

# Lenovo ThinkSystem NE2552E Flex Switch

## Product Guide

The Lenovo ThinkSystem NE2552E Flex Switch is an embedded switch module for Flex System that is designed for the data center to provide 10 Gb/25 Gb/50 Gb Ethernet server connectivity with 40 Gb/50 Gb/100 Gb Ethernet upstream links. 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 numerous high-availability software features help provide high availability for business sensitive traffic.

The NE2552E Flex Switch has 28 internal ports that can be configured as 28x 10 GbE ports, 28x 25 GbE ports, 14x 50 GbE ports, or certain combinations of 10 GbE, 25 GbE, and 50 GbE ports.

For external network connectivity, the NE2552E Flex Switch offers 8x 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 4x QSFP28 ports that support 100 GbE QSFP28 or 40 GbE QSFP+ optical transceivers, active optical cables (AOCs), and direct attach copper (DAC) cables. The QSFP28 ports can also be split out into two 50 GbE or four 25 GbE (for 100 GbE QSFP28), or four 10 GbE (for 40 GbE QSFP+) connections by using breakout cables.

The NE2552E Flex Switch is ideal for hyperconverged and cloud solutions, as well as latency-sensitive applications, such as high-performance computing clusters and financial applications.

The NE2552E RackSwitch is shown in the following figure.



Figure 1. Lenovo ThinkSystem NE2552E Flex Switch

### Did you know?

The NE2552E Flex Switch runs Enterprise Networking Operating System (ENOS), which is a data center-class NOS progressively developed over the past decade to deliver highly reliable, high-performance Ethernet and converged switching and interoperability with existing network infrastructures. ENOS has a feature-rich design with virtualization, high availability, and enterprise class Layer 2 and Layer 3 functionality.

The NE2552E is cloud-ready with support for advanced NIC virtualization technologies, such as Unified Fabric Port (UFP). In addition, the switch offers different operational modes (from "easy connect" transparent networking connectivity to Layer 3 functionality) to satisfy diverse customer networking requirements.

With support for Converged Enhanced Ethernet (CEE), the NE2552E can be used as an FCoE transit device and is ideal for network-attached storage (NAS) and iSCSI environments.

## Key features

The ThinkSystem NE2552E Flex Switch is considered particularly suited for the following environments:

- Mixed 10 GbE, 25 GbE, and 50 GbE embedded server connectivity with 40 GbE, 50 GbE, or 100 GbE upstream aggregation
- Cloud and virtualization solutions with integration into Lenovo and third-party IT and cloud infrastructure management tools
- Embedded network connectivity with support for converged SAN and LAN via NAS, iSCSI, or FCoE
  - Reduced I/O cost (CAPEX) with fewer adapters, cables, and transceivers to purchase
  - Reduced complexity (OPEX) with fewer components to manage and lower energy cost
- Web-scale and hyperconverged solutions
- Applications demanding better performance and lower latency

The NE2552E Flex Switch offers the following key features and benefits:

- High performance  
The 10 Gb/25 Gb/50 Gb Ethernet NE2552E Flex Switch with 40 Gb/50 Gb/100 Gb Ethernet uplinks provides a combination of low latency, non-blocking line-rate switching, and ease of management.
- Lower power and better cooling  
The embedded design of the NE2552E Flex Switch helps reduce data center air conditioning costs and power consumption.
- Layer 3 functionality  
The NE2552E Flex Switch includes Layer 3 functionality, which provides security and performance benefits, as inter-VLAN traffic stays within the switch. This switch also provides the full range of Layer 3 protocols from static routes for technologies, such as Open Shortest Path First (OSPF) and Border Gateway Protocol (BGP) for enterprise customers.
- Converged fabric  
The NE2552E Flex Switch supports Converged Enhanced Ethernet (CEE) which helps enable customers to combine storage, messaging traffic, VoIP, video, and other data on a common data center lossless Ethernet infrastructure. As a result, customers can deploy a single server interface for multiple data types, which can simplify the deployment and management of server network connectivity while maintaining the high availability and robustness that is required for storage transactions.
- Fault tolerance  
The NE2552E Flex Switch learns alternate routes automatically and performs faster convergence if there is a link or switch failure.
- Seamless interoperability  
The NE2552E Flex Switch performs seamlessly with other vendors' upstream switches.
- Virtualization  
The NE2552E Flex Switch can help customers address I/O requirements for multiple NICs while reducing cost and complexity. By using Unified Fabric Port, customers can partition a physical NIC into multiple virtual ports (2 - 8 vPorts) and create a virtual pipe between the adapter and the switch for improved performance, availability, and security.  
  
Switch Partition (SPAR) allows clients to virtualize the switch with partitions that isolate communications for multi-tenancy environments.

- Transparent networking capability  
With a simple configuration change to "easy connect" mode, the NE2552E Flex Switch becomes a transparent network device that is invisible to the core and eliminates network administration concerns of Spanning Tree Protocol configuration and interoperability and VLAN assignments and avoids any possible loops. By emulating a host NIC to the data center core, it accelerates the provisioning of VMs by eliminating the need to configure the typical access switch parameters.
- Advanced network management  
The NE2552E Flex Switch integrates with Lenovo XClarity for centralized data center management. Integration with third-party automation, deployment, and monitoring tools, such as VMware vRealize Orchestrator and Log Insight, Ansible DevOps tools, and OpenStack cloud, provides rapid resource provisioning and simplified configuration management across the network.

## Components and connectors

The front panel of the ThinkSystem NE2552E Flex Switch is shown in the following figure.

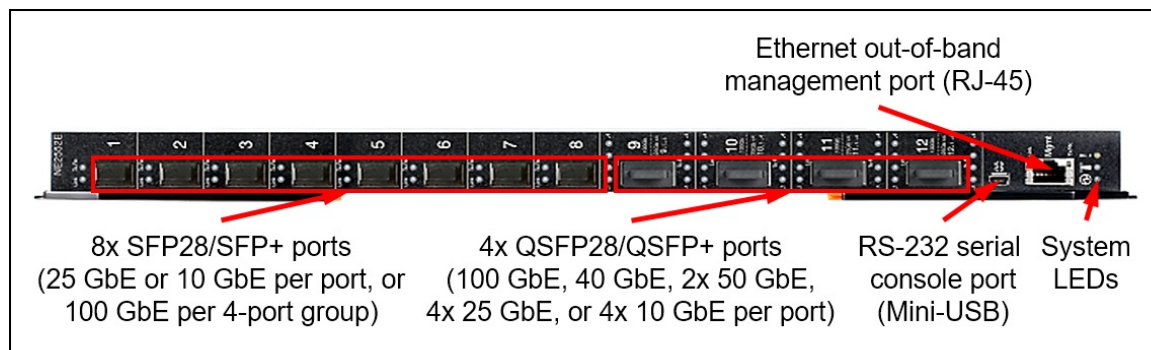


Figure 2. Front panel of the ThinkSystem NE2552E Flex Switch

The front panel includes the following components:

- 8x SFP28/SFP+ ports to attach SFP28/SFP+ transceivers, DAC cables, and AOCs for 25 Gb or 10 Gb Ethernet connections, or 100 Gb Ethernet connections by grouping 4x 25 GbE SFP28 ports into one 100 GbE port.
- 4x QSFP28/QSFP+ ports to attach QSFP28/QSFP+ transceivers, DAC cables, and AOCs for 100 Gb or 40 Gb Ethernet connections or breakout cables for 2x 50 Gb or 4x 25 Gb Ethernet connections out of a 100 GbE port or 4x 10 GbE connections out of a 40 GbE port.
- 1x RJ-45 10/100/1000 Mb Ethernet port for out-of-band management.
- 1x Mini-USB RS-232 console port that provides another means to configure the switch module.
- System LEDs that display the status of the switch module and the network.

## System specifications

The following table lists the NE2552E system specifications.

**Note:** The supported hardware options and software features listed in this product guide are based on the Lenovo Enterprise Networking Operating System (ENOS) version 8.4.8.

