

# Broadcom NetXtreme 10 GbE SFP+ Network Adapter Family for System x

## Product Guide (withdrawn product)

Lenovo offers the Broadcom 10 GbE SFP+ network adapter family by QLogic that is based on the Broadcom BCM57811S and BCM57810S controllers for System x® servers. These adapters use QLogic's controller technology, which provides outstanding performance, efficiency, and scalability for the enterprise data center. The adapters connect to SFP+ Multimode Fiber SR optical modules and direct-attach copper (DAC) cables.

The Broadcom Dual Port 10 GbE SFP+ Embedded Adapter for System x is shown in the following figure.

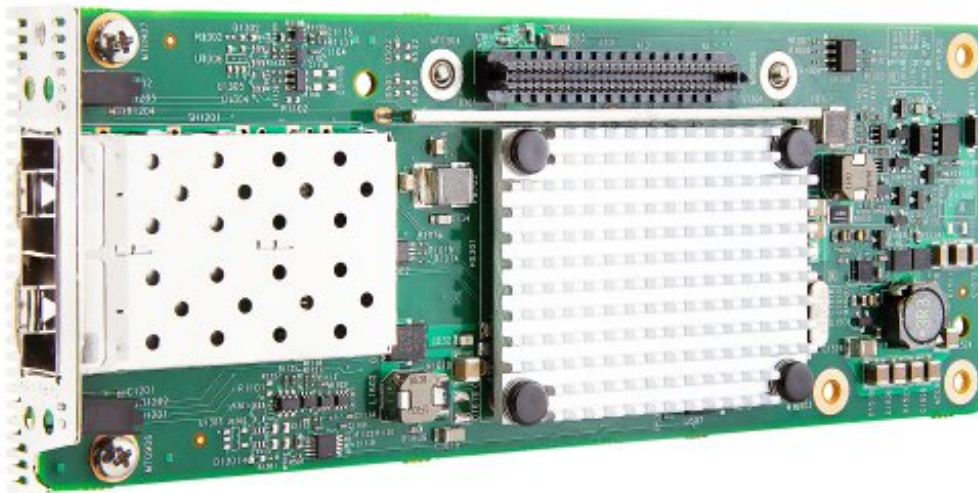


Figure 1. Broadcom Dual Port 10 GbE SFP+ Embedded Adapter for System x

### Did you know?

The single and dual-port Embedded Adapters (also known as mezzanine adapters) are designed specifically to fit in to a dedicated slot in servers such as the System x3650 M5. This card design allows you to use the server's standard PCIe slots for other technologies.

## Part number information

The following table shows the ordering part numbers and feature codes for this adapter.

**Withdrawn:** All adapters listed in this product guide are now withdrawn from marketing.

Table 1. Ordering part numbers and feature codes

Part number	Feature code	Description
94Y5180	A4Z6	Broadcom NetXtreme Dual Port 10GbE SFP+ Adapter
00D9700	A4C3	Broadcom Single Port 10GbE SFP+ Embedded Adapter
44T1360	A4YQ	Broadcom NetXtreme 2x10 GbE SFP+ Mezz Adapter
00D2028	A40T	Broadcom NetXtreme II ML2 Dual Port 10GbE SFP+

The part numbers for the adapters include the following items:

- One Broadcom adapter
- Support CD
- Safety flyer
- The PCIe adapters (94Y5180 and 00D2028) have a 3U bracket that is attached and include a 2U bracket in the box

Note: Transceivers are not included with the adapters

The Broadcom Dual Port 10GbE SFP+ Adapter for System x is shown in the following figure.



Figure 2. Broadcom Dual Port 10GbE SFP+ Adapter for System x

The following table lists the supported 10 Gb Ethernet SFP+ optical transceivers and DAC cables. For multi-port adapters, all adapter ports must have the same type of transceiver or DAC cable selected.

