

ThinkSystem Broadcom 57412 10GBASE-T Ethernet Adapters

Product Guide

The ThinkSystem Broadcom 57412 10GBASE-T Ethernet Adapters are four port 10 Gb Ethernet adapters that supports 10GBASE-T and 1000BASE-T Ethernet on Category 6 twisted-pair cables. They support networking virtualization technologies such as SR-IOV, VXLAN, and NVGRE. The 57412 10GBASE-T adapters are available in PCIe and OCP form factors.

The following figure shows the ThinkSystem Broadcom 57412 10GBase-T 4-Port PCIe Ethernet Adapter.



Figure 1. ThinkSystem Broadcom 57412 10GBase-T 4-Port PCIe Ethernet Adapter

Did you know?

10GBASE-T is a low-cost way to enter the 10 Gb Ethernet space. By using standard UTP twisted pair cabling, you eliminate the need for transceivers or fiber optic cabling.

The OCP adapter supports the Network Controller Sideband Interface (NC-SI) for communication with the server's onboard service processor. This support enables sharing the network interface with the service processor and the operating system, thereby eliminating the need for a separate management network.

Part number information

The ordering information is listed in the following table.

Table 1. Part number information

Part number	Feature code	Description	Vendor part number
4XC7A95697	C4GC	ThinkSystem Broadcom 57412 10GBase-T 4-Port PCIe Ethernet Adapter	BCM957412-P410TL00
4XC7A95696	C4GB	ThinkSystem Broadcom 57412 10GBase-T 4-Port OCP Ethernet Adapter	BCM957412-N410TL00

The PCIe adapters, when shipped as a stand-alone option part number, include the following items:

- One Broadcom adapter
- PCIe adapter: An attached full-height (3U) bracket, and a low-profile (2U) bracket that can be substituted if needed
- Documentation flyer

4-port adapter: When installing the Broadcom 57412 4-port adapter as a field upgrade, you will need to turn on slot bifurcation in UEFI system settings for the slot the adapter is installed in (**System Settings > Devices and I/O Ports > Override Slot Bifurcation > x4x4x4x4**). For details see the flyer that ships with the adapter.

The following figure shows the ThinkSystem Broadcom 57412 10GBase-T 4-Port OCP Ethernet Adapter.

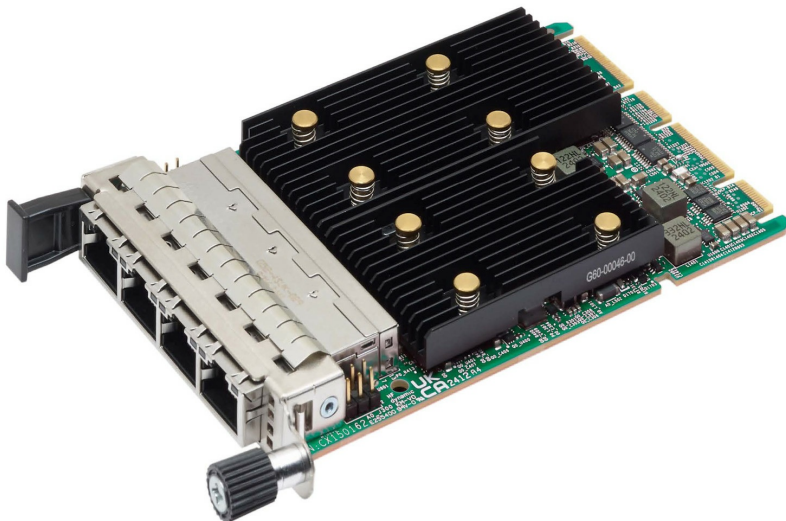


Figure 2. ThinkSystem Broadcom 57412 10GBase-T 4-Port OCP Ethernet Adapter

Network cabling requirements

The network cables that can be used with the adapters are as follows:

- 10GBASE-T maximum lengths:
 - CAT6: 55 m
 - CAT6a: 100 m
- 1000BASE-T maximum lengths:
 - CAT5e: 100 m
 - CAT6: 100 m
 - CAT6a: 100 m

The following table lists the supported Category 6 (CAT 6) cables supported by adapters with RJ45 ports.

