

# ThinkSystem AMD X4522-PLUS 10/25GbE SFP28 2-port PCIe Low-Latency Ethernet Adapter

## Product Guide

The ThinkSystem AMD X4522-PLUS 10/25GbE SFP28 2-port PCIe Low-Latency Ethernet Adapter is an advanced network adapter with the low latency needed particularly for the finance industry. Suitable workloads include those used by brokers, exchanges and market data vendors. The adapter has an architecture that is optimized for reliable operation and trade execution.

The following figure shows the ThinkSystem AMD X4522-PLUS 10/25GbE SFP28 2-port PCIe Low-Latency Ethernet Adapter.

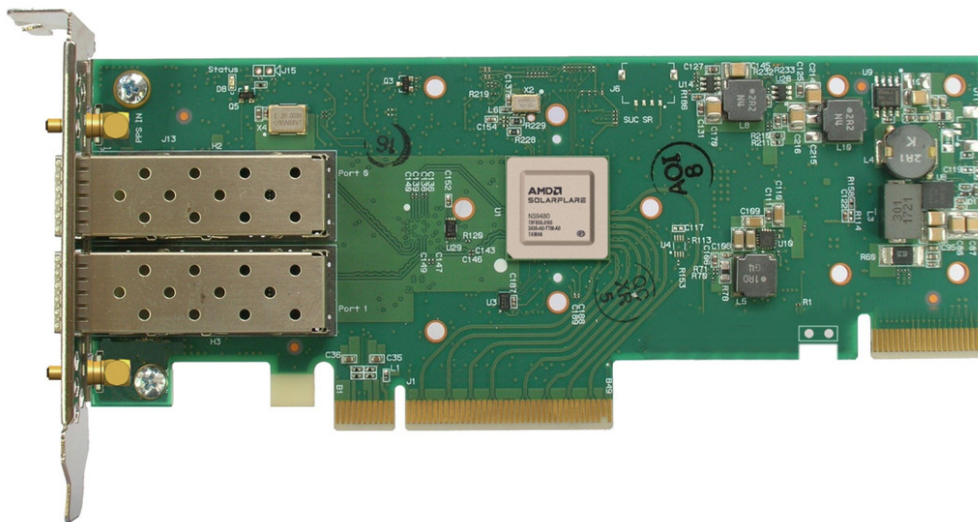


Figure 1. ThinkSystem AMD X4522-PLUS 10/25GbE SFP28 2-port PCIe Low-Latency Ethernet Adapter (heatsink removed to show card detail)

### Did you know?

For more than 15 years, the combination of AMD Solarflare™ low-latency Ethernet adapters and Onload™ family software have been used in virtually all facets of Capital markets such as leading-edge exchange systems, deterministic brokerage services, and sophisticated algorithmic trading applications.

## Part number information

The following table shows the part number for the adapter.

Table 1. Part number information

Part number	Feature code	Description
4XC7B10840	CHAX	ThinkSystem AMD X4522-PLUS 10/25GbE SFP28 2-port PCIe Low-Latency Ethernet Adapter(Generic FW)

The part numbers include the following:

- One PCIe adapter
- Low-profile (2U) and full-height (3U) adapter brackets
- Documentation

## Supported transceivers and cables

The following table lists the supported transceivers.

Table 2. Transceivers

Part number	Feature code	Description
10Gb Transceivers		
00FE331	B0RJ	10GBASE-LR SFP+ Transceiver
49Y4216	0069	Brocade 10Gb SFP+ SR Optical Transceiver
49Y4218	0064	QLogic 10Gb SFP+ SR Optical Transceiver
46C3447	5053	SFP+ SR Transceiver
4TC7A78615	BNDR	ThinkSystem Accelink 10G SR SFP+ Ethernet transceiver
25Gb Transceivers		
4TC7A69045	BF10	Lenovo Dual Rate 10G/25G SR SFP28 85C Transceiver
4TC7A88638	BYBJ	ThinkSystem Finisar Dual Rate 10G/25G SR SFP28 Transceiver

**25Gb transceivers:** When installed in this 25Gb Ethernet adapter, 25Gb transceivers are designed to operate at either 25 Gb/s or 10 Gb/s speeds as listed in the description of the transceiver, however the speed also depends on the negotiation with the connected switch. In most configurations, this negotiation is automatic, however in some configurations you may have to manually set the link speed or FEC mode.

The following table lists the supported optical cables.

