Lenovo ThinkAgile VX 2U Certified Node (Xeon SP Gen 1)

Product Guide (withdrawn product)

Lenovo ThinkAgile VX Certified Nodes are designed for deploying industry-leading Hyper-Converged Infrastructure (HCI) software from VMware on Lenovo enterprise platforms that feature the first generation of the Intel Xeon Processor Scalable family (Xeon SP Gen 1). They deliver fully validated and integrated Lenovo hardware and firmware that is certified with VMware software and preloaded with the VMware ESXi hypervisor. VMware offers a unique, software-defined approach to hyper convergence, leveraging the hypervisor to deliver compute, storage and management in a tightly integrated software stack.

The ThinkAgile VX 2U Certified Nodes are 2U rack-mount systems can be optimized for various types of workloads, including general purpose workloads for small and medium businesses, compute-heavy workloads (such as virtual desktop infrastructure (VDI), server virtualization, private/hybrid clouds, enterprise applications, and light databases), and high-performance workloads (such as databases, e-mail and collaboration, and load-balancing clusters).

The ThinkAgile 2U Certified Nodes are shown in the following figure.

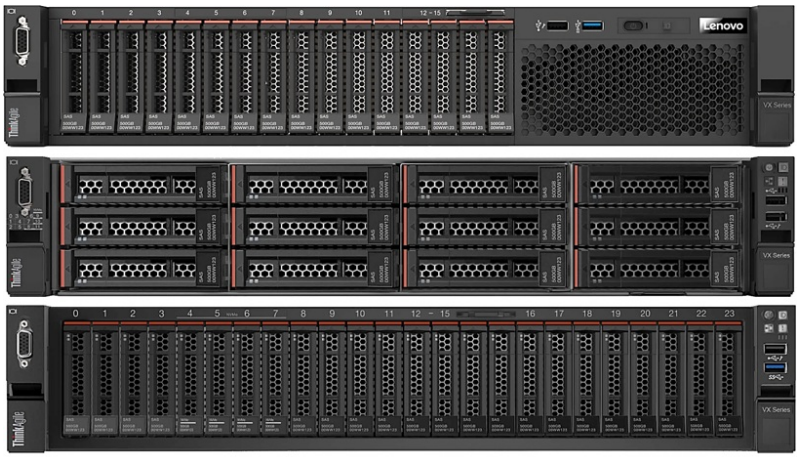

Figure 1. ThinkAgile VX 2U Certified Node with 16x SFF (top), 12x LFF (middle), or 24x SFF (bottom) drive bays

Did you know?

The ThinkAgile VX Certified Nodes are built on industry-leading Lenovo ThinkSystem servers that feature enterprise-class reliability, management, and security.

The ThinkAgile VX Certified Nodes deliver fully validated and integrated hardware and firmware that is certified with VMware software.

Key features

The ThinkAgile VX Certified Nodes offer the following key features:

- Offer quick and convenient path to implement a hyperconverged solution powered by VMware vSAN with a wide range of selection options for processors, memory, storage, and network connectivity.
- Built on proven and reliable Lenovo ThinkSystem servers featuring Intel Xeon Processor Scalable Family that provide compute power for a variety of workloads and applications.
- Meet various workload demands with cost-efficient hybrid or performance-optimized all-flash storage configurations.
- Deliver fully validated and integrated hardware and firmware that is certified with VMware software.
- Preloaded with the VMware ESXi hypervisor and ready for out-of-box deployment (software licenses are not included).
- Provide flexibility in using the existing VMware enterprise license agreements or purchasing new software licenses and support contracts from VMware or Lenovo.
- Offer optional Lenovo deployment services to get customers up and running quickly.

The VMware software running on ThinkAgile VX Certified Nodes delivers the following key features:

- Distributed architecture that allows "pay-as-you-grow", non-disruptive scaling by adding new nodes to the cluster (scale-out) to increase capacity and performance.
- Advanced capacity management, including deduplication, compression, and erasure coding (RAID 5/6), which helps deliver greater storage utilization with dramatically lower storage capacity and costs.
- Automation of VM storage provisioning and control of storage service levels (capacity, performance, availability) with VM-centric policies to load balance storage resources.
- Native HCI security solution with two-factor authentication (SecurID and CAC) and data-at-rest encryption that does not require self-encrypting drives (SEDs).
- Stretched cluster with local and site failure protection between two geographically dispersed sites for higher level of availability with near zero downtime.
- Centralized management with provisioning, administering, and monitoring virtual resources across multiple hosts and clusters from a centralized interface.
- Rapid workload provisioning, simplified data center operations, increased business efficiency, and decreased CAPEX and OPEX costs.
- VM and data protection with agent-less, image-level virtual machine backups and application-aware protection for business-critical Microsoft applications (Exchange, SQL Server, SharePoint) along with WAN-efficient, encrypted backup data replication.
- Reduced unplanned downtime and virtually eliminated planned downtime for server and storage maintenance with live workload migration, high availability, and fault tolerance.
- Enhanced application performance and availability with resource management, load balancing, and access prioritization.
- Intelligent operations management and automation to proactively monitor and manage compute, storage, and networking resources, identify performance bottlenecks, and re-balance workloads by leveraging predictive analytics.
- Capacity planning and optimization guidance to address future needs with performance trends, projections and extended forecasts.
- Managing remote offices and branch offices with rapid provisioning of servers through virtualization, minimization of host configuration drift, and enhanced visibility into regulatory compliance, across multiple sites.

Components and connectors

The following figure shows the front view of the VX 2U Certified Node with 16 SFF drive bays.

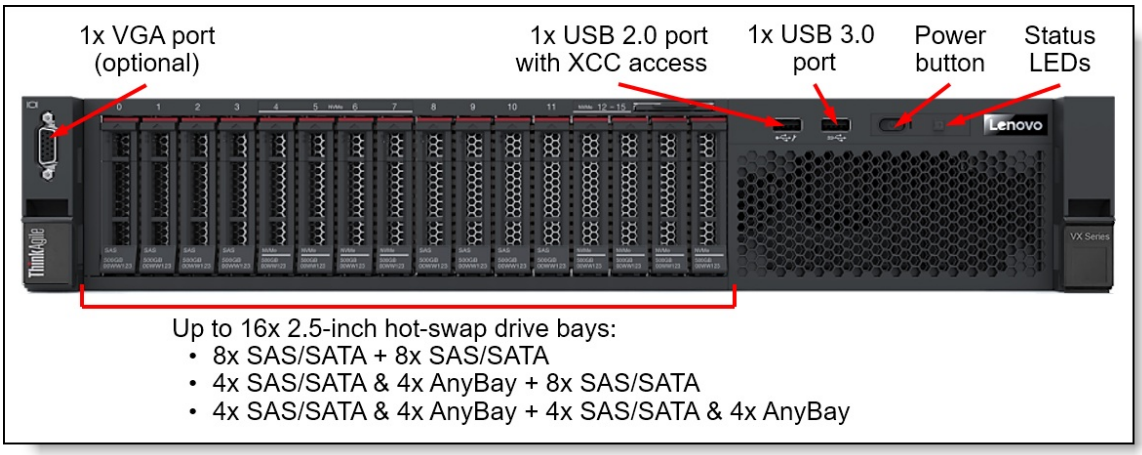

Figure 2. VX 2U Certified Node front view: 16x SFF drive bays

The following figure shows the front view of the VX 2U Certified Node with 24 SFF drive bays.

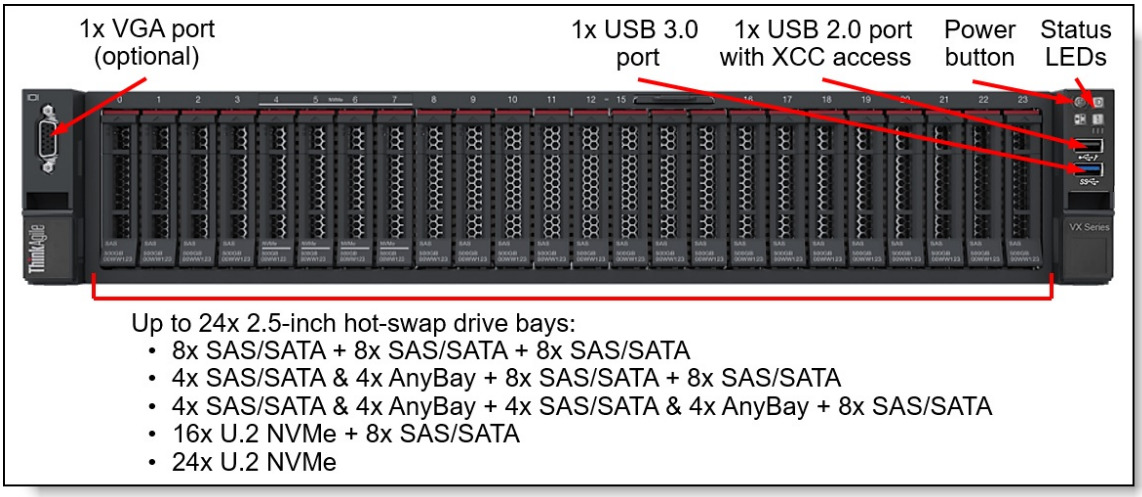

Figure 3. VX 2U Certified Node front view: 24x SFF drive bays

The following figure shows the front view of the VX 2U Certified Node with 12 LFF drive bays.

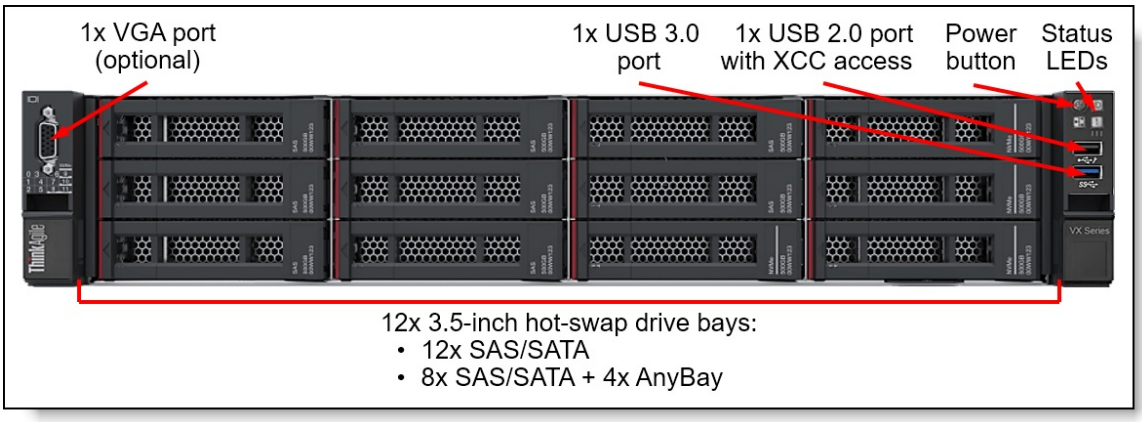

Figure 4. VX 2U Certified Node front view: 12x LFF drive bays

The front of the VX 2U Certified Node includes the following components:

- Up to 16x SFF or 24x SFF, or 12x LFF hot-swap drive bays
- One VGA port (optional)
- One USB 2.0 port with XClarity Controller access
- One USB 3.0 port
- A Power button
- Status LEDs that display the status of the system

The following figure shows the rear view of the VX 2U Certified Node.

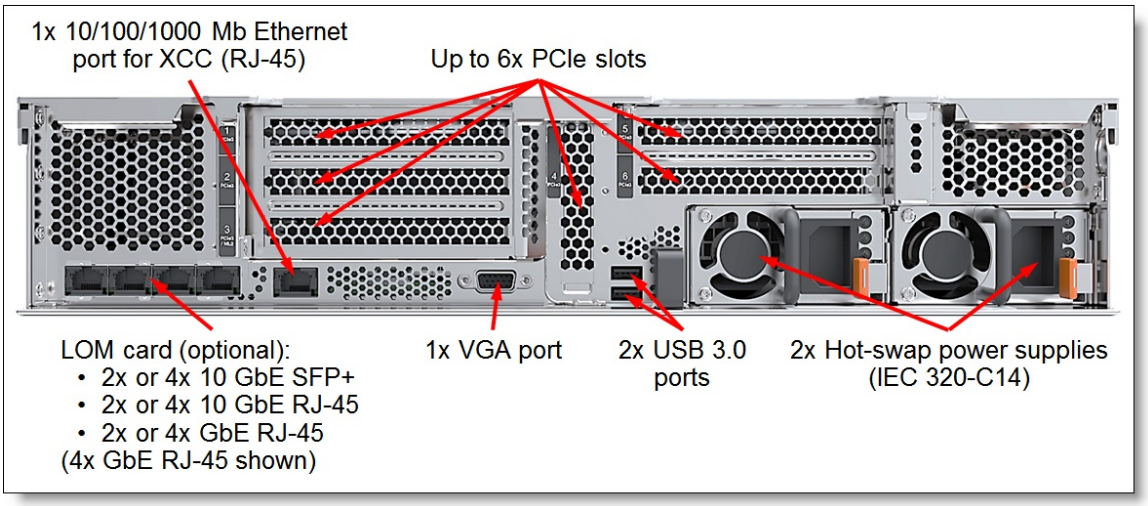

Figure 5. VX 2U Certified Node rear view

The rear of the VX 2U Certified Node includes the following components:

- Up to six PCIe expansion slots (depending on the riser cards selected)
- One LOM card slot
- One 1 GbE port for XClarity Controller
- One VGA port
- Two USB 3.0 ports
- Up to two hot-swap power supplies

System specifications

The following table lists the system specifications of the ThinkAgile VX 2U Certified Node.

Table 1. VX 2U Certified Node system specifications

Attribute	Specification
Form factor	2U Rack-mount.
Processor	One or two Intel Xeon Bronze, Silver, Gold, or Platinum Gen 1 processors.
Chipset	Intel C624.
Memory	24 DIMM sockets (Up to 12 DIMMs per processor; six memory channels per processor with two DIMMs per channel). Support for RDIMMs, LRDIMMs, or 3DS RDIMMs. Memory types cannot be intermixed. Memory speed up to 2666 MHz.
Memory capacity	• With RDIMMs: Up to 768 GB with 24x 32 GB RDIMMs and two processors. • With LRDIMMs: Up to 1.5 TB with 24x 64 GB LRDIMMs and two processors. • With 3DS RDIMMs: Up to 3 TB with 128 GB 3DS RDIMMs and two processors. **Note:** Node configurations with more than 768 GB of memory capacity per socket require processors that support up to 1.5 TB (M-suffix) per socket.

Attribute	Specification
Memory protection	Error correction code (ECC), Single Device Data Correction (SDDC; for x4-based memory DIMMs), Adaptive Double Device Data Correction (ADDDC; for x4-based memory DIMMs, requires Intel Xeon Gold or Platinum processors), patrol scrubbing, and demand scrubbing.

Drive bays	• Up to 16 SFF and 2 LFF hot-swap drive bays:
	  ◦ 8x 2.5" SAS/SATA + 8x 2.5" SAS/SATA + 2x 3.5" SAS/SATA (rear)
	  ◦ 4x 2.5" SAS/SATA & 4x 2.5" AnyBay + 8x 2.5" SAS/SATA + 2x 3.5" SAS/SATA (rear)
	  ◦ 4x 2.5" SAS/SATA & 4x 2.5" AnyBay + 4x 2.5" SAS/SATA & 4x 2.5" AnyBay + 2x 3.5" SAS/SATA (rear)
	• Up to 24 SFF and 2 LFF hot-swap drive bays:
	  ◦ 8x 2.5" SAS/SATA + 8x 2.5" SAS/SATA + 8x 2.5" SAS/SATA + 2x 3.5" SAS/SATA (rear)
	  ◦ 4x 2.5" SAS/SATA & 4x 2.5" AnyBay + 8x 2.5" SAS/SATA + 8x 2.5" SAS/SATA + 2x 3.5" SAS/SATA (rear)
	  ◦ 4x 2.5" SAS/SATA & 4x 2.5" AnyBay + 4x 2.5" SAS/SATA & 4x 2.5" AnyBay + 8x 2.5" SAS/SATA + 2x 3.5" SAS/SATA (rear)
	  ◦ 16x 2.5" U.2 NVMe PCIe + 8x 2.5" SAS/SATA (factory-installed only)
	  ◦ 24x 2.5" U.2 NVMe PCIe
	• Up to 14 LFF hot-swap drive bays:
	  ◦ 12x 3.5" SAS/SATA (front) + 2x 3.5" SAS/SATA (rear)
	  ◦ 8x 3.5" SAS/SATA & 4x 3.5" AnyBay (front) + 2x 3.5" SAS/SATA (rear)

Drive capacities	• 2.5-inch hot-swap drives:
	  ◦ 12 Gbps SAS HDDs up to 2.4 TB
	  ◦ 12 Gbps NL SAS HDDs up to 2 TB
	  ◦ 12 Gbps SAS SSDs up to 7.68 TB
	  ◦ 6 Gbps SATA SSDs up to 7.68 TB
	  ◦ U.2 NVMe PCIe 3.0 x4 SSDs up to 8 TB
	• 3.5-inch hot-swap drives:
	  ◦ 12 Gbps NL SAS HDDs up to 16 TB
	  ◦ 12 Gbps SAS SSDs up to 3.2 TB (2.5" SSD in a 3.5" tray)
	  ◦ 6 Gbps SATA SSDs up to 7.68 TB (2.5" SSD in a 3.5" tray)
	  ◦ NVMe PCIe 3.0 x4 SSDs up to 6.4 TB (2.5" SSD in a 3.5" tray)
	Note: NVMe PCIe SSDs are supported in the AnyBay or U.2 NVMe drive bays.

Storage controller	• 12 Gbps SAS/6 Gbps SATA non-RAID:
	  ◦ 430-8i HBA
	  ◦ 430-16i HBA
	• NVMe PCIe non-RAID:
	  ◦ Onboard NVMe
	  ◦ 810-4P NVMe Switch Adapter
	  ◦ 1610-4P NVMe Switch Adapter
	  ◦ 1610-8P NVMe Switch Adapter

Network interfaces	• 1 GbE RJ-45: 2 - 28 (LOM + Up to 6 network adapters) • 10 GbE RJ-45 or SFP+: 2 - 24 (LOM + Up to 6 network adapters) • 25 GbE SFP28: 1 - 12 (Up to 6 network adapters) • 40 GbE QSFP+: 1 - 6 (Up to 6 network adapters) • 100 GbE QSFP28: 1 - 6 (Up to 3 network adapters)
Boot drive	2x M.2 non-hot-swap SSDs up to 480 GB (RAID-1).

Attribute	Specification
I/O expansion slots	Up to seven slots. Slots 4 and 7 are the fixed slots on the system planar, and the remaining slots depend on the riser cards installed. The slots are as follows: • Slot 1: PCIe 3.0 x16 or PCIe 3.0 x8; full-height, half-length (PCIe x16 slot can be single- or double-wide) • Slot 2: PCIe 3.0 x8; full-height, half-length (not present if Slot 1 is PCIe x16 double-wide or Slot 3 is ML2 x16) • Slot 3: PCIe 3.0 x8, or PCIe 3.0 x16, or ML2 x8, or ML2 x16; full-height, half-length • Slot 4: PCIe 3.0 x8; low profile (vertical slot on system planar) • Slot 5: PCIe 3.0 x16; full-height, half-length • Slot 6: PCIe 3.0 x16; full-height, half-length • Slot 7: PCIe 3.0 x8 (dedicated to an internal RAID controller) Slots 5 and 6 require the second processor to be installed.

