP+ Ethernet technology is specifically designed for the data center. It is ideal

for today's big data, cloud, and enterprise workload solutions. It is an enterprise class Layer 2 and Layer 3 full featured switch that delivers line-rate, high-bandwidth switching, filtering, and traffic queuing without delaying data. Large data center-grade buffers help keep traffic moving, while the hot-swap redundant power supplies and fans (along with numerous high-availability features) help provide high availability for business sensitive traffic. The NE1072T RackSwitch is ideal for latency sensitive applications, such as high-performance computing clusters and financial applications. In addition to the 10 Gb Ethernet (GbE) and 40 GbE connections, the NE1072T RackSwitch can use 1 GbE connections

Lenovo ThinkSystem NE2572 RackSwitch

(Part # 7159E1X/HE3 or 7159E2X/HE4) Product Guide

The Lenovo ThinkSystem NE2572 RackSwitch is designed for the data center and provides 10 Gb/25 Gb Ethernet connectivity with 40 Gb/100 Gb Ethernet upstream links. It is ideal for big data, cloud, and enterprise workload solutions. It is an enterprise class Layer 2 and Layer 3 full featured switch that delivers line-rate, high-bandwidth switching, filtering, and traffic queuing without delaying data. Large data center-grade buffers help keep traffic moving, while the hot-swap redundant power supplies and fans (along with numerous high-availability software features) help provide high availability for business sensitive traffic. The Lenovo ThinkSystem NE2572 RackSwitch offers 48x 25Gb SFP28 and 6x 100Gb QSFP28 uplinks. The uplink ports support breakout to provide up to 72x 25GbE ports total, along with many other speed combinations. 480ns latency and high capacity position it for high speed solutions or growth path for almost any reference architecture where G8272 traditionally plays.

Lenovo ThinkSystem NE2572O RackSwitch - ONIE

 (Part # 7Z210O21WW) Product Guide

The Lenovo ThinkSystem NE2572O RackSwitch is a bare metal ONIE switch, designed for big data, cloud, and enterprise workloads in the data center, and it provides 10 Gb/25 Gb Ethernet connectivity with 40 Gb/100 Gb Ethernet upstream links. The switch delivers line-rate, low-latency, and high-bandwidth switching, while providing high availability for business sensitive traffic with the hot-swap redundant power supplies and fans.

The NE2572O RackSwitch has 48x SFP28/SFP+ ports that support 10 GbE SFP+ and 25 GbE SFP28 optical transceivers, active optical cables (AOCs), and direct attach copper (DAC) cables. The switch also offers 6x QSFP28/QSFP+ ports that support 40 GbE QSFP+ and 100 GbE QSFP28 optical transceivers, active optical cables (AOCs), and direct attach copper (DAC) cables. The QSFP28/QSFP+ ports can also be split out into two 50 GbE (for 100 GbE QSFP28), or four 10 GbE (for 40 GbE QSFP+) or 25 GbE (for 100 GbE QSFP28) connections by using breakout cables.

As an ONIE switch, it has no CNOS operating system supported. It ships with the ONIE boot loader; a small standards based O/S for loading disaggregated network switch software. Cumulus Linux/NetQ is currently supported and orderable from Lenovo as an option for NE2572O. CNOS not supported on the ONIE switches.

Lenovo ThinkSystem NE10032 RackSwitch

 (Part # 7159D1X/HE1 or 7159D2X/HE2) Product Guide

The Lenovo ThinkSystem NE10032 RackSwitch that uses 100 Gb QSFP28 and 40 Gb QSFP+ Ethernet technology is specifically designed for the data center. It is ideal for today's big data, cloud, and enterprise workload solutions. It is an enterprise class Layer 2 and Layer 3 full featured switch that delivers line-rate,

high-bandwidth switching, filtering, and traffic queuing without delaying data. Large data center-grade buffers help keep traffic moving, while the hot-swap redundant power supplies and fans (along with numerous high-availability features) help provide high availability for business sensitive traffic. The NE10032 RackSwitch has 32x QSFP+/QSFP28 ports that support 40 GbE and 100 GbE optical transceivers, active optical cables (AOCs), and direct attach copper (DAC) cables. The QSFP+/QSFP28 ports can also be split out into four 10 GbE (for 40 GbE ports) or 25 GbE (for 100 GbE ports) connections by using breakout cables.