Table 3. Optical cables

Part number	Feature code	Description
LC-LC OM3 Fiber Optic Cables (these cables require a 10 GbE SFP+ SR or 25 GbE SFP28 SR transceiver)		
00MN499	ASR5	Lenovo 0.5m LC-LC OM3 MMF Cable
00MN502	ASR6	Lenovo 1m LC-LC OM3 MMF Cable
00MN505	ASR7	Lenovo 3m LC-LC OM3 MMF Cable

<b>Part number</b>	<b>Feature code</b>	<b>Description</b>
00MN508	ASR8	Lenovo 5m LC-LC OM3 MMF Cable
00MN511	ASR9	Lenovo 10m LC-LC OM3 MMF Cable
00MN514	ASRA	Lenovo 15m LC-LC OM3 MMF Cable
00MN517	ASRB	Lenovo 25m LC-LC OM3 MMF Cable
00MN520	ASRC	Lenovo 30m LC-LC OM3 MMF Cable
<b>MTP-4xLC OM3 MMF Breakout Cables (these cables require a transceiver)</b>		
00FM412	A5UA	Lenovo 1m MPO-4xLC OM3 MMF Breakout Cable
00FM414	A5UC	Lenovo 5m MPO-4xLC OM3 MMF Breakout Cable
<b>SFP28 25Gb Active Optical Cables</b>		
4X97A94008	AV1F	Lenovo 3m 25G SFP28 Active Optical Cable
4X97A94011	AV1G	Lenovo 5m 25G SFP28 Active Optical Cable
4X97A94012	AV1H	Lenovo 10m 25G SFP28 Active Optical Cable
4X97A94013	AV1J	Lenovo 15m 25G SFP28 Active Optical Cable
4X97A94702	AV1K	Lenovo 20m 25G SFP28 Active Optical Cable
<b>OM4 LC to LC Cables</b>		
4Z57A10845	B2P9	Lenovo 0.5m LC-LC OM4 MMF Cable
4Z57A10846	B2PA	Lenovo 1m LC-LC OM4 MMF Cable
4Z57A10847	B2PB	Lenovo 3m LC-LC OM4 MMF Cable
4Z57A10848	B2PC	Lenovo 5m LC-LC OM4 MMF Cable
4Z57A10849	B2PD	Lenovo 10m LC-LC OM4 MMF Cable
4Z57A10850	B2PE	Lenovo 15m LC-LC OM4 MMF Cable
4Z57A10851	B2PF	Lenovo 25m LC-LC OM4 MMF Cable
4Z57A10852	B2PG	Lenovo 30m LC-LC OM4 MMF Cable

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

Table 4. Copper cables

Part number	Feature code	Description
<b>SFP+ 10Gb Passive DAC Cables</b>		
00D6288	A3RG	0.5m Passive DAC SFP+ Cable
90Y9427	A1PH	1m Passive DAC SFP+ Cable
00AY764	A51N	1.5m Passive DAC SFP+ Cable
00AY765	A51P	2m Passive DAC SFP+ Cable
90Y9430	A1PJ	3m Passive DAC SFP+ Cable
90Y9433	A1PK	5m Passive DAC SFP+ Cable
<b>SFP+ 10Gb Active DAC Cables</b>		
00VX111	AT2R	Lenovo 1m Active DAC SFP+ Cables
00VX114	AT2S	Lenovo 3m Active DAC SFP+ Cables
00VX117	AT2T	Lenovo 5m Active DAC SFP+ Cables
<b>SFP28 25Gb Passive DAC Cables</b>		
7Z57A03557	AV1W	Lenovo 1m Passive 25G SFP28 DAC Cable
7Z57A03558	AV1X	Lenovo 3m Passive 25G SFP28 DAC Cable
7Z57A03559	AV1Y	Lenovo 5m Passive 25G SFP28 DAC Cable
<b>QSFP28 100G-to-4x25G Ethernet Breakout Cables</b>		
7Z57A03564	AV22	Lenovo 1m 100G QSFP28 to 4x25G SFP28 Breakout DAC Cable
4Z57A85043	BS32	Lenovo 1.5m 100G to 4x25G Breakout SFP28 Breakout DAC Cable
4Z57A85044	BS33	Lenovo 2m 100G to 4x25G Breakout SFP28 Breakout DAC Cable
7Z57A03565	AV23	Lenovo 3m 100G QSFP28 to 4x25G SFP28 Breakout DAC Cable
7Z57A03566	AV24	Lenovo 5m 100G QSFP28 to 4x25G SFP28 Breakout DAC Cable

## Technical specifications

The X4522 adapter continues the Solarflare low-latency architecture with a custom ASIC design, delivering the same advanced acceleration, timing, and software capabilities as previous generations.

- Adapter hardware
  - 2x SFP56 cages (compatible with SFP28)
  - Support for direct attach copper (DAC) cables or optical transceivers
  - PCIe Gen5 x8 host interface
  - Low profile PCIe adapter
  - Passively cooled
- Network acceleration
  - Onload support - BSD sockets compliant TCP/UDP kernel bypass
  - TCPDirect - TCP/UDP kernel bypass
  - ef\_vi low level API for high performance raw Ethernet networking
- Time synchronization and hardware time stamping
  - On-board Stratum 3 compliant oscillator
  - IEEE 1588-2008 PTPv2
  - Hardware receive and transmit time stamping
- Security features
  - Secure firmware upgrade
  - Hardware root of trust

- Manageability and Remote Boot
  - UEFI boot
  - NC-SI over MCTP SMBus
  - PLDM over MCTP SMBus
  - MCTP PCIe VDM

**Note:** The X4522 adapter does not support XClarity OneCLI or out-of-band management in V3 servers.

## Server support

The following tables list the ThinkSystem servers that are compatible.

