

ThinkSystem AMD X3522 10/25GbE DSFP28 2-Port PCIe Low Latency Ethernet Adapter

Product Guide

The ThinkSystem AMD X3522 10/25GbE DSFP28 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.

25Gb support: The X3522 adapter currently only operates at 10Gb Ethernet. 25GbE support is planned for 4Q/2024.

The following figure shows the ThinkSystem AMD X3522 10/25GbE DSFP28 Low Latency Ethernet Adapter.

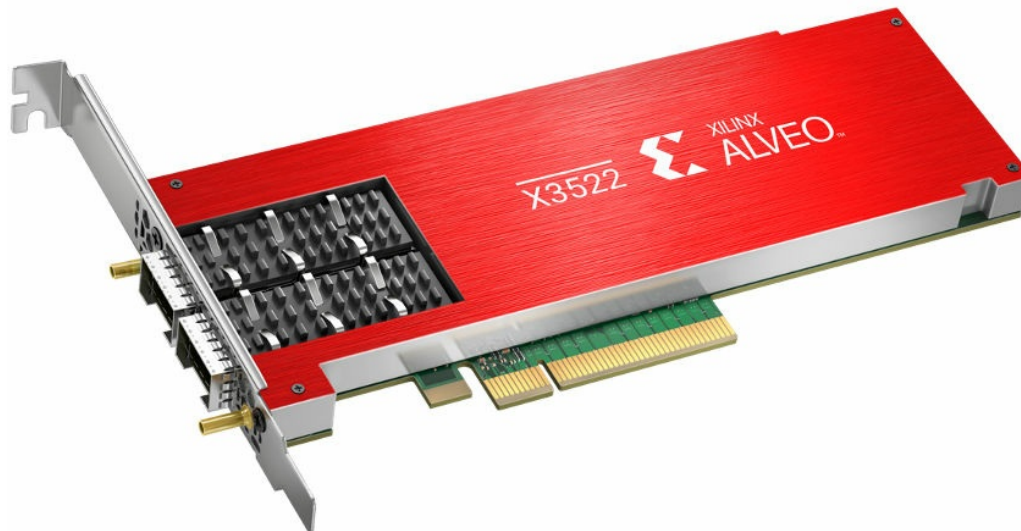


Figure 1. ThinkSystem AMD X3522 10/25GbE DSFP28 2-Port PCIe Ethernet Adapter (Low Latency)

Did you know?

Today's leading trading firms, market makers, hedge funds, and exchanges demand low latency trade execution and risk management for competitive advantage. The X3522 adapter offers the necessary performance for these application types.

Part number information

The following table shows the part number for the adapter.

Table 1. Part number information

Part number	Feature code	Description
4XC7A84827	BUQK	ThinkSystem AMD X3522 10/25GbE DSFP28 2-Port PCIe Ethernet Adapter (Low Latency)

The part numbers include the following:

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

Supported transceivers and cables

The following table lists the supported transceivers.

25Gb support: The X3522 adapter currently only operates at 10Gb Ethernet. 25GbE support is planned for 4Q/2024.

The following table lists the supported transceivers.

Table 2. Transceivers

Part number	Feature code	Description
10Gb Transceivers		
46C3447	5053	SFP+ SR Transceiver
4TC7A78615	BNDR	ThinkSystem Accelink 10G SR SFP+ Ethernet transceiver

The following table lists the supported fiber optic cables and Active 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
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
MTP-4xLC OM3 MMF Breakout Cables (these cables require a transceiver)		
00FM412	A5UA	Lenovo 1m MPO-4xLC OM3 MMF Breakout Cable
00FM413	A5UB	Lenovo 3m MPO-4xLC OM3 MMF Breakout Cable
00FM414	A5UC	Lenovo 5m MPO-4xLC OM3 MMF Breakout Cable
SFP+ 10Gb Active Optical Cables		
00YL634	ATYX	Lenovo 1m SFP+ to SFP+ Active Optical Cable
00YL637	ATYY	Lenovo 3m SFP+ to SFP+ Active Optical Cable
00YL640	ATYZ	Lenovo 5m SFP+ to SFP+ Active Optical Cable
00YL643	ATZ0	Lenovo 7m SFP+ to SFP+ Active Optical Cable
00YL646	ATZ1	Lenovo 15m SFP+ to SFP+ Active Optical Cable
00YL649	ATZ2	Lenovo 20m SFP+ to SFP+ Active Optical Cable
SFP28 25Gb Active Optical Cables		
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
OM4 LC to LC Cables (these cables require a transceiver)		
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
SFP+ 10Gb Passive DAC Cables		
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
00D6151	A3RH	7m Passive DAC SFP+ Cable
SFP28 25Gb Passive DAC Cables		
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
QSFP28 100G-to-4x25G Ethernet Breakout Cables		
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 X3522 adapter has the following specifications:

- Adapter hardware
 - 2x DSFP28 ports (double-density), compatible with SFP28 and SFP+
 - Each DSFP28 cage supports two ports via a shared PF
 - Support for direct attach copper (DAC) cables or optical transceivers
 - PCIe Gen4 x8 host interface
 - Low profile PCIe adapter
 - Onboard 8GB DDR4 memory
 - 1PPS In/Out SSMB connectors
 - Passively cooled
- Network acceleration
 - Onload® - 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
 - Tamper resistant adapter – digitally signed firmware and secured private keys
 - 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

Server support

The following tables list the ThinkSystem servers that are compatible.