Lenovo ThinkSystem NE10032O RackSwitch - ONIE

(Part # 7Z210O11WW) Product Guide

The Lenovo ThinkSystem NE10032O RackSwitch that uses 100 Gb SFP28 and 40 Gb QSFP+ Ethernet technology is a bare metal ONIE switch, designed for big data, cloud, and enterprise workloads in the data center. The switch delivers line-rate, low-latency, and high-bandwidth switching, while providing high availability for business sensitive traffic with the hot-swap redundant power supplies and fans.

The NE10032O RackSwitch has 32x QSFP+/QSFP28 ports that support 40 GbE and 100 GbE optical transceivers, active optical cables (AOCs), and direct attach copper (DAC) cables. The QSFP+/QSFP28 ports can also be split out into two 50 GbE (for 100 GbE ports), or four 10 GbE (for 40 GbE ports) or 25 GbE (for 100 GbE ports) connections by using breakout cables.

As an ONIE switch, it has no CNOS operating system installed or supported. It ships with the ONIE boot loader, a small standards based O/S for loading disaggregated network switch software. Cumulus Linux is currently supported and orderable from Lenovo as an option for NE10032O. CNOS not supported on the ONIE switches.

Lenovo RackSwitch G Series Top of Rack Ethernet Switches

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 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.

The ThinkSystem NE0152T RackSwitch can replace G8052, providing CNOS features. CNOS does not support stacking, however, so if stacking is required, use the G8052.

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 and Campus

Maximum number of each option supported per switch.	Part Number	CE0128TB/PB	CE0152TB/PB	G8296	G8272	G8052	G7052	G7028	NE0152T/O	NE1032	NE1032T	NE1072T	NE10032/O	NE2572/O
CAT 5e type cabling	Cables	29	53			49	49	25	53		25	46		41
CAT 6 type cabling	Cables													
1000BASE-T SFP (no 10/100 Mbps support)	00FE333													
1000BASE-SX SFP	81Y1622			86	48	4				32	8			40
1000BASE-LX SFP Transceiver	90Y9424													
Dual Rate 1Gb/10Gb SFP+ Transceiver	00MY034	4	4			4^{14}	4	4	4					48
10GBASE-SR SFP+ Transceiver	46C3447													
10GBASE-LR SFP+ Transceiver	00FE331			38^{9}										
10GBASE-ER SFP+ Transceiver	90Y9415			8^{9}	10	4								
10GBaseT SFP+ Transceiver (No 1G support, 10G transmission speed only)	7G17A03130			86	48									
0.5m LC-LC OM3 MMF Cable	00MN499													
1m LC-LC OM3 MMF Cable	00MN502													
3m LC-LC OM3 MMF Cable	00MN505													
5m LC-LC OM3 MMF Cable	00MN508													
10m LC-LC OM3 MMF Cable	00MN511											6	32	54
15m LC-LC OM3 MMF Cable	00MN514													
25m LC-LC OM3 MMF Cable	00MN517													
30m LC-LC OM3 MMF Cable	00MN520													
1m SFP+ to SFP+ Active Optical Cable	00YL634													
3m SFP+ to SFP+ Active Optical Cable	00YL637													
5m SFP+ to SFP+ Active Optical Cable	00YL640													
7m SFP+ to SFP+ Active Optical Cable	00YL643	4	4	86	48									
15m SFP+ to SFP+ Active Optical Cable	00YL646													
20m SFP+ to SFP+ Active Optical Cable	00YL649													48
0.5m Passive+ DAC Cable	00D6288													
1m Passive SFP+ DAC Cable	90Y9427													
1.5m Passive SFP+ DAC Cable	00AY764													
2m Passive SFP+ DAC Cable	00AY765					4	4	4	4	32	8			
3m Passive SFP+ DAC Cable	90Y9430													
5m Passive SFP+ DAC Cable	90Y9433													
7m Passive SFP+ DAC Cable	00D6151													
1m Active SFP+ DAC Cable	00VX111													
3m Active SFP+ DAC Cable	00VX114													
5m Active SFP+ DAC Cable	00VX117													
40GBASE-SR4 QSFP+ Transceiver	49Y7884													
40GBASE-eSR4 QSFP+ Transceiver	00FE325													
40GBASE-iSR4 QSFP+ Transceiver	00D9865			10	6									
40GBASE-LR4 QSFP+[5] Transceiver	00D6222													
40GBASE-SR QSFP+ BiDi[13] Transceiver	00YL631			4^{11}	4^{12}							6	32	6
1m Passive QSFP+ to SFP+ Breakout DAC Cable	49Y7886													
3m Passive QSFP+ to SFP+ Breakout DAC Cable	49Y7887													
5m Passive QSFP+ to SFP+ Breakout DAC Cable	49Y7888			2^{8}	6									
1m MPO-4xLC OM3 MMF Breakout Cable	00FM412													