Table 2. Supported optical transceivers and DAC cables - 10 Gb Ethernet

Part number	Feature code	Description
10 GbE SFP+ LR transceivers (for SFP+ adapters)		
00FE331	B0RJ	Lenovo 10GBASE-LR SFP+ Transceiver
90Y9412	A1PM	Lenovo 10Gb/s LR SFP+ XCVR
10 GbE SFP+ SR transceivers (for SFP+ adapters)		
46C3447	5053	Lenovo 10GBASE-SR SFP+ Transceiver
49Y4216	0069	Brocade 10Gb SFP+ SR Optical Transceiver
49Y4218	0064	QLogic 10Gb SFP+ SR Optical Transceiver
10 GbE SFP+ DAC cables (for SFP+ adapters)		
00D6288	A3RG	Lenovo 0.5m Passive SFP+ DAC Cable
90Y9427	A1PH	Lenovo 1m Passive SFP+ DAC Cable
00AY764	A51N	Lenovo 1.5m Passive SFP+ DAC Cable
00AY765	A51P	Lenovo 2m Passive SFP+ DAC Cable
90Y9430	A1PJ	Lenovo 3m Passive SFP+ DAC Cable
90Y9433	A1PK	Lenovo 5m Passive SFP+ DAC Cable
00D6151	A3RH	Lenovo 7m Passive SFP+ DAC Cable

The following figure shows the Broadcom NetXtreme II ML2 Dual Port 10GbE SFP+ adapter.



Figure 3. Broadcom NetXtreme II ML2 Dual Port 10GbE SFP+

## Features and specifications

Virtualization, cloud computing, high performance computing (HPC), and clustering initiatives are increasing workload demands. The Broadcom network adapter family is the solution of choice for workload-intensive computing environments, providing a reliable, high-performance 10 GbE connectivity solution.

These adapters support PCI-SIG single root input/output virtualization (SR-IOV) and NIC partitioning (NPAR). SR-IOV delivers higher performance and lower CPU utilization with increased virtual machine (VM) scalability.

QLogic NPAR enables up to four physical, switch-agnostic, switch-independent NIC partitions per adapter port. Dynamic and fine-grained bandwidth provisioning enables control of network traffic from VMs and hypervisor services.

The adapters have the following features and specifications:

- Dual-port or single-port 10 Gb Ethernet connectivity
- ASIC:
  - Single port adapter: Broadcom BCM57811S controller
  - Dual port adapters: Broadcom BCM57810S controller
- Choice of form factors:
  - Mezzanine (Embedded) form factor adapters are supported in selected System x servers where the adapter is installed in a dedicated slot.
  - ML2 (Mezzanine LOM Generation 2) adapters are supported in selected System x servers where the adapter is installed in a dedicated slot.
  - The PCIe adapter is supported in a low-profile PCIe adapter slot in a wide variety of System x servers
- SFP+ port supporting fiber optic and direct-attach copper (DAC) cables
- PCI Express 2.0 x8 host interface (5 GTps)
- Full line-rate performance
- Ethernet frame: 1500 byte or 9600 byte (jumbo frame)
- VLAN support with VLAN tagging
  - Supports Switch-independent NIC partitioning (NPAR) with up to four partition assignments per 10GbE link
  - Supports Unified Fabric Port (UFP)
  - Supports SR-IOV with up to 64 virtual functions per 10GbE link
- Performance features:
  - TCP/IP Offload Engine (TOE)
  - TCP segmentation/large send offload
  - Receive-side scaling (RSS) for IPv4 and IPv6
  - TCP/IP checksum offload for IPv4 and IPv6
  - UDP/IP checksum offload for IPv4 and IPv6
  - Message signal interrupt (MSI, MSI-X) support
  - PXE 2.x support
- VXLAN and NVGRE offload technology support (not supported with UFP)
- Wake on LAN (ML2 and Mezzanine cards only)
- Preboot eXecution Environment (PXE) support
- IEEE 1588 Precision Time Protocol (PTP)-Ready
- Network teaming, failover, and load balancing
  - Smart Load Balancing (SLB)
  - Link Aggregation Control Protocol (LACP) and generic trunking
- Management using Broadcom Advanced Control Suite management application

- Support for Network Controller Sideband Interface (NC-SI) for communication with the server's onboard IMM2 management processor. This support enables the sharing the network interface with the IMM2 and the operating system, thereby eliminating the need for a separate management network (ML2 and Mezzanine cards only)
- Power consumption:
  - Single port mezz card: 4.74 W typical
  - Dual port mezz card: 7.14 W typical
  - Dual port ML2 card: 14.4 W typical
  - Dual port PCIe card: 7.08 W typical
- Compliance
  - IEEE 802.3ae (10 Gb Ethernet)
  - IEEE 802.1q (VLAN)
  - IEEE 802.1p (Priority Encoding)
  - IEEE 802.3x (Flow Control)
  - IEEE 802.1au (Congestion Notification)
  - IPv4 (RFQ 791)
  - IPv6 (RFC 2460)

The Broadcom Single Port 10 GbE SPF+ Embedded Adapter for System x is shown in the following figure. The adapter is ideal for solutions where price sensitivity is paramount and where port-level redundancy is not required.



