ThinkSystem Broadcom 57608 2x200/1x400GbE QSFP112 Ethernet Adapters

Product Guide

The ThinkSystem Broadcom 57608 2x200/1x400GbE QSFP112 Ethernet Adapters are high-performance dual-port 200Gb Ethernet adapters with a PCIe 5.0 x16 host interface that are designed to build highly scalable, feature-rich networking solutions in servers for AI/ML, cloud, high-performance computing, and storage applications.

The 57608 Ethernet adapters are available in two form factors, a PCIe low-profile adapter and an OCP 3.0 adapter.

The adapters use the Broadcom BCM57608 400GbE MAC controller. Incorporating industry-leading PHY technology, the adapter provides highly efficient network connectivity using 8 lanes of built-in SerDes, each supporting 100/50G PAM-4 and 25G NRZ. The adapters support fourth-generation, standards-based RDMA over Converged Ethernet (RoCE) with hardware-based congestion control.

The 57608 Ethernet adapters offer two 200Gb Ethernet ports but can also be configured as a 1-port 400Gb adapter with port 1 active and port 2 disabled.

Figure 1. ThinkSystem Broadcom 57608 2x200/1x400GbE QSFP112 Ethernet Adapters

Did you know?

With its market-leading hardware acceleration technologies, the 57608 Ethernet adapters address the performance and service demands of mega-scale data center networks with high throughput and advanced flow processing. Features such as TruFlow™ increase virtual machine density by freeing up CPU cycles. The adapter supports technology-leading security enabling the industry's most secure server platform with secure boot and attestation anchored in Broadcom's silicon Root-of-Trust (RoT).

Part number information

The ordering information is listed in the following table.

Table 1. Ordering information

Part number	Feature code	Description	Vendor equivalent
PCIe adapter			
4XC7A95572	C4GA	ThinkSystem Broadcom 57608 2x200/1x400GbE QSFP112 PCIe Ethernet Adapter	P2200G
OCP adapter			
4XC7A95695	C4CQ	ThinkSystem Broadcom 57608 2x200/1x400GbE QSFP112 OCP Ethernet Adapter(Generic FW)	N2200G

The 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

Supported transceivers and cables

The adapters have two empty QSFP112 cages for connectivity.

The following table lists the supported transceivers.

Table 2. Transceivers

Part number	Feature code	Description
200/400Gb Transceivers		
4TC7A81831	BQJZ	ThinkSystem NDR/NDR200 QSFP112 IB Multi Mode Solo-Transceiver

The following table lists the supported optical cables.

Table 3. Optical cables

Part number	Feature code	Description
NVIDIA NDR Multi Mode Fibre Optical Cables		
4X97A81748	BQJN	Lenovo 3m NVIDIA NDR Multi Mode Optical Cable
4X97A81749	BQJP	Lenovo 5m NVIDIA NDR Multi Mode Optical Cable
4X97A81750	BQJQ	Lenovo 7m NVIDIA NDR Multi Mode MPO12 APC Optical Cable
4X97A81751	BQJR	Lenovo 10m NVIDIA NDR Multi Mode Optical Cable
4X97A81752	BQJS	Lenovo 20m NVIDIA NDR Multi Mode Optical Cable
4X97A85349	BSN6	Lenovo 30m NVIDIA NDR Multi Mode MPO12 APC Optical Cable
Lenovo 400GbE QSFP112 Active Optical Cables		
4X97B01312	C6R9	Lenovo 10m 400G QSFP112 Active Optical Cable
4X97B01313	C8N5	Lenovo 15m 400G QSFP28 Active Optical Cable
4X97B01314	C8N6	Lenovo 20m 400G QSFP28 Active Optical Cable

The following table lists the supported direct-attach copper (DAC) cables.