Table 2. CAT6 cables

Part number	Feature code	Description
CAT6 Green cables		
00WE123	AVFW	0.75m Green Cat6 Cable
00WE127	AVFX	1.0m Green Cat6 Cable
00WE131	AVFY	1.25m Green Cat6 Cable
00WE135	AVFZ	1.5m Green Cat6 Cable
00WE139	AVG0	3m Green Cat6 Cable
90Y3718	A1MT	10m Green Cat6 Cable
90Y3727	A1MW	25m Green Cat6 Cable
CAT6 Blue cables		
90Y3721	A1MU	10m Blue Cat6 Cable
90Y3730	A1MX	25m Blue Cat6 Cable
CAT6 Yellow cables		
90Y3715	A1MS	10m Yellow Cat6 Cable
90Y3724	A1MV	25m Yellow Cat6 Cable
CAT6 White cables without jackets		
4X97A83980	BRW9	Lenovo 750mm Cat6 RJ45 White Cable without Jacket
4X97A83981	BRWA	Lenovo 1000mm Cat6 RJ45 White Cable without Jacket
4X97A83982	BRWB	Lenovo 1250mm Cat6 RJ45 White Cable without Jacket
4X97A83983	BRWC	Lenovo 1500mm Cat6 RJ45 White Cable without Jacket
4X97A83984	BRWD	Lenovo 3000mm Cat6 RJ45 White Cable without Jacket

The following table lists the supported Category 5e (CAT 5e) cables supported by adapters with RJ45 ports.

Table 3. CAT5e Cables

Part number	Feature code	Description
CAT5e Blue Cables		
40K5679	3801	e1350 .6 Meter Blue Ethernet Cable
00WE111	AVFT	0.75m Blue Cat5e Cable
00WE115	AVFU	1.0m Blue Cat5e Cable
00WE119	AVFV	1.25m Blue Cat5e Cable
40K8785	3802	1.5 Meter Blue Ethernet Cable
40K5581	3803	3m Blue Cat5e Cable
40K8927	3804	e1350 10 Meter Blue Ethernet Cable
40K8930	3805	25m Blue Cat5e Cable
CAT5e Green Cables		
40K5563	BQ6P	Ethe .6m Green
00WE099	AVFQ	0.75m Green Cat5e Cable
00WE103	AVFR	1.0m Green Cat5e Cable
00WE107	AVFS	1.25m Green Cat5e Cable
40K5643	3797	e1350 1.5 Meter Green Ethernet Cable
40K5793	3798	e1350 3 Meter Green Ethernet Cable
40K5794	3799	10m Green Cat5e Cable
40K8869	3800	25m Green Cat5e Cable
CAT5e Yellow Cables		
40K8933	3791	e1350 .6 Meter Yellow Ethernet Cable
40K8951	3792	1.5m Yellow Cat5e Cable
40K8957	BQ6Q	Ethe 3m Yellow
40K8801	3794	10 Meter Yellow Ethernet Cable
40K8807	3795	25m Yellow Cat5e Cable

Specifications

The 57412 10GBASE-T adapters have the following technical specifications:

- Based on the Broadcom BCM57412 controller
- Host interface
 - PCIe 3.0 x8 host interface
 - Supports Message Signal Interrupt (MSI and MSI-X)
- Networking interfaces
 - 10GBASE-T quad-port PCIe NIC with line-rate, full-duplex throughput
 - 10GBASE-T IEEE 802.3an support
 - 1000BASE-T IEEE 802.3ab support
 - Auto-negotiation with link partner on opposite end of the line, next page support
 - Enhanced cable diagnostics, which detects common cable problems
 - IEEE fast retrain and link monitoring
- Boot support
 - UEFI
 - PXE boot
 - iSCSI boot (via server UEFI; OCP adapter only)
- Networking Features
 - Jumbo frames (up to 9600-Byte)
 - Link Aggregation (802.3ad)
 - Virtual LANs-802.1q VLAN tagging
 - Advanced Congestion Avoidance
 - VLAN insertion/removal
 - Interrupt coalescing
- Stateless Offload Features
 - Tunnel-aware stateless offloads
 - IPv4 and IPv6 offloads
 - TCP, UDP, and IP checksum offloads
 - Large Send Offload (LSO)
 - Large Receive Offload (LRO)
 - TCP Segmentation Offload (TSO)
 - Receive-side Scaling (RSS)
 - Transmit-side Scaling (TSS)
- Virtualization
 - vSwitch acceleration
 - Multiqueue, NetQueue, and VMQ
 - SR-IOV with up to 128 virtual functions (VFs)
 - Function-Level Reset (FLR) support
 - Virtual Network Termination-VXLAN, NVGRE, Geneve, GRE encaps/decap
- Data Center Bridging
 - Priority-based flow control (PFC; IEEE 802.1Qbb)
 - Enhanced transmission selection (ETS; IEEE 802.1Qaz)
 - Quantized Congestion Notification (QCN; IEEE 802.1Qau)
 - Data Center Bridging Capability eXchange (DCBX; IEEE 802.1Qaz)
 - Up to 8 traffic classes per port; fully DCB compliant per 802.1Qbb
- Manageability
 - TruManage™ integrated BMC
 - SMBus 2.0
 - MCTP over SMBus
 - MCTP over PCIe VDM
 - Network Controller Sideband Interface (NC-SI) (OCP only)

