

Broadcom NetXtreme 10GBase-T Network Adapter Family for System x

Product Guide (withdrawn product)

The Broadcom NetXtreme 10 GbE 10GBase-T Network Adapter Family for System x® features robust, standards-based 10GBase-T adapters in either a low-profile PCI Express or mezzanine LOM generation 2 (ML2) form factor. These adapters enable affordable 10-Gigabit Ethernet (10 GbE) network performance with cost-effective RJ-45 connections for distances up to 100 meters. They are compatible with the installed base of GbE switching and cabling infrastructure commonly deployed today.

Figure 1 shows the Broadcom NetXtreme 2x10GbE BaseT Adapter.

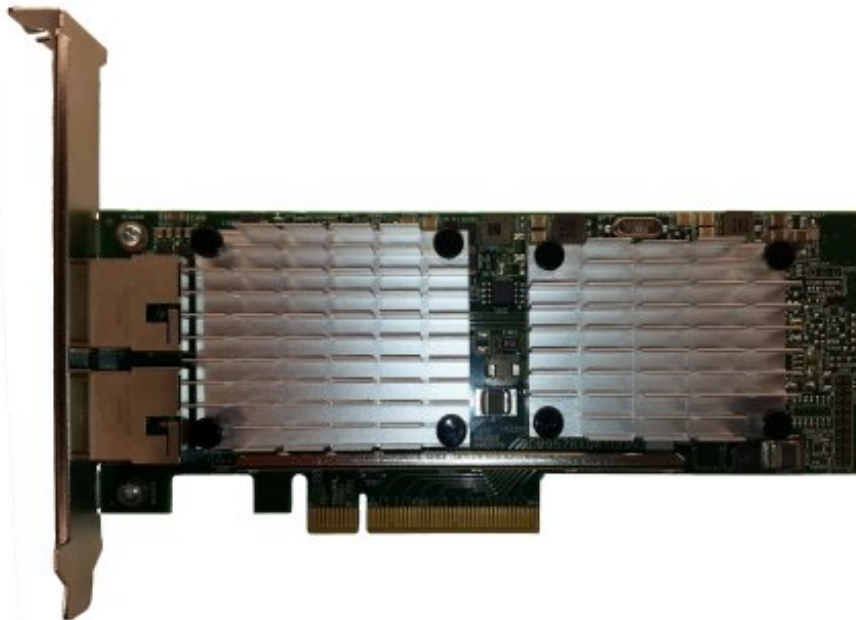


Figure 1. Broadcom NetXtreme 2x10GbE BaseT Adapter for System x

Did you know?

The Broadcom NetXtreme 10 GbE 10GBase-T Network Adapter family provides an ideal solution for System x servers requiring high-speed data transfer in LAN connectivity for mission-critical applications leveraging the existing, affordable cabling and switching IT infrastructure. These network adapters provides support for 10 Gb networking with CAT 6/7 copper cable connectivity with two built-in RJ-45 ports.

Part number information

Withdrawn from marketing: All adapters listed in this product guide are now withdrawn from marketing.

Table 1. Ordering part numbers and feature codes

Description	Part number	Feature code
Broadcom NetXtreme 2x10GbE BaseT Adapter for System x	44T1370	A5GZ
Broadcom NetXtreme II ML2 Dual Port 10GbaseT for System x	00D2026	A40S
Broadcom NetXtreme II Dual Port 10GBaseT Adapter for System x	49Y7910	A18Y

The part number for these adapters includes the following items:

- One Ethernet adapter with standard (4.75 in) bracket
- Publication CD
- Low profile (3.13 in) bracket
- Important notices flyer
- Warranty information

Figure 2 shows the Broadcom NetXtreme II ML2 Dual Port 10GbaseT adapter.