Table 4. Copper cables

Part number	Feature code	Description
Lenovo 800GbE OSFP112 to 2 x 400GbE QSFP112 DAC Cables		
4X97B00136	C6RJ	Lenovo 2m 800GbE OSFP112 to 2 x 400GbE QSFP112 DAC Cable
Lenovo Passive 400GbE QSFP112 DAC Cables		
4X97B00140	C6R5	Lenovo 1m Passive 400G QSFP112 DAC Cable
4X97B00141	C6RL	Lenovo 1.5m Passive 400G QSFP112 DAC Cable
4X97B00142	C6RK	Lenovo 2m Passive 400G QSFP112 DAC Cable
Lenovo 400GbE QSFP112 to 400GbE QSFP112 Active Copper Cables		
4X97B00143	C6RH	Lenovo 3m 400G QSFP112 to 400G QSFP112 Active Copper Cable
4X97B00144	C6RF	Lenovo 4m 400G QSFP112 to 400G QSFP112 Active Copper Cable
4X97B00145	C6RG	Lenovo 5m 400G QSFP112 to 400G QSFP112 Active Copper Cable
Lenovo 400GbE QSFP112 to 2X200GbE QSFP56 Active Copper Cables		
4X97B00146	C6RB	Lenovo 3m 400G QSFP112 to 2X200 QSFP56 Active Copper Cable
4X97B00147	C6RA	Lenovo 4m 400G QSFP112 to 2X200 QSFP56 Active Copper Cable
4X97B00148	C6RE	Lenovo 5m 400G QSFP112 to 2X200 QSFP56 Active Copper Cable
Lenovo 400GbE QSFP-DD to 2 x 200GbE QSFP56 DAC Cables		
4X97B00137	C6RD	Lenovo 2m 400GbE QSFP-DD to 2 x 200GbE QSFP56 DAC Cable
4X97B00139	C6RC	Lenovo 3m 400GbE QSFP-DD to 2 x 200GbE QSFP56 DAC Cable

Features

The ThinkSystem Broadcom 57608 2x200/1x400GbE QSFP112 Ethernet Adapters have the following features:

- Standards-compliant PCIe 5.0 QSFP112 PCIe NIC with line-rate, full-duplex throughput
  - Single-port 400/200/100/50/25G
  - Dual-port 200/100/50/25G
- High-speed SerDes capable of 100/50G PAM4 and 25G NRZ
- Large-scale RoCE deployment with Switch Aware Rate Adjustment (SARA) and Drop Congestion Notification (DCN)
- Optimized performance with StrataXGS® and StrataDNX™ switches
- Inline encryption engine enables CPU offload and improves application performance
- Peer memory direct for low-latency inter-GPU communication
- On-chip tunneling protocol processing for Geneve, VXLAN, and NVGRE
- Industry's most secure PCIe NIC solution provides unparalleled platform security via silicon Root-of-Trust
- TruFlow™ engine line-rate offload for virtual switch processing
- TruManage™ enhances server manageability and security for data center deployments
- NIC partitioning supporting 16 physical functions (PFs)
- Seamless integration with Broadcom's PCIe Gen 5 PCIe switches for GPU-based AI/ML servers

Specifications

The 57608 Ethernet adapters have the following technical specifications:

- Based on the following Broadcom controllers:
  - BCM57608-P2200G 2-port PCIe adapter
  - BCM57608-N2200G 2-port OCP adapter
- Network Interface:
  - 8 SerDes capable of 100/50G PAM4 and 25G NRZ
  - Support for up to 2 ports
  - QSFP112 support
    - 1x 400GbE
    - 2x 200/100/50/25GbE
  - 400Gb/s total bandwidth
  - Auto-negotiation with auto-detect
  - IEEE-1588v2
- Host Interface:
  - 16 lanes of PCI Express 5.0
  - Link rates: 32, 16, 8, 5, 2.5 GT/s
  - Lane configuration: x16, x8, x4, x2, and x1
  - MSI-X support
- Platform Security:
  - HW Secure Boot (RoT)
  - Attestation (SPDM)
  - OCP Secure Recovery
  - Secure Wipe and Restore
  - OCP Silver Security Badge (Cert Pending)
- Networking/Virtualizations and Accelerations:
  - RoCEv2
  - Multi-Queue, NetQueue, and VMQ
  - Single Root I/O Virtualization
  - VF isolation and protection
  - VXLAN, GRE, NVGRE, Geneve, and IP-in-IP
  - Tunnel-aware stateless off-loads
  - Edge Virtual Bridging (EVB)
  - Stateless TCP offloads: IP/TCP/UDP checksum, LSO, LRO, GRO, TSS, RSS, aRFS, Interrupt coalescing
  - kTLS hardware offload encryption/decryption support
  - QUIC hardware offload encryption/decryption support
- TruFlow Flow Processing:
  - Flexible matching key
  - NAT and NAPT
  - Tunnel encap/decap
  - Custom tunnel processing
  - Connection tracking
  - Flow aging
  - Sampling and mirroring
  - Rate-limiting and metering
  - Flow-based statistics
  - Network Traffic Hairpin
- RoCEv2:
  - Standards-based
  - DCQCN
  - Peer Memory Direct
  - Smart Congestion Control: DCN and SARA
  - Automated Configuration

- Manageability:
  - Network Controller Sideband Interface (NC-SI)
  - Management Component Transport Protocol (MCTP)
  - MCTP over SMBus/I2C
  - MCTP over PCIe VDM
  - NC-SI over MCTP
  - Platform Level Data Model (PLDM): Base, Monitoring/Control & FW update
  - PLDM over MCTP
  - I2C support for device control and configuration
- Network Boot:
  - UEFI PXE boot
  - UEFI L2 iSCSI boot
  - UEFI support for x86

Server support

The following tables list the ThinkSystem servers that are compatible.