Ports	• Front:
	  ◦ 1x USB 2.0 port with XClarity Controller access
	  ◦ 1x USB 3.0 port
	  ◦ 1x VGA port (optional)
	• Rear:
	  ◦ 2x USB 3.0 ports
	  ◦ 1x VGA port
	  ◦ 1x RJ-45 10/100/1000 Mb Ethernet port for systems management

Cooling	Five (one processor) or six (two processors) hot-swap system fans with N+1 redundancy.
Power supply	One or two redundant hot-swap 1100 W (100 - 240 V) or 1600 W (200 - 240 V) High Efficiency Platinum power supplies.
Video	Matrox G200 with 16 MB memory integrated into the XClarity Controller. Maximum resolution is 1920x1200 at 60 Hz with 32 bits per pixel.
Hot-swap parts	SSDs, HDDs, power supplies, and fans.
Systems management	Lenovo XClarity Controller (XCC) Standard, Advanced, or Enterprise (Pilot 4 chip), proactive platform alerts, light path diagnostics, Lenovo XClarity Administrator with Integrator for VMware vCenter (optional), Lenovo XClarity Energy Manager (optional).
Security features	Power-on password, administrator's password, secure firmware updates, Trusted Platform Module (TPM) 1.2 or 2.0 (configurable UEFI setting). Optional lockable front bezel.
Software	Software licenses that can be purchased from Lenovo or provided by the customer: • VMware vSAN: Standard, Advanced, Enterprise, Enterprise Plus, ROBO, or Desktop. • VMware vSphere: Standard, Enterprise Plus, or ROBO. • HCI Kit: Essentials, Standard, Advanced, Enterprise, or ROBO. • VMware Horizon: Standard, Advanced, or Enterprise. • VMware Cloud Foundation (VCF): Basic, Standard, Advanced, Enterprise, or for VDI. • VMware vCenter Server: Foundation or Standard.
Hypervisors	VMware ESXi 6.5 U2, 6.5 U3, 6.7, 6.7 U1, 6.7 U2, or 6.7 U3 (factory preload).
Warranty and support	Three-, four-, or five-year customer-replaceable unit and onsite limited warranty with selectable service levels: 9x5 coverage with next business day (NBD) parts delivered (base warranty), 9x5 coverage with NBD onsite response (Foundation Service), 24x7 coverage with 4-hour onsite response or 24-hour committed repair (select areas) (Essential Service), or 24x7 coverage with 2-hour onsite response or 6-hour committed repair (select areas) (Advanced Service). Also available are 1-year and 2-year post-warranty extensions, YourDrive YourData, and Enterprise Software Support.
Software maintenance	One-, three-, or five-year software support and subscription is included with the VMware software licenses available from Lenovo (optional).
Dimensions	Height: 87 mm (3.4 in.), width: 445 mm (17.5 in.), depth: 720 mm (28.3 in.).
Weight	Maximum configuration: 32 kg (70.5 lb).

Factory-integrated models

Factory-integrated models of the ThinkAgile VX Certified Nodes are configured by using the Lenovo Data Center Solution Configurator (DCSC):
http://dcsc.lenovo.com

During the configuration process, you are selecting one of the Configure-to-Order (CTO) base models first, and then you are selecting components (processors, memory, drives, network adapters, GPU adapters, power supplies, and software) for that model.

Note: You are required to engage a Lenovo representative in the project that includes the ThinkAgile VX Certified Nodes.

The following table lists the CTO base models of the VX 2U Certified Nodes.

Table 2. CTO base models

Description	Machine Type/Model
ThinkAgile VX 2U Certified Node	7Y94CTO5WW

The following table lists the available chassis selection options for the VX 2U Certified Nodes.

Table 3. Chassis selection options

Description	Machine Type/Model	Feature code
ThinkAgile VX 2U 3.5" 8/12 Bay Chassis	7Y94CTO5WW	B1DG
ThinkAgile VX 2U 2.5" 8/16 Bay Chassis	7Y94CTO5WW	B1DF
ThinkAgile VX 2U 2.5" 8/16/24 Bay Chassis	7Y94CTO5WW	B1DH

The VX 2U Certified Nodes ship with the following items:

- *Electronic Publications Flyer*
- Tool-less Slide Rail Kit (with or without 2U CMA depending on the rack installation option)
- One or two customer-selected power cables (depending on the quantity of the power supplies)

Processors

The ThinkAgile VX 2U Certified Nodes can be configured with one or two processors. The following table lists the processor options that are available for selection.

Table 4. Processor options

Description	Part number	Feature code*	Quantity (min / max)
Intel Xeon Bronze processors			
Intel Xeon Bronze 3104 6C 85W 1.7GHz Processor	7XG7A05572	AWEJ	1 / 2
Intel Xeon Bronze 3106 8C 85W 1.7GHz Processor	7XG7A05570	AWEH	1 / 2
Intel Xeon Silver processors			
Intel Xeon Silver 4108 8C 85W 1.8GHz Processor	7XG7A05571	AWEG	1 / 2
Intel Xeon Silver 4109T 8C 70W 2.0GHz Processor	7XG7A05574	AWET	1 / 2
Intel Xeon Silver 4110 8C 85W 2.1GHz Processor	7XG7A05575	AWEE	1 / 2
Intel Xeon Silver 4112 4C 85W 2.6GHz Processor	7XG7A05577	AWEF	1 / 2
Intel Xeon Silver 4114 10C 85W 2.2GHz Processor	7XG7A05578	AWEC	1 / 2
Intel Xeon Silver 4114T 10C 85W 2.2GHz Processor	7XG7A05579	AWES	1 / 2

Description	Part number	Feature code*	Quantity (min / max)
Intel Xeon Silver 4116 12C 85W 2.1GHz Processor	7XG7A05576	AWER	1 / 2
Intel Xeon Silver 4116T 12C 85W 2.1GHz Processor	7XG7A05573	AWEA	1 / 2
Intel Xeon Gold processors			
Intel Xeon Gold 5115 10C 85W 2.4GHz Processor	7XG7A05596	AWDU	1 / 2
Intel Xeon Gold 5117 14C 105W 2.0GHz Processor	4XG7A09082	B137	1 / 2
Intel Xeon Gold 5118 12C 105W 2.3GHz Processor	7XG7A05580	AWEP	1 / 2
Intel Xeon Gold 5119T 14C 85W 1.9GHz Processor	7XG7A05581	AWEQ	1 / 2
Intel Xeon Gold 5120 14C 105W 2.2GHz Processor	7XG7A05583	AWE6	1 / 2
Intel Xeon Gold 5120T 14C 105W 2.2GHz Processor	7XG7A05582	AWE8	1 / 2
Intel Xeon Gold 5122 4C 105W 3.6GHz Processor	7XG7A05591	AWED	1 / 2
Intel Xeon Gold 6126 12C 125W 2.6GHz Processor	7XG7A05590	AWEL	1 / 2
Intel Xeon Gold 6128 6C 115W 3.4GHz Processor	7XG7A05588	AWEB	1 / 2
Intel Xeon Gold 6130 16C 125W 2.1GHz Processor	7XG7A05587	AWEN	1 / 2
Intel Xeon Gold 6130T 16C 125W 2.1GHz Processor	7XG7A05586	AWE4	1 / 2
Intel Xeon Gold 6132 14C 140W 2.6GHz Processor	7XG7A05606	AWDY	1 / 2
Intel Xeon Gold 6134 8C 130W 3.2GHz Processor	7XG7A05605	AWE9	1 / 2
Intel Xeon Gold 6134M 8C 130W 3.2GHz Processor	4XG7A09067	B0X4	1 / 2
Intel Xeon Gold 6136 12C 150W 3.0GHz Processor	7XG7A05604	AWE3	1 / 2
Intel Xeon Gold 6138 20C 125W 2.0GHz Processor	7XG7A05585	AWDZ	1 / 2
Intel Xeon Gold 6138T 20C 125W 2.0GHz Processor	7XG7A05584	AWEM	1 / 2
Intel Xeon Gold 6140 18C 140W 2.3GHz Processor	7XG7A05603	AWE1	1 / 2
Intel Xeon Gold 6140M 18C 140W 2.3GHz Processor	7XG7A05602	AWE2	1 / 2
Intel Xeon Gold 6142 16C 150W 2.6GHz Processor	7XG7A05601	AWDW	1 / 2
Intel Xeon Gold 6142M 16C 150W 2.6GHz Processor	4XG7A09066	B0X3	1 / 2
Intel Xeon Gold 6146 12C 165W 3.2GHz Processor	7XG7A05599	AWE0	1 / 2
Intel Xeon Gold 6148 20C 150W 2.4GHz Processor	7XG7A05598	AWDX	1 / 2
Intel Xeon Gold 6150 18C 165W 2.7GHz Processor	7XG7A05597	AWDT	1 / 2
Intel Xeon Gold 6152 22C 140W 2.1GHz Processor	7XG7A05595	AWDV	1 / 2
Intel Xeon Gold 6154 18C 200W 3.0GHz Processor	7XG7A05594	AWDN	1 / 2
Intel Xeon Platinum processors			
Intel Xeon Platinum 8153 16C 125W 2.0GHz Processor	7XG7A05593	AWDR	1 / 2
Intel Xeon Platinum 8156 4C 105W 3.6GHz Processor	7XG7A05592	AWDL	1 / 2
Intel Xeon Platinum 8158 12C 150W 3.0GHz Processor	7XG7A05617	AWDS	1 / 2
Intel Xeon Platinum 8160 24C 150W 2.1GHz Processor	7XG7A05616	AWDP	1 / 2
Intel Xeon Platinum 8160M 24C 150W 2.1GHz Processor	7XG7A05615	AWDQ	1 / 2
Intel Xeon Platinum 8160T 24C 150W 2.1GHz Processor	7XG7A05614	AWEK	1 / 2
Intel Xeon Platinum 8164 26C 150W 2.0GHz Processor	7XG7A05613	AWDM	1 / 2
Intel Xeon Platinum 8168 24C 205W 2.7GHz Processor	7XG7A05612	AWDJ	1 / 2
Intel Xeon Platinum 8170 26C 165W 2.1GHz Processor	7XG7A05611	AWDK	1 / 2
Intel Xeon Platinum 8170M 26C 165W 2.1GHz Processor	4XG7A09065	B0X2	1 / 2
Intel Xeon Platinum 8176 28C 165W 2.1GHz Processor	7XG7A05610	AWDH	1 / 2
Intel Xeon Platinum 8176M 28C 165W 2.1GHz Processor	7XG7A05609	AWDG	1 / 2
Intel Xeon Platinum 8180 28C 205W 2.5GHz Processor	7XG7A05608	AWDF	1 / 2

Description	Part number	Feature code*	Quantity (min / max)
Intel Xeon Platinum 8180M 28C 205W 2.5GHz Processor	7XG7A05607	AWDE	1 / 2

* For CTO configurations, the feature code represents a processor, and fans and heatsinks are derived by the configuration tool. For field upgrades, the part number includes a processor, a heatsink, and an additional system fan.
** Factory-installed only.

Configuration note: If processors with 200 W or 205 W TDP are used, or if Gold 6146 or Platinum 8160T processors are used, the following conditions must be met:

- 24x 2.5” chassis only
- Ambient temperature
  - Up to 35 °C (95 °F): 8x 2.5” SAS/SATA drive bays (drive backplane in the middle)
  - Up to 30 °C (86 °F):
    - 4x 2.5" SAS/SATA and 4x 2.5" AnyBay (up to 4 NVMe SSDs)
    - 8x 2.5" SAS/SATA and 8x 2.5" AnyBay (up to 8 NVMe SSDs)
- No rear HDD kit installed
- No GPUs installed
- The node performance might be impacted in case of a fan failure

The following table lists the specifications of the processors for the certified nodes.

Table 5. Processor specifications (HT = Hyper-Threading, TB = Turbo Boost, VT = Virtualization Technology)

CPU model	Core frequency (Base / TB Max)	Number of cores / threads	Cache	Max DDR4 frequency	Max memory per socket	UPI speed	TDP	HT	TB	VT-x	VT-d
Intel Xeon Bronze processors											
3104	1.7 / 1.7 GHz	6 / 6	8.25 MB	2133 MHz	768 GB	9.6 GT/s	85 W	No	No	Yes	Yes
3106	1.7 / 1.7 GHz	8 / 8	11 MB	2133 MHz	768 GB	9.6 GT/s	85 W	No	No	Yes	Yes
Intel Xeon Silver processors											
4108	1.8 / 3.0 GHz	8 / 16	11 MB	2400 MHz	768 GB	9.6 GT/s	85 W	Yes	Yes	Yes	Yes
4109T	2.0 / 3.0 GHz	8 / 16	11 MB	2400 MHz	768 GB	9.6 GT/s	70 W	Yes	Yes	Yes	Yes
4110	2.1 / 3.0 GHz	8 / 16	11 MB	2400 MHz	768 GB	9.6 GT/s	85 W	Yes	Yes	Yes	Yes
4112	2.6 / 3.0 GHz	4 / 8	8.25 MB	2400 MHz	768 GB	9.6 GT/s	85 W	Yes	Yes	Yes	Yes
4114	2.2 / 3.0 GHz	10 / 20	13.75 MB	2400 MHz	768 GB	9.6 GT/s	85 W	Yes	Yes	Yes	Yes
4114T	2.2 / 3.0 GHz	10 / 20	13.75 MB	2400 MHz	768 GB	9.6 GT/s	85 W	Yes	Yes	Yes	Yes
4116	2.1 / 3.0 GHz	12 / 24	16.5 MB	2400 MHz	768 GB	9.6 GT/s	85 W	Yes	Yes	Yes	Yes
4116T	2.1 / 3.0 GHz	12 / 24	16.5 MB	2400 MHz	768 GB	9.6 GT/s	85 W	Yes	Yes	Yes	Yes
Intel Xeon Gold processors											
5115	2.4 / 3.2 GHz	10 / 20	13.75 MB	2400 MHz	768 GB	10.4 GT/s	85 W	Yes	Yes	Yes	Yes
5117	2.0 / 2.8 GHz	14 / 28	19.25 MB	2400 MHz	768 GB	10.4 GT/s	105W	Yes	Yes	Yes	Yes
5118	2.3 / 3.2 GHz	12 / 24	16.5 MB	2400 MHz	768 GB	10.4 GT/s	105 W	Yes	Yes	Yes	Yes
5119T	1.9 / 3.2 GHz	14 / 28	19.25 MB	2400 MHz	768 GB	10.4 GT/s	85 W	Yes	Yes	Yes	Yes
5120	2.2 / 3.2 GHz	14 / 28	19.25 MB	2400 MHz	768 GB	10.4 GT/s	105 W	Yes	Yes	Yes	Yes
5120T	2.2 / 3.2 GHz	14 / 28	19.25 MB	2400 MHz	768 GB	10.4 GT/s	105 W	Yes	Yes	Yes	Yes
5122	3.6 / 3.7 GHz	4 / 8	16.5 MB	2666 MHz	768 GB	10.4 GT/s	105 W	Yes	Yes	Yes	Yes
6126	2.6 / 3.7 GHz	12 / 24	19.25 MB	2666 MHz	768 GB	10.4 GT/s	125 W	Yes	Yes	Yes	Yes
6128	3.4 / 3.7 GHz	6 / 12	19.25 MB	2666 MHz	768 GB	10.4 GT/s	115 W	Yes	Yes	Yes	Yes
6130	2.1 / 3.7 GHz	16 / 32	22 MB	2666 MHz	768 GB	10.4 GT/s	125 W	Yes	Yes	Yes	Yes
6130T	2.1 / 3.7 GHz	16 / 32	22 MB	2666 MHz	768 GB	10.4 GT/s	125 W	Yes	Yes	Yes	Yes
6132	2.6 / 3.7 GHz	14 / 28	19.25 MB	2666 MHz	768 GB	10.4 GT/s	140 W	Yes	Yes	Yes	Yes
6134	3.2 / 3.7 GHz	8 / 16	24.75 MB	2666 MHz	768 GB	10.4 GT/s	130 W	Yes	Yes	Yes	Yes

CPU model	Core frequency (Base / TB Max)	Number of cores / threads	Cache	Max DDR4 frequency	Max memory per socket	UPI speed	TDP	HT	TB	VT-x	VT-d
6134M	3.2 / 3.7 GHz	8 / 16	24.75 MB	2666 MHz	1.5 TB	10.4 GT/s	130 W	Yes	Yes	Yes	Yes
6136	3.0 / 3.7 GHz	12 / 24	24.75 MB	2666 MHz	768 GB	10.4 GT/s	150 W	Yes	Yes	Yes	Yes
6138	2.0 / 3.7 GHz	20 / 40	27.5 MB	2666 MHz	768 GB	10.4 GT/s	125 W	Yes	Yes	Yes	Yes
6138T	2.0 / 3.7 GHz	20 / 40	27.5 MB	2666 MHz	768 GB	10.4 GT/s	125 W	Yes	Yes	Yes	Yes
6140	2.3 / 3.7 GHz	18 / 36	24.75 MB	2666 MHz	768 GB	10.4 GT/s	140 W	Yes	Yes	Yes	Yes
6140M	2.3 / 3.7 GHz	18 / 36	24.75 MB	2666 MHz	1.5 TB	10.4 GT/s	140 W	Yes	Yes	Yes	Yes
6142	2.6 / 3.7 GHz	16 / 32	22 MB	2666 MHz	768 GB	10.4 GT/s	150 W	Yes	Yes	Yes	Yes
6142M	2.6 / 3.7 GHz	16 / 32	22 MB	2666 MHz	1.5 TB	10.4 GT/s	150 W	Yes	Yes	Yes	Yes
6146	3.2 / 4.2 GHz	12 / 24	24.75 MB	2666 MHz	768 GB	10.4 GT/s	165 W	Yes	Yes	Yes	Yes
6148	2.4 / 3.7 GHz	20 / 40	27.5 MB	2666 MHz	768 GB	10.4 GT/s	150 W	Yes	Yes	Yes	Yes
6150	2.7 / 3.7 GHz	18 / 36	24.75 MB	2666 MHz	768 GB	10.4 GT/s	165 W	Yes	Yes	Yes	Yes
6152	2.1 / 3.7 GHz	22 / 44	30.25 MB	2666 MHz	768 GB	10.4 GT/s	140 W	Yes	Yes	Yes	Yes
6154	3.0 / 3.7 GHz	18 / 36	24.75 MB	2666 MHz	768 GB	10.4 GT/s	200 W	Yes	Yes	Yes	Yes
Intel Xeon Platinum processors											
8153	2.0 / 2.8 GHz	16 / 32	22 MB	2666 MHz	768 GB	10.4 GT/s	125 W	Yes	Yes	Yes	Yes
8156	3.6 / 3.7 GHz	4 / 8	16.5 MB	2666 MHz	768 GB	10.4 GT/s	105 W	Yes	Yes	Yes	Yes
8158	3.0 / 3.7 GHz	12 / 24	24.75 MB	2666 MHz	768 GB	10.4 GT/s	150 W	Yes	Yes	Yes	Yes
8160	2.1 / 3.7 GHz	24 / 48	33 MB	2666 MHz	768 GB	10.4 GT/s	150 W	Yes	Yes	Yes	Yes
8160M	2.1 / 3.7 GHz	24 / 48	33 MB	2666 MHz	1.5 TB	10.4 GT/s	150 W	Yes	Yes	Yes	Yes
8160T	2.1 / 3.7 GHz	24 / 48	33 MB	2666 MHz	768 GB	10.4 GT/s	150 W	Yes	Yes	Yes	Yes
8164	2.0 / 3.7 GHz	26 / 52	35.75 MB	2666 MHz	768 GB	10.4 GT/s	150 W	Yes	Yes	Yes	Yes
8168	2.7 / 3.7 GHz	24 / 48	33 MB	2666 MHz	768 GB	10.4 GT/s	205 W	Yes	Yes	Yes	Yes
8170	2.1 / 3.7 GHz	26 / 52	35.75 MB	2666 MHz	768 GB	10.4 GT/s	165 W	Yes	Yes	Yes	Yes
8170M	2.1 / 3.7 GHz	26 / 52	35.75 MB	2666 MHz	1.5 TB	10.4 GT/s	165 W	Yes	Yes	Yes	Yes
8176	2.1 / 3.8 GHz	28 / 56	38.5 MB	2666 MHz	768 GB	10.4 GT/s	165 W	Yes	Yes	Yes	Yes
8176M	2.1 / 3.8 GHz	28 / 56	38.5 MB	2666 MHz	1.5 TB	10.4 GT/s	165 W	Yes	Yes	Yes	Yes
8180	2.5 / 3.8 GHz	28 / 56	38.5 MB	2666 MHz	768 GB	10.4 GT/s	205 W	Yes	Yes	Yes	Yes
8180M	2.5 / 3.8 GHz	28 / 56	38.5 MB	2666 MHz	1.5 TB	10.4 GT/s	205 W	Yes	Yes	Yes	Yes

Memory

The ThinkAgile VX Certified Nodes support Lenovo TruDDR4 memory. TruDDR4 memory uses the highest-quality components sourced from Tier 1 DRAM suppliers and only memory that meets strict requirements is selected. It is compatibility tested and tuned to maximize performance and reliability.