Server support

The following tables list the ThinkSystem servers that are compatible.

Table 4. Server support (Part 1 of 4)

Part Number	Description	AMD V3				2S Intel V3/V4				4S 8S Intel V3			Multi Node V3/V4		1S V3						
		SR635 V3 (7D9H / 7D9G)	SR655 V3 (7D9F / 7D9E)	SR645 V3 (7D9D / 7D9C)	SR665 V3 (7D9B / 7D9A)	ST650 V3 (7D7B / 7D7A)	SR630 V3 (7D72 / 7D73)	SR650 V3 (7D75 / 7D76)	SR630 V4 (7DG8 / 7DG9)	SR650 V4 (7DGC / 7DGD)	SR650a V4 (7DGC / 7DGD)	SR850 V3 (7D97 / 7D96)	SR860 V3 (7D94 / 7D93)	SR950 V3 (7DC5 / 7DC4)	SD535 V3 (7DD8 / 7DD1)	SD530 V3 (7DDA / 7DD3)	SD550 V3 (7DD9 / 7DD2)	ST45 V3 (7DH4 / 7DH5)	ST50 V3 (7DF4 / 7DF3)	ST250 V3 (7DCF / 7DCE)	SR250 V3 (7DCM / 7DCL)
4XC7A95697	ThinkSystem Broadcom 57412 10GBase-T 4-Port PCIe Ethernet Adapter	N	N	N	N	N	N	N	Y	Y	Y	N	N	N	N	N	N	N	N	N	N
4XC7A95696	ThinkSystem Broadcom 57412 10GBase-T 4-Port OCP Ethernet Adapter	N	N	N	N	N	N	N	Y	Y	Y	N	N	N	N	N	N	N	N	N	N

Table 5. Server support (Part 2 of 4)

Part Number	Description	GPU Rich				Edge				Super Computing				1S Intel V2							
		SR670 V2 (7Z22 / 7Z23)	SR675 V3 (7D9Q / 7D9R)	SR680a V3 (7DHE)	SR685a V3 (7DHC)	SR780a V3 (7DJ5)	SE350 (7Z46 / 7D1X)	SE350 V2 (7DA9)	SE360 V2 (7DAM)	SE450 (7D8T)	SE455 V3 (7DBY)	SC750 V4 (7DDJ)	SC777 V4 (7DKA)	SD665 V3 (7D9P)	SD665-N V3 (7DAZ)	SD650 V3 (7D7M)	SD650-I V3 (7D7L)	SD650-N V3 (7D7N)	ST50 V2 (7D8K / 7D8J)	ST250 V2 (7D8G / 7D8F)	SR250 V2 (7D7R / 7D7Q)
4XC7A95697	ThinkSystem Broadcom 57412 10GBase-T 4-Port PCIe Ethernet Adapter	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
4XC7A95696	ThinkSystem Broadcom 57412 10GBase-T 4-Port OCP Ethernet Adapter	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

Table 6. Server support (Part 3 of 4)