Maximum number of each option supported per switch.	Part Number	CE0128TB/PB	CE0152TB/PB	G8296	G8272	G8052	G7052	G7028	NE0152T/O	NE1032	NE1032T	NE1072T	NE10032/O	NE2572/O
3m MPO-4xLC OM3 MMF Breakout Cable	00FM413			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
5m MPO-4xLC OM3 MMF Breakout Cable	00FM414			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
1M QSFP+ Passive DAC	49Y7890			10										
3M QSFP+ Passive DAC	49Y7891													
5m QSFP+ Passive DAC	00D5810													
7m QSFP+ Passive DAC	00D5813													
10m QSFP+ MPO-MPO OM3 MMF Cable	00VX003													
30m QSFP+ MPO-MPO OM3 MMF Cable	00VX005													
8Gbps FC SW SFP+[4]	44X1964													
8Gbps FC LW SFP+[4]	00FM472													
1m QSFP+ to QSFP+ Active Optical Cable	7Z57A04256													
3m QSFP+ to QSFP+ Active Optical Cable	00YL652													
5m QSFP+ to QSFP+ Active Optical Cable	00YL655													
7m QSFP+ to QSFP+ Active Optical Cable	00YL658													
15m QSFP+ to QSFP+ Active Optical Cable	00YL661												6	32	6
20m QSFP+ to QSFP+ Active Optical Cable	00YL664														
1m QSFP+ to 4xSFP+ Active Optical Cable	00YL667														
3m QSFP+ to 4xSFP+ Active Optical Cable	00YL670														
5m QSFP+ to 4xSFP+ Active Optical Cable	00YL673														
25GBASE-SR SFP28 Transceiver	7G17A03537														48
100GBase-SR4 QSFP28 Transceiver	7G17A03539														
100GBase-LR4 QSFP28 Transceiver	7G17A03540														
5m MPO-MPO OM4 MMF Cable	7Z57A03567														
10m MPO-MPO OM4 MMF Cable	7Z57A03569														
20m MPO-MPO OM4 MMF Cable	7Z57A03571														
Lenovo 1m MPO-4xLC Breakout OM4 MMF Cable	7Z57A03573														
Lenovo 3m MPO-4xLC Breakout OM4 MMF Cable	7Z57A03574														
Lenovo 5m MPO-4xLC Breakout OM4 MMF Cable	7Z57A03575														
3m 100G QSFP28 Active Optical Cable	7Z57A03546													32	6
5m 100G QSFP28 Active Optical Cable	7Z57A03547														
10m 100G QSFP28 Active Optical Cable	7Z57A03548														
20m 100G QSFP28 Active Optical Cable	7Z57A03550														
1m Passive 100G QSFP28 DAC Cable	7Z57A03561														
3m Passive 100G QSFP28 DAC Cable	7Z57A03562														
5m Passive 100G QSFP28 DAC Cable	7Z57A03563														
1m 100G QSFP28 to 4x25G SFP28 Breakout DAC Cable	7Z57A03564														
3m 100G QSFP28 to 4x25G SFP28 Breakout DAC Cable	7Z57A03565														
5m 100G QSFP28 to 4x25G SFP28 Breakout DAC Cable	7Z57A03566														