Figure 4. Broadcom Single Port 10 GbE SPF+ Embedded Adapter for System x

## Server support

The adapter is supported in the System x servers that are listed in the following tables.

### Support for System x and dense servers with Xeon E5/E7 v4 and E3 v5 processors

Table 3. Support for System x and dense servers with Xeon E5/E7 v4 and E3 v5 processors

Part number	Description	Processors						
		x3250 M6 (3943)	x3250 M6 (3633)	x3550 M5 (8869)	x3650 M5 (8871)	x3850 X6/x3950 X6 (6241, E7 v4)	nx360 M5 (5465, E5-2600 v4)	sd350 (5493)
94Y5180	Broadcom NetXtreme Dual Port 10GbE SFP+ Adapter	N	N	Y	Y	Y	Y	N
00D9700	Broadcom Single Port 10GbE SFP+ Embedded Adapter	N	N	N	N	N	N	N
44T1360	Broadcom NetXtreme 2x10 GbE SFP+ Mezz Adapter	N	N	N	N	N	N	N
00D2028	Broadcom NetXtreme II ML2 Dual Port 10GbE SFP+	N	N	Y	Y	Y	Y	N

### Support for System x and dense servers with Intel Xeon E5 v3 and E3 v4 processors

Table 4. Support for servers with Intel Xeon E5 v3 and E3 v4 processors

Part number	Description	Processors						
		x3100 M5 (5457)	x3250 M5 (5458)	x3500 M5 (5464)	x3550 M5 (5463)	x3650 M5 (5462)	x3850 X6/x3950 X6 (6241, E7 v3)	nx360 M5 (5465)
94Y5180	Broadcom NetXtreme Dual Port 10GbE SFP+ Adapter	N	N	Y	Y	Y	Y	Y
00D9700	Broadcom Single Port 10GbE SFP+ Embedded Adapter	N	N	N	N	N	N	N
44T1360	Broadcom NetXtreme 2x10 GbE SFP+ Mezz Adapter	N	N	N	N	N	N	N
00D2028	Broadcom NetXtreme II ML2 Dual Port 10GbE SFP+	N	N	N	Y	Y	Y	Y

## Support for System x and dense servers with Intel Xeon v2 processors

Table 5. Support for servers with Intel Xeon v2 processors

Part number	Description	x3500 M4 (7383, E5-2600 v2)	x3530 M4 (7160, E5-2400 v2)	x3550 M4 (7914, E5-2600 v2)	x3630 M4 (7158, E5-2400 v2)	x3650 M4 (7915, E5-2600 v2)	x3650 M4 BD (5466)	x3650 M4 HD (5460)	x3750 M4 (8752)	x3750 M4 (8753)	x3850 X6/x3950 X6 (3837)	x3850 X6/x3950 X6 (6241, E7 v2)	dx360 M4 (E5-2600 v2)	nx360 M4 (5455)
94Y5180	Broadcom NetXtreme Dual Port 10GbE SFP+ Adapter	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
00D9700	Broadcom Single Port 10GbE SFP+ Embedded Adapter	N	N	Y	N	Y	N	Y	N	N	N	N	Y	N
44T1360	Broadcom NetXtreme 2x10 GbE SFP+ Mezz Adapter	N	N	Y	N	Y	Y	Y	N	N	N	N	Y	Y
00D2028	Broadcom NetXtreme II ML2 Dual Port 10GbE SFP+	N	N	N	N	N	N	N	Y	Y	Y	Y	N	N

For the latest information about the System x servers that support this adapter, see the ServerProven® website at

<http://www.lenovo.com/us/en/serverproven/xseries/lan/matrix.shtml>

### Operating system support

The following tables list the supported operating systems for each part number:

- [Broadcom NetXtreme Dual Port 10GbE SFP+ Adapter, 94Y5180](#)
- [Broadcom NetXtreme II ML2 Dual Port 10GbE SFP+, 00D2028](#)