Table 1. NE2552E system specifications

Attribute	Specification
Form factor	Flex System embedded I/O module
Ports	<ul style="list-style-type: none"> <li>• Internal: 28x 10/25 Gb Ethernet ports or 14x 50 Gb Ethernet ports</li> <li>• External: 8x SFP+/SFP28 ports and 4x QSFP+/QSFP28 ports</li> </ul>

Attribute	Specification
Media types (external ports)	<p>10 Gb Ethernet SFP+:</p> <ul style="list-style-type: none"> <li>• 10 GbE short-range (SR) SFP+ transceivers</li> <li>• 10 GbE long-range (LR) SFP+ transceivers</li> <li>• 10 GbE extended-range (ER) SFP+ transceivers</li> <li>• 10 GbE RJ-45 SFP+ transceivers</li> <li>• 10 GbE SFP+ active optical cables</li> <li>• 10 GbE SFP+ DAC cables</li> </ul> <p>25 Gb Ethernet SFP28:</p> <ul style="list-style-type: none"> <li>• 25 GbE SR SFP28 transceivers</li> <li>• 25 GbE LR SFP28 transceivers</li> <li>• 25 GbE SFP28 active optical cables</li> <li>• 25 GbE SFP28 DAC cables</li> </ul> <p>40 Gb Ethernet QSFP+:</p> <ul style="list-style-type: none"> <li>• 40 GbE SR QSFP+ bi-directional (BiDi) transceivers</li> <li>• 40 GbE short-range (SR4/iSR4/eSR4) QSFP+ transceivers</li> <li>• 40 GbE long-range (LR4) QSFP+ transceivers</li> <li>• 40 GbE QSFP+ to QSFP+ active optical cables</li> <li>• 40 GbE QSFP+ to 4x 10 GbE SFP+ active optical breakout cables</li> <li>• 40 GbE QSFP+ to QSFP+ DAC cables</li> <li>• 40 GbE QSFP+ to 4x 10 GbE SFP+ DAC breakout cables</li> </ul> <p>100 Gb Ethernet QSFP28:</p> <ul style="list-style-type: none"> <li>• 100 GbE short-range (SR4) QSFP28 transceivers</li> <li>• 100 GbE long-range (LR4) QSFP28 transceivers</li> <li>• 100 GbE QSFP28 to QSFP28 active optical cables</li> <li>• 100 GbE QSFP28 to 4x 25 GbE SFP28 active optical breakout cables</li> <li>• 100 GbE QSFP28 to QSFP28 DAC cables</li> <li>• 100 GbE QSFP28 to 4x 25 GbE SFP28 DAC breakout cables</li> <li>• 100 GbE QSFP28 to 2x 50 GbE QSFP28 DAC breakout cables (not supplied by Lenovo)</li> </ul>
Port speeds	<ul style="list-style-type: none"> <li>• Internal ports: 10 Gbps, 25 Gbps, or 50 [2x 25] Gbps (25/50 Gbps auto-negotiation)</li> <li>• 10 GbE SFP+ transceivers, DAC cables, and AOCs: 10 Gbps</li> <li>• 25 GbE SFP28 transceivers, DAC cables, and AOCs: 25 Gbps</li> <li>• 40 GbE QSFP+ SR BiDi/SR4/LR4 transceivers: 40 Gbps</li> <li>• 40 GbE QSFP+ iSR4/eSR4 transceivers, DAC cables, and AOCs: 40 Gbps or 4x 10 Gbps</li> <li>• 100 GbE QSFP28 DAC cables: 100 Gbps, 2x 50 [2x 25] Gbps, or 4x 25 Gbps</li> <li>• 100 GbE QSFP28 SR4 transceivers and AOCs: 100 Gbps or 4x 25 Gbps</li> <li>• 100 GbE QSFP28 LR4 transceivers: 100 Gbps</li> </ul> <p><b>Notes:</b></p> <ul style="list-style-type: none"> <li>• Internal ports and external SFP+/SFP28 ports are combined into nine 4-port groups: INTA-INTB: 1-2, 3-4, 5-6, 7-8, 9-10, 11-12, and 13-14; EXT: 1-4 and 5-8. All ports in the same 4-port group operate at the same speed (10 Gbps, 25 Gbps, or 50 [2x 25] Gbps [internal ports only]). External port groups can be configured for 100 Gbps (4x 25 Gbps) operations.</li> <li>• The switch can operate in any combination of up to three of five different port speeds supported (10 Gbps, 25 Gbps, 40 Gbps, 50 Gbps, and 100 Gbps) across all ports on the switch; a combination of four or five different port speeds is not supported.</li> </ul>
Switching method	Cut-through.
Data traffic types	Unicast, multicast, broadcast.

Attribute	Specification
Software features	<p>Lenovo Enterprise Networking OS:</p> <p>Layer 2 switching, Layer 3 switching, virtual local area networks (VLANs), VLAN tagging, spanning tree protocol (STP), link aggregation (trunk) groups (LAGs), virtual LAGs (vLAGs), Hot Links, Layer 2 failover, quality of service (QoS), Switch Partitioning (SPAR), IPv4/IPv6 management, IPv4/IPv6 routing, IPv4 virtual router redundancy protocol (VRRP), virtual NICs, Unified Fabric Port (UFP), Converged Enhanced Ethernet, Fibre Channel over Ethernet (FCoE) transit switch operations.</p>
Performance	<p>Non-blocking architecture with wire-speed forwarding of traffic:</p> <ul style="list-style-type: none"> <li>● 100% line-rate performance</li> <li>● Up to 2.6 Tbps aggregated throughput</li> <li>● As low as 480 ns (QSFP28) or 529 ns (SFP28) port-to-port switching latency</li> <li>● Up to 1934 Million packets per second (Mpps)</li> <li>● Up to 9216-byte jumbo frames</li> <li>● Buffer size: 22 MB</li> </ul>
Scalability	<ul style="list-style-type: none"> <li>● MAC address forwarding database entries: 103 000</li> <li>● VLANs: 4095</li> <li>● Per VLAN Rapid Spanning Tree (PVRST) instances: 128</li> <li>● Multiple STP (MSTP) instances: 32</li> <li>● Link aggregation groups: 52</li> <li>● Ports in a link aggregation group: 32</li> <li>● Maximum ACL entries (IPv4 / IPv6 / VLAN): 256 / 128 / 128</li> <li>● Static routes (IPv4 / IPv6): 128 / 128</li> <li>● Dynamic routes (IPv4 / IPv6): 2000 / 600</li> </ul>
Hot-swap parts	SFP+/SFP28/QSFP+/QSFP28 transceivers, DAC cables, and AOCs.
Management ports	2x 1 GbE internal ports connected to the chassis management module; 1x 10/100/1000 Mb Ethernet EXTM external port (RJ-45); 1x RS-232 external port (Mini-USB).
Management interfaces	Browser-based Interface (BBI); Industry-standard command line interface (ISCLI); SNMP; NETCONF (XML); Lenovo XClarity Administrator; Lenovo Networking Content Pack for VMware vRealize Log Insight; Lenovo Networking Neutron Plugin for OpenStack-based environments; Ansible support for IT automation.
Security features	Secure Shell (SSH); Secure Copy (SCP); Secure FTP (sFTP); user level security; LDAP/LDAPS, RADIUS, and TACACS+ authentication; access control lists (ACLs); port-based network access control (IEEE 802.1x).
Warranty	One-year customer-replaceable unit limited warranty. When installed in a supported chassis, the switch assumes the chassis' base warranty and any warranty service upgrade; warranty includes Networking OS software upgrades.
Mean Time Between Failures	300,000 hours MTBF with ambient operating temperature of 25° C (77° F).
Dimensions	Height: 30 mm (1.2 in.); width: 401 mm (15.8 in.); depth: 317 mm (12.5 in.)
Weight	3.7 kg (8.1 lb).

## Part number information

The following table lists the ordering information for the NE2552E switch.

Table 2. NE2552E ordering information

Part number	Feature code	Description
4SG7A08868	B2VW	Lenovo ThinkSystem NE2552E Flex Switch

The switch is shipped with the *Electronic Publications Flyer*.

### Notes:

- QSFP28 and SFP+/SFP28 transceivers and cables are not included and should be ordered for the switch (see [Transceivers and cables](#) for details).
- A serial management cable is not included and should be ordered for the switch, if needed. The optional Cable Kit (90Y9338) contains mini-USB-to-RJ-45 and mini-USB-to-DB9 serial cables.

## Transceivers and cables

With the flexibility of the NE2552E Flex Switch, customers can choose the following technologies for external connectivity:

- For 1 GbE links, customers can use SFP ports with the 1000BASE-T SFP transceivers and RJ-45 UTP Category 5, 5E, or 6 cables for distances up to 100 meters. For longer distances, the 1000BASE-SX transceivers can be used for distances up to 220 meters on OM1 (62.5  $\mu$ ) or up to 550 meters on OM2 (50  $\mu$ ) multimode fiber optic (MMF) cables. The 1000BASE-LX transceivers can be used for distances up to 10 kilometers on single-mode fiber optic (SMF) cables.
- For 10 GbE links, customers can use SFP28 ports with 10 GbE SFP+ direct-attached copper (DAC) cables for distances up to 7 meters or 10 GbE SFP+ active optical cables (AOCs) for distances up to 20 meters. For distances up to 30 meters, the 10GBASE-T SFP+ transceiver can be used with Category 6a or 7 RJ-45 UTP cables.

