Flex System EN4132 2-port 10Gb Ethernet Adapter
Product Guide (withdrawn product)

The Flex System™ EN4132 2-port 10Gb Ethernet Adapter delivers high-bandwidth and industry-leading Ethernet connectivity for performance-driven server in enterprise data centers, high-performance computing (HPC), and embedded environments. Clustered databases, web infrastructure, and high frequency trading are just a few applications that achieve significant throughput and latency improvements, resulting in faster access, real-time response, and more users per server. Based on Mellanox ConnectX-3 EN technology, this adapter improves network performance by increasing available bandwidth while decreasing the associated transport load on the processor. The following figure shows the adapter.

Tip: Do not confuse this adapter with the EN4132 2-port 10Gb RoCE Adapter (IBM Power Systems feature code EC26). These are two separate adapters.

Figure 1. Flex System EN4132 2-port 10Gb Ethernet Adapter

Did you know?

Mellanox networking adapters deliver industry-leading bandwidth with ultra low, sub-microsecond latency for performance-driven server clustering applications. Combined with the Flex System Fabric EN4093 10Gb Scalable Switch, your organization can achieve efficient computing by off-loading the processor protocol processing and data movement overhead, such as RDMA and Send/Receive semantics, allowing more processor power for the application.

Part number information

The following table shows the part number to order this card.

Withdrawn: This adapter is withdrawn from marketing

Table 1. Part number and feature code for ordering

Description	Part number	Feature code
Flex System EN4132 2-port 10Gb Ethernet Adapter	90Y3466	A1QY

The part number includes the following items:

- One Flex System EN4132 2-port 10Gb Ethernet Adapter
- Documentation package

Target uses

- Financial institutions using high frequency trading or data exchange applications that require low latency fabrics. This adapter delivers low latency Sockets and RDMA solutions for the ultimate in application performance.
- Web 2.0 and cloud service providers that need high bandwidth and processor off-loads to get the highest productivity from their data centers.

Features

The Flex System EN4132 2-port 10Gb Ethernet Adapter has the following features:

- RDMA over Ethernet
  ConnectX-3 provides efficient RDMA services, delivering low-latency and high-performance to bandwidth and latency sensitive applications.

- Sockets acceleration
  Applications using TCP/UDP/IP transport can achieve industry-leading throughput over 10 GbE. The hardware-based stateless off-load and flow steering engines in ConnectX-3 reduce the processor overhead of IP packet transport, freeing more processor cycles to work on the application. Sockets acceleration software further increases performance for latency sensitive applications.

Specifications

The Flex System EN4132 2-port 10Gb Ethernet Adapter has the following specifications:

- Based on Mellanox ConnectX-3 technology
- PCI Express 3.0 (1.1 and 2.0 compatible) through an x8 edge connector up to 8 GT/s
- RDMA over Ethernet
- Wake on LAN (WoL) support
- RoHS-6 compliant
- Power consumption: Typical: 9 W, maximum 11 W

Ethernet specifications

- IEEE 802.3ae 10 Gigabit Ethernet
- IEEE 802.3ad Link Aggregation and Failover (requires EN4093R or Cisco Nexus B22 switch in stacked mode)
- IEEE 802.3az Energy Efficient Ethernet
- IEEE 802.1Q, .1p VLAN tags and priority
- IEEE 802.1Qau Congestion Notification
- IEEE P802.1Qbb D1.0 Priority-based Flow Control
- Jumbo frame support (10 KB)
- 128 MAC/VLAN addresses per port
- VMware NetQueue support

Additional processor off-loads

- RDMA over Ethernet
- TCP/UDP/IP stateless off-load
- Intelligent interrupt coalescence

Network boot support

- PXE Boot for UEFI support (RHEL 6, SLES 11, and Windows 2008 only)
- Note: No IA-32 BIOS (legacy) PXE support

Supported servers

The following table lists the Flex System compute nodes that support the EN4132 2-port 10Gb Ethernet Adapter.

Table 2. Supported servers

Description	Part number	x220 (7906)	x222 (7916)	x240 (8737, E5-2600)	x240 (8737, E5-2600 v2)	x240 (7162)	x240 M5 (9532)	x440 (7917)	x440 (7167)	x280 / x480 / x880 X6 (7903)	x280 / x480 / x880 X6 (7196)
Flex System EN4132 2-port 10Gb Ethernet Adapter	90Y3466	Y	N	Y	Y	Y	Y	Y	N	Y	Y

See ServerProven® at the following web address for the latest information about the expansion cards that are supported by each blade server type:
http://ibm.com/servers/eserver/serverproven/compat/us/