Maximum number of each option supported per switch.	Part Number	CE0128TB/PB	CE0152TB/PB	G8296	G8272	G8052	G7052	G7028	NE0152T/O	NE1032	NE1032T	NE1072T	NE10032/O	NE2572/O
Lenovo 1m Passive 25G SFP28 DAC Cable	7Z57A03557													48
Lenovo 3m Passive 25G SFP28 DAC Cable	7Z57A03558													
Lenovo 5m Passive 25G SFP28 DAC Cable	7Z57A03559													

[1] Only supported in the SFP+ ports, not in Omni Ports; [2] Suppor̶̶̶̶̶̶̶̶̶̶̶̶̶̶̶̶ ports 2-25; [4] Support 4/8 Gbps when a multi-rate FC transceiv̶̶̶̶̶̶̶̶̶̶̶̶̶̶̶̶ 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; [14] As for G8052, there is no support for Dual Speed transceivers working at 1G. These transceivers will be recognized by the switch, but they will make link only at 10G. The command "speed1G" is not implemented on G8052.

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.

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/V7K/V5K/V3K	DS3K/ DS5K	DS8K	XIV	Tape	SVC/V7K/ V5K/V3K FCoE Dir Attach
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	
	G8124E or None	Brocade VDX6730	Brocade	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	
			Cisco	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	
	G8124E or None	Brocade VDX6730	Brocade	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	
			Cisco	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 iSCSI	HW iSCSI	DS3K	DS5K	XIV	DS8K	SVC	V7000
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			

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 <u>and</u> 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

Lan Adapter Reference on Server Proven Web site

Which LAN adapters are supported on each server:
http://static.lenovo.com/us/en/serverproven/index.shtml

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

		Emulex						Mellanox	Solarflare		
	Part Number	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 (no 10/100 Mbps support)											
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

		Broadcom				Intel	Qlogic	
	Part Number	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	
Qlogic	49Y4218	x	x	x	x	x	x	x
Brocade	49Y4216	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

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

1GbE Cat5e Cables

Length m	0.6	.75	1	1.25	1.5	3	10m	25m
Blue	40K5679	00WE111	00WE115	00WE119	40K8785	40K5581	40K8927	40K8930
Yellow	40K8933				40K8951	40K8957	40K8801	40K8807
Green	40K5563	00WE099	00WE103	00WE107	40K5643	40K5793	40K5794	40K8869

10GbE Cat6 Cables

Length	.75	1	1.25	1.5m	3m	10m	25m
Blue						90Y3721	90Y3730
Yellow						90Y3715	90Y3724
Green	00WE123	00WE127	00WE131	00WE135	00WE139	90Y3718	90Y3727

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

These cables are also used for 25GbE SFP28 and 100GbE QSFP28 applications. Different distances apply, check the switch product guide for details.