The VX 2U Certified Nodes support up to 24 DIMMs. The following rules apply when selecting the memory configuration:

- The nodes support RDIMMs, LRDIMMs, or 3DS RDIMMs.
- Mixing different types of memory (RDIMMs, LRDIMMs, and 3DS RDIMMs) is not supported.
- Mixing x4 and x8 RDIMMs and RDIMMs of different capacity is supported.
- All DIMMs in the node operate at the same speed up to 2666 MHz, which is determined by the maximum memory speed supported by the specific processor.
  Note: Maximum memory speed can be achieved when Max performance mode is enabled in UEFI.
- The following maximum memory capacities supported by the server:
  - RDIMMs: 768 GB (384 GB per processor).
  - LRDIMMs: 1.5 TB (768 GB per processor).
  - 3DS RDIMMs: 3 TB (1.5 GB per processor) (requires processors that support 1.5 TB of memory per socket).

The following memory protection technologies are supported:

- ECC
- SDDC (for x4-based memory DIMMs)
- ADDDC (for x4-based memory DIMMs; Gold and Platinum processors only)
- Patrol scrubbing
- Demand scrubbing

The following table lists the memory options that are available for selection.

Table 6. Memory options

Description	Part number	Feature code	Quantity*
RDIMMs			
ThinkSystem 8GB TruDDR4 2666 MHz (1Rx8 1.2V) RDIMM	7X77A01301	AUU1	4, 6, 8, 12 / 4, 6, 8, 12, 16, 24
ThinkSystem 16GB TruDDR4 2666 MHz (1Rx4 1.2V) RDIMM	7X77A01302	AUNB	4, 6, 8, 12 / 4, 6, 8, 12, 16, 24
ThinkSystem 16GB TruDDR4 2666 MHz (2Rx8 1.2V) RDIMM	7X77A01303	AUNC	4, 6, 8, 12 / 4, 6, 8, 12, 16, 24
ThinkSystem 32GB TruDDR4 2666 MHz (2Rx4 1.2V) RDIMM	7X77A01304	AUND	4, 6, 8, 12 / 4, 6, 8, 12, 16, 24
LRDIMMs			
ThinkSystem 64GB TruDDR4 2666 MHz (4Rx4 1.2V) LRDIMM	7X77A01305	AUNE	4, 6, 8, 12 / 4, 6, 8, 12, 16, 24
3DS RDIMMs			
ThinkSystem 128GB TruDDR4 2666 MHz (8Rx4 1.2V) 3DS RDIMM	7X77A01307	AUNF	4, 6, 8, 12 / 4, 6, 8, 12, 16, 24

* The quantity shown is with one processor / two processors.

Internal storage

The ThinkAgile VX 2U Certified Node supports the following internal drive bay configurations to provide storage capacity:

1. Up to 16 SFF and 2 LFF hot-swap drive bays:
    a. 8x 2.5" SAS/SATA + 8x 2.5" SAS/SATA + 2x 3.5" SAS/SATA (rear)
    b. 4x 2.5" SAS/SATA & 4x 2.5" AnyBay + 8x 2.5" SAS/SATA + 2x 3.5" SAS/SATA (rear)
    c. 4x 2.5" SAS/SATA & 4x 2.5" AnyBay + 4x 2.5" SAS/SATA & 4x 2.5" AnyBay + 2x 3.5" SAS/SATA (rear)
2. Up to 24 SFF and 2 LFF hot-swap drive bays:
    a. 8x 2.5" SAS/SATA + 8x 2.5" SAS/SATA + 8x 2.5" SAS/SATA + 2x 3.5" SAS/SATA (rear)
    b. 4x 2.5" SAS/SATA & 4x 2.5" AnyBay + 8x 2.5" SAS/SATA + 8x 2.5" SAS/SATA + 2x 3.5" SAS/SATA (rear)
    c. 4x 2.5" SAS/SATA & 4x 2.5" AnyBay + 4x 2.5" SAS/SATA & 4x 2.5" AnyBay + 8x 2.5" SAS/SATA + 2x 3.5" SAS/SATA (rear)
    d. 16x 2.5" U.2 NVMe PCIe + 8x 2.5" SAS/SATA (factory-installed only)
    e. 24x 2.5" U.2 NVMe PCIe
3. Up to 14 LFF hot-swap drive bays:
    a. 12x 3.5" SAS/SATA (front) + 2x 3.5" SAS/SATA (rear)
    b. 8x 3.5" SAS/SATA & 4x 3.5" AnyBay (front) + 2x 3.5" SAS/SATA (rear)

In addition, the VX 2U Certified Nodes support two internal M.2 SATA SSDs for the hypervisor boot volume.

Lenovo AnyBay allows a choice of drive interface types in the same drive bay: SAS drives, SATA drives, or U.2 NVMe PCIe drives.

The following figures show the internal drive bay configurations.

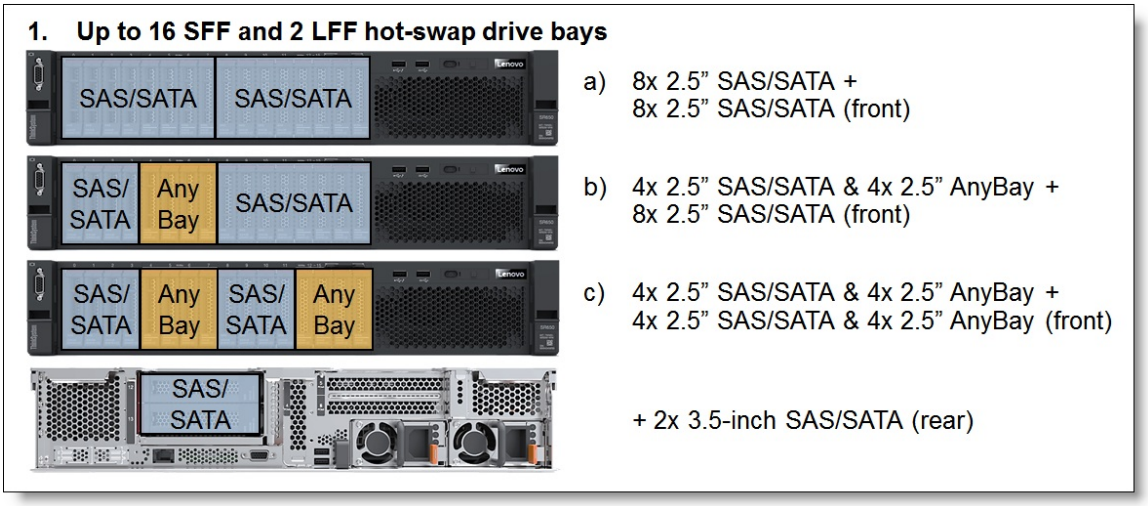

Figure 6. Drive bay configurations: 2.5-inch 8/16-bay chassis

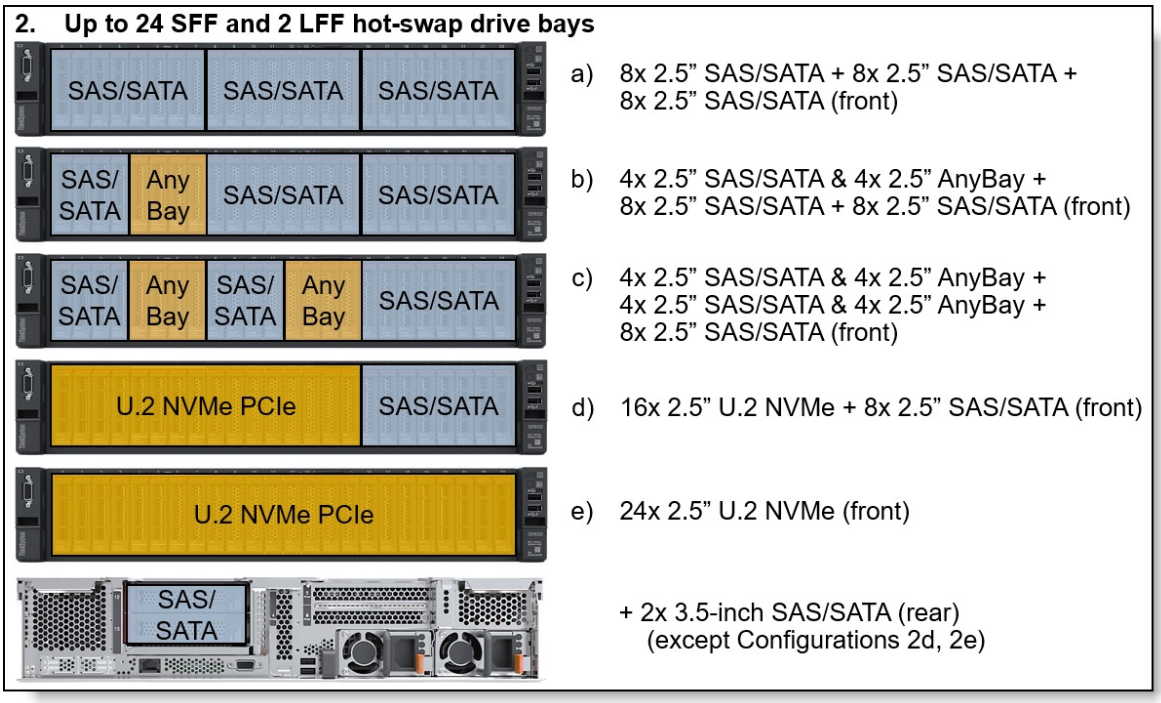

Figure 7. Drive bay configurations: 2.5-inch 8/16/24-bay chassis

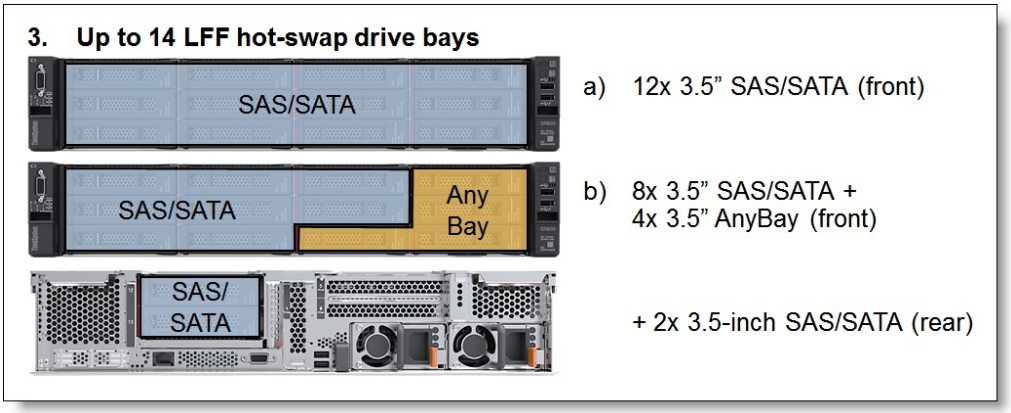

Figure 8. Drive bay configurations: 3.5-inch 8/12-bay chassis

The following table lists the internal storage options for the VX 2U Certified Node.

Table 7. Internal storage options

Description	Part number	Feature code	Maximum quantity
Factory-installed backplane kits			
ThinkSystem SR550/SR650 2.5" SATA/SAS 8-Bay Backplane Kit	None*	AURA	3
ThinkSystem SR650 2.5" AnyBay 8-Bay Backplane Kit	None*	AUR5	2
ThinkSystem SR550/SR650 3.5" SATA/SAS 12-Bay Backplane Kit	None*	AUR9	1
ThinkSystem SR650 3.5" AnyBay 12-Bay Backplane Kit	None*	AUR8	1
ThinkSystem SR650 2.5" NVMe 8-Bay Backplane	None*	B4PC	3
ThinkSystem SR590/SR650 3.5" Rear HDD Kit	7XH7A06253	AURZ	1
Backplane kit field upgrade options			
SR550/SR650 2.5" SATA/SAS 8-Bay Backplane Upgrade Kit	7XH7A06254	None**	2
SR650 2.5" AnyBay 8-Bay Backplane Upgrade Kit	7XH7A06251	None**	2
ThinkSystem SR650 U.2 NVMe 24-Bay Backplane Upgrade Kit	4XH7A08810	None**	1
ThinkSystem SR590/SR650 3.5" Rear HDD Kit	7XH7A06253	AURZ	1
M.2 enablement kits			
ThinkSystem M.2 with Mirroring Enablement Kit	7Y37A01093	AUMV	1

* Factory-installed.
** Field upgrade.

Configuration notes:

- 24x 2.5-inch front drives are supported only on storage dense models that use the 2.5" 8/16/24 chassis (feature code B1DH).
- The 2.5" SATA/SAS 8-Bay Backplane Kit (7XH7A06254) adds 8x 2.5" SAS/SATA hot-swap drive bays to the previously configured models that support drive bay expansion capabilities.
- The 2.5" AnyBay 8-Bay Backplane Kit (7XH7A06251) adds 4x 2.5" SAS/SATA & 4x 2.5" AnyBay hot-swap drive bays to the previously configured models that support drive bay expansion capabilities.
- The SAS/SATA and AnyBay backplane upgrade kits include drive backplanes and required SAS cables, NVMe cables, power cables, and drive bay fillers; storage controllers are not included.
- Previously configured models that are based on the 24x 2.5" chassis (feature code B1DH) can be upgraded to 24 U.2 NVMe PCIe drive bays by using the U.2 NVMe 24-Bay Backplane Upgrade Kit (4XH7A08810). The kit includes drive backplanes and required NVMe cables, power cables, drive bay fillers, NVMe switch adapters, and x16/x8/x16 Riser Card 1 (feature code B4PB).

- For models with 16/24x 2.5" U.2 NVMe PCIe drive bays (either factory-installed or upgraded in the field), the following conditions must be met:
  - No processors with more than 165 W TDP, or Gold 6146 or Platinum 8160T processors installed.
  - No GPU adapters installed.
  - Ambient temperature of up to 30 °C (86 °F).
  - The node performance might be impacted in case of a system fan failure.
- The 3.5" Rear HDD Kit is connected to a separate port on the internal storage controller.
- The 3.5" Rear HDD Kit is installed in place of the PCIe Riser Card 1; PCIe slots 1, 2, and 3 are not present.
- U.2 NVMe PCIe SSDs in the 8/16/24-drive bay configurations that contain *four AnyBay drive bays* require either the second processor (enables the onboard NVMe controller) or the 1610-4P NVMe Switch Adapter to be installed.
  Note: In the 8/16/24-drive bay configurations that contain *four AnyBay drive bays*, the 1610-4P NVMe Switch Adapter is supported only in the configurations with one processor.
- Models with 12x 3.5-inch drive bays (8x SAS/SATA + 4x AnyBay) and an 8-port SAS RAID controller or HBA support only NVMe drives in the AnyBay drive bays.
- The M.2 with Mirroring Enablement Kit (7Y37A01093) is connected to the Intel PCH via the PCIe link, and the kit supports two M.2 SATA SSDs configured in a RAID-1 drive group for a hypervisor boot volume.

The following table lists M.2 drive selection options for the hypervisor boot volume.

Table 8. Drive options for hypervisor boot volume

Description	Part number	Feature code	Quantity
ThinkSystem M.2 128GB SATA 6Gbps Non-Hot-Swap SSD	7N47A00130	AUUV	2
ThinkSystem M.2 5100 240GB SATA 6Gbps Non-Hot Swap SSD	4XB7A14049	B5S4	2
ThinkSystem M.2 5300 240GB SATA 6Gbps Non-Hot Swap SSD	4XB7A17071	B8HS	2
ThinkSystem M.2 5100 480GB SATA 6Gbps Non-Hot-Swap SSD	7SD7A05703	B11V	2
ThinkSystem M.2 5300 480GB SATA 6Gbps Non-Hot Swap SSD	4XB7A17073	B919	2

Configuration note: Two M.2 SATA SSDs are required for selection, and they must be of the same model and capacity.

The following table shows additional cooling options for configurations with the M.2 5100 or 5300 SSDs.

Table 9. Cooling options

Description	Part number	Feature code	Maximum quantity
ThinkSystem M.2 SSD Thermal Kit	4XH7A08791	B31F	1

Configuration note: The M.2 SSD Thermal Kit (4XH7A08791) is required when the M.2 5100 or 5300 SSDs are installed in the VX 2U Certified Node; however, the SSD Thermal Kit is not required in the node configurations with the GPU Thermal Kit (7XH7A05897) (see GPU adapters for details).

The following table lists the storage controllers for internal storage of the VX 2U Certified Node.

Table 10. Controllers for internal storage

Description	Part number	Feature code	Maximum quantity	I/O slots supported
12 Gb SAS/SATA non-RAID HBAs				
ThinkSystem 430-8i SAS/SATA 12Gb HBA	7Y37A01088	AUNL	4	7, 4, 2, 3, 1, 5, 6
ThinkSystem 430-16i SAS/SATA 12Gb HBA	7Y37A01089	AUNM	2	7, 4, 2, 3, 1, 5, 6
NVMe PCIe interfaces (non-RAID)				
Onboard NVMe interface (4-port)	None	None	1	-
ThinkSystem 810-4P NVMe Switch Adapter	None^	B22D	4	2, 4, 6, 7
ThinkSystem 1610-4P NVMe Switch Adapter	7Y37A01081	AUV2	2	1, 5, 6
ThinkSystem 1610-8P NVMe Switch Adapter	None*	B4PA	1	1

^ The 810-4P NVMe adapters can be factory-installed, or four 810-4P NVMe adapters are included in the 24-drive U.2 NVMe upgrade kit for field upgrades.
* The 1610-8P NVMe adapter can be factory-installed, or it is included in the 24-drive NVMe upgrade kit for field upgrades.

Configuration notes:

- Low profile SAS HBAs for internal storage are supported in the PCIe x8 slots on the system board and full-high PCIe x8 and x16 slots supplied by the Riser Cards 1 and 2.
- In the configurations with 2.5-inch AnyBay drive bays, the 1610-4P NVMe Switch Adapter is supported in the full-height PCIe x16 slots supplied by the riser cards 1 and 2.
    - In the configurations with one processor, the 1610-4P NVMe Switch Adapter provides 4x PCIe 3.0 x4 ports for JBOD (non-RAID) connectivity to U.2 NVMe PCIe SSDs in four AnyBay drive bays, and it is supported in the PCIe x16 slot 1 supplied by the x16/x8 Riser Card 1 (the 1610-4P NVMe Switch Adapter has a PCIe 3.0 x16 host interface).
    - In the configurations with two processors, the onboard NVMe interface and 1610-4P NVMe Switch Adapter provide 4x PCIe 3.0 x4 ports each for JBOD (non-RAID) connectivity to U.2 NVMe PCIe SSDs in the AnyBay drive bays.
- Configurations with 16x 2.5-inch U.2 NVMe PCIe drive bays use the following interfaces and adapters for balanced JBOD (non-RAID) connectivity to up to 16x U.2 NVMe PCIe SSDs (up to eight SSDs per processor) without oversubscription:
    - The onboard NVMe interface (Processor 2) that provides four PCIe 3.0 x4 ports for connections to four SSDs without oversubscription.
    - Two 810-4P NVMe Switch adapters installed in the PCIe x8 Slots 4 and 7 (Processor 1) that provide two PCIe 3.0 x4 ports each for connections to four SSDs (two SSDs per 810-4P) without oversubscription.
    - Two 1610-4P NVMe Switch adapters installed in the PCIe x16 Slot 1 (Processor 1) and PCIe x16 Slot 6 (Processor 2) that provide four PCIe 3.0 x4 ports each for connections to eight SSDs (four SSDs per 1610-4P) without oversubscription.
    - If the additional 8-bay SAS/SATA backplane is installed, it is connected to a supported internal storage controller installed in the PCIe x8 slot 3.
- Configurations with 24x 2.5-inch U.2 NVMe PCIe drive bays use the following interfaces and adapters for balanced JBOD (non-RAID) connectivity to up to 24x U.2 NVMe PCIe SSDs (up to 12 SSDs per processor) with 2:1 oversubscription:
    - One 1610-8P NVMe Switch Adapter installed in the PCIe x16 Slot 1 (Processor 2) that provides eight PCIe 3.0 x4 ports for connections to eight SSDs with 2:1 oversubscription.
    - Four 810-4P NVMe Switch adapters installed in the PCIe x8 Slots 2, 4, and 7 (Processor 1) and PCIe x16 Slot 6 (Processor 2) that provide four PCIe 3.0 x4 ports each for connections to 16 SSDs (four SSDs per 810-4P) with 2:1 oversubscription.