Figure 2. Broadcom NetXtreme II ML2 Dual Port 10GbaseT for System x

Overview

The Broadcom NetXtreme II 10GBase-T adapter family provide:

- A turnkey dual-port 10 GbE adapter solution operating at 100 m over CAT6a or CAT7 unshielded twisted pair (UTP) cable
- Interoperable with IEEE standard devices operating at 10 Mbps, 100 Mbps, and 1 Gbps over existing CAT5 UTP
- A dependable, performance-focused solution that can be optimized for high throughput and high I/O

per second, with low CPU utilization

Broadcom offload architecture minimizes the CPU overhead, eliminating competition with the host application for host resources and freeing valuable CPU cycles for processing user applications:

- TCP offload engine (TOE) accelerates network data transfers, with high I/O-per-second and high bandwidth.
- Receive side scaling (RSS) is used to avoid bottlenecks by distributing network processing across multiple CPUs.
- Adaptive interrupt coalescing streamlines interrupt processing.
- Message Signal Interrupt (MSI/MSI-X) allows interrupt distribution in multi-CPU systems.

Broadcom's 10GBASE-T PHY is based on highly advanced digital signal processing to allow robust operation over unshielded twisted pair (UTP) wiring. It is a highly integrated solution that combines enhanced analog front ends with digital adaptive equalizers, ADCs, phase-locked loops, line drivers, LDPC encoders and decoders, echo cancellers, crosstalk cancellers, and all required support circuitry.

The Broadcom NetXtreme II ML2 Dual Port 10GbBaseT is a special mezzanine LAN-on-motherboard (mezzanine LOM) form factor adapter that also supports the Network Controller Sideband Interface (NC-SI) for communication with the server's onboard IMM2 management processor. This support enables sharing the network interface with the IMM2 and the operating system, thereby eliminating the need for a separate management network

The following figure shows the Broadcom NetXtreme II Dual Port 10GBaseT Adapter.

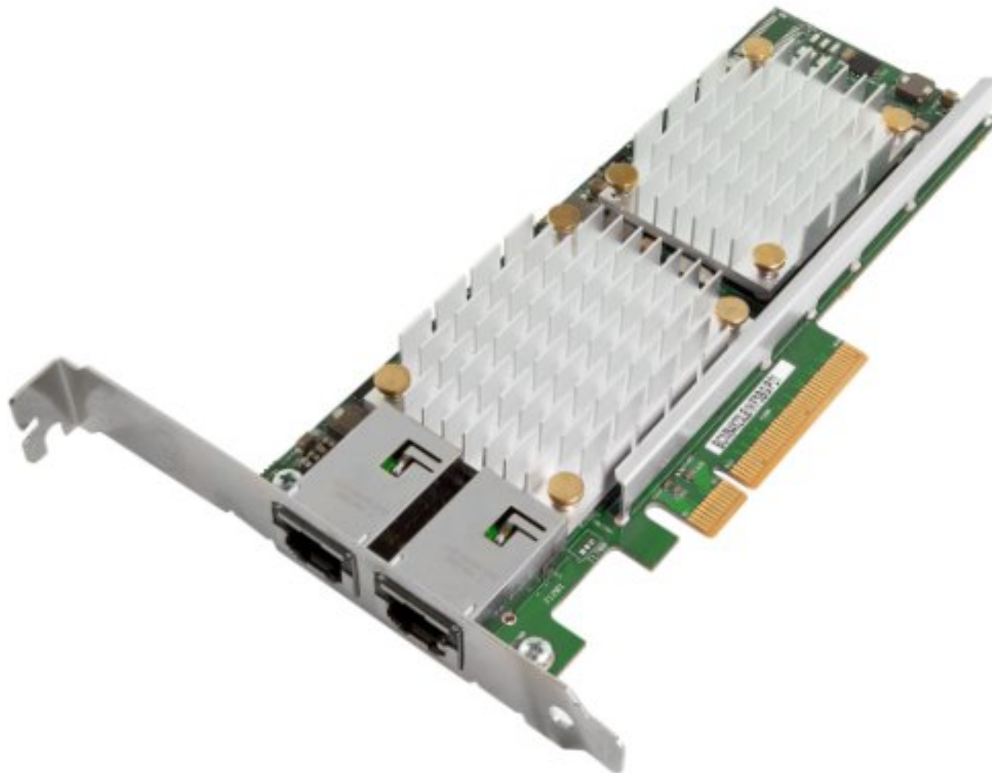


Figure 3. Broadcom NetXtreme II Dual Port 10GBaseT Adapter for System x

Features and specifications

The adapters have the following features:

- Offer an end-to-end solution up to 10 Gb on Category 6A or 7 UTP cabling up to 100 m, and up to 1 Gb on Category 5E UTP cabling up to 55 m
- Two integrated RJ-45 Ethernet ports operating at 10/100/1000 Mbps or 10 Gbps speeds
- pNIC mode support
- Supports failover and NIC teaming
 - Smart Load Balancing
 - IEEE 802.3ad link aggregation
- Supports PXE 2.1
- Jumbo frame support (up to 9 KB)
- IEEE 802.1Q VLAN tagging support
- IEEE 802.1x flow control support
- IEEE 802.1p quality of service (QoS) support
- Supports IPv4 and IPv6
- Supports Broadcom Advanced Control Suite (BACS)
- Supports Network Controller Sideband Interface (NC-SI) (ML2 adapter only)

Performance features:

- TCP offload engine (TOE)
- TCP, IP, UDP checksum offload
- Receive side scaling (RSS)
- TCP segmentation offload (TCO)
- Giant send offload (GSO)
- Message Signal Interrupt (MSI/MSI-X)
- Supports Switch-independent NIC partitioning (NPAR) with up to four partition assignments per 10GbE link (44T1370 and 00D2026)
- Supports Unified Fabric Port (UFP)
- VXLAN and NVGRE offload technology (not supported with UFP)
- Supports SR-IOV with up to 64 virtual functions per 10GbE link (44T1370 and 00D2026)

The NetXtreme 2x10GbE BaseT Adapter (44T1370) and NetXtreme II ML2 Dual Port 10GbaseT Adapter (00D2026) 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 specifications:

- Form factor:
 - 44T1370: Low-profile half-length PCIe
 - 00D2026: ML2 form factor
 - 49Y7910: Low-profile half-length PCIe
- Standard (3U) bracket attached with low-profile (2U) bracket included in the box (option part number orders only)
- Host interface: PCIe x8 Gen 2

- ASIC:
 - 44T1370: Broadcom BCM57810
 - 00D2026: Broadcom BCM57810
 - 49Y7910: Broadcom BCM57712
- Power dissipation:
 - 44T1370: 21 W typical
 - 00D2026: 28.4 W typical
 - 49Y7910: 21 W typical

Cable support:

- CAT 7: 10 GbE and 1 GbE up to 100 meters
- CAT 6a: 10 GbE and 1 GbE up to 100 meters
- CAT 6: 10 GbE up to 55 meters, 1 GbE up to 100 meters
- CAT5e: 1 GbE up to 100 meters (10 GbE not recommended)

Server support

The adapters are supported in the System x servers identified in the following table.

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

Table 2. Support for System x and dense servers with Xeon E5/E7 v4 and E3 v5 processors

Part number	Description	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)
44T1370	Broadcom NetXtreme 2x10GbE BaseT Adapter	N	N	Y	Y	Y	Y	N
00D2026	Broadcom NetXtreme II ML2 Dual Port 10GbaseT	N	N	Y	Y	Y	Y	N
49Y7910	Broadcom NetXtreme II Dual Port 10GBaseT Adapter	N	N	N	N	Y	N	N