40GbE QSFP+ MTP Optical Cable

QSFP+ MTP 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:

QSFP+ MTP Optical Cable Length	10m	30m
Part Number	90Y3519 / 00VX003	90Y3521 / 00VX005

40GBase-eSR4 MTP-4xLC OM3 MMF Breakout Optical 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:

- MTP-4xLC <=== up to **100m** (OM3) with SR4 or **300m** with eSR4 ===> 4xLC-MTP

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

MTP-4xLC OM3 MMF Breakout Optical Cable Length	1m	3m	5m
Part Number	00FM412	00FM413	00FM414

For SFP28 and QSFP28 cables, there are many options and considerations. Please refer to the Product Guide for the switch in question for specific cable options, speed recommendations and port assignment notes. The switches in this category are:

- Lenovo ThinkSystem NE2552E Flex Switch - Product Guide
- Lenovo ThinkSystem NE10032 RackSwitch (Part # 7159D1X/HE1 or 7159D2X/HE2) Product Guide
- Lenovo ThinkSystem NE2572 RackSwitch (Part # 7159E1X/HE3 or 7159E2X/HE4) Product Guide

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 Flow

Front to Rear Fan Airflow

Almost all of our rack switches go into racks that require "rear-to-front" airflow. Meaning racks with 1U/2U servers, Flex chassis, and any environment where the server NICs are in the rear of the rack. There are typically only 3 areas where you would want "Front-to-Rear" airflow:

1)   iDataplex racks (NICs in front)

2)   NeXTScale racks (NICs in front)

3)   Racks full of networking equipment with no servers (all ports typically in front)

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).

Air Inlet Duct for	G7028/52	G8000	G8052	G8124E	G8264	G8264T	G8264CS	G8272	G8296	G8316	G8332	NE1032	NE1032T	NE1072T	NE10032	NE2572
487 mm RackSwitch (PN 00FM507)								X				X	X	X	X	X
2U 483 mm RackSwitch (PN 00MY160)									X							
483 mm RackSwitch (PN 00D6060)					X	X	X			X	X					
442 mm RackSwitch (PN 00D6061)			X													
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
- An air inlet duct is available – check the switch product guide for the correct one
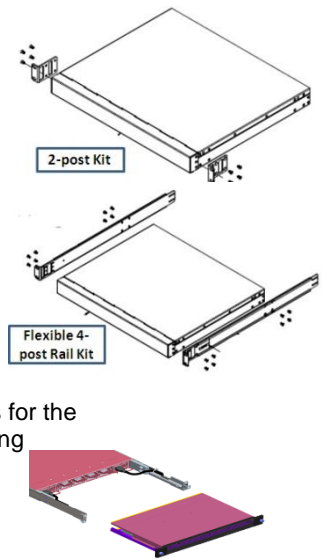
Spare Parts for the RackSwitch Products

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	G8028	G8264CS	G8272	G8296	G8332	NE1032	NE1032T	NE1072T	NE10032	NE2572
Hot-Swap, Rear-to-Front Fan Assembly Spare (PN 00D6071)	X	X			X						
Hot-Swap, Front-to-Rear Fan Assembly Spare (PN 00D6073)	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							
Lenovo RackSwitch Hot-swap, Front-to-Rear Fan Assembly (PN00YK773)							X	X	X	X	X
Lenovo RackSwitch Hot-swap, Rear-to-Front Fan Assembly (PN00YK774)							X	X	X	X	X
Lenovo RackSwitch Hot-Swap, Rear-to-Front 450W Power Supply (PN 49Y7938)	X	X									
Lenovo RackSwitch Hot-Swap, Front-to-Rear 450W Power Supply (PN 49Y7937)	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)											
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					
Lenovo RackSwitch Hot-Swap, Front-to-Rear 770W Power Supply (PN00YK771)							X	X	X	X	X
Lenovo RackSwitch Hot-Swap, Rear-to-Front 770W Power Supply (PN00YK772)							X	X	X	X	X
Console Cable Kit Spare (System x PN 90Y9462)	X	X	X	X	X	X	X	X	X	X	X

Lenovo Warranty Service Upgrades

Lenovo Switches come with a limited 3-year hardware warranty with Next Business Day (NBD), 9x5, Customer Replaceable Unit (CRU) warranty service and includes a 3-year software license, which provides entitlement to upgrades over that period. Go to the individual switch product guide for details on the upgrades available. It is important to note that embedded switches for Flex Systems take on the warranty or upgrade of the chassis they are installed in.