Table 5. Server support (Part 1 of 4)

		AMD V3				2S Intel V3/V4						4S 8S Intel V3			Multi Node V3/V4			1S V3			
Part Number	**Description**	**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)**
4XC7A95572	ThinkSystem Broadcom 57608 2x200/1x400GbE QSFP112 PCIe Ethernet Adapter	N	N	N	N	N	N	N	Y	Y	Y	N	N	N	N	N	N	N	N	N	N
4XC7A95695	ThinkSystem Broadcom 57608 2x200/1x400GbE QSFP112 OCP Ethernet Adapter(Generic FW)	N	N	N	N	N	N	N	Y	Y	Y	N	N	N	N	N	N	N	N	N	N

Table 6. 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)
4XC7A95572	ThinkSystem Broadcom 57608 2x200/1x400GbE QSFP112 PCIe Ethernet Adapter	N	N	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
4XC7A95695	ThinkSystem Broadcom 57608 2x200/1x400GbE QSFP112 OCP Ethernet Adapter(Generic FW)	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

Table 7. 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)
4XC7A95572	ThinkSystem Broadcom 57608 2x200/1x400GbE QSFP112 PCIe Ethernet Adapter	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
4XC7A95695	ThinkSystem Broadcom 57608 2x200/1x400GbE QSFP112 OCP Ethernet Adapter(Generic FW)	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

Table 8. Server support (Part 4 of 4)

Part Number	Description	1S Intel V1				2S Intel V1								Dense V1			
		ST50 (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)
4XC7A95572	ThinkSystem Broadcom 57608 2x200/1x400GbE QSFP112 PCIe Ethernet Adapter	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
4XC7A95695	ThinkSystem Broadcom 57608 2x200/1x400GbE QSFP112 OCP Ethernet Adapter(Generic FW)	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

Support of adapters with generic firmware

One or more of the adapters described in this product guide uses standard vendor firmware (look for "Generic FW" or "Generic" in the adapter names). These adapters are supported in Lenovo servers however there are currently limitations on the use of Lenovo management tools.

Support in Lenovo XClarity management tools for adapters with generic firmware is per the following table.

Tip: Always use firmware that is obtained from Lenovo sources to ensure the firmware is fully tested by Lenovo and is supported. You should not use firmware that is obtained from the vendor web site, unless directed to do so by Lenovo support.

Table 9. Lenovo XClarity management tools support for adapters with generic firmware

Function	Lenovo XClarity Provisioning Manager	Lenovo XClarity OneCLI (out-of-band)	Lenovo XClarity OneCLI (in-band)	Lenovo XClarity Administrator
Adapter configuration	Supported (in-band via UEFI)	Planned for support 3Q/2025	Planned for support 3Q/2025	Planned for support 3Q/2025

Operating system support

The following table lists the supported operating systems.

Tip: This data is automatically generated based on data from Lenovo ServerProven.

Table 10. Operating system support for ThinkSystem Broadcom 57608 2x200/1x400GbE QSFP112 PCIe Ethernet Adapter, 4XC7A95572

Operating systems	SR685a V3
Red Hat Enterprise Linux 9.4	Y
Ubuntu 22.04 LTS	Y
Ubuntu 24.04 LTS	Y

Physical specifications

The PCIe adapter has the following dimensions:

- Length: 167 mm (6.6 in.)
- Height: 64 mm (2.5 in)

The OCP adapter has the following dimensions:

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

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:

- Safety Approvals:
  - 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
- EMC approvals:
  - EN 55032:2015 +AC:2016, Class A
  - EN 55024:2010 +A1:2015
  - EN 55035
  - EN 61000-3-2:2014
  - EN 61000-3-3:2013
  - CFR47 Part 15 Subpart B Class A
  - ICES-003 Class A
  - AS/NZS CISPR 32:2015, Class A
  - CNS 15936:2016
  - CNS 15663
  - KN32 Class A
  - KN35
  - 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
- Lenovo ServerProven compatibility information:
  http://serverproven.lenovo.com
- Broadcom P2200G product web page:
  https://www.broadcom.com/products/ethernet-connectivity/network-adapters/p2200g
- Broadcom N2200G product web page:
  https://www.broadcom.com/products/ethernet-connectivity/network-adapters/n2200g

Related product families

Product families related to this document are the following:

- Ethernet Adapters

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