For longer distances, the 10GBASE-SR SFP+ transceivers can be used for up to 300 meters with OM3 or up to 400 meters with OM4 multimode fiber optic (MMF) LC-LC cables. The 10GBASE-LR SFP+ transceivers can support distances up to 10 kilometers with single mode fiber optic (SMF) LC-LC cables. For extended distances, the 10GBASE-ER SFP+ transceivers can support up to 40 kilometers with SMF LC-LC cables.

To increase the number of available 10 GbE ports, customers can split out four 10 GbE ports for each QSFP28 port by using QSFP+ to 4x SFP+ DAC or active optical breakout cables for distances up to 5 meters. The 40GBASE-iSR4 QSFP+ transceivers can be used for distances up to 100 meters with OM3 or up to 150 meters with OM4 MMF MPO-4xLC breakout cables. For longer distances, the 40GBASE-eSR4 transceivers can be used for up to 300 meters with OM3 or up to 400 meters with OM4 MMF MPO-4xLC breakout 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 for distances up to 20 meters. For longer distances, the 25GBASE-SR SFP28 transceivers can be used for up to 70 meters with OM3 or up to 100 meters with OM4 MMF LC-LC cables. The 25GBASE-LR SFP28 transceivers can support distances up to 10 kilometers with single mode fiber optic LC-LC cables.

To increase the number of available 25 GbE ports, customers can split out four 25 GbE ports for each QSFP28 port by using QSFP28 to 4x SFP28 DAC breakout cables for distances up to 5 meters or active optical breakout cables for distances up to 20 meters. For longer distances, the 100GBASE-SR4 QSFP28 transceivers can be used for up to 70 meters with OM3 or up to 100 meters with OM4 MMF MPO-4xLC breakout cables.

- For 40 GbE links, customers can use QSFP28 ports with QSFP+ to QSFP+ DAC cables for distances up to 7 meters or QSFP+ to QSFP+ active optical cables for distances up to 20 meters.

For longer distances, customers can use the 40GBASE QSFP+ bi-directional transceivers or 40GBASE-SR4/iSR4 QSFP+ transceivers for up to 100 meters with OM3 or up to 150 meters with OM4 MMF MPO-MPO cables. The 40GBASE-eSR4 QSFP+ transceiver can be used for distances up to 300 meters with OM3 or up to 400 meters with OM4 MMF MPO-MPO cables. The 40GBASE-LR4 QSFP+ transceiver can be used for distances up to 10 kilometers with SMF LC-LC cables.

- For 50 GbE links, customers can split out two 50 GbE ports for each QSFP28 port by using the QSFP28-2xQSFP28 DAC breakout cables (not supplied by Lenovo).
- For 100 GbE links, customers can use QSFP28 ports with QSFP28 DAC cables for distances up to 5 meters or QSFP28 active optical cables for distances up to 20 meters.

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

To increase the number of available 100 GbE ports, customers can group four external 25 GbE SFP28 ports (EXT1-4 or EXT5-8) into one 100 GbE port and use QSFP28 to 4x SFP28 DAC breakout cables for distances up to 5 meters or active optical breakout cables for distances up to 20 meters. For longer distances, the 25GBASE-SR SFP28 transceivers can be used for up to 70 meters with OM3 or up to 100 meters with OM4 MMF MPO-4xLC breakout cables.

**Notes:**

- External SFP+/SFP28 ports are combined into two 4-port groups: EXT1-4 and EXT5-8. All external ports in the same 4-port group operate at the same speed (10 Gbps or 25 Gbps). Each external SFP28 port group can also be configured for 100 Gbps (4x 25 Gbps) operations.
- The switch can operate in any combination of up to three of five different port speeds supported (10 Gbps, 25 Gbps, 40 Gbps, 50 Gbps, and 100 Gbps) across all ports on the switch; a combination of four or five different port speeds is not supported.

The following table lists the supported cables and transceivers.

Table 3. Transceivers and cables

Part number	Feature code	Description	Maximum quantity
Serial console cables			
90Y9338	A2RR	Flex System Management Serial Access Cable Kit	1
UTP Category 5E cables for 1 GbE RJ-45 management ports			
40K5679	3801	0.6m Blue Cat5e Cable	1
40K5563	3796	0.6m Green Cat5e Cable	1
40K8933	3791	0.6m Yellow Cat5e Cable	1

Part number	Feature code	Description	Maximum quantity
40K8785	3802	1.5m Blue Cat5e Cable	1
40K5643	3797	1.5m Green Cat5e Cable	1
40K8951	3792	1.5m Yellow Cat5e Cable	1
40K5581	3803	3m Blue Cat5e Cable	1
40K5793	3798	3m Green Cat5e Cable	1
40K8957	3793	3m Yellow Cat5e Cable	1
40K8927	3804	10m Blue Cat5e Cable	1
40K5794	3799	10m Green Cat5e Cable	1
40K8801	3794	10m Yellow Cat5e Cable	1
40K8930	3805	25m Blue Cat5e Cable	1
40K8869	3800	25m Green Cat5e Cable	1
40K8807	3795	25m Yellow Cat5e Cable	1
<b>SFP transceivers - 1 GbE</b>			
00FE333	A5DL	Lenovo 1000BASE-T (RJ-45) SFP Transceiver (no 10/100 Mbps support)	8
81Y1622	3269	Lenovo 1000BASE-SX SFP Transceiver	8
90Y9424	A1PN	Lenovo 1000BASE-LX SFP Transceiver	8
<b>SFP+ transceivers - 10 GbE</b>			
00MY034	ATTJ	Lenovo Dual Rate 1/10Gb SX/SR SFP+ Transceiver (no 1 Gb support)	8
46C3447	5053	Lenovo 10Gb SFP+ SR Transceiver (10GBASE-SR)	8
00FE331	B0RJ	Lenovo 10GBASE-LR SFP+ Transceiver	8
90Y9415	A1PP	Lenovo 10Gb SFP+ ER Transceiver (10GBASE-ER)	8
7G17A03130	AVV1	Lenovo 10GBASE-T SFP+ Transceiver	8
<b>OM3 optical cables for 10 GbE SR SFP+, 25 GbE SR SFP28, and 40 GbE SR QSFP+ BiDi transceivers</b>			
00MN499	ASR5	Lenovo 0.5m LC-LC OM3 MMF Cable	12
00MN502	ASR6	Lenovo 1m LC-LC OM3 MMF Cable	12
00MN505	ASR7	Lenovo 3m LC-LC OM3 MMF Cable	12
00MN508	ASR8	Lenovo 5m LC-LC OM3 MMF Cable	12
00MN511	ASR9	Lenovo 10m LC-LC OM3 MMF Cable	12
00MN514	ASRA	Lenovo 15m LC-LC OM3 MMF Cable	12
00MN517	ASRB	Lenovo 25m LC-LC OM3 MMF Cable	12
00MN520	ASRC	Lenovo 30m LC-LC OM3 MMF Cable	12
<b>OM4 optical cables for 10 GbE SR SFP+, 25 GbE SR SFP28, and 40 GbE SR QSFP+ BiDi transceivers</b>			
4Z57A10845	B2P9	Lenovo 0.5m LC-LC OM4 MMF Cable	12
4Z57A10846	B2PA	Lenovo 1m LC-LC OM4 MMF Cable	12
4Z57A10847	B2PB	Lenovo 3m LC-LC OM4 MMF Cable	12
4Z57A10848	B2PC	Lenovo 5m LC-LC OM4 MMF Cable	12
4Z57A10849	B2PD	Lenovo 10m LC-LC OM4 MMF Cable	12
4Z57A10850	B2PE	Lenovo 15m LC-LC OM4 MMF Cable	12
4Z57A10851	B2PF	Lenovo 25m LC-LC OM4 MMF Cable	12
4Z57A10852	B2PG	Lenovo 30m LC-LC OM4 MMF Cable	12