Part Number	Description	2S Intel V2			AMD V1				Dense V2			4S V2	8S	4S V1					
		ST650 V2 (7Z75 / 7Z74)	SR630 V2 (7Z70 / 7Z71)	SR650 V2 (7Z72 / 7Z73)	SR635 (7Y98 / 7Y99)	SR655 (7Y00 / 7Z01)	SR655 Client OS	SR645 (7D2Y / 7D2X)	SR665 (7D2W / 7D2V)	SD630 V2 (7D1K)	SD650 V2 (7D1M)	SD650-N V2 (7D1N)	SN550 V2 (7Z69)	SR850 V2 (7D31 / 7D32)	SR860 V2 (7Z59 / 7Z60)	SR950 (7X11 / 7X12)	SR850 (7X18 / 7X19)	SR850P (7D2F / 2D2G)	SR860 (7X69 / 7X70)
4XC7A95697	ThinkSystem Broadcom 57412 10GBase-T 4-Port PCIe Ethernet Adapter	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
4XC7A95696	ThinkSystem Broadcom 57412 10GBase-T 4-Port OCP Ethernet Adapter	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

Table 7. Server support (Part 4 of 4)

Part Number	Description	1S Intel V1			2S Intel V1							Dense V1					
		ST150 (7Y48 / 7Y50)	ST250 (7Y45 / 7Y46)	SR150 (7Y54)	SR250 (7Y52 / 7Y51)	ST550 (7X09 / 7X10)	SR530 (7X07 / 7X08)	SR550 (7X03 / 7X04)	SR570 (7Y02 / 7Y03)	SR590 (7X98 / 7X99)	SR630 (7X01 / 7X02)	SR650 (7X05 / 7X06)	SR670 (7Y36 / 7Y37)	SD530 (7X21)	SD650 (7X58)	SN550 (7X16)	SN850 (7X15)
4XC7A95697	ThinkSystem Broadcom 57412 10GBase-T 4-Port PCIe Ethernet Adapter	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
4XC7A95696	ThinkSystem Broadcom 57412 10GBase-T 4-Port OCP Ethernet Adapter	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

Physical specifications

The PCIe adapter has a Low Profile form factor with the following dimensions:

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

The OCP adapter has the following dimensions:

- Width: 76 mm (3 in.)
- Depth: 115 mm (4.5 in.)

Operating environment

The adapters are supported in the following environment:

- Temperature (operating): 0 to 55 °C (32 to 131 °F)
- Temperature (storage): -40 to 65 °C (-40 to 149 °F)
- Humidity: 5 to 95% non-condensing

Warranty

One-year limited warranty. When installed in a supported server, these adapters assume the server's base warranty and any warranty upgrade.

Agency approvals

The adapters conform to the following standards:

Regulatory and Safety Approvals

- CE/European Union
 - EN IEC 62368-1:2020 +A11:2020, IEC 62368-1:2018 (Ed3)
- UL/USA
 - IEC 62368-1:2018 (Ed3), UL 62368-1, 3rd edition
- International
 - CB Scheme
 - UL 1977 (connector safety)
 - UL 796 (PCB wiring safety)
 - UL 94 (flammability of parts)
 - CSA C22.2 No. 62368-1-19, 3rd Ed
 - EN55035 (EN 61000-4-2)

Electromagnetic Compatibility

- CE/EU
 - EN 55032:2015 +A11:2020, Class A
 - EN55035:2017 +A11:2020
 - EN 61000-3-2:2014
 - EN 61000-3-3:2013
- FCC/USA
 - CFR47 Part 15 Subpart B Class A
- IC/Canada
 - ICES-003 Issue7, Class A
- ACA/Australia, New Zealand
 - AS/NZS CISPR 32:2015, Class A
- BSM/Taiwan
 - CNS 15936:2016
 - CNS 15663
- KC/S.Korea
 - KN32 Class A
 - KN35
- VCCI/Japan
 - VCCI-CISP 32:2016

Related publications

For more information, see the following resources:

- ThinkSystem Ethernet and InfiniBand Adapter Reference
<https://lenovopress.lenovo.com/lp1594-thinksystem-ethernet-infiniband-adapter-reference>
- Broadcom Ethernet Products web page
<https://www.broadcom.com/products/ethernet-connectivity/network-adapters>
- Lenovo ServerProven compatibility information
<http://serverproven.lenovo.com>

Related product families

Product families related to this document are the following:

- [Ethernet Adapters](#)

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