**Tip:** These tables are automatically generated based on data from [Lenovo ServerProven](#).

Table 6. Operating system support for Broadcom NetXtreme Dual Port 10GbE SFP+ Adapter, 94Y5180

Operating systems	x3850/3950 X6 (3837)		x3850/3950 X6 (6241, E7 v2)		x3850/3950 X6 (6241, E7 v3)		x3850/3950 X6 (6241, E7 v4)		nx360 M5 (5465)		x3500 M5 (5464)		x3550 M5 (5463)		x3550 M5 (8869)		x3650 M5 (5462)		x3650 M5 (8871)		
	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	
Microsoft Windows Server 2008 R2	Y	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	N
Microsoft Windows Server 2012	Y	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Microsoft Windows Server 2012 R2	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Microsoft Windows Server 2016	N	Y <sup>1</sup>	Y <sup>1</sup>	Y <sup>1</sup>	Y <sup>1</sup>	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Microsoft Windows Server 2019	N	N	N	N	Y	N	N	N	N	N	N	N	Y	N	Y	N	Y	N	Y	N	Y
Microsoft Windows Server version 1709	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Microsoft Windows Server version 1803	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Y	N	Y	N	Y	N	Y
Red Hat Enterprise Linux 6 Server x64 Edition	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 7	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.0	N	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
SUSE Linux Enterprise Server 11 for AMD64/EM64T	Y	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
VMware vSphere 5.1 (ESXi)	Y	N	N	N	N	Y	Y	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N
VMware vSphere Hypervisor (ESXi) 5.5	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 6.0	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 6.5	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 6.7	N	N	N	Y	Y	Y	Y	Y	Y	N	Y	N	Y	N	Y	N	Y	N	Y	N	Y

<sup>1</sup> [in box driver support only]



Table 7. Operating system support for Broadcom NetXtreme II ML2 Dual Port 10GbE SFP+, 00D2028

Operating systems	x3850/3950 X6 (3837)	x3850/3950 X6 (6241, E7 v2)	x3850/3950 X6 (6241, E7 v3)	x3850/3950 X6 (6241, E7 v4)	nx360 M5 (5465)	x3550 M5 (5463)	x3550 M5 (8869)	x3650 M5 (5462)	x3650 M5 (8871)
Microsoft Windows Server 2008 R2	Y	Y	Y	N	N	Y	Y	Y	N
Microsoft Windows Server 2012	Y	Y	Y	Y	Y	Y	Y	Y	Y
Microsoft Windows Server 2012 R2	N	Y	Y	Y	Y	Y	Y	Y	Y
Microsoft Windows Server 2016	N	Y <sup>1</sup>	Y <sup>1</sup>	Y <sup>1</sup>	Y	Y	Y	Y	Y
Microsoft Windows Server 2019	N	N	N	N	N	N	Y	N	Y
Microsoft Windows Server version 1709	N	N	N	N	N	Y	Y	Y	Y
Microsoft Windows Server version 1803	N	N	N	N	N	N	Y	N	Y
Red Hat Enterprise Linux 6 Server x64 Edition	Y	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 7	Y	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.0	N	N	N	Y	N	N	N	N	N
SUSE Linux Enterprise Server 11 for AMD64/EM64T	Y	Y	Y	Y	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 11 with Xen for AMD64/EM64T	Y	Y	Y	Y	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 12	N	Y	Y	Y	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 12 with Xen	N	N	N	N	N	Y	Y	Y	Y
SUSE Linux Enterprise Server 15	N	N	N	N	N	N	Y	N	Y
SUSE Linux Enterprise Server 15 with Xen	N	N	N	N	N	N	Y	N	Y
VMware vSphere 5.1 (ESXi)	Y	Y	N	N	Y	Y	N	Y	N
VMware vSphere Hypervisor (ESXi) 5.5	Y	Y	Y	N	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 6.0	Y	Y	Y	N	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 6.5	Y	N	N	N	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 6.7	N	N	N	N	N	N	Y	N	Y

<sup>1</sup> [in box driver support only]

## Warranty

The adapters carry a 1-year, customer-replaceable unit (CRU) limited warranty. When they are installed in a supported server, these adapters assume your system's base warranty and any Lenovo warranty service upgrade purchased for the system.

## Physical specifications

The adapters have the following physical specifications:

Embedded adapter dimensions (approximate):

- Width: 60 mm (2.4 in.)
- Length: 160 mm (6.3 in.)
- Height: 17 mm (0.7 in.)