Part number	Feature code	Description	Maximum quantity
UTP Category 6 cables for 10 GbE SFP+ RJ-45 transceivers and 1 GbE RJ-45 management ports			
90Y3721	A1MU	10m Blue Cat6 Cable	9
90Y3718	A1MT	10m Green Cat6 Cable	9
90Y3715	A1MS	10m Yellow Cat6 Cable	9
90Y3730	A1MX	25m Blue Cat6 Cable	9
90Y3727	A1MW	25m Green Cat6 Cable	9
90Y3724	A1MV	25m Yellow Cat6 Cable	9
SFP+ active optical cables - 10 GbE			
00YL634	ATYX	Lenovo 1m SFP+ to SFP+ Active Optical Cable	8
00YL637	ATYY	Lenovo 3m SFP+ to SFP+ Active Optical Cable	8
00YL640	ATYZ	Lenovo 5m SFP+ to SFP+ Active Optical Cable	8
00YL643	ATZ0	Lenovo 7m SFP+ to SFP+ Active Optical Cable	8
00YL646	ATZ1	Lenovo 15m SFP+ to SFP+ Active Optical Cable	8
00YL649	ATZ2	Lenovo 20m SFP+ to SFP+ Active Optical Cable	8
SFP+ passive direct-attach copper cables - 10 GbE			
00D6288	A3RG	Lenovo 0.5m Passive SFP+ DAC Cable	8
90Y9427	A1PH	Lenovo 1m Passive SFP+ DAC Cable	8
00AY764	A51N	Lenovo 1.5m Passive SFP+ DAC Cable	8
00AY765	A51P	Lenovo 2m Passive SFP+ DAC Cable	8
90Y9430	A1PJ	Lenovo 3m Passive SFP+ DAC Cable	8
90Y9433	A1PK	Lenovo 5m Passive SFP+ DAC Cable	8
00D6151	A3RH	Lenovo 7m Passive SFP+ DAC Cable	8
SFP28 transceivers - 25 GbE			
7G17A03537	AV1B	Lenovo 25GBASE-SR SFP28 Transceiver	8
7G17A03538	AV1C	Lenovo 25GBASE-LR SFP28 Transceiver	8
SFP28 active optical cables - 25 GbE			
7Z57A03541	AV1F	Lenovo 3m 25G SFP28 Active Optical Cable	8
7Z57A03542	AV1G	Lenovo 5m 25G SFP28 Active Optical Cable	8
7Z57A03543	AV1H	Lenovo 10m 25G SFP28 Active Optical Cable	8
7Z57A03544	AV1J	Lenovo 15m 25G SFP28 Active Optical Cable	8
7Z57A03545	AV1K	Lenovo 20m 25G SFP28 Active Optical Cable	8
SFP28 passive direct-attach copper cables - 25 GbE			
7Z57A03557	AV1W	Lenovo 1m Passive 25G SFP28 DAC Cable	8
7Z57A03558	AV1X	Lenovo 3m Passive 25G SFP28 DAC Cable	8
7Z57A03559	AV1Y	Lenovo 5m Passive 25G SFP28 DAC Cable	8
QSFP+ transceivers - 40 GbE			
4TC7A85336	BU8E	ThinkSystem Accelink 40G SR4 QSFP+ Ethernet transceiver	4
00YL631	ATYW	Lenovo 40GBASE QSFP+ Bi-Directional Transceiver	4
Optical cables for 40 GbE QSFP+ SR4/iSR4/eSR4 transceivers			
00VX003	AT2U	Lenovo 10m QSFP+ MPO-MPO OM3 MMF Cable	4
00VX005	AT2V	Lenovo 30m QSFP+ MPO-MPO OM3 MMF Cable	4

Part number	Feature code	Description	Maximum quantity
Optical breakout cables for 40 GbE QSFP+ iSR4/eSR4 transceivers			
00FM412	A5UA	Lenovo 1m MPO-4xLC OM3 MMF Breakout Cable	4
00FM413	A5UB	Lenovo 3m MPO-4xLC OM3 MMF Breakout Cable	4
00FM414	A5UC	Lenovo 5m MPO-4xLC OM3 MMF Breakout Cable	4
QSFP+ active optical cables - 40 GbE			
00YL652	ATZ3	Lenovo 3m QSFP+ to QSFP+ Active Optical Cable	4
00YL655	ATZ4	Lenovo 5m QSFP+ to QSFP+ Active Optical Cable	4
00YL658	ATZ5	Lenovo 7m QSFP+ to QSFP+ Active Optical Cable	4
00YL661	ATZ6	Lenovo 15m QSFP+ to QSFP+ Active Optical Cable	4
00YL664	ATZ7	Lenovo 20m QSFP+ to QSFP+ Active Optical Cable	4
QSFP+ active optical breakout cables - 40 GbE to 4x10 GbE			
00YL667	ATZ8	Lenovo 1m QSFP+ to 4xSFP+ Active Optical Cable	4
00YL670	ATZ9	Lenovo 3m QSFP+ to 4xSFP+ Active Optical Cable	4
00YL673	ATZA	Lenovo 5m QSFP+ to 4xSFP+ Active Optical Cable	4
QSFP+ passive direct-attach copper cables - 40 GbE			
49Y7890	A1DP	Lenovo 1m Passive QSFP+ DAC Cable	4
49Y7891	A1DQ	Lenovo 3m Passive QSFP+ DAC Cable	4
00D5810	A2X8	Lenovo 5m Passive QSFP+ DAC Cable	4
00D5813	A2X9	Lenovo 7m Passive QSFP+ DAC Cable	4
QSFP+ passive copper breakout cables - 40 GbE to 4x 10 GbE			
49Y7886	A1DL	Lenovo 1m Passive QSFP+ to SFP+ Breakout DAC Cable	4
49Y7887	A1DM	Lenovo 3m Passive QSFP+ to SFP+ Breakout DAC Cable	4
49Y7888	A1DN	Lenovo 5m Passive QSFP+ to SFP+ Breakout DAC Cable	4
QSFP28 transceivers - 100 GbE			
7G17A03539	AV1D	Lenovo 100GBASE-SR4 QSFP28 Transceiver	4
7G17A03540	AV1E	Lenovo 100GBASE-LR4 QSFP28 Transceiver	4
Optical cables for 100 GbE QSFP28 SR4 transceivers			
7Z57A03567	AV25	Lenovo 5m MPO-MPO OM4 MMF Cable	4
7Z57A03568	AV26	Lenovo 7m MPO-MPO OM4 MMF Cable	4
7Z57A03569	AV27	Lenovo 10m MPO-MPO OM4 MMF Cable	4
7Z57A03570	AV28	Lenovo 15m MPO-MPO OM4 MMF Cable	4
7Z57A03571	AV29	Lenovo 20m MPO-MPO OM4 MMF Cable	4
7Z57A03572	AV2A	Lenovo 30m MPO-MPO OM4 MMF Cable	4
Optical breakout cables for 100 GbE QSFP28 SR4 transceivers			
7Z57A03573	AV2B	Lenovo 1m MPO-4xLC Breakout OM4 MMF Cable	4
7Z57A03574	AV2C	Lenovo 3m MPO-4xLC Breakout OM4 MMF Cable	4
7Z57A03575	AV2D	Lenovo 5m MPO-4xLC Breakout OM4 MMF Cable	4
QSFP28 active optical cables - 100 GbE			
4Z57A10844	B2UZ	Lenovo 1m 100G QSFP28 Active Optical Cable	4
7Z57A03546	AV1L	Lenovo 3m 100G QSFP28 Active Optical Cable	4
7Z57A03547	AV1M	Lenovo 5m 100G QSFP28 Active Optical Cable	4

Part number	Feature code	Description	Maximum quantity
7Z57A03548	AV1N	Lenovo 10m 100G QSFP28 Active Optical Cable	4
7Z57A03549	AV1P	Lenovo 15m 100G QSFP28 Active Optical Cable	4
7Z57A03550	AV1Q	Lenovo 20m 100G QSFP28 Active Optical Cable	4
QSFP28 active optical breakout cables - 100 GbE to 4x 25 GbE			
7Z57A03551	AV1R	Lenovo 3m 100G to 4x25G Breakout Active Optical Cable	4
7Z57A03552	AV1S	Lenovo 5m 100G to 4x25G Breakout Active Optical Cable	4
7Z57A03553	AV1T	Lenovo 10m 100G to 4x25G Breakout Active Optical Cable	4
7Z57A03554	AV1U	Lenovo 15m 100G to 4x25G Breakout Active Optical Cable	4
7Z57A03555	AV1V	Lenovo 20m 100G to 4x25G Breakout Active Optical Cable	4
QSFP28 direct attach copper cables - 100 GbE			
7Z57A03561	AV1Z	Lenovo 1m Passive 100G QSFP28 DAC Cable	4
7Z57A03562	AV20	Lenovo 3m Passive 100G QSFP28 DAC Cable	4
7Z57A03563	AV21	Lenovo 5m Passive 100G QSFP28 DAC Cable	4
QSFP28 direct attach copper breakout cables - 100 GbE			
7Z57A03564	AV22	Lenovo 1m 100G QSFP28 to 4x25G SFP28 Breakout DAC Cable	4
4Z57A85043	BS32	Lenovo 1.5m 100G to 4x25G Breakout SFP28 Breakout DAC Cable	
4Z57A85044	BS33	Lenovo 2m 100G to 4x25G Breakout SFP28 Breakout DAC Cable	
7Z57A03565	AV23	Lenovo 3m 100G QSFP28 to 4x25G SFP28 Breakout DAC Cable	4
7Z57A03566	AV24	Lenovo 5m 100G QSFP28 to 4x25G SFP28 Breakout DAC Cable	4

The network cables that can be used with the switch are listed in the following table.