The following tables list supported internal storage configurations with the SAS/SATA and AnyBay backplanes.

Internal storage configurations tables conventions:

- The numbers in brackets (x or x+y or x+y+z) in the Storage controller column specify the quantity of drive bays connected to each of the controllers.
- 1x NVMe (4) in the Storage controller column represents the onboard NVMe controller.
- 2x NVMe (4+4) in the Storage controller column represents the onboard NVMe controller and NVMe Switch adapter.

Table 11. Internal storage configurations: Up to 16 SFF front and 2 LFF rear drive bays

Hot-swap drive bay configuration	Backplane kit type and quantity			Storage controller type and quantity
	8x2.5" SATA/ SAS	8x2.5" Any Bay	2x3.5" Rear HDD	
2.5" 8/16-bay chassis (Feature code B1DF) or 2.5" 8/16/24-bay chassis (Feature code B1DH)				
8x 2.5" SAS/SATA (front)	1	0	0	1x 430-8i/16i HBA (8)
8x 2.5" SAS/SATA (front) + 2x 3.5" SAS/SATA (rear)	1	0	1	1x 430-16i HBA (10)
				2x 430-8i HBA (8+2)
4x 2.5" SAS/SATA (front) + 4x 2.5" AnyBay (front)	0	1	0	1x 430-8i/16i HBA (8) + 1x NVMe (4)
4x 2.5" SAS/SATA (front) + 4x 2.5" AnyBay (front) + 2x 3.5" SAS/SATA (rear)	0	1	1	1x 430-16i HBA (10) + 1x NVMe (4)
				2x 430-8i HBA (8+2) + 1x NVMe (4)
16x 2.5" SAS/SATA (front)	2	0	0	1x 430-16i HBA (16)
				2x 430-8i HBA (8+8)
16x 2.5" SAS/SATA (front) + 2x 3.5" SAS/SATA (rear)	2	0	1	1x 430-16i HBA (16) + 1x 430-8i HBA (2)
				3x 430-8i HBA (8+8+2)
12x 2.5" SAS/SATA (front) + 4x 2.5" AnyBay (front)	1	1	0	1x 430-16i HBA (16) + 1x NVMe (4)
12x 2.5" SAS/SATA (front) + 4x 2.5" AnyBay (front) + 2x 3.5" SAS/SATA (rear)	1	1	1	1x 430-16i HBA (16) + 1x NVMe (4) + 1x 430-8i HBA (2)
8x 2.5" SAS/SATA (front) + 8x 2.5" AnyBay (front)	0	2	0	1x 430-16i HBA (16) + 2x NVMe (4+4)
				2x 430-8i HBA (8+8) + 2x NVMe (4+4)
8x 2.5" SAS/SATA (front) + 8x 2.5" AnyBay (front) + 2x 3.5" SAS/SATA (rear)	0	2	1	1x 430-16i HBA (16) + 2x NVMe (4+4) + 1x 430-8i HBA (2)
				3x 430-8i HBA (8+8+2) + 2x NVMe (4+4)

Table 12. Internal storage configurations: Up to 24 SFF front and 2 LFF rear drive bays

Hot-swap drive bay configuration	Backplane kit type and quantity				Storage controller type and quantity
	8x2.5" SATA/ SAS	8x2.5" Any Bay	8x2.5" NVMe	2x3.5" Rear HDD	
2.5" 8/16/24-bay chassis (Feature code B1DH)					
24x 2.5" SAS/SATA (front)	3	0	0	0	1x 430-8i HBA (8) + 1x 430-16i HBA (16)
					3x 430-8i HBA (8+8+8)
24x 2.5" SAS/SATA (front) + 2x 3.5" SAS/SATA (rear)	3	0	0	1	2x 430-16i HBA (16+10)
					2x 430-8i HBA (8+2) + 1x 430-16i HBA (16)
					4x 430-8i HBA (8+8+8+2)
20x 2.5" SAS/SATA (front) + 4x 2.5" AnyBay (front)	2	1	0	0	3x 430-8i HBA (8+8+8) + 1x NVMe (4)
20x 2.5" SAS/SATA (front) + 4x 2.5" AnyBay (front) + 2x 3.5" SAS/SATA (rear)	2	1	0	1	2x 430-16i HBA (16+10) + 1x NVMe (4)
					4x 430-8i HBA (8+8+8+2) + 1x NVMe (4)
16x 2.5" SAS/SATA (front) + 8x 2.5" AnyBay (front)	1	2	0	0	1x 430-8i HBA (8) + 1x 430-16i HBA (16) + 2x NVMe (4+4)
16x 2.5" SAS/SATA (front) + 8x 2.5" AnyBay (front) + 2x 3.5" SAS/SATA (rear)	1	2	0	1	2x 430-8i HBA (8+2) + 1x 430-16i HBA (16) + 2x NVMe (4+4)
					2x 430-16i HBA (16+10) + 2x NVMe (4+4)
16x 2.5" U.2 NVMe (front)	0	0	2	0	2x 810-4P NVMe (4+4) + 2x 1610-4P NVMe (4+4)
16x 2.5" U.2 NVMe (front) + 8x 2.5" SAS/SATA (front)	1	0	2	0	2x 810-4P NVMe (4+4) + 2x 1610-4P NVMe (4+4) + 1x 430-8i HBA
24x 2.5" U.2 NVMe (front)	0	0	3	0	4x 810-4P NVMe (4+4+4+4) + 1x 1610-8P NVMe (8)

Table 13. Internal storage configurations: Up to 12 LFF front and 2 LFF rear drive bays

Hot-swap drive bay configuration	Backplane kit type and quantity			Storage controller type and quantity
	12x3.5" SATA/ SAS	12x3.5" Any Bay	2x3.5" Rear HDD	
3.5" 8/12-bay chassis (Feature code B1DG)				
12x 3.5" SAS/SATA (front)	1	0	0	1x 430-16i HBA (12)
12x 3.5" SAS/SATA (front) + 2x 3.5" SAS/SATA (rear)	1	0	1	1x 430-16i HBA (14)
8x 3.5" SAS/SATA (front) + 4x 3.5" AnyBay (front)	0	1	0	1x 430-16i HBA (12) + 1x NVMe (4)
8x 3.5" SAS/SATA (front) + 4x 3.5" AnyBay (NVMe only) (front)*	0	1	0	1x 430-8i HBA (8) + 1x NVMe (4)
8x 3.5" SAS/SATA (front) + 4x 3.5" AnyBay (front) + 2x 3.5" SAS/SATA (rear)	0	1	1	1x 430-16i HBA (14) + 1x NVMe (4)

* Four NVMe SSDs are required in the 3.5" AnyBay configuration with an 8-port storage controller.

Drives for internal storage

The following tables list drive options for the VX 2U Certified Node.

Table 14. Drive options for internal storage: 2.5-inch hot-swap drives

Description	Part number	Feature code	Maximum quantity	Cache	Capacity	Uncategorized
2.5-inch hot-swap HDDs - 12 Gbps SAS						
ThinkSystem 2.5" 900GB 10K SAS 12Gb Hot Swap 512n HDD	7XB7A00026	AUM0	24	N	Y	Y
ThinkSystem 2.5" 900GB 15K SAS 12Gb Hot Swap 512e HDD	7XB7A00023	AULX	24	N	Y	Y
ThinkSystem 2.5" 1.2TB 10K SAS 12Gb Hot Swap 512n HDD	7XB7A00027	AUM1	24	N	Y	Y
ThinkSystem 2.5" 1.8TB 10K SAS 12Gb Hot Swap 512e HDD	7XB7A00028	AUM2	24	N	Y	Y
ThinkSystem 2.5" 2.4TB 10K SAS 12Gb Hot Swap 512e HDD	7XB7A00069	B0YS	24	N	Y	Y
2.5-inch hot-swap HDDs - 12 Gbps NL SAS						
ThinkSystem 2.5" 1TB 7.2K SAS 12Gb Hot Swap 512n HDD	7XB7A00034	AUM6	24	N	N	Y
ThinkSystem 2.5" 2TB 7.2K SAS 12Gb Hot Swap 512n HDD	7XB7A00035	AUM7	24	N	N	Y
2.5-inch hot-swap SSDs - SS300 Performance 12 Gbps SAS						
ThinkSystem 2.5" HUSMM32 400GB Performance SAS 12Gb Hot Swap SSD	7N47A00124	AUMG	24	Y	N	Y
ThinkSystem 2.5" HUSMM32 800GB Performance SAS 12Gb Hot Swap SSD	7N47A00125	AUMH	24	Y	N	Y
ThinkSystem 2.5" HUSMM32 1.6TB Performance SAS 12Gb Hot Swap SSD	7N47A00126	AVRB	24	Y	N	Y
2.5-inch hot-swap SSDs - SS530 Performance 12 Gbps SAS						
ThinkSystem 2.5" SS530 400GB Performance SAS 12Gb Hot Swap SSD	4XB7A10219	B4Y4	24	Y	Y	Y
ThinkSystem 2.5" SS530 800GB Performance SAS 12Gb Hot Swap SSD	4XB7A10230	B4Y5	24	Y	Y	Y
ThinkSystem 2.5" SS530 1.6TB Performance SAS 12Gb Hot Swap SSD	4XB7A10231	B4Y6	24	Y	Y	Y
ThinkSystem 2.5" SS530 3.2TB Performance SAS 12Gb Hot Swap SSD	4XB7A10232	B4Y7	24	Y	Y	Y
2.5-inch hot-swap SSDs - PM1635a Mainstream 12 Gbps SAS						
ThinkSystem 2.5" PM1635a 400GB Mainstream SAS 12Gb Hot Swap SSD	7N47A00117	AUMC	24	Y*	Y	Y
ThinkSystem 2.5" PM1635a 800GB Mainstream SAS 12Gb Hot Swap SSD	7N47A00118	AUMD	24	Y	Y	Y
ThinkSystem 2.5" PM1635a 1.6TB Mainstream SAS 12Gb Hot Swap SSD	7N47A00119	AVRG	24	Y	Y	Y
ThinkSystem 2.5" PM1635a 3.2TB Mainstream SAS 12Gb Hot Swap SSD	7N47A00120	AVRJ	24	N	Y	Y
2.5-inch hot-swap SSDs - PM1645 Mainstream 12 Gbps SAS						
ThinkSystem 2.5" PM1645 800GB Mainstream SAS 12Gb Hot Swap SSD	4XB7A13653	B4A0	24	Y	Y	Y
ThinkSystem 2.5" PM1645 1.6TB Mainstream SAS 12Gb Hot Swap SSD	4XB7A13654	B4A1	24	Y	Y	Y
ThinkSystem 2.5" PM1645 3.2TB Mainstream SAS 12Gb Hot Swap SSD	4XB7A13655	B4A2	24	Y	Y	Y
2.5-inch hot-swap SSDs - PM1645a Mainstream 12 Gbps SAS						
ThinkSystem 2.5" PM1645a 800GB Mainstream SAS 12Gb Hot Swap SSD	4XB7A17062	B8HU	24	Y	Y	Y
ThinkSystem 2.5" PM1645a 1.6TB Mainstream SAS 12Gb Hot Swap SSD	4XB7A17063	B8J4	24	Y	Y	Y
ThinkSystem 2.5" PM1645a 3.2TB Mainstream SAS 12Gb Hot Swap SSD	4XB7A17064	B8JD	24	Y	Y	Y
2.5-inch hot-swap SSDs - PM1633a Capacity 12 Gbps SAS						
ThinkSystem 2.5" PM1633a 3.84TB Capacity SAS 12Gb Hot Swap SSD	7N47A00121	AUMK	24	Y*	Y	Y
ThinkSystem 2.5" PM1633a 7.68TB Capacity SAS 12Gb Hot Swap SSD	7N47A00122	AUML	24	Y*	Y	Y

Description	Part number	Feature code	Maximum quantity	Cache	Capacity	Uncategorized
2.5-inch hot-swap SSDs - PM1643 Capacity 12 Gbps SAS						
ThinkSystem 2.5" PM1643 960GB Capacity SAS 12Gb Hot Swap SSD	4XB7A17168	B6TL	24	N	Y	Y
ThinkSystem 2.5" PM1643 3.84TB Capacity SAS 12Gb Hot Swap SSD	4XB7A13645	B4A7	24	Y	Y	Y
ThinkSystem 2.5" PM1643 7.68TB Capacity SAS 12Gb Hot Swap SSD	4XB7A13646	B4A6	24	Y	Y	Y
2.5-inch hot-swap SSDs - PM1643a Entry 12 Gbps SAS						
ThinkSystem 2.5" PM1643a 960GB Entry SAS 12Gb Hot Swap SSD	4XB7A38175	B91A	24	N	Y	Y
ThinkSystem 2.5" PM1643a 1.92TB Entry SAS 12Gb Hot Swap SSD	4XB7A38176	B91B	24	Y*	Y	Y
ThinkSystem 2.5" PM1643a 3.84TB Entry SAS 12Gb Hot Swap SSD	4XB7A17054	B91C	24	Y	Y	Y
ThinkSystem 2.5" PM1643a 7.68TB Entry SAS 12Gb Hot Swap SSD	4XB7A17055	B91D	24	Y	Y	Y
2.5-inch hot-swap SSDs - 5100 Mainstream 6 Gbps SATA						
ThinkSystem 2.5" 5100 480GB Mainstream SATA 6Gb Hot Swap SSD	7SD7A05764	B10X	24	Y	Y	Y
ThinkSystem 2.5" 5100 960GB Mainstream SATA 6Gb Hot Swap SSD	7SD7A05763	B10Y	24	Y	Y	Y
ThinkSystem 2.5" 5100 1.92TB Mainstream SATA 6Gb Hot Swap SSD	7SD7A05762	B10Z	24	Y	Y	Y
ThinkSystem 2.5" 5100 3.84TB Mainstream SATA 6Gb Hot Swap SSD	7SD7A05761	B110	24	Y	Y	Y
2.5-inch hot-swap SSDs - 5200 Mainstream 6 Gbps SATA						
ThinkSystem 2.5" 5200 240GB Mainstream SATA 6Gb Hot Swap SSD	4XB7A10237	B488	24	Y*	Y	Y
ThinkSystem 2.5" 5200 480GB Mainstream SATA 6Gb Hot Swap SSD	4XB7A10238	B489	24	Y	Y	Y
ThinkSystem 2.5" 5200 960GB Mainstream SATA 6Gb Hot Swap SSD	4XB7A10239	B48A	24	Y	Y	Y
ThinkSystem 2.5" 5200 1.92TB Mainstream SATA 6Gb Hot Swap SSD	4XB7A10240	B48B	24	Y	Y	Y
ThinkSystem 2.5" 5200 3.84TB Mainstream SATA 6Gb Hot Swap SSD	4XB7A10241	B48C	24	Y	Y	Y
2.5-inch hot-swap SSDs - 5300 Mainstream 6 Gbps SATA						
ThinkSystem 2.5" 5300 480GB Mainstream SATA 6Gb Hot Swap SSD	4XB7A17088	B8HY	24	Y	Y	Y
ThinkSystem 2.5" 5300 960GB Mainstream SATA 6Gb Hot Swap SSD	4XB7A17089	B8J6	24	Y	Y	Y
ThinkSystem 2.5" 5300 1.92TB Mainstream SATA 6Gb Hot Swap SSD	4XB7A17090	B8JE	24	Y	Y	Y
ThinkSystem 2.5" 5300 3.84TB Mainstream SATA 6Gb Hot Swap SSD	4XB7A17091	B8J7	24	Y	Y	Y
2.5-inch hot-swap SSDs - S4600 Mainstream 6 Gbps SATA						
ThinkSystem 2.5" Intel S4600 480GB Mainstream SATA 6Gb Hot Swap SSD	7SD7A05722	B0ZQ	24	Y*	Y	Y
ThinkSystem 2.5" Intel S4600 960GB Mainstream SATA 6Gb Hot Swap SSD	7SD7A05721	B0ZR	24	Y	Y	Y
ThinkSystem 2.5" Intel S4600 1.92TB Mainstream SATA 6Gb Hot Swap SSD	7SD7A05720	B0ZS	24	Y	Y	Y
2.5-inch hot-swap SSDs - S4610 Mainstream 6 Gbps SATA						
ThinkSystem 2.5" Intel S4610 480GB Mainstream SATA 6Gb Hot Swap SSD	4XB7A13634	B49M	24	Y*	Y	Y
ThinkSystem 2.5" Intel S4610 960GB Mainstream SATA 6Gb Hot Swap SSD	4XB7A13635	B49N	24	Y	Y	Y
ThinkSystem 2.5" Intel S4610 1.92TB Mainstream SATA 6Gb Hot Swap SSD	4XB7A13636	B49P	24	Y	Y	Y
ThinkSystem 2.5" Intel S4610 3.84TB Mainstream SATA 6Gb Hot Swap SSD	4XB7A13637	B49Q	24	Y	Y	Y
2.5-inch hot-swap SSDs - 5100 Entry 6 Gbps SATA						
ThinkSystem 2.5" 5100 960GB Entry SATA 6Gb Hot Swap SSD	4XB7A08503	B10P	24	Y*	Y	Y
ThinkSystem 2.5" 5100 1.92TB Entry SATA 6Gb Hot Swap SSD	4XB7A08504	B10Q	24	Y*	Y	Y
ThinkSystem 2.5" 5100 3.84TB Entry SATA 6Gb Hot Swap SSD	4XB7A08505	B10R	24	Y*	Y	Y

Description	Part number	Feature code	Maximum quantity	Cache	Capacity	Uncategorized
2.5-inch hot-swap SSDs - 5200 Entry 6 Gbps SATA						
ThinkSystem 2.5" 5200 960GB Entry SATA 6Gb Hot Swap SSD	4XB7A10154	B2X3	24	Y*	Y	Y
ThinkSystem 2.5" 5200 1.92TB Entry SATA 6Gb Hot Swap SSD	4XB7A10155	B2X4	24	Y*	Y	Y
ThinkSystem 2.5" 5200 3.84TB Entry SATA 6Gb Hot Swap SSD	4XB7A10156	B2X5	24	Y*	Y	Y
ThinkSystem 2.5" 5200 7.68TB Entry SATA 6Gb Hot Swap SSD	4XB7A10157	B2X6	24	Y*	Y	Y
2.5-inch hot-swap SSDs - 5300 Entry 6 Gbps SATA						
ThinkSystem 2.5" 5300 480GB Entry SATA 6Gb Hot Swap SSD	4XB7A17076	B8JM	24	N	Y	Y
ThinkSystem 2.5" 5300 960GB Entry SATA 6Gb Hot Swap SSD	4XB7A17077	B8HP	24	Y*	Y	Y
ThinkSystem 2.5" 5300 1.92TB Entry SATA 6Gb Hot Swap SSD	4XB7A17078	B8J5	24	Y	Y	Y
ThinkSystem 2.5" 5300 3.84TB Entry SATA 6Gb Hot Swap SSD	4XB7A17079	B8JP	24	Y	Y	Y
ThinkSystem 2.5" 5300 7.68TB Entry SATA 6Gb Hot Swap SSD	4XB7A17080	B8J2	24	N	Y	Y
2.5-inch hot-swap SSDs - PM863a Entry 6 Gbps SATA						
ThinkSystem 2.5" PM863a 960GB Entry SATA 6Gb Hot Swap SSD	7N47A00113	AVCZ	24	N	Y	Y
ThinkSystem 2.5" PM863a 1.92TB Entry SATA 6Gb Hot Swap SSD	7N47A00114	AVRC	24	Y*	Y	Y
2.5-inch hot-swap SSDs - PM883 Entry 6 Gbps SATA						
ThinkSystem 2.5" PM883 240GB Entry SATA 6Gb Hot Swap SSD	4XB7A10195	B34H	24	N	Y	Y
ThinkSystem 2.5" PM883 480GB Entry SATA 6Gb Hot Swap SSD	4XB7A10196	B34J	24	N	Y	Y
ThinkSystem 2.5" PM883 960GB Entry SATA 6Gb Hot Swap SSD	4XB7A10197	B34K	24	N	Y	Y
ThinkSystem 2.5" PM883 1.92TB Entry SATA 6Gb Hot Swap SSD	4XB7A10198	B34L	24	Y*	Y	Y
ThinkSystem 2.5" PM883 3.84TB Entry SATA 6Gb Hot Swap SSD	4XB7A10199	B34M	24	Y	Y	Y
ThinkSystem 2.5" PM883 7.68TB Entry SATA 6Gb Hot Swap SSD	4XB7A10200	B4D2	24	Y	Y	Y
2.5-inch hot-swap SSDs - S4500 Entry 6 Gbps SATA						
ThinkSystem 2.5" Intel S4500 240GB Entry SATA 6Gb Hot Swap SSD	7SD7A05742	B0YY	24	N	Y	Y
ThinkSystem 2.5" Intel S4500 480GB Entry SATA 6Gb Hot Swap SSD	7SD7A05741	B0YZ	24	N	Y	Y
ThinkSystem 2.5" Intel S4500 960GB Entry SATA 6Gb Hot Swap SSD	7SD7A05740	B0Z0	24	Y*	Y	Y
ThinkSystem 2.5" Intel S4500 1.92TB Entry SATA 6Gb Hot Swap SSD	7SD7A05739	B0Z1	24	Y*	Y	Y
ThinkSystem 2.5" Intel S4500 3.84TB Entry SATA 6Gb Hot Swap SSD	7SD7A05738	B0Z2	24	Y	Y	Y
2.5-inch hot-swap SSDs - S4510 Entry 6 Gbps SATA						
ThinkSystem 2.5" Intel S4510 480GB Entry SATA 6Gb Hot Swap SSD	4XB7A10248	B499	24	N	Y	Y
ThinkSystem 2.5" Intel S4510 960GB Entry SATA 6Gb Hot Swap SSD	4XB7A10249	B49A	24	Y*	Y	Y
ThinkSystem 2.5" Intel S4510 1.92TB Entry SATA 6Gb Hot Swap SSD	4XB7A13622	B49B	24	Y*	Y	Y
ThinkSystem 2.5" Intel S4510 3.84TB Entry SATA 6Gb Hot Swap SSD	4XB7A13623	B49C	24	Y*	Y	Y
2.5-inch hot-swap SSDs - Optane P4800X Performance U.2 NVMe PCIe						
ThinkSystem U.2 Intel P4800X 375GB Performance NVMe PCIe 3.0 x4 HS SSD	7N47A00081	AUMJ	24	Y^	N	Y
ThinkSystem U.2 Intel P4800X 750GB Performance NVMe PCIe 3.0 x4 HS SSD	7N47A00083	B2ZJ	24	Y^	N	Y
2.5-inch hot-swap SSDs - P4600 Mainstream U.2 NVMe PCIe						
ThinkSystem U.2 Intel P4600 1.6TB Mainstream NVMe PCIe 3.0 x4 HS SSD	7SD7A05772	B11J	24	Y^	Y	Y
ThinkSystem U.2 Intel P4600 3.2TB Mainstream NVMe PCIe 3.0 x4 HS SSD	7SD7A05771	B11K	24	Y^	Y	Y