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

Table 3. Support for servers with Intel Xeon v3 processors

Part number	Description	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)
44T1370	Broadcom NetXtreme 2x10GbE BaseT Adapter	N	Y	Y	Y	Y	Y	Y
00D2026	Broadcom NetXtreme II ML2 Dual Port 10GbaseT	N	N	N	Y	Y	Y	Y
49Y7910	Broadcom NetXtreme II Dual Port 10GBaseT Adapter	Y	Y	N	N	N	Y	N

Support for servers with Intel Xeon v2 processors

Table 4. 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)
44T1370	Broadcom NetXtreme 2x10GbE BaseT Adapter	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
00D2026	Broadcom NetXtreme II ML2 Dual Port 10GbaseT	N	N	N	N	N	N	N	Y	Y	Y	Y	N	N
49Y7910	Broadcom NetXtreme II Dual Port 10GBaseT Adapter	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

See ServerProven for the latest information about the adapters supported by each System x server type:
<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 2x10GbE BaseT Adapter, 44T1370](#)
- [Broadcom NetXtreme II ML2 Dual Port 10GbBaseT, 00D2026](#)
- [Broadcom NetXtreme II Dual Port 10GbBaseT Adapter for System x, 49Y7910](#)

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

Table 5. Operating system support for Broadcom NetXtreme 2x10GbE BaseT Adapter, 44T1370

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)	x3250 M5 (5458)
Microsoft Windows Server 2008 R2	Y	Y	Y	N	N	Y	Y	Y	Y	N	Y
Microsoft Windows Server 2012	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
Microsoft Windows Server 2016	N	Y ¹	Y ¹	Y ¹	Y	Y	Y	Y	Y	Y	Y
Microsoft Windows Server 2019	N	N	N	Y	N	N	N	Y	N	Y	N
Microsoft Windows Server version 1709	N	N	Y	Y	Y	Y	Y	Y	Y	Y	N
Microsoft Windows Server version 1803	N	N	N	N	N	N	N	Y	N	Y	N
Red Hat Enterprise Linux 5 Server Edition	N	N	N	N	N	N	N	N	N	N	Y
Red Hat Enterprise Linux 5 Server x64 Edition	N	N	N	N	N	N	N	N	N	N	Y
Red Hat Enterprise Linux 6 Server Edition	N	N	N	N	N	N	N	N	N	N	Y
Red Hat Enterprise Linux 6 Server x64 Edition	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.0	N	N	N	Y	N	N	N	N	N	N	N
SUSE Linux Enterprise Server 11 for AMD64/EM64T	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 11 for x86	N	N	N	N	N	N	N	N	N	N	Y
VMware vSphere 5.1 (ESXi)	Y	Y	N	N	Y	Y	Y	N	Y	N	Y
VMware vSphere Hypervisor (ESXi) 5.5	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 6.0	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 6.5	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 6.7	N	N	N	Y	Y	Y	N	Y	N	Y	N

¹ [in box driver support only]

Table 6. Operating system support for Broadcom NetXtreme II ML2 Dual Port 10GbaseT, 00D2026

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 ¹	Y ¹	Y ¹	Y	Y	Y	Y	Y
Microsoft Windows Server 2019	N	N	N	Y	N	N	Y	N	Y
Microsoft Windows Server version 1709	N	N	Y	Y	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	Y	Y	N	N	Y	N	Y
SUSE Linux Enterprise Server 15 with Xen	N	N	Y	Y	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	N	Y	Y	N	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 6.5	Y	N	Y	Y	Y	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 6.7	N	N	N	Y	N	N	Y	N	Y

¹ [in box driver support only]