Table 4. NE2552E Flex Switch network cabling requirements

Transceiver	Standard	Cable	Connector
10 Gb Ethernet			
10Gb SR SFP+ (46C3447) 1/10Gb SFP+ (00MY034)	10GBASE-SR	Up to 30 m with MMF LC-LC cables supplied by Lenovo (see Table 3); up to 300 m with OM3 or up to 400 m with OM4 MMF LC-LC cables	LC
10Gb LR SFP+ (90Y9412, 00FE331)	10GBASE-LR	1310 nm SMF LC-LC cable up to 10 km	LC
10Gb ER SFP+ (90Y9415)	10GBASE-ER	1310 nm SMF LC-LC cable up to 40 km	LC
10Gb RJ-45 SFP+ (7G17A03130)	10GBASE-T	Up to 25 m with UTP Category 6 cables supplied by Lenovo (see Table 3); UTP Category 6a or 7 cables up to 30 m	RJ-45
Active optical cable	10GBASE-SR	SFP+ active optical cables up to 20 m (see Table 3)	SFP+
Direct attach copper cable	10GSFP+Cu	SFP+ DAC cables up to 7 m (see Table 3)	SFP+
25 Gb Ethernet			
25Gb SR SFP28 (7G17A03537)	25GBASE-SR	Up to 30 m with MMF LC-LC cables supplied by Lenovo (see Table 3); up to 70 m with OM3 or up to 100 m with OM4 MMF LC-LC cables	LC

Transceiver	Standard	Cable	Connector
25Gb LR SFP28 (7G17A03538)	25GBASE-LR	1310 nm SMF LC-LC cable up to 10 km	LC
Active optical cable	25GBASE-SR	SFP28 active optical cables up to 20 m (see Table 3)	SFP28
Direct attach copper cable	25GBASE-CR	SFP28 DAC cables up to 5 m (see Table 3)	SFP28
<b>40 Gb Ethernet</b>			
40Gb SR QSFP+ BiDi (00YL631)	40GBASE-SR BiDi	Up to 30 m with MMF LC-LC cables supplied by Lenovo (see Table 3); up to 100 m with OM3 or up to 150 m with OM4 MMF LC-LC cables	LC
Active optical cable	40GBASE-SR4	QSFP+ to QSFP+ active optical cables up to 20 m; QSFP+ to 4x SFP+ active optical break-out cables up to 5 m for 4x 10 GbE SFP+ connections out of a 40 GbE port (see Table 3)	QSFP+
Direct attach copper cable	40GBASE-CR4	QSFP+ to QSFP+ DAC cables up to 7 m; QSFP+ to 4x SFP+ DAC break-out cables up to 5 m for 4x 10 GbE SFP+ connections out of a 40 GbE port (see Table 3)	QSFP+
<b>50 Gb (2x 25 Gb) Ethernet</b>			
Direct attach copper cable	25G/50G Eth. Consortium	QSFP28 to 2x QSFP28 DAC breakout cables (not supplied by Lenovo)	QSFP28
<b>100 Gb Ethernet</b>			
100Gb SR4 QSFP28 (7G17A03539)	100GBASE-SR4	Up to 30 m with MPO-MPO MMF cables or up to 5 m with MPO-4xLC breakout cables supplied by Lenovo (see Table 3); up to 70 m with OM3 or up to 100 m with OM4 MMF MPO-MPO or MPO-4xLC breakout cables	MPO
100Gb LR4 QSFP28 (7G17A03540)	100GBASE-LR4	1310 nm SMF LC-LC cable up to 10 km	LC
Active optical cable	100GBASE-SR4	QSFP28 to QSFP28 active optical cables up to 20 m; QSFP28 to 4x SFP28 active optical breakout cables up to 20 m for 4x 25 GbE connections out of a 100 GbE port (see Table 3)	QSFP28
Direct attach copper cable	100GBASE-CR4	QSFP28 to QSFP28 DAC cables up to 5 m; QSFP28 to 4x SFP28 DAC breakout cables up to 5 m for 4x 25 GbE connections out of a 100 GbE port (see Table 3)	QSFP28
<b>Management ports</b>			
1 GbE port	1000BASE-T	UTP Category 5, 5E, and 6 up to 100 meters	RJ-45
Serial port	RS-232	DB-9-to-mini-USB or RJ-45-to-mini-USB console cable (comes with the optional Cable Kit, 90Y9338).	Mini-USB

## Software features

The NE2552E Flex Switch includes the following software features:

- Scalability and performance:
  - Media access control (MAC) address learning with automatic updates
  - Static and LACP (IEEE 802.3ad) link aggregation
  - Broadcast and multicast storm control
  - IGMP snooping to limit flooding of IP multicast traffic
  - IGMP filtering to control multicast traffic for hosts that are participating in multicast groups
  - Configurable traffic distribution schemes over trunk links that are based on source or destination IP or MAC addresses, or both

- Fast port forwarding and fast uplink convergence for rapid STP convergence
- Availability and redundancy:
  - IEEE 802.1D STP for providing Layer 2 redundancy
  - IEEE 802.1s Multiple STP (MSTP) for topology optimization
  - IEEE 802.1w Rapid STP (RSTP) provides rapid STP convergence for critical delay-sensitive traffic, such as voice or video
  - Per-VLAN Rapid STP (PVRST) enhancements
  - Layer 2 Failover to support active/standby configurations of NIC teaming on compute nodes
  - Hot Links provides basic link redundancy with fast recovery for network topologies that require Spanning Tree to be turned off
- VLAN support:
  - Up to 4095 VLANs supported per switch, with VLAN numbers 1 - 4095 (4095 is used for management module's connection only)
  - Port-based and protocol-based VLANs
  - 802.1Q VLAN tagging support on all ports
  - Full private VLANs
  - Ingress VLAN tagging support to tunnel packets through a public domain without altering the original 802.1Q tagging information
- Security:
  - VLAN-based, MAC-based, and IP-based access control lists (ACLs)
  - 802.1x port-based authentication
  - Multiple user IDs and passwords
  - User access control
  - RADIUS, TACACS+, and LDAP authentication and authorization
  - Secure I/O Module (SIOM) mode: Only secure communication protocols are allowed
  - NIST SP 800-131A compliance
- Quality of Service (QoS):
  - IEEE 802.1p, IP ToS/DSCP, and ACL-based (MAC/IP source and destination addresses, VLANs) traffic classification and processing
  - Traffic shaping and re-marking based on defined policies
  - 2 or 8 (configurable) Weighted Round Robin (WRR) priority queues per port
  - IPv4/IPv6 ACL metering
  - Control Plane Protection (CPP)
  - Packet drop logging
  - Microburst detection
- IP v4 Layer 3 functions:
  - Host management
  - IP forwarding
  - IP filtering with ACLs
  - Virtual Router Redundancy Protocol (VRRP) for router redundancy
  - Routing protocols: RIP v1, RIP v2, OSPF v2, and BGP
  - DHCP Relay
  - IGMP snooping and IGMP relay
  - Protocol Independent Multicast (PIM) in Sparse Mode (PIM-SM) and Dense Mode (PIM-DM)
- IPv6 Layer 3 functions:
  - IPv6 host management (except default switch management IP address)
  - IPv6 forwarding
  - IPv6 filtering with ACLs
  - OSPF v3 routing protocol
- Virtualization:
  - Virtual NICs (vNICs): Ethernet, iSCSI, or FCoE traffic is supported on vNICs (adapter-specific)
  - Unified fabric port (UFP):
    - Up to eight UFP virtual ports (vPorts) per physical port (adapter-specific)
    - Ethernet, iSCSI, or FCoE traffic is supported on vPorts