Lenovo and Juniper Partnership

On March 9, 2016, Lenovo and Juniper Networks announced a strategic partnership to deliver next generation datacenter solutions. Together, the two companies intend to deliver value that will enable datacenter transformation, as the Enterprise customers and Telcos transition to Cloud. Lenovo brings enterprise server and storage and a strong China presence to Juniper's expertise in networking with carrier grade reliability. The collaboration includes joint go-to-market initiatives to expand into growth and emerging markets by helping customers build, and manage their data centers. For customers looking for networking offerings beyond what Lenovo offers today such as campus, modular and carrier grade switches, Juniper Networks is Lenovo's preferred networking partner. The first Juniper products to be offered in the Lenovo catalog are the EX2300 line of PoE switches described below. Other Juniper products are being evaluated for their ability to add to the Lenovo datacenter solutions, however, any Juniper product may be ordered using the special bid process (VLH).

Juniper Power over Ethernet Switch

Juniper EX2300-C-12P (Part # 7165H1X) [Product Guide](#)

The Juniper EX2300-C-12P Ethernet switch for Lenovo with Power over Ethernet (PoE) delivers a compact, high-density, cost-effective solution for small network environments where space and power are at a premium. Featuring a small, 1U footprint, this switch is ideal for access-layer deployments in micro branches, retail and workgroup environments, and converged network access in larger networks. The EX2300-C-12P offers 12x 10/100/1000BASE-T ports in a single platform. Both models offer Power over Ethernet (PoE) for powering attached network devices, such as such as telephones, video cameras, IEEE 802.11ac WLAN access points, and videophones. Optional front panel 10GbE uplink ports support connections to higher-layer devices. The compact PoE-enabled EX2300-C-12P switch can simultaneously deliver up to 15.4 watts of standards-based 802.3af Class 3 PoE to a maximum of 8 ports or 30 watts of standards-based 802.3at PoE+ to a maximum of 4, based on a total system budget of 124 W. Low power consumption, fanless design, rack or desktop configuration, and a small footprint enable flexible, environmentally friendly deployment.

Juniper EX2300-24P (Part # 7165H2X) [Product Guide](#)

The Juniper EX2300-24P Ethernet switch for Lenovo with Power over Ethernet (PoE) delivers a compact, high-density, cost-effective solution for small network environments where space and power are at a premium. Featuring a small, 1U footprint, this switch is ideal for access-layer deployments in micro branches, retail and workgroup environments, and converged network access in larger networks. The EX2300-24P offers 24x 10/100/1000BASE-T ports. Both models offer Power over Ethernet (PoE) for powering attached network devices, such as such as telephones, video cameras, IEEE 802.11ac WLAN access points, and videophones. Optional front panel 10GbE uplink ports support connections to higher-layer devices. The PoE-enabled EX2300-24P switch can simultaneously deliver up to 15.4 watts of standards-based 802.3af Class 3 PoE to a maximum of 24 ports or 30 watts of standards-based 802.3at PoE+ to a maximum of 12 ports, based on a total system budget of 370 watts. Low power consumption, low acoustic fans, and a small footprint enable flexible, environmentally friendly deployment.

Networking Software Offerings

Feature on Demand License Keys

ENOS and CNOS support Features on Demand (FoD) license keys to enable additional features.

- The Advanced Instrumentation Tools FoD option enables access to low-level switch diagnostics for advanced troubleshooting.
- The ONIE option provides scripting to simplify automated software loading
- Flex System switches use FOD to scale the switch port count support

Check the switch product guide to see what FOD is available and how to order / download.