I/O adapter cards are installed in the slot in supported servers, such as the x240, as highlighted in the following figure.
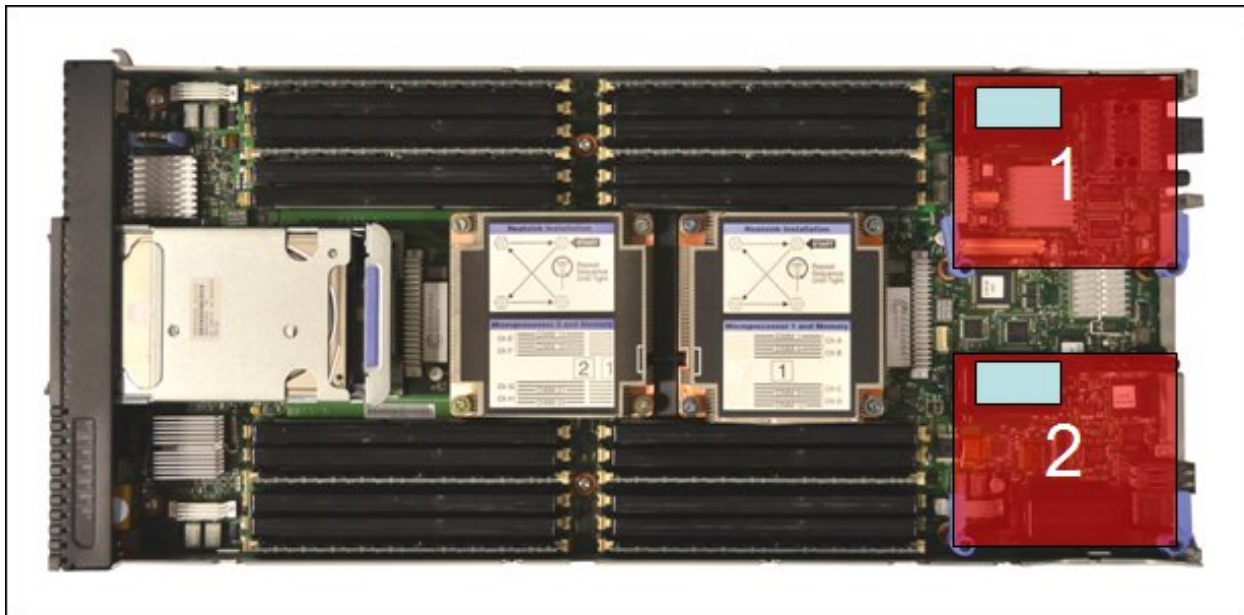

Figure 2. Location of the I/O adapter slots in the Flex System x240 Compute Node

Supported I/O modules

The EN4132 2-port 10Gb Ethernet Adapter supports the I/O modules listed in the following table. One or two compatible switches must be installed in the corresponding I/O bays in the chassis. Installing two switches means that both ports of the adapter are enabled.

Table 3. I/O modules supported with the EN4132 2-port 10Gb Ethernet Adapter

Description	Part number	Supports the EN4132 adapter
1 Gb switches		
Flex System EN2092 1Gb Ethernet Scalable Switch	49Y4294	No
10 Gb switches		
Lenovo Flex System Fabric EN4093R 10Gb Scalable Switch + EN4093 10Gb Scalable Switch (Upgrade 1)	00FM514 49Y4798	Yes
Lenovo Flex System Fabric CN4093 10Gb Converged Scalable Switch	00FM510	No
Lenovo Flex System SI4091 10Gb System Interconnect Module	00FE327	Yes
Lenovo Flex System Fabric SI4093 System Interconnect Module + SI4093 System Interconnect Module (Upgrade 1)	00FM518 95Y3318	Yes
Flex System EN4091 10Gb Ethernet Pass-thru	88Y6043	Yes
Flex System EN4023 10Gb Scalable Switch	94Y5212	Yes
Flex System Fabric CN4093 10Gb Converged Scalable Switch	00D5823	No
Flex System Fabric EN4093 10Gb Scalable Switch	49Y4270	Yes
Flex System Fabric EN4093R 10Gb Scalable Switch	95Y3309	Yes
Flex System Fabric SI4093 System Interconnect Module	95Y3313	Yes
Cisco Nexus B22 Fabric Extender for Flex System	94Y5350	Yes
25 Gb switches		
Lenovo ThinkSystem NE2552E Flex Switch	4SG7A08868	Yes
40 Gb switches		
Flex System EN6131 40Gb Ethernet Switch	90Y9346	Yes

The following table shows the connections between adapters installed in the compute nodes to the switch bays in the chassis.

Table 4. Adapter to I/O bay correspondence

I/O adapter slot in the server	Port on the adapter	Corresponding I/O module bay in the chassis
Slot 1	Port 1	Module bay 1
	Port 2	Module bay 2
Slot 2	Port 1	Module bay 3
	Port 2	Module bay 4