- Supports up to 1024 VLAN for the virtual ports
    - Integration with Layer 2 failover
  - Virtual link aggregation groups (vLAGs)
    - Two switches (vLAG peers) act as a single virtual entity for a multi-port aggregation
    - vLAG Peer Gateway for improved usage of the link between the vLAG peers
    - Two-tier vLAGs with VRRP enables active/active VRRP to reduce routing latency
  - Switch partitioning (SPAR):
    - SPAR forms separate virtual switching contexts by segmenting the data plane of the module. Data plane traffic is not shared between SPARs on the same switch.
    - SPAR operates as a Layer 2 broadcast network. Hosts on the same VLAN that are attached to a SPAR can communicate with each other and with the upstream switch. Hosts on the same VLAN but attached to different SPARs communicate through the upstream switch.
    - SPAR is implemented as a dedicated VLAN with a set of internal compute node ports and a single external port or link aggregation (LAG). Multiple external ports or LAGs are not allowed in SPAR. A port can be a member of only one SPAR.
    - SPAR operates in one of the following modes:
      - Pass-through Domain (or VLAN-agnostic) mode  
In VLAN-agnostic mode (default configuration), the NE2552E transparently forwards VLAN tagged frames without filtering on the customer VLAN tag. This mode provides an end host view to the upstream network. When FCoE is used, the switch can be connected to the FCoE transit switch or FCoE gateway (FC Forwarder [FCF]) device.
      - Local Domain (or VLAN-aware) mode  
In VLAN-aware mode (optional configuration), the NE2552E provides more security for multi-tenant environments by extending client VLAN traffic isolation to the switch module and its external ports. VLAN-based access control lists (ACLs) can be configured on the NE2552E. When FCoE is used, the switch operates as an FCoE transit switch and it should be connected to the FCF device.
- Converged Enhanced Ethernet:
  - Priority-Based Flow Control (PFC) (IEEE 802.1Qbb) extends 802.3x standard flow control to allow the switch to pause traffic that is based on the 802.1p priority value in each packet's VLAN tag.
  - Enhanced Transmission Selection (ETS) (IEEE 802.1Qaz) provides a method for allocating link bandwidth that is based on the 802.1p priority value in each packet's VLAN tag.
  - Data Center Bridging Capability Exchange Protocol (DCBX) (IEEE 802.1AB) allows neighboring network devices to exchange information about their capabilities.
- Fibre Channel over Ethernet (FCoE):
  - FC-BB5 FCoE specification compliant
  - FCoE transit switch operations
  - FCoE Initialization Protocol (FIP) support for automatic ACL configuration
  - FCoE Link Aggregation Group (LAG) support
  - Multi-hop RDMA over Converged Ethernet (RoCE) with LAG support
  - Up to 2000 secure FCoE sessions with FIP Snooping by using Class ID ACLs

- Manageability:
  - Industry-standard command line interface (ISCLI)
    - Serial interface
    - Telnet
    - Secure Shell (SSH)
  - Browser-Based Interface (BBI)
    - HTTP
    - HTTPS
  - Scriptable CLI
  - Link Layer Discovery Protocol (LLDP) for discovering network devices
  - Simple Network Management Protocol (SNMP V1, V2, and V3)
  - Service Location Protocol (SLP) for dynamic directory services
  - Secure Copy (SCP) for uploading and downloading the configuration file via secure channels
  - Dynamic port mode for changing port speeds without rebooting
  - Firmware image update and configuration file transfer via TFTP, FTP, and Secure FTP (sFTP)
  - NETCONF (XML)
  - Network Time Protocol (NTP) and Precision Time Protocol (PTP) for switch clock synchronization
  - EasyConnect (EZC) Wizard
  - Lenovo XClarity for discovery, inventory, monitoring and events
  - Third-party tools integration
    - Lenovo Networking Content Pack for VMware vRealize Log Insight (optional download) for automated log management
    - Lenovo Networking Neutron Plugin to automate VLAN provisioning and configuration updates for OpenStack-based cloud environments
    - Integration with Ansible management
- Monitoring:
  - Switch LEDs for external port status and switch module status indication
  - Remote Monitoring (RMON) agent to collect statistics and proactively monitor performance
  - Port mirroring for analyzing network traffic that is passing through switch
  - Change tracking and remote logging with syslog feature
  - sFlow agent for monitoring traffic in data networks (separate sFlow analyzer required elsewhere)
  - POST diagnostics

The following features are not supported with IPv6:

- Default switch management IP address
- SNMP trap host destination IP address
- Bootstrap Protocol (BOOTP) and DHCP
- RADIUS, TACACS+ and LDAP
- QoS metering and re-marking ACLs for out-profile traffic
- Routing Information Protocol (RIP)
- Internet Group Management Protocol (IGMP)
- Border Gateway Protocol (BGP)
- Virtual Router Redundancy Protocol (VRRP)
- sFlow

## Ethernet standards

The NE2552E switch module supports the following standards:

- IEEE 802.1AB Data Center Bridging Capability Exchange Protocol (DCBX)
- IEEE 802.1D Spanning Tree Protocol (STP)
- IEEE 802.1p Class of Service (CoS) prioritization
- IEEE 802.1s Multiple STP (MSTP)
- IEEE 802.1Q Tagged VLAN (frame tagging on all ports when VLANs are enabled)
- IEEE 802.1Qbb Priority-Based Flow Control (PFC)
- IEEE 802.1Qaz Enhanced Transmission Selection (ETS)
- IEEE 802.1x port-based authentication
- IEEE 802.1w Rapid STP (RSTP)
- IEEE 802.3x Full-duplex Flow Control
- IEEE 802.3ad Link Aggregation Control Protocol
- IEEE 802.3 10BASE-T Ethernet (External Ethernet management port only)
- IEEE 802.3u 100BASE-TX Fast Ethernet (External Ethernet management port only)
- IEEE 802.3ab 1000BASE-T copper twisted pair Gigabit Ethernet (External Ethernet management port only)
- IEEE 802.3ae 10GBASE-KR backplane 10 Gb Ethernet
- IEEE 802.3ae 10GBASE-SR short range fiber optics 10 Gb Ethernet
- IEEE 802.3ae 10GBASE-LR long range fiber optics 10 Gb Ethernet
- IEEE 802.3ae 10GBASE-ER extended range fiber optics 10 Gb Ethernet
- IEEE 802.3an 10GBASE-T copper twisted pair 10 Gb Ethernet
- 10GSFP+Cu 10 Gb SFP+ Direct attach copper cable
- IEEE 802.3by 25GBASE-KR backplane 25 Gb Ethernet
- IEEE 802.3by 25GBASE-CR copper 25 Gb Ethernet
- IEEE 802.3by 25GBASE-SR short range fiber optics 25 Gb Ethernet
- IEEE 802.3cc 25GBASE-LR long range fiber optics 25 Gb Ethernet
- IEEE 802.3ba 40GBASE-CR4 copper 40 Gb Ethernet
- IEEE 802.3ba 40GBASE-SR4 short range fiber optics 40 Gb Ethernet
- IEEE 802.3ba 40GBASE-LR4 long range fiber optics 40 Gb Ethernet
- IEEE 802.3bj 100GBASE-CR4 copper 100 Gb Ethernet
- IEEE 802.3bm 100GBASE-SR4 short range fiber optics 100 Gb Ethernet
- IEEE 802.3ba 100GBASE-LR4 long range fiber optics 100 Gb Ethernet
- 25G 50G Ethernet Consortium

## Warranty

The NE2552E carries a 1-year, customer-replaceable unit (CRU) limited warranty, which includes unrestricted access to software upgrades. When installed in a supported chassis, these I/O modules assume your Flex System chassis' base warranty and any warranty service upgrade.

## Physical specifications

The NE2552E Flex Switch features the following approximate dimensions and weight:

- Height: 30 mm (1.2 in.)
- Width: 401 mm (15.8 in.)
- Depth: 317 mm (12.5 in.)
- Weight: 3.7 kg (8.1 lb)



## Regulatory compliance

The NE2552E Flex Switch conforms to the following regulations:

- United States FCC Part 15, Class A
- Canada ICES-003, Class A
- Australia and New Zealand Class A Statement
- European Union Council Directive 2004/108/EC
- European Union Council Directive 2014/30/EU
- EN55022 Class A
- EN55024
- Japan VCCI Class A Statement
- Korea KCC Class A Statement
- Russia Electromagnetic Interference (EMI) Class A Statement
- People's Republic of China Class A Electronic Emission Statement
- Taiwan Class A Compliance Statement

## Chassis and adapters

The switches are installed in I/O module bays in the rear of the Flex System Chassis, as shown in the following figure. Switches are normally installed in pairs because ports on the I/O adapters that are installed in the compute nodes are routed to two I/O bays for redundancy and performance.

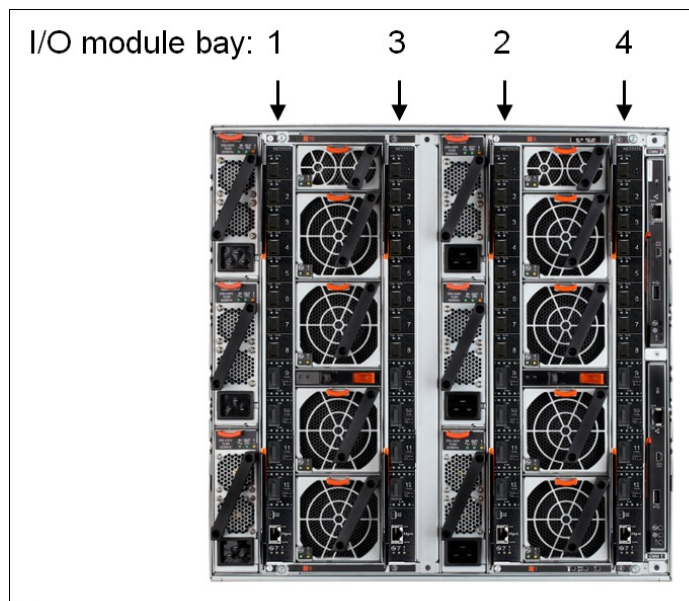


Figure 3. Location of the I/O bays in the Flex System Enterprise Chassis

The NE2552E switches can be installed in bays 1, 2, 3, and 4 of the Enterprise chassis. A supported 10 GbE, 25 GbE, or 50 GbE adapter must be installed in the corresponding slot of the compute node. Each adapter can use one (10/25 GbE) or two (50 GbE) lanes to connect to the respective I/O module bay.