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. Lenovo VMware support link

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. Lenovo VMware support link

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. Lenovo OpenStack support link

Lenovo Telemetry Analytics Tool: Ganglia Plugins

Ganglia Monitoring System is a scalable distributed monitoring system for high-performance computing systems. For more information about Ganglia, go to: http://ganglia.sourceforge.net/

Network telemetry is supported from Lenovo CNOS switches to the Ganglia Monitoring System for the following use cases:

1. Congestion Detection - Provides in-depth insights on network congestion at various stages including device, interface and traffic type along with class-of-service.
2. Data Center Planning - Identifies network bandwidth requirement by long-term monitoring of switch hardware resource utilization.
3. Streaming Telemetry - Streaming telemetry providing real time monitoring data with asynchronous reporting. Provides REST APIs to support latest cloud data center and analytics eco-system.

For more information and to download, go to: https://github.com/lenovo/networking-telemetry

Blue Medora vRealize Operations Management Pack for Lenovo Network

The Blue Medora vRealize Operations Plug-in for Lenovo Network extends VMware vRealize Operations 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

Note: Blue Medora is not supported on CNOS at this time.

Lenovo XClarity Administrator

Lenovo XClarity is a fast, flexible, and scalable hardware systems management application that enables administrators to deploy infrastructure faster and with less effort. The application seamlessly integrates into Lenovo servers, Flex System, RackSwitch networking, and S Series storage. RackSwitch is supported by XClarity Administrator non-pro only which provides basic discovery, device display and alarm reporting. It is offered at no charge using the trial download as a permanent deployment. Support is offered on the XClarity Administrator Pro, however, only the basic non-pro features are supported for RackSwitch. Lenovo XClarity Administrator support link

Lenovo Network Advisor for Splunk

Lenovo Network Advisor for Splunk application provides insights into network utilization, which allows for quick troubleshooting of switches contributing to inefficient network usage. This translates into the effective usage of compute and network resources.

The datasets supported by Lenovo Network Advisor for Splunk include:

- Basic Dataset
  - ✓ Network and Device Health Status: temperature, fans, power, memory, CPU
  - ✓ Traffic Statistics and Performance: interface counters
  - ✓ Critical Network and Device Alerts
- Advanced Dataset
  - ✓ In-Depth Buffer Utilization
  - ✓ Interface Congestion Statistics

Lenovo Network Advisor for Splunk follows an off-box forwarder model. In the off-box forwarder model, instances of the Splunk universal forwarder run on a dedicated physical or virtual machine and retrieves data from Lenovo CNOS switches through REST APIs. Each forwarder is mapped one to one with a CNOS switch.

For more information, go to the User Docs:

http://systemx.lenovofiles.com/help/topic/com.lenovo.systemx.common.nav.doc/overview_switch_management.html?cp=0_4_1

A Lenovo Press paper is coming soon.
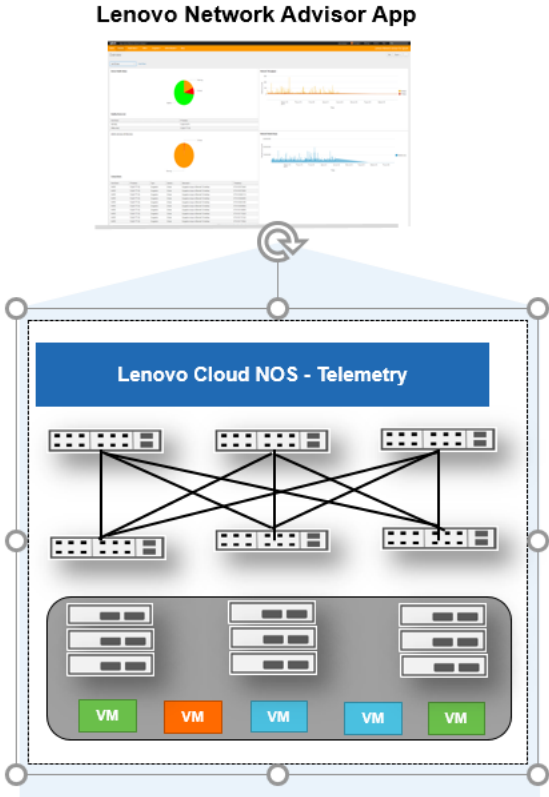
Figure 2: Lenovo Network Advisor App