Table 5. Server support (Part 1 of 5)

Part Number	Description	AMD V3				2S Intel V3/V4						Multi Node V3	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)	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)
4XC7B10840	ThinkSystem AMD X4522-PLUS 10/25GbE SFP28 2-port PCIe Low-Latency Ethernet Adapter(Generic FW)	N	N	N	Y	N	N	N	N	N	N	N	N	N	N	N	N	N

Table 6. Server support (Part 2 of 5)

Part Number	Description	4S 8S Intel V3/V4						GPU Rich				Edge							
		SR850 V3 (7D97 / 7D96)	SR860 V3 (7D94 / 7D93)	SR950 V3 (7DC5 / 7DC4)	SR850 V4 (7DJT / 7DJS)	SR860 V4 (7DJQ / 7DJN)	SR670 V2 (7Z22 / 7Z23)	SR675 V3 (7D9Q / 7D9R)	SR680a V3 (7DHE)	SR680a V3 B200 (7DM9)	SR685a V3 (7DHC)	SR780a V3 (7DJ5)	SR680a V4 (7DMK)	SE100 (7DGR)	SE350 (7Z46 / 7D1X)	SE350 V2 (7DA9)	SE360 V2 (7DAM)	SE450 (7D8T)	SE455 V3 (7DBY)
4XC7B10840	ThinkSystem AMD X4522-PLUS 10/25GbE SFP28 2-port PCIe Low-Latency Ethernet Adapter(Generic FW)	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 5)

Part Number	Description	Super Computing						1S Intel V2		2S Intel V2		AMD V1						
		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)	ST650 V2 (7Z75 / 7Z74)	SR630 V2 (7Z70 / 7Z71)	SR650 V2 (7Z72 / 7Z73)	SR635 (7Y98 / 7Y99)	SR655 (7Y00 / 7Z01)	SR645 (7D2Y / 7D2X)	SR665 (7D2W / 7D2V)
4XC7B10840	ThinkSystem AMD X4522-PLUS 10/25GbE SFP28 2-port PCIe Low-Latency Ethernet Adapter(Generic FW)	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

Table 8. Server support (Part 4 of 5)

Part Number	Description	Dense V2				4S V2	8S	4S V1		1S Intel V1					
		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)	ST50 (7Y48 / 7Y50)	ST250 (7Y45 / 7Y46)	SR150 (7Y54)	SR250 (7Y52 / 7Y51)
4XC7B10840	ThinkSystem AMD X4522-PLUS 10/25GbE SFP28 2-port PCIe Low-Latency Ethernet Adapter(Generic FW)	N	N	N	N	N	N	N	N	N	N	N	N	N	N

Table 9. Server support (Part 5 of 5)

Part Number	Description	2S Intel V1							Dense V1				
		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)
4XC7B10840	ThinkSystem AMD X4522-PLUS 10/25GbE SFP28 2-port PCIe Low-Latency Ethernet Adapter(Generic FW)	N	N	N	N	N	N	N	N	N	N	N	N

## Regulatory approvals

The X4522 adapter has the following hardware certifications:

- FCC Part 15 – Radiated & Conducted Emissions (USA)
- CAN ICES-3(A)/NMB-3(A) – Radiated & Conducted Emissions (Canada)
- CISPR 32 – Radiated & Conducted Emissions (International)
- EN55032: 2015 – Radiated & Conducted Emissions (European Union)
- EN55035:2017 – Immunity (European Union)
- EMC Directive 2014/30/EU
- Electromagnetic Compatibility Regulations 2016 (UK)
- VCCI (Class A)– Radiated & Conducted Emissions (Japan)
- KCC Class A (Korea)
- CNS13438 – Radiated & Conducted Emissions (Taiwan)
- CNS 15663 - RoHS (Taiwan)
- AS/NZS CISPR 32 – Radiated and Conducted Emissions (Australia/New Zealand)
- Article 58-2 of Radio Waves Act, Clause 3 (Korea)

## Physical specifications

The X4522 adapter has the following physical specifications:

- Length: 168 mm (6.6 inches)
- Height: 69 mm (2.7 inches)

## Operating environment

The X4522 adapter is supported in the following environment:

- Temperature:
  - Operating: 0°C to 55°C (32°F to 131°F)
  - Storage: -40°C to 75°C (-40°F to 167°F)
- Humidity:
  - Operating: 8% to 90%
  - Storage: 5% to 95%

## Warranty

One year limited warranty. When installed in a Lenovo server, this adapter assumes the server's base warranty and any warranty upgrades.

## Related publications

For more information, refer to these documents:

- ServerProven compatibility  
<https://serverproven.lenovo.com/>
- AMD Solarflare X4 Ethernet Adapters product page  
<https://www.amd.com/en/products/ethernet-adapters/solarflare-x4.html>

## **Related product families**

Product families related to this document are the following:

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

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