Description	Part number	Feature code	Maximum quantity	Cache	Capacity	Uncategorized
ThinkSystem U.2 Intel P4600 6.4TB Mainstream NVMe PCIe 3.0 x4 HS SSD	7SD7A05770	B11L	8†	Y^	Y	Y
2.5-inch hot-swap SSDs - P4610 Mainstream U.2 NVMe PCIe						
ThinkSystem U.2 Intel P4610 1.6TB Mainstream NVMe PCIe 3.0 x4 HS SSD	4XB7A13936	B589	24	Y	Y	Y
ThinkSystem U.2 Intel P4610 3.2TB Mainstream NVMe PCIe 3.0 x4 HS SSD	4XB7A13937	B58A	24	Y	Y	Y
ThinkSystem U.2 Intel P4610 6.4TB Mainstream NVMe PCIe 3.0 x4 HS SSD	4XB7A13938	B58B	24	Y	Y	Y
2.5-inch hot-swap SSDs - P4500 Entry U.2 NVMe PCIe						
ThinkSystem U.2 Intel P4500 1.0TB Entry NVMe PCIe 3.0 x4 Hot Swap SSD	7SD7A05779	B11C	24	N	Y	Y
ThinkSystem U.2 Intel P4500 2.0TB Entry NVMe PCIe 3.0 x4 Hot Swap SSD	7SD7A05778	B11D	24	N	Y	Y
ThinkSystem U.2 Intel P4500 4.0TB Entry NVMe PCIe 3.0 x4 Hot Swap SSD	7SD7A05777	B11E	24	N	Y	Y
2.5-inch hot-swap SSDs - P4510 Entry U.2 NVMe PCIe						
ThinkSystem U.2 Intel P4510 1.0TB Entry NVMe PCIe 3.0 x4 Hot Swap SSD	4XB7A10202	B58F	24	N	Y	Y
ThinkSystem U.2 Intel P4510 2.0TB Entry NVMe PCIe 3.0 x4 Hot Swap SSD	4XB7A10204	B58G	24	N	Y	Y
ThinkSystem U.2 Intel P4510 4.0TB Entry NVMe PCIe 3.0 x4 Hot Swap SSD	4XB7A10205	B58H	24	N	Y	Y
ThinkSystem U.2 Intel P4510 8.0TB Entry NVMe PCIe 3.0 x4 Hot Swap SSD	4XB7A08513	B58J	24	N	Y	Y
2.5-inch hot-swap SSDs - PM963 Entry U.2 NVMe PCIe						
ThinkSystem U.2 PM963 1.92TB Entry 2.5" NVMe PCIe 3.0 x4 Hot Swap SSD	7N47A00984	AUV0	8†	N	Y	Y
ThinkSystem U.2 PM963 3.84TB Entry 2.5" NVMe PCIe 3.0 x4 Hot Swap SSD	7N47A00985	AUUU	8†	N	Y	Y

* For hybrid storage configurations only; not available as a cache drive in all flash storage configurations.
^ For all flash storage configurations only; not available as a cache drive in hybrid storage configurations.
† Not supported in the configurations with 16/24x 2.5" U.2 NVMe PCIe drive bays.

Table 15. Drive options for internal storage: 3.5-inch hot-swap drives

Description	Part number	Feature code	Maximum quantity	Cache	Capacity	Uncategorized
3.5-inch hot-swap HDDs - 12 Gbps NL SAS						
ThinkSystem 3.5" 1TB 7.2K SAS 12Gb Hot Swap 512n HDD	7XB7A00041	AUU4	14	N	Y	Y
ThinkSystem 3.5" 2TB 7.2K SAS 12Gb Hot Swap 512n HDD	7XB7A00042	AUU5	14	N	Y	Y
ThinkSystem 3.5" 4TB 7.2K SAS 12Gb Hot Swap 512n HDD	7XB7A00043	AUU6	14	N	Y	Y
ThinkSystem 3.5" 6TB 7.2K SAS 12Gb Hot Swap 512e HDD	7XB7A00044	AUU7	14	N	Y	Y
ThinkSystem 3.5" 8TB 7.2K SAS 12Gb Hot Swap 512e HDD	7XB7A00045	B0YR	14	N	Y	Y
ThinkSystem 3.5" 10TB 7.2K SAS 12Gb Hot Swap 512e HDD	7XB7A00046	AUUG	14	N	Y	Y
ThinkSystem 3.5" 12TB 7.2K SAS 12Gb Hot Swap 512e HDD	7XB7A00067	B117	14	N	Y	Y
ThinkSystem 3.5" 14TB 7.2K SAS 12Gb Hot Swap 512e HDD	4XB7A13906	B496	14	N	Y	Y
ThinkSystem 3.5" 16TB 7.2K SAS 12Gb Hot Swap 512e HDD	4XB7A13911	B7EZ	14	N	Y	Y
3.5-inch hot-swap SSDs - SS300 Performance 12 Gbps SAS						

Description	Part number	Feature code	Maximum quantity	Cache	Capacity	Uncategorized
ThinkSystem 3.5" HUSMM32 400GB Performance SAS 12Gb Hot Swap SSD	7N47A00997	B16Z	14	Y	N	Y
ThinkSystem 3.5" HUSMM32 800GB Performance SAS 12Gb Hot Swap SSD	7N47A00998	B170	14	Y	N	Y
ThinkSystem 3.5" HUSMM32 1.6TB Performance SAS 12Gb Hot Swap SSD	7N47A00999	B171	14	Y	N	Y
3.5-inch hot-swap SSDs - SS530 Performance 12 Gbps SAS						
ThinkSystem 3.5" SS530 800GB Performance SAS 12Gb Hot Swap SSD	4XB7A10234	B4Y8	14	Y	Y	Y
ThinkSystem 3.5" SS530 1.6TB Performance SAS 12Gb Hot Swap SSD	4XB7A10235	B4Y9	14	Y	Y	Y
ThinkSystem 3.5" SS530 3.2TB Performance SAS 12Gb Hot Swap SSD	4XB7A10236	B4YA	14	Y	Y	Y
3.5-inch hot-swap SSDs - PM1635a Mainstream 12 Gbps SAS						
ThinkSystem 3.5" PM1635a 800GB Mainstream SAS 12Gb Hot Swap SSD	4XB7A10188	B2XD	14	N	Y	Y
ThinkSystem 3.5" PM1635a 1.6TB Mainstream SAS 12Gb Hot Swap SSD	4XB7A10187	B2XE	14	N	Y	Y
ThinkSystem 3.5" PM1635a 3.2TB Mainstream SAS 12Gb Hot Swap SSD	4XB7A10189	B2XL	14	N	Y	Y
3.5-inch hot-swap SSDs - PM1645 Mainstream 12Gbps SAS						
ThinkSystem 3.5" PM1645 800GB Mainstream SAS 12Gb Hot Swap SSD	4XB7A13657	B4A3	14	Y	Y	Y
ThinkSystem 3.5" PM1645 1.6TB Mainstream SAS 12Gb Hot Swap SSD	4XB7A13658	B4A4	14	Y	Y	Y
ThinkSystem 3.5" PM1645 3.2TB Mainstream SAS 12Gb Hot Swap SSD	4XB7A13659	B4A5	14	Y	Y	Y
3.5-inch hot-swap SSDs - PM1645a Mainstream 12Gbps SAS						
ThinkSystem 3.5" PM1645a 800GB Mainstream SAS 12Gb Hot Swap SSD	4XB7A17066	B8HT	14	Y	Y	Y
ThinkSystem 3.5" PM1645a 1.6TB Mainstream SAS 12Gb Hot Swap SSD	4XB7A17043	B8JN	14	Y	Y	Y
ThinkSystem 3.5" PM1645a 3.2TB Mainstream SAS 12Gb Hot Swap SSD	4XB7A17067	B8JK	14	Y	Y	Y
3.5-inch hot-swap SSDs - PM1633a Capacity 12 Gbps SAS						
ThinkSystem 3.5" PM1633a 3.84TB Capacity SAS 12Gb Hot Swap SSD	4XB7A10173	B2XC	14	N	Y	Y
3.5-inch hot-swap SSDs - PM1643 Capacity 12Gbps SAS						
ThinkSystem 3.5" PM1643 3.84TB Capacity SAS 12Gb Hot Swap SSD	4XB7A13649	B4A8	14	Y	Y	Y
3.5-inch hot-swap SSDs - PM1643a Entry 12Gbps SAS						
ThinkSystem 3.5" PM1643a 3.84TB Entry SAS 12Gb Hot Swap SSD	4XB7A17058	B91E	14	Y	Y	Y
3.5-inch hot-swap SSDs - 5100 Mainstream 6 Gbps SATA						
ThinkSystem 3.5" 5100 480GB Mainstream SATA 6Gb Hot Swap SSD	7SD7A05759	B112	14	N	Y	Y
ThinkSystem 3.5" 5100 960GB Mainstream SATA 6Gb Hot Swap SSD	7SD7A05758	B113	14	N	Y	Y
ThinkSystem 3.5" 5100 1.92TB Mainstream SATA 6Gb Hot Swap SSD	7SD7A05757	B114	14	N	Y	Y
ThinkSystem 3.5" 5100 3.84TB Mainstream SATA 6Gb Hot Swap SSD	7SD7A05756	B115	14	N	Y	Y
3.5-inch hot-swap SSDs - 5200 Mainstream 6 Gbps SATA						
ThinkSystem 3.5" 5200 240GB Mainstream SATA 6Gb Hot Swap SSD	4XB7A10242	B48D	14	Y*	Y	Y
ThinkSystem 3.5" 5200 480GB Mainstream SATA 6Gb Hot Swap SSD	4XB7A10243	B48E	14	Y	Y	Y
ThinkSystem 3.5" 5200 960GB Mainstream SATA 6Gb Hot Swap SSD	4XB7A10244	B48F	14	Y	Y	Y
ThinkSystem 3.5" 5200 1.92TB Mainstream SATA 6Gb Hot Swap SSD	4XB7A10245	B48G	14	Y	Y	Y
ThinkSystem 3.5" 5200 3.84TB Mainstream SATA 6Gb Hot Swap SSD	4XB7A10246	B48H	14	Y	Y	Y
3.5-inch hot-swap SSDs - 5300 Mainstream 6 Gbps SATA						
ThinkSystem 3.5" 5300 480GB Mainstream SATA 6Gb Hot Swap SSD	4XB7A17097	B8JF	14	Y	Y	Y

Description	Part number	Feature code	Maximum quantity	Cache	Capacity	Uncategorized
ThinkSystem 3.5" 5300 960GB Mainstream SATA 6Gb Hot Swap SSD	4XB7A17098	B8J0	14	Y	Y	Y
ThinkSystem 3.5" 5300 1.92TB Mainstream SATA 6Gb Hot Swap SSD	4XB7A17099	B8HR	14	Y	Y	Y
ThinkSystem 3.5" 5300 3.84TB Mainstream SATA 6Gb Hot Swap SSD	4XB7A17100	B8HX	14	Y	Y	Y
3.5-inch hot-swap SSDs - S4600 Mainstream 6 Gbps SATA						
ThinkSystem 3.5" Intel S4600 480GB Mainstream SATA 6Gb Hot Swap SSD	7SD7A05717	B0ZU	14	N	Y	Y
ThinkSystem 3.5" Intel S4600 960GB Mainstream SATA 6Gb Hot Swap SSD	7SD7A05716	B0ZV	14	N	N	Y
ThinkSystem 3.5" Intel S4600 1.92TB Mainstream SATA 6Gb Hot Swap SSD	7SD7A05715	B109	14	Y	N	Y
3.5-inch hot-swap SSDs - S4610 Mainstream 6 Gbps SATA						
ThinkSystem 3.5" Intel S4610 480GB Mainstream SATA 6Gb Hot Swap SSD	4XB7A13640	B49S	14	Y*	Y	Y
ThinkSystem 3.5" Intel S4610 960GB Mainstream SATA 6Gb Hot Swap SSD	4XB7A13641	B49T	14	Y	Y	Y
ThinkSystem 3.5" Intel S4610 1.92TB Mainstream SATA 6Gb Hot Swap SSD	4XB7A13642	B49U	14	Y	Y	Y
ThinkSystem 3.5" Intel S4610 3.84TB Mainstream SATA 6Gb Hot Swap SSD	4XB7A13643	B49V	14	Y	Y	Y
3.5-inch hot-swap SSDs - 5100 Entry 6 Gbps SATA						
ThinkSystem 3.5" 5100 480GB Entry SATA 6Gb Hot Swap SSD	4XB7A08506	B10S	14	N	Y	Y
ThinkSystem 3.5" 5100 960GB Entry SATA 6Gb Hot Swap SSD	4XB7A08507	B10T	14	N	Y	Y
ThinkSystem 3.5" 5100 1.92TB Entry SATA 6Gb Hot Swap SSD	4XB7A08508	B10U	14	Y*	Y	Y
ThinkSystem 3.5" 5100 3.84TB Entry SATA 6Gb Hot Swap SSD	4XB7A08509	B10V	14	Y*	Y	Y
3.5-inch hot-swap SSDs - 5200 Entry 6 Gbps SATA						
ThinkSystem 3.5" 5200 960GB Entry SATA 6Gb Hot Swap SSD	4XB7A10159	B2X8	14	N	Y	Y
ThinkSystem 3.5" 5200 1.92TB Entry SATA 6Gb Hot Swap SSD	4XB7A10160	B2X9	14	Y*	Y	Y
ThinkSystem 3.5" 5200 3.84TB Entry SATA 6Gb Hot Swap SSD	4XB7A10161	B2XA	14	Y*	Y	Y
ThinkSystem 3.5" 5200 7.68TB Entry SATA 6Gb Hot Swap SSD	4XB7A10162	B2XB	14	Y*	Y	Y
3.5-inch hot-swap SSDs - 5300 Entry 6 Gbps SATA						
ThinkSystem 3.5" 5300 240GB Entry SATA 6Gb Hot Swap SSD	4XB7A17081	B8JB	14	N	Y	Y
ThinkSystem 3.5" 5300 480GB Entry SATA 6Gb Hot Swap SSD	4XB7A17082	B8J9	14	N	Y	Y
ThinkSystem 3.5" 5300 960GB Entry SATA 6Gb Hot Swap SSD	4XB7A17083	B8JC	14	Y*	Y	Y
ThinkSystem 3.5" 5300 1.92TB Entry SATA 6Gb Hot Swap SSD	4XB7A17084	B8HZ	14	Y	Y	Y
ThinkSystem 3.5" 5300 3.84TB Entry SATA 6Gb Hot Swap SSD	4XB7A17085	B8HQ	14	Y	Y	Y
ThinkSystem 3.5" 5300 7.68TB Entry SATA 6Gb Hot Swap SSD	4XB7A17086	B8J3	14	N	Y	Y
3.5-inch hot-swap SSDs - S4500 Entry 6 Gbps SATA						
ThinkSystem 3.5" Intel S4500 480GB Entry SATA 6Gb Hot Swap SSD	7SD7A05736	B0Z4	14	N	Y	Y
ThinkSystem 3.5" Intel S4500 960GB Entry SATA 6Gb Hot Swap SSD	7SD7A05735	B0Z5	14	Y*	Y	Y
ThinkSystem 3.5" Intel S4500 1.92TB Entry SATA 6Gb Hot Swap SSD	7SD7A05734	B0Z6	14	Y*	Y	Y
ThinkSystem 3.5" Intel S4500 3.84TB Entry SATA 6Gb Hot Swap SSD	7SD7A05733	B0Z7	14	Y*	Y	Y
3.5-inch hot-swap SSDs - S4510 Entry 6 Gbps SATA						
ThinkSystem 3.5" Intel S4510 480GB Entry SATA 6Gb Hot Swap SSD	4XB7A13626	B49E	14	N	Y	Y
ThinkSystem 3.5" Intel S4510 960GB Entry SATA 6Gb Hot Swap SSD	4XB7A13627	B49F	14	Y*	Y	Y
ThinkSystem 3.5" Intel S4510 1.92TB Entry SATA 6Gb Hot Swap SSD	4XB7A13628	B49G	14	Y*	Y	Y

Description	Part number	Feature code	Maximum quantity	Cache	Capacity	Uncategorized
ThinkSystem 3.5" Intel S4510 3.84TB Entry SATA 6Gb Hot Swap SSD	4XB7A13629	B49H	14	Y*	Y	Y
3.5-inch hot-swap SSDs - P4600 Mainstream NVMe PCIe						
ThinkSystem 3.5" Intel P4600 1.6TB Mainstream NVMe PCIe 3.0 x4 HS SSD	4XB7A08528	B2XF	4	Y^	Y	Y
ThinkSystem 3.5" Intel P4600 3.2TB Mainstream NVMe PCIe 3.0 x4 HS SSD	4XB7A08529	B2XG	4	Y^	Y	Y
ThinkSystem 3.5" Intel P4600 6.4TB Mainstream NVMe PCIe 3.0 x4 HS SSD	4XB7A08530	B2XH	4	Y^	Y	Y
3.5-inch hot-swap SSDs - P4610 Mainstream NVMe PCIe						
ThinkSystem 3.5" Intel P4610 1.6TB Mainstream NVMe PCIe 3.0 x4 HS SSD	4XB7A13944	B58C	4	Y^	Y	Y
ThinkSystem 3.5" Intel P4610 3.2TB Mainstream NVMe PCIe 3.0 x4 HS SSD	4XB7A13945	B58D	4	Y^	Y	Y
ThinkSystem 3.5" Intel P4610 6.4TB Mainstream NVMe PCIe 3.0 x4 HS SSD	4XB7A13946	B58E	4	Y^	Y	Y
3.5-inch hot-swap SSDs - PM963 Entry NVMe PCIe						
ThinkSystem 3.5" PM963 1.92TB Entry NVMe PCIe 3.0 x4 Hot Swap SSD	7N47A00987	AUUX	4	N	Y	Y
ThinkSystem 3.5" PM963 3.84TB Entry NVMe PCIe 3.0 x4 Hot Swap SSD	7N47A00988	AUVZ	4	N	Y	Y

* For hybrid storage configurations only; not available as a cache drive in all flash storage configurations.
^ For all flash storage configurations only; not available as a cache drive in hybrid storage configurations.