Table 5. Server support (Part 1 of 4)

Part Number	Description	2S AMD V3				2S Intel V3		4S 8S Intel V3		Multi Node		GPU Rich				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)	SR850 V3 (7D97 / 7D96)	SR860 V3 (7D94 / 7D93)	SR950 V3 (7DC5 / 7DC4)	SD535 V3 (7DD8 / 7DD1)	SD530 V3 (7DDA / 7DD3)	SD550 V3 (7DD9 / 7DD2)	SR670 V2 (7Z22 / 7Z23)	SR675 V3 (7D9Q / 7D9R)	SR680a V3 (7DHE)	SR685a V3 (7DHC)	ST250 V3 (7DCF / 7DCE)	SR250 V3 (7DCM / 7DCL)
4XC7A84827	ThinkSystem AMD X3522 10/25GbE DSFP28 2-Port PCIe Ethernet Adapter (Low Latency)	Y	Y	Y	Y	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N

Table 6. Server support (Part 2 of 4)

Part Number	Description	Edge					Super Computing					1S Intel V2		2S Intel V2			
		SE350 (7Z46 / 7D1X)	SE350 V2 (7DA9)	SE360 V2 (7DAM)	SE450 (7D8T)	SE455 V3 (7DBY)	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)
4XC7A84827	ThinkSystem AMD X3522 10/25GbE DSFP28 2-Port PCIe Ethernet Adapter (Low Latency)	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	Y

Table 7. Server support (Part 3 of 4)

Part Number	Description	AMD V1					Dense V2				4S V2	8S	4S V1		1S Intel V1					
		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)	ST50 (7Y48 / 7Y50)	ST250 (7Y45 / 7Y46)	SR150 (7Y54)	SR250 (7Y52 / 7Y51)
4XC7A84827	ThinkSystem AMD X3522 10/25GbE DSFP28 2-Port PCIe Ethernet Adapter (Low Latency)	N	Y	Y	Y	Y	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	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)
4XC7A84827	ThinkSystem AMD X3522 10/25GbE DSFP28 2-Port PCIe Ethernet Adapter (Low Latency)	N	N	N	N	N	N	N	N	N	N	N	N

Operating system support

The adapter supports the operating systems listed in the following table.

Tip: This table is automatically generated based on data from [Lenovo ServerProven](#).

Table 9. Operating system support for ThinkSystem AMD X3522 10/25GbE DSFP28 2-port PCIe Ethernet Adapter (Low Latency), 4XC7A84827

Operating systems	SR630 V3 (4th Gen Xeon)	SR630 V3 (5th Gen Xeon)	SR635 V3	SR645 V3	SR650 V3 (4th Gen Xeon)	SR650 V3 (5th Gen Xeon)	SR655 V3	SR665 V3	SR630 V2	SR650 V2	SR645	SR655	SR665
Red Hat Enterprise Linux 7.8	N	N	N	N	N	N	N	N	N	N	Y ¹	Y	Y ¹
Red Hat Enterprise Linux 7.9	N	N	N	N	N	N	N	N	Y	Y	Y ¹	Y	Y ¹
Red Hat Enterprise Linux 8.2	N	N	N	N	N	N	N	N	Y	Y	Y ¹	Y	Y ¹
Red Hat Enterprise Linux 8.3	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.4	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.5	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.6	Y	N	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.7	Y	N	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 8.8	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 9.0	Y	N	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 9.1	Y	N	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y
Red Hat Enterprise Linux 9.2	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 15 SP2	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 15 SP3	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 15 SP4	Y	N	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y
SUSE Linux Enterprise Server 15 SP5	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Ubuntu 18.04.5 LTS	N	N	N	N	N	N	N	N	Y	Y	N	N	N
Ubuntu 20.04 LTS	N	N	N	N	N	N	N	N	Y	Y	N	N	N
Ubuntu 20.04.5 LTS	N	N	Y	Y	N	N	Y	Y	N	N	N	N	N
Ubuntu 22.04 LTS	Y	N	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y

¹ The OS is not supported with EPYC 7003 processors.

Regulatory approvals

The X3522 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 X3522 adapter has the following physical specifications:

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

Operating environment

The X3522 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/>
- Alveo X3 Series product page
<https://www.xilinx.com/products/boards-and-kits/alveo/x3.html>

Related product families

Product families related to this document are the following:

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

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