The connections between the adapters installed in the compute nodes to the switch bays in the chassis are shown in the following figure.
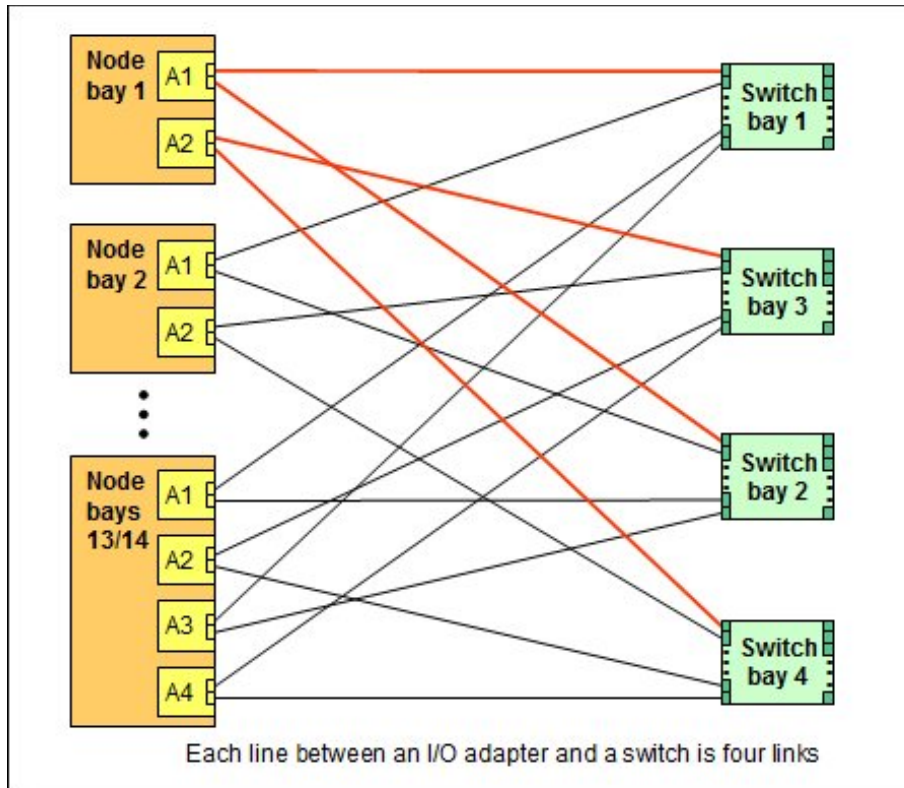
Each line between an I/O adapter and a switch is four links

Figure 3. Logical layout of the interconnects between I/O adapters and I/O modules

Operating system support

The EN4132 2-port 10Gb Ethernet Adapter supports the following 64-bit operating systems:

- Microsoft Windows Server 2012 R2
- Microsoft Windows Server 2016
- Microsoft Windows Server version 1709
- Red Hat Enterprise Linux 6 Server x64 Edition
- SUSE Linux Enterprise Server 11 for AMD64/EM64T
- SUSE Linux Enterprise Server 12
- VMware vSphere 5.1 (ESXi)
- VMware vSphere Hypervisor (ESXi) 5.5
- VMware vSphere Hypervisor (ESXi) 6.0
- VMware vSphere Hypervisor (ESXi) 6.5
- VMware vSphere Hypervisor (ESXi) 6.7

Support for operating systems is based on the combination of the expansion card and the blade server on which it is installed. See the ServerProven® website for the latest information about the specific versions and service packs supported.
http://www.lenovo.com/us/en/serverproven

Select the server, and then filter on the adapter card name or part number, then click the + icon to see the supported operating systems:

Regulatory compliance

The adapter conforms to the following standards:

- United States FCC 47 CFR Part 15, Subpart B, ANSI C63.4 (2003), Class A
- United States UL 60950-1, Second Edition
- IEC/EN 60950-1, Second Edition
- FCC - Verified to comply with Part 15 of the FCC Rules, Class A
- Canada ICES-003, issue 4, Class A
- UL/IEC 60950-1
- CSA C22.2 No. 60950-1-03
- Japan VCCI, Class A
- Australia/New Zealand AS/NZS CISPR 22:2006, Class A
- IEC 60950-1(CB Certificate and CB Test Report)
- Taiwan BSMI CNS13438, Class A
- Korea KN22, Class A; KN24
- Russia/GOST ME01, IEC-60950-1, GOST R 51318.22-99, GOST R 51318.24-99, GOST R 51317.3.2-2006, GOST R 51317.3.3-99
- IEC 60950-1 (CB Certificate and CB Test Report)
- CE Mark (EN55022 Class A, EN60950-1, EN55024, EN61000-3-2, EN61000-3-3)
- CISPR 22, Class A

Physical specifications

The dimensions and weight of the adapter are as follows:

- Width: 100 mm (3.9 in.)
- Depth: 80 mm (3.1 in.)
- Weight: 13 g (0.3 lb)

Shipping dimensions and weight (approximate):

- Height: 58 mm (2.3 in.)
- Width: 229 mm (9.0 in.)
- Depth: 208 mm (8.2 in.)
- Weight: 0.4 kg (0.89 lb)

Related publications

For more information, see the following resources:

- Flex System Information Center (User's Guides for servers and options)
  http://flexsystem.lenovofiles.com/help/index.jsp
- *Flex System Interoperability Guide*
  http://lenovopress.com/fsig
- *Lenovo Flex System Products and Technology*
  http://lenovopress.com/sg248255
- ServerProven
  http://www.lenovo.com/us/en/serverproven

Related product families

Product families related to this document are the following:

- 10 Gb Embedded Connectivity
- Blade Network Adapters

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