Configuration notes:

- The drives can be selected either from the Cache drives and Capacity drives categories if the hybrid or all flash storage configuration is selected, or from an uncategorized list if no storage configuration type is selected.
- If the drives are selected from the Cache drives and Capacity drives categories, the following rules apply:
  - 12x 3.5-inch chassis:
    - 1 drive group: 1 cache drive and from 2 to 7 capacity drives.
    - 2 drive groups: 1 cache drive and from 2 to 6 capacity drives in each drive group.
    - 3 drive groups: 1 cache drive and from 2 to 3 capacity drives in each drive group.
    - 4 drive groups: 1 cache drive and 2 capacity drives in each drive group.
  - 16x 2.5-inch chassis:
    - 1 drive group: 1 cache drive and from 2 to 7 capacity drives.
    - 2 drive groups: 1 cache drive and from 2 to 7 capacity drives in each drive group.
    - 3 drive groups: 1 cache drive and from 2 to 4 capacity drives in each drive group.
    - 4 drive groups: 1 cache drive and from 2 to 3 capacity drives in each drive group.
  - 24x 2.5-inch chassis:
    - 1 drive group: 1 cache drive and from 2 to 7 capacity drives.
    - 2 drive groups: 1 cache drive and from 2 to 7 capacity drives in each drive group.
    - 3 drive groups: 1 cache drive and from 2 to 7 capacity drives in each drive group.
    - 4 drive groups: 1 cache drive and from 2 to 5 capacity drives in each drive group.
  - The quantity of the capacity drives in each drive group must be the same.
  - All cache drives in the certified node must be of the same model and capacity. All capacity drives in the certified node must be of the same model and capacity.

I/O expansion

The VX 2U Certified Node supports one LOM card slot and up to seven PCIe slots: one slot on the system planar that is dedicated to an internal storage controller, one regular PCIe slot on the system planar, and up to five PCIe slots with different riser cards installed into two riser sockets on the system planar (one riser socket supports installation of one riser card).

The slot form factors are as follows:

- LOM card slot
- Slot 1: PCIe 3.0 x16 or PCIe 3.0 x8; full-height, half-length (PCIe x16 slot can be single- or double-wide)
- Slot 2: PCIe 3.0 x8; full-height, half-length (not present if Slot 1 is PCIe x16 double-wide or Slot 3 is ML2 x16)
- Slot 3: PCIe 3.0 x8, or PCIe 3.0 x16, or ML2 x8, or ML2 x16; full-height, half-length
- Slot 4: PCIe 3.0 x8; low profile (vertical slot on system planar)
- Slot 5: PCIe 3.0 x16; full-height, half-length
- Slot 6: PCIe 3.0 x16; full-height, half-length
- Slot 7: PCIe 3.0 x8 (dedicated to an internal storage controller)

Configuration notes:

- Slots 5 and 6, and PCIe 3.0 x16 single-wide Slot 1 require the second processor to be installed.
- PCIe 3.0 x16 single-wide Slot 1 is only available in the following configurations:
  - 24 NVMe PCIe drive bays; or
  - Two double-wide GPUs and one PCIe x16 adapter.
- Slots 1 - 3 are not present if the Rear HDD Kit is installed.
- Slots 1 and 5 can be enabled for GPU adapters:
  - Factory-installed GPUs: When a GPU adapter is selected, all required parts are derived.
  - GPU field upgrades: Refer to GPU adapters for upgrade kit requirements.

The locations of the PCIe slots are shown in the following figure.

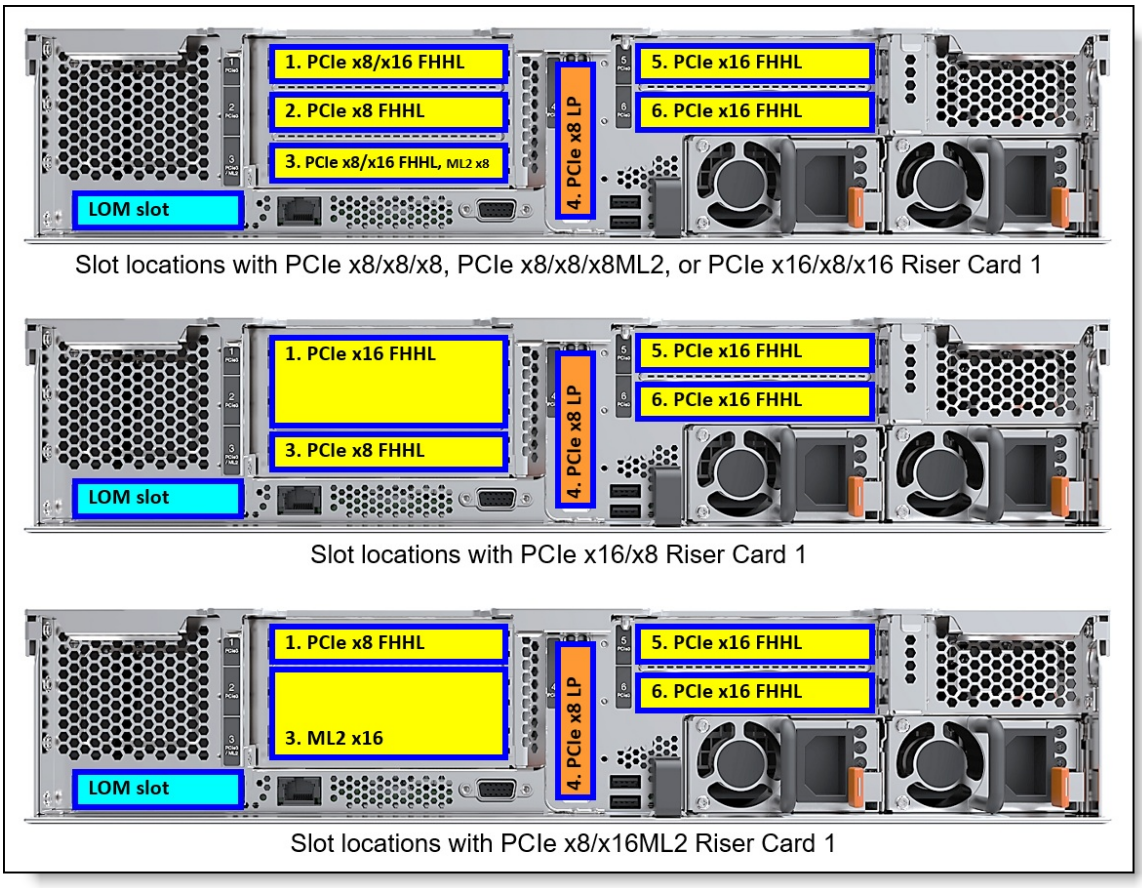

Figure 9. Slot locations

Riser 1 supplies slots 1, 2, and 3, and Riser 2 supplies slots 5 and 6. The slots that are available for use depend on the number of riser cards that are installed and whether the second processor is installed, as shown in the following table.

Table 16. Slots available for use

Riser Card 1	Riser Card 2	Slots available for use	
		Processor 1	Processor 2
None	None	LOM, 4, 7	-
None	PCIe x16/x16	LOM, 4, 7	5, 6
PCIe x8/x8/x8 or PCIe x8/x8/x8ML2	None	LOM, 1, 2, 3, 4, 7	-
PCIe x16/x8 or PCIe x8/x16ML2	None	LOM, 1, 3, 4, 7	-
PCIe x8/x8/x8 or PCIe x8/x8/x8ML2	PCIe x16/x16	LOM, 1, 2, 3, 4, 7	5, 6
PCIe x16/x8 or PCIe x8/x16ML2	PCIe x16/x16	LOM, 1, 3, 4, 7	5, 6
PCIe x16/x8/x16	PCIe x16/x16	LOM, 2, 3, 4, 7	1, 5, 6

The following table lists available PCIe riser card options.

Table 17. PCIe riser cards

Description	Part number	Feature code	Maximum quantity
x8 Riser Card 1 options (Riser card 1 supplies slots 1, 2, and 3)			
ThinkSystem 2U x8/x8/x8 PCIe FH Riser 1	7XH7A02677	AUR4	1
ThinkSystem 2U x8/x8/x8ML2 PCIe FH Riser 1	7XH7A02680	AUR7	1
ThinkSystem SR650 x16/x8/x16 PCIe FH Riser 1	None*	B4PB	1*
x16 Riser Card 1 options (Riser card 1 supplies slots 1 and 3)			
ThinkSystem 2U x16/x8 PCIe FH Riser 1	7XH7A02678	AUR3	1
ThinkSystem SR650 x8/x16ML2 PCIe FH Riser 1 Kit	7XH7A02681	AURB	1
Riser Card 2 option (Riser card 2 supplies slots 5 and 6)			
ThinkSystem SR550/SR650 (x16/x8)/(x16/x16) PCIe FH Riser 2 Kit	7XH7A02679	AURC	1

* Only for configurations with 24x U.2 NVMe PCIe drive bays. The x16/x8/x16 Riser 1 can be factory-installed, or it is included in the 24-drive U.2 NVMe upgrade kit for field upgrades.

Configuration notes:

- If the PCIe x16/x8/x16 Riser Card (feature code B4PB) is installed, the onboard NVMe interface cannot be used for connections to U.2 NVMe or AnyBay drive bays.
- In the configurations with 16x 2.5-inch U.2 NVMe PCIe drive bays, the PCIe 3.0 x8 Slot 3 and PCIe 3.0 x16 Slot 5 are available, and the remaining slots are occupied by the NVMe switch adapters.
  Note: If the additional 8-bay SAS/SATA backplane is installed, only the PCIe 3.0 x16 Slot 5 is available (the PCIe 3.0 x8 Slot 3 is occupied by an internal storage controller).
- In the configurations with 24x 2.5-inch U.2 NVMe PCIe drive bays, the PCIe 3.0 x16 Slots 3 and 5 are available, and the remaining slots are occupied by the NVMe switch adapters.

Network connectivity

The ThinkAgile VX 2U Certified Nodes provide two- or four-port 1/10 GbE RJ-45 or 10 GbE SFP+ network connectivity with the onboard Intel X722 NIC and a LOM card installed in the node. Additional 1/10 GbE RJ-45, 10 GbE SFP+, 25 GbE SFP28, 40 GbE QSFP+, or 100 GbE QSFP28 ports can be selected, if required.

The VX 2U Certified Nodes also support ML2 adapters that are installed in the custom ML2 slot provided by an ML2 riser card. The LOM cards and ML2 network adapters support direct connectivity to the XClarity Controller via the Network Controller Sideband Interface (NSCI) for out-of-band systems management.

The following table lists the network adapter options that are available for selection.

Table 18. Network adapters

Description	Part number	Feature code	Max qty#	I/O slots supported
LOM cards - 1 Gb Ethernet				
ThinkSystem 1Gb 2-port RJ45 LOM	7ZT7A00544	AUKG	1	LOM slot
ThinkSystem 1Gb 4-port RJ45 LOM	7ZT7A00545	AUKH	1	LOM slot
LOM cards - 10 Gb Ethernet				
ThinkSystem 10Gb 2-port Base-T LOM	7ZT7A00548	AUKL	1	LOM slot
ThinkSystem 10Gb 2-port SFP+ LOM	7ZT7A00546	AUKJ	1*	LOM slot
ThinkSystem 10Gb 4-port Base-T LOM	7ZT7A00549	AUKM	1	LOM slot
ThinkSystem 10Gb 4-port SFP+ LOM	7ZT7A00547	AUKK	1*	LOM slot

Description	Part number	Feature code	Max qty#	I/O slots supported
ML2 adapters - 10 Gb Ethernet				
Broadcom NX-E ML2 10Gb 2-Port Base-T Ethernet Adapter	7ZT7A00497	AUKQ	1	3 (ML2)
Emulex VFA5.2 ML2 Dual Port 10GbE SFP+ Adapter	00AG560	AT7U	1*	3 (ML2)
Intel X710-DA2 ML2 2x10GbE SFP+ Adapter	00JY940	ATRH	1*	3 (ML2)
ML2 adapters - 25 Gb Ethernet				
Mellanox ConnectX-4 Lx ML2 1x25GbE SFP28 Adapter	00MN990	ATZR	1*	3 (ML2)
Mellanox ConnectX-4 Lx ML2 25Gb 2-Port SFP28 Ethernet Adapter	7ZT7A00507	AUKU	1*	3 (ML2)
PCIe Low Profile adapters - 1 Gb Ethernet				
Broadcom NetXtreme PCIe 1Gb 2-Port RJ45 Ethernet Adapter	7ZT7A00482	AUZX	4 / 6	1, 2, 3, 4, 5, 6
Broadcom NetXtreme PCIe 1Gb 4-Port RJ45 Ethernet Adapter	7ZT7A00484	AUZV	4 / 6	1, 2, 3, 4, 5, 6
ThinkSystem I350-T2 PCIe 1Gb 2-Port RJ45 Ethernet Adapter	7ZT7A00534	AUZY	4 / 6	1, 2, 3, 4, 5, 6
ThinkSystem I350-T4 PCIe 1Gb 4-Port RJ45 Ethernet Adapter	7ZT7A00535	AUZW	4 / 6	1, 2, 3, 4, 5, 6
PCIe Low Profile adapters - 10 Gb Ethernet				
Broadcom NX-E PCIe 10Gb 2-Port Base-T Ethernet Adapter	7ZT7A00496	AUKP	4 / 6	1, 2, 3, 4, 5, 6
Emulex VFA5.2 2x10 GbE SFP+ PCIe Adapter	00AG570	AT7S	4 / 6*	1, 2, 3, 4, 5, 6
Intel X550-T2 Dual Port 10GBase-T Adapter	00MM860	ATPX	4 / 6	1, 2, 3, 4, 5, 6
Intel X710-DA2 PCIe 10Gb 2-Port SFP+ Ethernet Adapter	7ZT7A00537	AUKX	4 / 6*	1, 2, 3, 4, 5, 6
PCIe Full Height adapters - 10 Gb Ethernet				
Emulex OCe14104B-NX PCIe 10Gb 4-Port SFP+ Ethernet Adapter	7ZT7A00493	AUKN	3 / 5*	1, 2, 3, 5, 6
PCIe Low Profile adapters - 25 Gb Ethernet				
Broadcom NX-E PCIe 25Gb 1-Port SFP28 Ethernet Adapter	7ZT7A00505	AUKS	4 / 6*	1, 2, 3, 4, 5, 6
Intel XXV710-DA2 PCIe 25Gb 2-Port SFP28 Ethernet Adapter	7XC7A05523	B0WY	4 / 6*	1, 2, 3, 4, 5, 6
Mellanox ConnectX-4 Lx 2x25GbE SFP28 Adapter	01GR250	AUAJ	4 / 6*	1, 2, 3, 4, 5, 6
QLogic QL41262 PCIe 25Gb 2-Port SFP28 Ethernet Adapter	4XC7A08228	B21R	4 / 6*	1, 2, 3, 4, 5, 6
PCIe Low Profile adapters - 40 Gb Ethernet				
Mellanox ConnectX-4 Lx 1x40GbE QSFP+ Adapter	00MM950	ATRN	4 / 6*	1, 2, 3, 4, 5, 6
Mellanox ConnectX-5 Ex 25/40GbE 2-port Low-Latency Adapter	4XC7A08229	B31C	1 / 3*^	1, 5, 6†
PCIe x16 Low Profile adapters - 100 Gb Ethernet				
Mellanox ConnectX-4 1x100GbE/EDR IB QSFP28 VPI Adapter	00KH924	ASWQ	1 / 3*	1, 5, 6
Mellanox ConnectX-4 2x100GbE/EDR IB QSFP28 VPI Adapter	00MM960	ATRP	1 / 3*	1, 5, 6

The maximum quantity shown is with one processor / two processors (this does not apply to LOM cards and ML2 adapters).
* The adapter comes without transceivers or cables; for ordering transceivers or cables, see the configuration notes below the table.
^ The 25 GbE connectivity requires the optional Mellanox QSA 100G to 25G Cable Adapter (4G17A10853) (one per port); the supported cables include 25 GbE passive DAC and active optical cables (25 GbE transceivers not supported) (see Transceivers and cables for 25 GbE SFP28 adapters for details).
† The adapter is supported in the PCIe x16 slots supplied by the riser cards 1 and 2.

Configuration notes:

- ML2 network adapters are supported in the ML2 x8 slot 3 supplied by the x8/x8/x8ML2 Riser Card 1 (7XH7A02680).
- PCIe full-height network adapters are supported in the full-height PCIe x8 and x16 slots supplied by the riser cards 1 and 2.
- PCIe x16 Low Profile network adapters are supported in the full-height PCIe x16 slots supplied by the riser cards 1 and 2.
- PCIe x8 or x4 Low Profile network adapters are supported in the low profile PCIe x8 slot 4 on the system board and full-height PCIe x8 and x16 slots supplied by the riser cards 1 and 2.
- Supported transceivers or DAC cables should be purchased for the SFP+, SFP28, QSFP+, and QSFP28 adapters, and UTP Category 6 or Category 5e cables should be purchased for the 10 GbE (Category 6) or 1 GbE (Category 5e or 6) RJ-45 adapters. The maximum number of transceivers or cables that are supported per adapter equals the quantity of the adapter ports, and all adapter ports must have the same type of the transceiver or cable selected.
  The following transceiver and cables can be purchased:
  - UTP cables for 10 GbE and 1 GbE RJ-45 adapters
  - Transceivers and cables for 10 GbE SFP+ adapters
  - Transceivers and cables for 25 GbE SFP28 adapters
  - Transceivers and cables for 40 GbE QSFP+ adapters
  - Transceivers and cables for 100 GbE QSFP28 network adapters

The following table lists cables for the 10 GbE and 1 GbE RJ-45 adapters.

Table 19. Cables for 10 GbE and 1 GbE RJ-45 adapters

Description	Part number	Feature code
UTP Category 6 cables (Green) for 10 GbE and 1 GbE RJ-45 adapters		
0.75m Cat6 Green Cable	00WE123	AVFW
1.0m Cat6 Green Cable	00WE127	AVFX
1.25m Cat6 Green Cable	00WE131	AVFY
1.5m Cat6 Green Cable	00WE135	AVFZ
3m Cat6 Green Cable	00WE139	AVG0
10m Cat6 Green Cable	90Y3718	A1MT
25m Cat6 Green Cable	90Y3727	A1MW
UTP Category 5e cables (Blue) for 1 GbE RJ-45 adapters		
0.75m Blue Cat5e Cable	00WE111	AVFT
1.0m Blue Cat5e Cable	00WE115	AVFU
1.25m Blue Cat5e Cable	00WE119	AVFV
1.5m Blue Cat5e Cable	40K8785	3802
3m Blue Cat5e Cable	40K5581	3803
10m Blue Cat5e Cable	40K8927	3804
25m Blue Cat5e Cable	40K8930	3805
UTP Category 5e cables (Green) for 1 GbE RJ-45 adapters		
0.75m Green Cat5e Cable	00WE099	AVFQ
1.0m Green Cat5e Cable	00WE103	AVFR
1.25m Green Cat5e Cable	00WE107	AVFS
1.5m Green Cat5e Cable	40K5643	3797
3m Green Cat5e Cable	40K5793	3798
10m Green Cat5e Cable	40K5794	3799
25m Green Cat5e Cable	40K8869	3800

The following table lists transceivers and cables for the 10 GbE SFP+ adapters.