Table 7. Operating system support for Broadcom NetXtreme II Dual Port 10GBaseT Adapter for System x, 49Y7910

	x3850/3950 X6 (3837)	x3850/3950 X6 (6241, E7 v2)	x3100 M5 (5457)	x3250 M5 (5458)
Operating systems				
Microsoft Windows Server 2008 R2	Y	Y	Y	Y
Microsoft Windows Server 2012	Y	Y	Y	Y
Microsoft Windows Server 2012 R2	Y	Y	Y	Y
Red Hat Enterprise Linux 5 Server with Xen x64 Edition	N	N	Y	Y
Red Hat Enterprise Linux 5 Server x64 Edition	N	N	Y	Y
Red Hat Enterprise Linux 6 Server Edition	N	N	Y	Y
Red Hat Enterprise Linux 6 Server x64 Edition	Y	Y	N	Y
Red Hat Enterprise Linux 7	Y	Y	Y	Y
SUSE Linux Enterprise Server 11 for AMD64/EM64T	Y	Y	N	Y
SUSE Linux Enterprise Server 11 with Xen for AMD64/EM64T	Y	Y	N	Y
SUSE Linux Enterprise Server 12	N	Y	Y	Y
SUSE Linux Enterprise Server 12 with Xen	N	N	Y	Y
VMware vSphere 5.1 (ESXi)	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 5.5	Y	Y	Y	Y
VMware vSphere Hypervisor (ESXi) 6.0	Y	Y	N	Y

Physical specifications

The Broadcom NetXtreme 2x10GbE BaseT Adapter has the following physical specifications:

- Height: 69 mm (2.7 in)
- Length: 168 mm (6.6 in)
- Width: 16 mm (0.6 in)
- Weight: 127 g (0.28 lb)

The Broadcom NetXtreme II ML2 Dual Port 10GbaseT adapter has the following physical specifications:

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

The Broadcom NetXtreme II Dual Port 10GBaseT adapter has the following physical specifications:

- Height: 70 mm (2.7 in)
- Length: 150 mm (5.9 in)
- Width: 17.3 mm (0.7 in)

Shipping dimensions (all adapters):

- Length: 290 mm (11.5 in)
- Width: 251 mm (8.2 in)
- Height: 51 mm (2.3 in)
- Weight: 0.4 kg (0.89 lb)

Operating environment

The Broadcom NetXtreme 2x10GbE BaseT Adapter is supported in the following environment

- Operating temperature: 0 °C to 55 °C (32 °F to 131 °F)
- Storage temperature: -40 °C to 65 °C (-40 °F to 149 °F)
- Relative humidity: 5% to 95% non-condensing

The Broadcom NetXtreme II ML2 Dual Port 10GbaseT adapter and Broadcom NetXtreme II Dual Port 10GBaseT adapter are supported in the following environment:

- Temperature:
 - 0 - 914 m (0 - 3,000 ft): 10 - 35 °C (50 - 95 °F)
 - 914 - 2,133 m (3,000 - 7,000 ft): 10 - 32 °C (50 - 90 °F)
- Relative humidity: 20 - 80% (non-condensing)
- Maximum altitude: 2,133 m (7,000 ft)

Warranty

One-year limited warranty. When installed in a System x server, these cards assume your system's base warranty and any Lenovo warranty service upgrade.

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-IV

Related publications

For more information, refer to the following resources:

- *NetXtreme II Quick Installation Guide and User's Guide*
<http://ibm.com/support/entry/portal/docdisplay?Indocid=MIGR-5081963>
- (Download the ISO file, burn it to disc or unpack it using 7zip or another tool, and then open Manuals/English/index.htm.)
- 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>
- Lenovo ServerProven compatibility information for network adapters:
<http://www.lenovo.com/us/en/serverproven/xseries/lan/matrix.shtml>
- Announcement letter - Broadcom NetXtreme 2x10GbE BaseT Adapter
<http://ibm.com/common/ssi/cgi-bin/ssialias?infotype=dd&subtype=ca&&htmlfid=897/ENUS114-065>
- 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>
- US Announcement Letter for Broadcom NetXtreme II Dual Port 10GBase-T Adapter
<http://ibm.com/common/ssi/cgi-bin/ssialias?infotype=dd&subtype=ca&&htmlfid=897/ENUS111-197>

Related product families

Product families related to this document are the following:

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

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