In compute nodes that have an integrated dual-port 10 GbE network interface controller (NIC), NIC ports are routed to bays 1 and 2 with a specialized Fabric Connector, and the adapter is not required. However, the Fabric Connector can be replaced with the adapter when needed. In such a case, the integrated NIC is disabled.

Internal ports on the NE2552E switch are combined into seven 4-port groups:

- INTA1, INTB1, INTA2, INTB2
- INTA3, INTB3, INTA4, INTB4
- INTA5, INTB5, INTA6, INTB6
- INTA7, INTB7, INTA8, INTB8
- INTA9, INTB9, INTA10, INTB10
- INTA11, INTB11, INTA12, INTB12
- INTA13, INTB13, INTA14, INTB14

All internal ports in the same 4-port group operate at the same speed (10 Gbps, 25 Gbps, or 50 Gbps [2x 25 Gbps]). For 50 Gbps internal connections, two 25 Gbps ports (INTAx and INTBx) are combined into a single 50 Gbps (2x 25 Gbps) port (INTAx).

**Note:** The switch can operate in any combination of up to three of five different port speeds supported (10 Gbps, 25 Gbps, 40 Gbps, 50 Gbps, and 100 Gbps) across all ports on the switch; a combination of four or five different port speeds is not supported.

The following figure shows internal port mappings and speeds for various 4-port group configurations.

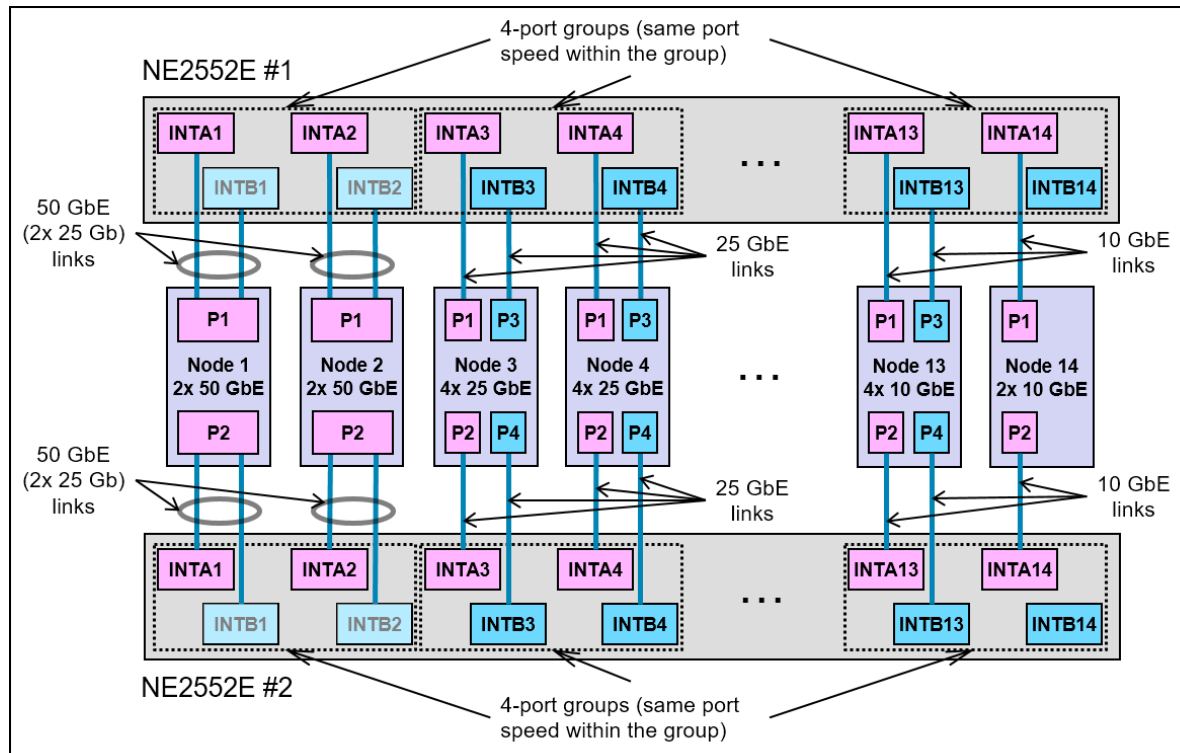


Figure 4. NE2552E internal port mappings

The following table shows compatibility information for the NE2552E and Flex System chassis.

Table 5. Flex System chassis compatibility

Description	Part number	Enterprise Chassis with CMM	Enterprise Chassis with CMM2	Carrier-grade Chassis with CMM2
Lenovo ThinkSystem NE2552E Flex Switch	4SG7A08868	No	Yes	No

The midplane connections between the adapters that are installed in the compute nodes to the I/O module bays in the chassis are listed in the following table. Half-wide compute nodes support up to two adapters, and full-wide compute nodes support up to four adapters.

Table 6. Adapter to I/O bay correspondence

I/O adapter slot in the compute node	Port on the adapter	Corresponding I/O module bay in the chassis			
		Bay 1	Bay 2	Bay 3	Bay 4
Slot 1	Port 1	Yes			
	Port 2		Yes		
	Port 3	Yes			
	Port 4		Yes		
Slot 2	Port 1			Yes	
	Port 2				Yes
	Port 3			Yes	
	Port 4				Yes
Slot 3 (full-wide compute nodes only)	Port 1	Yes			
	Port 2		Yes		
	Port 3	Yes			
	Port 4		Yes		
Slot 4 (full-wide compute nodes only)	Port 1			Yes	
	Port 2				Yes
	Port 3			Yes	
	Port 4				Yes

The currently available I/O adapters supported by the NE2552E switch are listed in the following table.

Table 7. Network adapters

Description	Part number	Feature code
<b>10 Gb Ethernet</b>		
Onboard 2-Port Emulex 10Gb Virtual Fabric Adapter (select x240 compute nodes)	None	None
Onboard 4-port Intel X722 10GbE controller (select SN550 and SN850 compute nodes)	None	None
Flex System CN4022 2-port 10Gb Converged Adapter	88Y5920	A4K3
Flex System CN4052S 2-port 10Gb Virtual Fabric Adapter	00AG540	ATBT
Flex System CN4052S 2-port 10Gb Virtual Fabric Adapter Advanced	01CV780	AU7X
Flex System CN4054S 4-port 10Gb Virtual Fabric Adapter	00AG590	ATBS
Flex System CN4054S 4-port 10Gb Virtual Fabric Adapter Advanced	01CV790	AU7Y
Flex System EN4172 2-port 10Gb Ethernet Adapter	00AG530	A5RN
<b>25 Gb Ethernet</b>		
ThinkSystem QLogic QL45214 Flex 25Gb 4-Port Ethernet Adapter	7XC7A05844	B2VU
<b>50 Gb Ethernet</b>		
ThinkSystem QLogic QL45212 Flex 50Gb 2-Port Ethernet Adapter	7XC7A05843	B2VT
ThinkSystem QLogic QL45262 Flex 50Gb 2-Port Ethernet Adapter with iSCSI/FCoE	7XC7A05845	B2VV

## Network connectivity

The following table lists the network switches that are offered by Lenovo that can be used with the NE2552E switch for network connectivity.