Table 20. Transceivers and cables for 10 GbE SFP+ adapters

Description	Part number	Feature code
10 GbE SFP+ SR transceivers for 10 GbE SFP+ adapters		
Lenovo 10GBASE-SR SFP+ Transceiver	46C3447	5053
Lenovo 10GBASE-LR SFP+ Transceiver	00FE331	B0RJ
Optical cables for 10 GbE SFP+ SR transceivers		
Lenovo 0.5m LC-LC OM3 MMF Cable	00MN499	ASR5
Lenovo 1m LC-LC OM3 MMF Cable	00MN502	ASR6
Lenovo 3m LC-LC OM3 MMF Cable	00MN505	ASR7
Lenovo 5m LC-LC OM3 MMF Cable	00MN508	ASR8
Lenovo 10m LC-LC OM3 MMF Cable	00MN511	ASR9
Lenovo 15m LC-LC OM3 MMF Cable	00MN514	ASRA
Lenovo 25m LC-LC OM3 MMF Cable	00MN517	ASRB
Lenovo 30m LC-LC OM3 MMF Cable	00MN520	ASRC
Passive SFP+ DAC cables for 10 GbE SFP+ adapters		
Lenovo 0.5m Passive SFP+ DAC Cable	00D6288	A3RG
Lenovo 1m Passive SFP+ DAC Cable	90Y9427	A1PH
Lenovo 1.5m Passive SFP+ DAC Cable	00AY764	A51N
Lenovo 2m Passive SFP+ DAC Cable	00AY765	A51P
Lenovo 3m Passive SFP+ DAC Cable	90Y9430	A1PJ
Lenovo 5m Passive SFP+ DAC Cable	90Y9433	A1PK
Lenovo 7m Passive SFP+ DAC Cable	00D6151	A3RH
Active SFP+ DAC cables for 10 GbE SFP+ adapters*		
Lenovo 1m Active DAC SFP+ Cable	00VX111	AT2R
Lenovo 3m Active DAC SFP+ Cable	00VX114	AT2S
Lenovo 5m Active DAC SFP+ Cable	00VX117	AT2T
SFP+ active optical cables for 10 GbE SFP+ adapters		
Lenovo 1m SFP+ to SFP+ Active Optical Cable	00YL634	ATYX
Lenovo 3m SFP+ to SFP+ Active Optical Cable	00YL637	ATYY
Lenovo 5m SFP+ to SFP+ Active Optical Cable	00YL640	ATYZ
Lenovo 7m SFP+ to SFP+ Active Optical Cable	00YL643	ATZ0
Lenovo 15m SFP+ to SFP+ Active Optical Cable	00YL646	ATZ1
Lenovo 20m SFP+ to SFP+ Active Optical Cable	00YL649	ATZ2

* The Emulex VFA5.2 ML2 (00AG560) and PCIe (00AG570) network adapters do not support active SFP+ DAC cables.

The following table lists transceivers and cables for the 25 GbE SFP28 adapters.

Table 21. Transceivers and cables for 25 GbE SFP28 adapters

Description	Part number	Feature code
25 GbE SFP28 SR transceivers for 25 GbE SFP28 adapters		
Lenovo 25GBase-SR SFP28 Transceiver	7G17A03537	AV1B
Optical cables for 25 GbE SFP28 SR transceivers		
Lenovo 0.5m LC-LC OM3 MMF Cable	00MN499	ASR5

Description	Part number	Feature code
Lenovo 1m LC-LC OM3 MMF Cable	00MN502	ASR6
Lenovo 3m LC-LC OM3 MMF Cable	00MN505	ASR7
Lenovo 5m LC-LC OM3 MMF Cable	00MN508	ASR8
Lenovo 10m LC-LC OM3 MMF Cable	00MN511	ASR9
Lenovo 15m LC-LC OM3 MMF Cable	00MN514	ASRA
Lenovo 25m LC-LC OM3 MMF Cable	00MN517	ASRB
Lenovo 30m LC-LC OM3 MMF Cable	00MN520*	ASRC*
Passive copper cables for 25 GbE SFP28 network adapters		
Lenovo 1m Passive 25G SFP28 DAC Cable	7Z57A03557*	AV1W*
Lenovo 3m Passive 25G SFP28 DAC Cable	7Z57A03558	AV1X
Lenovo 5m Passive 25G SFP28 DAC Cable	7Z57A03559	AV1Y
Active optical cables for 25 GbE SFP28 network adapters*		
Lenovo 3m 25G SFP28 Active Optical Cable	7Z57A03541	AV1F
Lenovo 5m 25G SFP28 Active Optical Cable	7Z57A03542	AV1G
Lenovo 10m 25G SFP28 Active Optical Cable	7Z57A03543	AV1H
Lenovo 15m 25G SFP28 Active Optical Cable	7Z57A03544	AV1J
Lenovo 20m 25G SFP28 Active Optical Cable	7Z57A03545	AV1K

* Not supported with the Intel XXV710-DA2 PCIe 25Gb 2-Port SFP28 Ethernet Adapter (7XC7A05523).

The following table lists transceivers and cables for the 40 GbE QSFP+ adapters.

Table 22. Transceivers and cables for 40 GbE QSFP+ adapters

Description	Part number	Feature code
40 GbE QSFP+ transceivers for 40 GbE network adapters		
Lenovo 40GBASE-SR4 QSFP+ Transceiver	49Y7884	A1DR
Optical cables for 40 GbE QSFP+ SR4 transceivers		
Lenovo 10m QSFP+ MPO-MPO OM3 MMF Cable	00VX003	AT2U
Lenovo 30m QSFP+ MPO-MPO OM3 MMF Cable	00VX005	AT2V
Passive DAC cables for 40 GbE QSFP+ network adapters		
Lenovo 1m Passive QSFP+ DAC Cable	49Y7890	A1DP
Lenovo 3m Passive QSFP+ DAC Cable	49Y7891	A1DQ
Lenovo 5m Passive QSFP+ DAC Cable	00D5810	A2X8
Lenovo 7m Passive QSFP+ DAC Cable	00D5813	A2X9
Active optical cables for 40 GbE QSFP+ network adapters		
Lenovo 1m QSFP+ to QSFP+ Active Optical Cable	7Z57A04256	AX42
Lenovo 3m QSFP+ to QSFP+ Active Optical Cable	00YL652	ATZ3
Lenovo 5m QSFP+ to QSFP+ Active Optical Cable	00YL655	ATZ4
Lenovo 7m QSFP+ to QSFP+ Active Optical Cable	00YL658	ATZ5
Lenovo 15m QSFP+ to QSFP+ Active Optical Cable	00YL661	ATZ6
Lenovo 20m QSFP+ to QSFP+ Active Optical Cable	00YL664	ATZ7
25 GbE SFP28 cable adapter for 40 GbE QSFP+ network adapters		
Mellanox 100G QSFP28 to 25G SFP28 Cable Adapter	4G17A10853	B306

The following table lists transceivers and cables for the 100 GbE QSFP28 network adapters.

Table 23. Transceivers and cables for 100 GbE QSFP28 network adapters

Description	Part number	Feature code
100 GbE QSFP28 transceivers for 100 GbE QSFP28 network adapters		
Lenovo 100GBase-SR4 QSFP28 Transceiver	7G17A03539	AV1D
Optical cables for 100 GbE QSFP28 SR4 transceivers		
Lenovo 5m MPO-MPO OM4 MMF Cable	7Z57A03567	AV25
Lenovo 10m MPO-MPO OM4 MMF Cable	7Z57A03569	AV27
Lenovo 20m MPO-MPO OM4 MMF Cable	7Z57A03571	AV29
Optical breakout cables for 100 GbE QSFP28 SR4 transceivers		
Lenovo 1m MPO-MPO Breakout OM4 MMF Cable	7Z57A03573	AV2B
Lenovo 3m MPO-MPO Breakout OM4 MMF Cable	7Z57A03574	AV2C
Lenovo 5m MPO-MPO Breakout OM4 MMF Cable	7Z57A03575	AV2D
Passive copper cables for 100 GbE QSFP28 network adapters		
Lenovo 1m Passive 100G QSFP28 DAC Cable	7Z57A03561	AV1Z
Lenovo 3m Passive 100G QSFP28 DAC Cable	7Z57A03562	AV20
Lenovo 5m Passive 100G QSFP28 DAC Cable	7Z57A03563	AV21
Passive copper breakout cables for 100 GbE QSFP28 network adapters		
Lenovo 1m 100G QSFP28 to 4x25G SFP28 Breakout DAC Cable	7Z57A03564	AV22
Lenovo 3m 100G QSFP28 to 4x25G SFP28 Breakout DAC Cable	7Z57A03565	AV23
Lenovo 5m 100G QSFP28 to 4x25G SFP28 Breakout DAC Cable	7Z57A03566	AV24
Active optical cables for 100 GbE QSFP28 network adapters		
Lenovo 3m 100G QSFP28 Active Optical Cable	7Z57A03546	AV1L
Lenovo 5m 100G QSFP28 Active Optical Cable	7Z57A03547	AV1M
Lenovo 10m 100G QSFP28 Active Optical Cable	7Z57A03548	AV1N
Lenovo 15m 100G QSFP28 Active Optical Cable	7Z57A03549	AV1P
Lenovo 20m 100G QSFP28 Active Optical Cable	7Z57A03550	AV1Q

For more information, see the list of Product Guides in the Ethernet Adapters category:
http://lenovopress.com/servers/options/ethernet#rt=product-guide

GPU adapters

The VX 2U Certified Nodes support graphics processing unit (GPU) adapters listed in the following table.

Table 24. GPU adapters

Description	Part number	Feature code	Maximum quantity*	I/O slots supported
Low profile PCIe 3.0 x16 single-wide GPU adapters				
ThinkSystem NVIDIA Quadro P620 2GB PCIe Active GPU	4X67A11584	B31D	1 / 3	1, 5, 6
ThinkSystem NVIDIA Tesla T4 16GB PCIe Passive GPU	4X67A14926	B4YB	3 / 4	1, 2, 3, 5, 6
Full-height, full-length PCIe 3.0 x16 double-wide GPU adapters				
ThinkSystem AMD Radeon Instinct MI25 16GB PCIe Passive GPU	7C57A02897	B228	1 / 2	1, 5
ThinkSystem AMD Radeon Pro V340 32GB PCIe Passive GPU	4C57A09497	B32P	1 / 2	1, 5
ThinkSystem NVIDIA Tesla M10 32GB PCIe Passive GPU	7C57A02891	B15V	1 / 2	1, 5

Description	Part number	Feature code	Maximum quantity*	I/O slots supported
NVIDIA Tesla M60 GPU, PCIe (Passive)	00KG655	B13J	1 / 2	1, 5
ThinkSystem NVIDIA Tesla P40 24GB PCIe Passive GPU	7C57A02888	B15U	1 / 2	1, 5
ThinkSystem NVIDIA Tesla V100 16GB PCIe Passive GPU	4C57A09498	B1JY	1 / 2	1, 5
ThinkSystem NVIDIA Tesla V100 32GB PCIe Passive GPU	4X67A12088	B34S	1 / 2	1, 5
Full-height, half-length PCIe 3.0 x16 single-wide GPU adapters				
ThinkSystem NVIDIA Tesla V100 FHHL 16GB PCIe GPU	4X67A11524	B32D	1 / 3	1, 5, 6
Full-height, full-length PCIe 3.0 x16 single-wide GPU adapters				
ThinkSystem NVIDIA Quadro P4000 8GB PCIe Active GPU	4V17A10255	B225	1 / 3	1, 5, 6

* The maximum quantity shown is with one processor / two processors.

Configuration notes:

- All GPU adapters in the node must be of the same model; mixing different GPU adapter models is not supported.
- The GPU adapters require the PCIe x16 riser cards (except T4 GPU adapters).
- The T4 GPU adapters are supported only in the specific I/O slots, as follows:
  - 1x T4 GPU adapter (one or two processors):
    - PCIe 3.0 x16 Slot 1 on the x16/x8 Riser Card 1 (7XH7A02678); or
    - PCIe 3.0 x8 Slot 1 on the x8/x8/x8 Riser Card 1 (7XH7A02677).
  - 2x T4 GPU adapters:
    - One processor: PCIe 3.0 x8 Slots 1 and 2 on the x8/x8/x8 Riser Card 1 (7XH7A02677).
    - Two processors:
      - PCIe 3.0 x16 or x8 Slot 1 on one of the following riser cards:
        - PCIe 3.0 x16 Slot 1 on the x16/x8 Riser Card 1 (7XH7A02678); or
        - PCIe 3.0 x8 Slot 1 on the x8/x8/x8 Riser Card 1 (7XH7A02677).
      - PCIe 3.0 x16 Slot 5 on the x16/x16 Riser Card 2 (7XH7A02679).
    - **Note:** Slot 6 must remain unoccupied in the configurations with two T4 GPU adapters.
  - 3x T4 GPU adapters:
    - One processor: PCIe 3.0 x8 Slots 1, 2, and 3 on the x8/x8/x8 Riser Card 1 (7XH7A02677).
    - Two processors:
      - PCIe 3.0 x16 or x8 Slot 1 on one of the following riser cards:
        - PCIe 3.0 x16 Slot 1 on the x16/x8 Riser Card 1 (7XH7A02678); or
        - PCIe 3.0 x8 Slot 1 on the x8/x8/x8 Riser Card 1 (7XH7A02677).
      - PCIe 3.0 x16 Slots 5 and 6 on the x16/x16 Riser Card 2 (7XH7A02679).
  - 4x T4 GPU adapters (require two processors):
    - PCIe 3.0 x8 or x16 Slot 1 and PCIe 3.0 x8 Slot 2 on one of the following riser cards:
      - x8/x8/x8 Riser Card 1 (7XH7A02677); or
      - x16/x8/x16 Riser Card 1 (4XH7A09902).
    - PCIe 3.0 x16 Slots 5 and 6 on the x16/x16 Riser Card 2 (7XH7A02679).
- The GPU adapters are supported with the following drive bay configurations:
  - Processors of up to 150 W TDP: 8x or 16x 2.5-inch SAS/SATA & AnyBay drive bays (support for up to 4x or 8x NVMe SSDs).
  - Processors of up to 165 W TDP at the ambient temperature of up to 30 °C (86 °F): 8x 2.5-inch SAS/SATA drive bays (no support for NVMe SSDs).
  - **Note:** The P620, P4000, T4, V100 FHHL, and V340 GPU adapters are supported only with the processors of up to 150 W TDP.
- If the double-wide GPU adapter is installed in the PCIe slot 5, the PCIe slot 6 cannot be used.
- The P620 GPU adapters do not require any thermal kits. The GPU adapters other than P620 may require one of the optional GPU Thermal Kits (the GPU thermal kits are derived by the configurator for factory-installed GPU adapters, and these kits need to be purchased with the GPU adapters for field upgrades, as shown in the Cooling options table).
- The GPU adapters (except the V100 FHHL adapter) are supported only in the ASHRAE A2 environments

(up to 35 °C [95 °F]); the V100 FHHL adapter is supported only in the environments with the ambient temperature of up to 30 °C (86 °F).

- If the P620 or P4000 GPU adapters are installed, the node performance might be impacted in case of a system fan failure.
- The GPU adapters are not supported with the T-suffix processors.
- The GPU adapters are not supported with the Rear HDD Kit.
- The maximum memory that can be installed in the certified node with the NVIDIA M10 or M60 GPUs is 1 TB.

The following table shows additional cooling options for configurations with the GPU adapters.

Table 25. Cooling options for GPU adapters

Description	Part number	Feature code	Maximum quantity
ThinkSystem SR650 GPU Thermal Kit	7XH7A05897	None	1
ThinkSystem SR650 2nd GPU Upgrade Kit	7XH7A05899	AURU	1
ThinkSystem SR650 GPU 1U Heatsink Option Kit	7XH7A05898	None	1
ThinkSystem SR650 V100 FHHL Air Duct Companion Kit	4XH7A08792	B37F	2

Configuration notes:

- The GPU adapters other than P620 require one of the following thermal kits depending on the configuration:
  - The GPU Thermal Kit (7XH7A05897) is required when adding GPU adapters to the nodes without factory-installed GPUs or factory-enabled full-length support. The kit provides support for up to three GPU adapters in the PCIe x16 slots 1, 5, and 6, and it contains an air duct, two low-profile heatsinks, and two full-length card holders.
  - The 2nd GPU Upgrade Kit (7XH7A05899) is required when adding more GPU adapters to the nodes with one riser card and the factory-installed GPUs. The kit provides support for the additional GPU adapters, and it contains a full-length card holder (the second riser card is not included in the kit).
  - The GPU 1U Heatsink Option Kit (7XH7A05898) is required when adding the second processor to the nodes with one processor and the factory-installed GPUs. The kit contains a low-profile heatsink for the second processor option.
- The V100 FHHL GPU adapters require the following quantities of the V100 FHHL Air Duct Companion Kit (4XH7A08792) in addition to one of the thermal kits described above:
  - 1x V100 FHHL GPU adapter: 1x Air Duct Companion Kit (4XH7A08792).
  - 2x or 3x V100 FHHL GPU adapters: 2x Air Duct Companion Kits (4XH7A08792).

Power supplies and cables

The VX 2U Certified Nodes can be configured with one or two power supplies. The following table lists the power supply options that are available for selection.

Table 26. Power supplies

Description	Part number	Feature code	Maximum quantity
ThinkSystem 1100W (230V/115V) Platinum Hot-Swap Power Supply	7N67A00885	AVWF	2
ThinkSystem 1600W (230V) Platinum Hot-Swap Power Supply	7N67A00886	AVWG	2

Configuration notes:

- Minimum of 1 and maximum of 2 power supplies per system.
- For N+N power redundancy, the power supplies should provide sufficient power without oversubscription for the selected node configuration. To ensure that the right power supply is chosen, you should always validate your node configuration using the latest version of the Lenovo Capacity Planner: http://datacentersupport.lenovo.com/us/en/solutions/lnvo-lcp
- If two power supplies are installed, they must be identical.
- The power supplies support AC (Worldwide) and HVDC (China only) power sources.

The VX 2U Certified Nodes ship with one or two customer-configured power cords (A hot-swap power supply option does not contain a power cord). The following table lists the rack power cables and line cords that can be ordered for the VX 2U Certified Nodes.