PCIe adapter dimensions (approximate):

- Height: 69 mm (2.7 in.)
- Length: 168 mm (6.6 in.)
- Width: 17 mm (0.7 in.)

ML2 adapter dimensions (approximate):

- Height: 69 mm (2.7 in.)
- Length: 168 mm (6.6 in.)
- Width: 17 mm (0.7 in.)

All adapters have the following shipping dimensions and weight (approximate):

- Height: 189 mm (7.51 in.)
- Width: 90 mm (3.54 in.)
- Depth: 38 mm (1.50 in.)
- Weight: 450 g (0.99 lb)

## Operating environment

The adapter is supported in this environment:

- Temperature:
  - Operating: 0° to 55°C (32° to 131 °F) at 0 - 914 m (0 - 3000 ft)
  - Storage: -20° to 65°C (-4° to 149°F) at 0 - 914 m (0 - 3000 ft)
- Relative humidity: 5% - 95% (non-condensing)

## Agency approvals

The adapters have the following agency approvals:

- EN55022
- EN55024
- EN60950 / CE
- EN 61000-3-2
- EN 61000-3-3
- ICES-003, Issue-004
- IEC 950 CB Scheme
- FCC 47 CFR Part 15 Class A
- UL 1950
- CSA C22.2 950-95
- VCCI
- AS/NZSCISPR 22 / C-tick
- RRL for KC
- BSMI
- UL 94-/V

## Top-of-rack Ethernet switches

The following 10 Gb Ethernet top-of-rack switches are supported.

Table 8. 10Gb Ethernet Top-of-rack switches

Part number	Description
Switches mounted at the rear of the rack (rear-to-front airflow)	
7159A1X	Lenovo ThinkSystem NE1032 RackSwitch (Rear to Front)
7159B1X	Lenovo ThinkSystem NE1032T RackSwitch (Rear to Front)
7Z330O11WW	Lenovo ThinkSystem NE1064TO RackSwitch (Rear to Front, ONIE)
7159C1X	Lenovo ThinkSystem NE1072T RackSwitch (Rear to Front)
7159BR6	Lenovo RackSwitch G8124E (Rear to Front)
7159G64	Lenovo RackSwitch G8264 (Rear to Front)
7159DRX	Lenovo RackSwitch G8264CS (Rear to Front)
7159CRW	Lenovo RackSwitch G8272 (Rear to Front)
7159GR6	Lenovo RackSwitch G8296 (Rear to Front)
Switches mounted at the front of the rack (front-to-rear airflow)	
7159BF7	Lenovo RackSwitch G8124E (Front to Rear)
715964F	Lenovo RackSwitch G8264 (Front to Rear)
7159DFX	Lenovo RackSwitch G8264CS (Front to Rear)
7159CFV	Lenovo RackSwitch G8272 (Front to Rear)
7159GR5	Lenovo RackSwitch G8296 (Front to Rear)

For more information, see the Lenovo Press Product Guides in the 10Gb top-of-rack switch category:  
<https://lenovopress.com/networking/tor/10gb>

## Related publications

For more information, see the following documents:

- Lenovo System x networking options product page  
<https://www3.lenovo.com/us/en/data-center/servers/server-options/system-x-options/networking-adapters/system-x-adapters/c/system-x-adapters>
- ServerProven compatibility page for networking adapters:  
<http://www.lenovo.com/us/en/serverproven/xseries/lan/matrix.shtml>
- Announcement letter - Broadcom NetXtreme II ML2 Dual Port 10GbE SFP+  
<http://ibm.com/common/ssi/cgi-bin/ssialias?infotype=dd&subtype=ca&&htmlfid=897/ENUS114-031>
- Announcement letter - Broadcom Single Port 10GbE SFP+ Embedded Adapter  
<http://ibm.com/common/ssi/cgi-bin/ssialias?infotype=dd&subtype=ca&&htmlfid=897/ENUS113-122>
- Announcement letter - Broadcom dual-port adapters  
<http://ibm.com/common/ssi/cgi-bin/ssialias?infotype=dd&subtype=ca&&htmlfid=897/ENUS113-213>

## Related product families

Product families related to this document are the following:

- [10 Gb Ethernet Connectivity](#)
- [Ethernet Adapters](#)

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