Table 8. Ethernet LAN switches

Description	Part number
<b>1 Gb Ethernet switches</b>	
Lenovo ThinkSystem NE0152T RackSwitch (Rear to Front)	7Y810011WW
Lenovo ThinkSystem NE0152TO RackSwitch (Rear to Front, ONIE)	7Z320011WW
Lenovo RackSwitch G7028 (Rear to Front)	7159BAX
Lenovo RackSwitch G7052 (Rear to Front)	7159CAX
Lenovo CE0128TB Switch (3-Year Warranty)	7Z340011WW
Lenovo CE0128TB Switch (Limited Lifetime Warranty)	7Z360011WW
Lenovo CE0128PB Switch (3-Year Warranty)	7Z340012WW
Lenovo CE0128PB Switch (Limited Lifetime Warranty)	7Z360012WW
Lenovo CE0152TB Switch (3-Year Warranty)	7Z350021WW
Lenovo CE0152TB Switch (Limited Lifetime Warranty)	7Z370021WW
Lenovo CE0152PB Switch (3-Year Warranty)	7Z350022WW
Lenovo CE0152PB Switch (Limited Lifetime Warranty)	7Z370022WW
<b>10 Gb Ethernet switches</b>	
Lenovo ThinkSystem NE1032 RackSwitch (Rear to Front)	7159A1X
Lenovo ThinkSystem NE1032T RackSwitch (Rear to Front)	7159B1X
Lenovo ThinkSystem NE1072T RackSwitch (Rear to Front)	7159C1X
Lenovo RackSwitch G8272 (Rear to Front)	7159CRW
<b>25 Gb Ethernet switches</b>	
Lenovo ThinkSystem NE2572 RackSwitch (Rear to Front)	7159E1X
Lenovo ThinkSystem NE2572O RackSwitch (Rear to Front, ONIE)	7Z210021WW
<b>100 Gb Ethernet switches</b>	
Lenovo ThinkSystem NE10032 RackSwitch (Rear to Front)	7159D1X
Lenovo ThinkSystem NE10032O RackSwitch (Rear to Front, ONIE)	7Z210011WW

For more information, see the list of Product Guides in the Top-of-rack Switches category:

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

## Storage connectivity

The following table lists the external storage systems that are currently offered by Lenovo that can be used with the NE2552E for external NAS or iSCSI SAN storage connectivity.

Table 9. External storage systems: DE Series

Description	Part number	
	Worldwide	Japan
Lenovo ThinkSystem DE Series Storage (iSCSI connectivity)		
Lenovo ThinkSystem DE2000H 10GBASE-T Hybrid Flash Array LFF	7Y70A003WW	7Y701001JP
Lenovo ThinkSystem DE2000H 10GBASE-T Hybrid Flash Array SFF	7Y71A002WW	7Y711005JP
Lenovo ThinkSystem DE2000H iSCSI Hybrid Flash Array LFF	7Y70A004WW	7Y701000JP
Lenovo ThinkSystem DE2000H iSCSI Hybrid Flash Array SFF	7Y71A003WW	7Y711006JP
Lenovo ThinkSystem DE4000H iSCSI Hybrid Flash Array 4U60	7Y77A000WW	7Y771002JP
Lenovo ThinkSystem DE4000H iSCSI Hybrid Flash Array LFF	7Y74A002WW	7Y74A002JP
Lenovo ThinkSystem DE4000H iSCSI Hybrid Flash Array SFF	7Y75A001WW	7Y75A001JP
Lenovo ThinkSystem DE4000F iSCSI All Flash Array SFF	7Y76A002WW	7Y76A002JP
Lenovo ThinkSystem DE6000H iSCSI Hybrid Flash Array 4U60	7Y80A002WW	7Y801000JP
Lenovo ThinkSystem DE6000H iSCSI Hybrid Flash Array SFF	7Y78A002WW	7Y781000JP
Lenovo ThinkSystem DE6000F iSCSI All Flash Array SFF	7Y79A002WW	7Y79A002JP

Table 10. External storage systems: DM Series

Description	Part number
Lenovo ThinkSystem DM Series Storage (NAS or iSCSI connectivity)	
ThinkSystem DM3000H Hybrid Storage Array (2U12 LFF, CTO only)	7Y42CTO1WW
ThinkSystem DM3000H, 48TB (12x 4TB HDDs), 10GBASE-T, ONTAP 9.5 Fundamentals	7Y421003EA*
ThinkSystem DM3000H, 48TB (12x 4TB HDDs), 10GBASE-T, ONTAP 9.5	7Y421007EA*
ThinkSystem DM3000H, 96TB (12x 8TB HDDs), 10GBASE-T, ONTAP 9.5 Fundamentals	7Y421005EA*
ThinkSystem DM3000H, 96TB (12x 8TB HDDs), 10GBASE-T, ONTAP 9.5	7Y421001EA*
ThinkSystem DM5000H Hybrid Storage Array (2U24 SFF, CTO only)	7Y57CTO1WW
ThinkSystem DM5000H, 11.5TB (12x 960GB SSDs), 10GBASE-T, ONTAP 9.5 Fundamentals	7Y571004EA*
ThinkSystem DM5000H, 11.5TB (12x 960GB SSDs), 10GBASE-T, ONTAP 9.5	7Y57100LEA*
ThinkSystem DM5000H, 14.4TB (12x 1.2TB HDDs), 10GBASE-T, ONTAP 9.5 Fundamentals	7Y57100CEA*
ThinkSystem DM5000H, 21.6TB (12x 1.8TB HDDs), 10GBASE-T, ONTAP 9.5 Fundamentals	7Y57100GEA*
ThinkSystem DM5000H, 23TB (24x 960GB SSDs), 10GBASE-T, ONTAP 9.5 Fundamentals	7Y571006EA*
ThinkSystem DM5000H, 23TB (24x 960GB SSDs), 10GBASE-T, ONTAP 9.5	7Y57100NEA*
ThinkSystem DM5000H, 28.8TB (24x 1.2TB HDDs), 10GBASE-T, ONTAP 9.5 Fundamentals	7Y57100EEA*
ThinkSystem DM5000H, 28.8TB (24x 1.2TB HDDs), 10GBASE-T, ONTAP 9.5	7Y57100VEA*
ThinkSystem DM5000H, 43.2TB (24x 1.8TB HDDs), 10GBASE-T, ONTAP 9.5 Fundamentals	7Y57100JEA*
ThinkSystem DM5000H, 43.2TB (24x 1.8TB HDDs), 10GBASE-T, ONTAP 9.5	7Y571002EA*
ThinkSystem DM5000H, 46TB (12x 3.84TB SSDs), 10GBASE-T, ONTAP 9.5 Fundamentals	7Y571008EA*
ThinkSystem DM5000H, 46TB (12x 3.84TB SSDs), 10GBASE-T, ONTAP 9.5	7Y57100QEA*
ThinkSystem DM5000H, 92TB (24x 3.84TB SSDs), 10GBASE-T, ONTAP 9.5 Fundamentals	7Y57100AEA*

Description	Part number
ThinkSystem DM5000H, 92TB (24x 3.84TB SSDs), 10GBASE-T, ONTAP 9.5	7Y57100REA*
ThinkSystem DM5000F Flash Storage Array (2U24 SFF, CTO only)	7Y41CTO1WW
ThinkSystem DM5000F, 11.5TB (12x 960GB SSDs), 10GBASE-T, ONTAP 9.5	7Y411002EA*
ThinkSystem DM5000F, 23TB (24x 960GB SSDs), 10GBASE-T, ONTAP 9.5	7Y411004EA*
ThinkSystem DM5000F, 46TB (12x 3.84TB SSDs), 10GBASE-T, ONTAP 9.5	7Y411006EA*
ThinkSystem DM5000F, 92TB (24x 3.84TB SSDs), 10GBASE-T, ONTAP 9.5	7Y411007EA*
Lenovo ThinkSystem DM7000H Hybrid Storage Array (3U, CTO only)	7Y56CTO1WW
Lenovo ThinkSystem DM7000F Flash Storage Array (3U, CTO only)	7Y40CTO1WW

\* Available only in EMEA.

For more information, see the list of Product Guides in the Lenovo Storage category:  
<http://lenovopress.com/storage/san/lenovo#rt=product-guide>

## Related publications and links

For more information, see the following Lenovo ThinkSystem NE2552E Flex Switch product publications that are available from the Flex System Information Center:

[http://flexsystem.lenovofiles.com/help/topic/com.lenovo.acc.ne2552e.doc/ts\\_ne2552e.html](http://flexsystem.lenovofiles.com/help/topic/com.lenovo.acc.ne2552e.doc/ts_ne2552e.html)

- *ThinkSystem NE2552E Flex Switch Installation Guide*
- *ThinkSystem NE2552E Flex Switch Application Guide*
- *ThinkSystem NE2552E Flex Switch Industry Standard CLI (ISCLI) Command Reference*

For discussions on various Lenovo networking topics, visit the Data Center Networking Community Forum:  
[http://forums.lenovo.com/t5/Datacenter-Networking/ct-p/nh\\_eg](http://forums.lenovo.com/t5/Datacenter-Networking/ct-p/nh_eg)

For additional information, see these resources:

- 3D Tour: Lenovo ThinkSystem NE2552E Flex Switch  
<http://lenovopress.com/lp0871>
- ThinkSystem QLogic QL45212, QL45262 and QL45214 25Gb and 50Gb Flex Ethernet Adapters  
<http://lenovopress.com/lp0855>
- *Flex System Products and Technology*, SG24-8255:  
<http://lenovopress.com/sg248255>
- Flex System Interoperability Guide:  
<http://lenovopress.com/fsig>

## Related product families

Product families related to this document are the following:

- [25 Gb Embedded Connectivity](#)
- [Blade Networking Modules](#)

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