Table 27. Power cables

Description	Part number	Feature code
Rack power cables		
1.0m, 10A/125-250V, C13 to IEC 320-C14 Rack Power Cable	00Y3043	A4VP
1.0m, 13A/100-250V, C13 to IEC 320-C14 Rack Power Cable	4L67A08367	B0N5
1.2m, 16A/100-250V, 2 Short C13s to Short C20 Rack Power Cable	47C2491	A3SW
1.5m, 10A/100-250V, C13 to IEC 320-C14 Rack Power Cable	39Y7937	6201
1.5m, 13A/100-250V, C13 to IEC 320-C14 Rack Power Cable	4L67A08368	B0N6
2.0m, 10A/100-250V, C13 to IEC 320-C14 Rack Power Cable	4L67A08365	B0N4
2.0m, 13A/125V-10A/250V, C13 to IEC 320-C14 Rack Power Cable	4L67A08369	6570
2.5m, 16A/100-250V, 2 Long C13s to Short C20 Rack Power Cable	47C2492	A3SX
2.8m, 10A/100-250V, C13 to IEC 320-C14 Rack Power Cable	4L67A08366	6311
2.8m, 13A/125V-10A/250V, C13 to IEC 320-C14 Rack Power Cable	4L67A08370	6400
2.8m, 10A/100-250V, C13 to IEC 320-C20 Rack Power Cable	39Y7938	6204
2.8m, 16A/100-250V, 2 Short C13s to Long C20 Rack Power Cable	47C2493	A3SY
4.1m, 16A/100-250V, 2 Long C13s to Long C20 Rack Power Cable	47C2494	A3SZ
4.3m, 10A/100-250V, C13 to IEC 320-C14 Rack Power Cable	39Y7932	6263
4.3m, 13A/125V-10A/250V, C13 to IEC 320-C14 Rack Power Cable	4L67A08371	6583
Line cords		
Argentina 2.8m, 10A/250V, C13 to IRAM 2073 Line Cord	39Y7930	6222
Argentina 4.3m, 10A/250V, C13 to IRAM 2073 Line Cord	81Y2384	6492
Australia/New Zealand 2.8m, 10A/250V, C13 to AS/NZS 3112 Line Cord	39Y7924	6211
Australia/New Zealand 4.3m, 10A/250V, C13 to AS/NZS 3112 Line Cord	81Y2383	6574
Brazil 2.8m, 10A/250V, C13 to NBR 14136 Line Cord	69Y1988	6532
Brazil 4.3m, 10A/250V, C13 to NBR14136 Line Cord	81Y2387	6404
China 2.8m, 10A/250V, C13 to GB 2099.1 Line Cord	39Y7928	6210
China 4.3m, 10A/250V, C13 to GB 2099.1 Line Cord	81Y2378	6580
Denmark 2.8m, 10A/250V, C13 to DK2-5a Line Cord	39Y7918	6213
Denmark 4.3m, 10A/250V, C13 to DK2-5a Line Cord	81Y2382	6575
Europe 2.8m, 10A/250V, C13 to CEE7-VII Line Cord	39Y7917	6212
Europe 4.3m, 10A/250V, C13 to CEE7-VII Line Cord	81Y2376	6572
India 2.8m, 10A/250V, C13 to IS 6538 Line Cord	39Y7927	6269

Description	Part number	Feature code
India 4.3m, 10A/250V, C13 to IS 6538 Line Cord	81Y2386	6567
Israel 2.8m, 10A/250V, C13 to SI 32 Line Cord	39Y7920	6218
Israel 4.3m, 10A/250V, C13 to SI 32 Line Cord	81Y2381	6579
Italy 2.8m, 10A/250V, C13 to CEI 23-16 Line Cord	39Y7921	6217
Italy 4.3m, 10A/250V, C13 to CEI 23-16 Line Cord	81Y2380	6493
Japan 2.8m, 12A/125V, C13 to JIS C-8303 Line cord	46M2593	A1RE
Japan 2.8m, 12A/250V, C13 to JIS C-8303 Line Cord	4L67A08357	6533
Japan 4.3m, 12A/125V, C13 to JIS C-8303 Line Cord	39Y7926	6335
Japan 4.3m, 12A/250V, C13 to JIS C-8303 Line Cord	4L67A08362	6495
Korea 2.8m, 12A/250V, C13 to KS C8305 Line Cord	39Y7925	6219
Korea 4.3m, 12A/250V, C13 to KS C8305 Line Cord	81Y2385	6494
South Africa 2.8m, 10A/250V, C13 to SABS 164 Line Cord	39Y7922	6214
South Africa 4.3m, 10A/250V, C13 to SABS 164 Line Cord	81Y2379	6576
Switzerland 2.8m, 10A/250V, C13 to SEV 1011-S24507 Line Cord	39Y7919	6216
Switzerland 4.3m, 10A/250V, C13 to SEV 1011-S24507 Line Cord	81Y2390	6578
Taiwan 2.8m, 10A/125V, C13 to CNS 10917-3 Line Cord	23R7158	6386
Taiwan 2.8m, 10A/250V, C13 to CNS 10917-3 Line Cord	81Y2375	6317
Taiwan 2.8m, 15A/125V, C13 to CNS 10917-3 Line Cord	81Y2374	6402
Taiwan 4.3m, 10A/125V, C13 to CNS 10917-3 Line Cord	4L67A08363	AX8B
Taiwan 4.3m, 10A/250V, C13 to CNS 10917-3 Line Cord	81Y2389	6531
Taiwan 4.3m, 15A/125V, C13 to CNS 10917-3 Line Cord	81Y2388	6530
United Kingdom 2.8m, 10A/250V, C13 to BS 1363/A Line Cord	39Y7923	6215
United Kingdom 4.3m, 10A/250V, C13 to BS 1363/A Line Cord	81Y2377	6577
United States 2.8m, 10A/125V, C13 to NEMA 5-15P Line Cord	90Y3016	6313
United States 2.8m, 10A/250V, C13 to NEMA 6-15P Line Cord	46M2592	A1RF
United States 2.8m, 13A/125V, C13 to NEMA 5-15P Line Cord	00WH545	6401
United States 4.3m, 10A/125V, C13 to NEMA 5-15P Line Cord	4L67A08359	6370
United States 4.3m, 10A/250V, C13 to NEMA 6-15P Line Cord	4L67A08361	6373
United States 4.3m, 13A/125V, C13 to NEMA 5-15P Line Cord	4L67A08360	AX8A

Configuration note: If the 1100 W AC power supplies (7N67A00885) in the VX 2U Certified Node are connected to a low-voltage power source (100 - 125 V), the only supported power cables are those that are rated above 10 A; cables that are rated at 10 A are not supported.

Rack installation

The VX 2U Certified Nodes ship with a rail kit with or without CMA depending on the rack installation option selected. The following table lists the rack installation options that are available for the VX 2U Certified Nodes.

Table 28. Rack installation options

Description	Part number	Feature code	Maximum quantity
4-post rail kits			
ThinkSystem Tool-less Slide Rail	7M27A05702	AXCA	1
ThinkSystem Tool-less Slide Rail Kit with 2U CMA	7M27A05700	AXCH	1
Cable management arm (CMA) upgrade			
ThinkSystem 2U CMA Upgrade Kit for Tool-less Slide Rail	7M27A05698	None^	1*
Front VGA port			
ThinkSystem SR550/SR590/SR650 EIA Latch w/ VGA Upgrade Kit	7Z17A02578	AUS8	1
Lockable front bezel			
ThinkSystem 2U Security Bezel	7Z17A02580	AURX	1

^ Field upgrade only.
* The 2U CMA Upgrade Kit for Tool-less Slide Rail is supported with the Tool-less Slide Rail (7M27A05702) only.

The following table summarizes the rail kit features and specifications.

Table 29. Rail kit features and specifications summary

Feature	Tool-less Slide Rail	
	Without CMA	With CMA
Part number	7M27A05702	7M27A05700
CMA	7M27A05698	Included
Rail length	730 mm (28.74 in.)	807 mm (31.8 in.)
Rail type	Full-out slide (ball bearing)	
Tool-less installation	Yes	
In-rack server maintenance	Yes	
1U PDU support	Yes	
0U PDU support	Limited*	
Rack type	IBM and Lenovo 4-post, IEC standard-compliant	
Mounting holes	Square or round	
Mounting flange thickness	2 mm (0.08 in.) – 3.3 mm (0.13 in.)	
Distance between front and rear mounting flanges^	609.6 mm (24 in.) – 863.6 mm (34 in.)	

* If a 0U PDU is used, the rack cabinet must be at least 1100 mm (43.31 in.) deep if no CMA is used, or at least 1200 mm (47.24 in.) deep if a CMA is used.
^ Measured when mounted on the rack, from the front surface of the front mounting flange to the rear most point of the rail.

Software

The ThinkAgile VX Certified Nodes support the following VMware HCI components:

- VMware vSphere ESXi hypervisor
- VMware vSAN distributed enterprise storage
- VMware vCenter Server centralized management

The VMware ESXi hypervisor is factory-preinstalled on the 2x M.2 SSDs configured in a RAID-1 drive group.

The following table lists the VMware ESXi hypervisor versions that are available for selection.

Table 30. VMware ESXi hypervisor selection options

Description	Feature code
VMware ESXi 6.5 U2 (Factory Installed)	B3VW
VMware ESXi 6.5 U3 (Factory installed)	B6U0
VMware ESXi 6.7 (Factory Installed)	B3VX
VMware ESXi 6.7 U1 (Factory Installed)	B4XA
VMware ESXi 6.7 U2 (Factory Installed)	B6U1
VMware ESXi 6.7 U3 (Factory installed)	B88T

VMware software licenses and support are not included with ThinkAgile VX Certified Nodes. Customers can use the existing VMware software licenses and active support contracts, or they can purchase software licenses and support from VMware or Lenovo.

Lenovo offers the following VMware software license and support options for ThinkAgile VX Certified Nodes:

- VMware vSAN License and Subscription
- VMware vSphere License and Subscription
- VMware HCI Kit License and Subscription
- VMware Horizon License and Subscription
- VMware Cloud Foundation License and Subscription
- VMware vCenter Server License and Subscription

Configuration notes:

- The selection of VMware software licenses is optional.
- VMware software licenses are available with 1-year, 3-year, or 5-year software support.
- The quantity of processor-based licenses is derived by the configuration tool based on the number of processors selected.
- The quantity of VM-based licenses is specified based on VM requirements.
- The quantity of CCU-based licenses is specified based on the concurrent user requirements.

VMware vSAN License and Subscription

Lenovo offers the following VMware vSAN License and Subscription options that can be purchased for ThinkAgile VX Certified Nodes:

- *VMware Virtual SAN 6 Standard* provides support for hybrid and all-flash storage configurations.
- *VMware Virtual SAN 6 Advanced* provides support for hybrid and all-flash storage configurations with space efficiency features (compression, deduplication, and erasure coding).
- *VMware Virtual SAN 6 Enterprise* provides support for hybrid and all-flash storage configurations with space efficiency features (compression, deduplication, and erasure coding), stringent security (data-at-rest encryption), and advanced failure protection (stretched cluster).
- *VMware Virtual SAN 6 Enterprise Plus* is a bundle of vSAN Enterprise and vRealize Operations Advanced features.
- *VMware Virtual SAN 6 for Remote Office Branch Office (ROBO)* provides support for hybrid and all-flash storage configurations for up to 25 virtual machines at remote locations.
- *VMware Virtual SAN 6 for Desktop* provides support for hybrid and all-flash storage configurations for customers using vSAN exclusively for virtual desktop infrastructure.

The following table lists ordering information for the VMware vSAN License and Subscription options.

Table 31. VMware vSAN License and Subscription options

Description	Part number	Feature code
vSAN 6 Standard		
VMware vSAN 6 Standard for 1 Processor w/1Yr Support	7S06001HWW	B28W
VMware vSAN 6 Standard for 1 Processor w/3Yr Support	7S06004TWW	B2C6
VMware vSAN 6 Standard for 1 Processor w/5Yr Support	7S060083WW	B2FG
vSAN 6 Advanced		
VMware vSAN 6 Advanced for 1 Processor w/1Yr Support	7S06001MWW	B290
VMware vSAN 6 Advanced for 1 Processor w/3Yr Support	7S06004XWW	B2CA
VMware vSAN 6 Advanced for 1 Processor w/5Yr Support	7S060087WW	B2FL
vSAN 6 Enterprise		
VMware vSAN 6 Enterprise for 1 Processor w/1Yr Support	7S06001RWW	B294
VMware vSAN 6 Enterprise for 1 Processor w/3Yr Support	7S060051WW	B2CE
VMware vSAN 6 Enterprise for 1 Processor w/5Yr Support	7S06008BWW	B2FQ
vSAN 6 Enterprise Plus		
VMware vSAN 6 Enterprise Plus for 1 Processor w/1Y Support and Subscription	7S0600FRWW	S226
VMware vSAN 6 Enterprise Plus for 1 Processor w/3Y Support and Subscription	7S0600FSWW	S227
VMware vSAN 6 Enterprise Plus for 1 Processor w/5Y Support and Subscription	7S0600FTWW	S228
vSAN 6 Standard for Remote Office Branch Office (ROBO)		
VMware vSAN 6 Standard for Rmt Off Brnch Off 25VM Pk w/1Yr Support	7S06001LWW	B28Z
VMware vSAN 6 Standard for Rmt Off Brnch Off 25VM Pk w/3Yr Support	7S06004WWW	B2C9
VMware vSAN 6 Standard for Rmt Off Brnch Off 25VM Pk w/5Yr Support	7S060086WW	B2FK
vSAN 6 Advanced for Remote Office Branch Office		
VMware vSAN 6 Advanced for Rmt Off Brnch Off 25VM Pk w/1Yr Support	7S06001QWW	B293
VMware vSAN 6 Advanced for Rmt Off Brnch Off 25VM Pk w/3Yr Support	7S060050WW	B2CD
VMware vSAN 6 Advanced for Rmt Off Brnch Off 25VM Pk w/5Yr Support	7S06008AWW	B2FP
vSAN 6 Enterprise for Remote Office Branch Office		
VMware vSAN 6 Enterprise for Rmt Off Brnch Off 25VM Pk w/1Yr Support	7S06001UWW	B297
VMware vSAN 6 Enterprise for Rmt Off Brnch Off 25VM Pk w/3Yr Support	7S060054WW	B2CH
VMware vSAN 6 Enterprise for Rmt Off Brnch Off 25VM Pk w/5Yr Support	7S06008EWW	B2FT
vSAN 6 Standard for Desktop		
VMware vSAN 6 Standard for Desktop 10 Conc User Pk w/1Yr Support	7S06001JWW	B28X
VMware vSAN 6 Standard for Desktop 10 Conc User Pk w/3Yr Support	7S06004UWW	B2C7
VMware vSAN 6 Standard for Desktop 10 Conc User Pk w/5Yr Support	7S060084WW	B2FH
VMware vSAN 6 Standard for Desktop 100 Conc User Pk w/1Yr Support	7S06001KWW	B28Y
VMware vSAN 6 Standard for Desktop 100 Conc User Pk w/3Yr Support	7S06004VWW	B2C8
VMware vSAN 6 Standard for Desktop 100 Conc User Pk w/5Yr Support	7S060085WW	B2FJ
vSAN 6 Advanced for Desktop		
VMware vSAN 6 Advanced for Desktop 10 Conc User Pk w/1Yr Support	7S06001NWW	B291
VMware vSAN 6 Advanced for Desktop 10 Conc User Pk w/3Yr Support	7S06004YWW	B2CB
VMware vSAN 6 Advanced for Desktop 10 Conc User Pk w/5Yr Support	7S060088WW	B2FM
VMware vSAN 6 Advanced for Desktop 100 Conc User Pk w/1Yr Support	7S06001PWW	B292

Description	Part number	Feature code
VMware vSAN 6 Advanced for Desktop 100 Conc User Pk w/3Yr Support	7S06004ZWW	B2CC
VMware vSAN 6 Advanced for Desktop 100 Conc User Pk w/5Yr Support	7S060089WW	B2FN
vSAN 6 Enterprise for Desktop		
VMware vSAN 6 Enterprise for Desktop 10 Conc User Pk w/1Yr Support	7S06001SWW	B295
VMware vSAN 6 Enterprise for Desktop 10 Conc User Pk w/3Yr Support	7S060052WW	B2CF
VMware vSAN 6 Enterprise for Desktop 10 Conc User Pk w/5Yr Support	7S06008CWW	B2FR
VMware vSAN 6 Enterprise for Desktop 100 Conc User Pk w/1Yr Support	7S06001TWW	B296
VMware vSAN 6 Enterprise for Desktop 100 Conc User Pk w/3Yr Support	7S060053WW	B2CG
VMware vSAN 6 Enterprise for Desktop 100 Conc User Pk w/5Yr Support	7S06008DWW	B2FS

The following table compares features of the VMware vSAN software editions.

Table 32. VMware vSAN software editions feature comparison

Feature	VMware vSAN software edition			
	Standard	Advanced	Enterprise	Enterprise Plus
Licensing for data center	Processor-based (per 1 processor)			
Licensing for ROBO	VM-based (per 25 VMs)*			Not applicable
Licensing for Desktop	Concurrent user-based (per 10 or 100 users)			Not applicable
Cluster size	2 - 64	2 - 64	2 - 64	2 - 64
Storage-Policy Based Management	Yes	Yes	Yes	Yes
Flash Read/Write Caching	Yes	Yes	Yes	Yes
Distributed RAID	Yes	Yes	Yes	Yes
Virtual Distributed Switch	Yes	Yes	Yes	Yes
Rack Awareness	Yes	Yes	Yes	Yes
vSphere Replication	Yes	Yes	Yes	Yes
Software Checksum	Yes	Yes	Yes	Yes
All-Flash Hardware	Yes	Yes	Yes	Yes
iSCSI Target Service	Yes	Yes	Yes	Yes
IOPS Limit	Yes	Yes	Yes	Yes
Deduplication and Compression	No	Yes**	Yes**	Yes**
RAID-5/6 Erasure Coding	No	Yes**	Yes**	Yes**
Data-at-Rest Encryption	No	No	Yes	Yes
Stretched Cluster with Local Failure Protection	No	No	Yes	Yes
vRealize Operations Advanced	No	No	No	Yes

* A maximum of 25 VMs is supported at any single location under the ROBO license. Two or more nodes can be used in a cluster under the ROBO license, however, the maximum number of VMs at the location must not exceed 25.
** Requires All-Flash configurations; hybrid configurations not supported.

VMware vSphere License and Subscription

Lenovo offers the following VMware vSphere License and Subscription options that can be purchased for ThinkAgile VX Certified Nodes:

- *VMware vSphere 6 Standard* provides an entry-level solution for basic server consolidation and business continuity.
- *VMware vSphere 6 Enterprise Plus* offers resource management with enhanced application availability and performance for server virtualization and cloud solutions.
- *VMware vSphere 6 Remote Office Branch Office (ROBO) Standard* provides remote site server virtualization with business continuity and backup features.
- *VMware vSphere 6 Remote Office Branch Office Advanced* provides remote site server virtualization that offers business continuity and backup with advanced features such as standardization of host configurations.

Note: Lenovo also offers *VMware vSphere 6 Remote Office Branch Office (ROBO) Enterprise* as a part of the VMware 6 HCI Kit for ROBO Standard or Advanced, and it provides remote site server virtualization and consolidation with business continuity and backup, standardization of host configurations, and data security through encryption.

The following table lists ordering information for the VMware vSphere License and Subscription options.

Table 33. VMware vSphere License and Subscription options

Description	Part number	Feature code
vSphere 6 Standard		
VMware vSphere 6 Standard for 1 Processor w/1Yr Support	7S060003WW	B27G
VMware vSphere 6 Standard for 1 Processor w/3Yr Support	7S06003DWW	B2AS
VMware vSphere 6 Standard for 1 Processor w/5Yr Support	7S06006PWW	B2E2
vSphere 6 Enterprise Plus		
VMware vSphere 6 Enterprise Plus for 1 Processor w/1Yr Support	7S060004WW	B27H
VMware vSphere 6 Enterprise Plus for 1 Processor w/3Yr Support	7S06003EWW	B2AT
VMware vSphere 6 Enterprise Plus for 1 Processor w/5Yr Support	7S06006QWW	B2E3
vSphere 6 for Remote Office Branch Office Standard		
VMware vSphere 6 Remote Off Branch Off Std (25 VM Pk) w/1Yr Support	7S060009WW	B27N
VMware vSphere 6 Remote Off Branch Off Std (25 VM Pk) w/3Yr Support	7S06003KWW	B2AY
VMware vSphere 6 Remote Off Branch Off Std (25 VM Pk) w/5Yr Support	7S06006VWW	B2E8
vSphere 6 for Remote Office Branch Office Advanced		
VMware vSphere 6 Remote Off Branch Off Adv (25 VM Pk) w/1Yr Support	7S06000AWW	B27P
VMware vSphere 6 Remote Off Branch Off Adv (25 VM Pk) w/3Yr Support	7S06003LWW	B2AZ
VMware vSphere 6 Remote Off Branch Off Adv (25 VM Pk) w/5Yr Support	7S06006WWW	B2E9

The following table compares features of the VMware vSphere software editions.

Table 34. VMware vSphere software editions feature comparison

Feature	VMware vSphere software edition				
	Standard	**Enterprise Plus**	**ROBO Standard**	**ROBO Advanced**	**ROBO Enterprise**
Licensing	Processor-based (per 1 processor)		VM-based (per 25 VMs)		
Hypervisor	Yes	Yes	Yes	Yes	Yes
vMotion	Yes	Yes	Yes	Yes	Yes
Storage vMotion	Yes	Yes	Yes	Yes	Yes
Cross-Switch vMotion	Yes	Yes	No	No	No
Fault Tolerance	2 vCPU	8 vCPU	2 vCPU	4 vCPU	4 vCPU
Data Protection and Replication	Yes	Yes	Yes	Yes	Yes
Virtual Volumes	Yes	Yes	Yes	Yes	Yes
Storage-Policy Based Management	Yes	Yes	Yes	Yes	Yes
APIs for Storage Awareness	Yes	Yes	No	No	No
APIs for Array Integration, Multipathing	Yes	Yes	No	No	No
Content Library	Yes	Yes	No	No	No
vCenter High Availability	Yes*	Yes*	No	No	No
vCenter Backup and Restore	Yes*	Yes*	No	No	No
vCenter Server Appliance Migration Tool	Yes*	Yes*	No	No	No
Virtual Machine Encryption	No	Yes	No	No	Yes
Proactive High Availability	No	Yes	No	No	No
vSphere Integrated Containers	No	Yes	No	Yes	Yes
Distributed Resource Scheduler (DRS)	No	Yes	No	No	Yes**
Distributed Power Management	No	Yes	No	No	No
Big Data Extensions	No	Yes	No	No	No
Distributed Switch	No	Yes	No	Yes	Yes
Storage DRS	No	Yes	No	No	No
I/O Controls (Network and Storage) and SR-IOV	No	Yes	No	No	No
Host Profiles and Auto Deploy	No	Yes	No	Yes	Yes
Flash Read Cache	No	Yes	No	No	No
Cross-vCenter and Long Distance vMotion	No	Yes	No	No	No
vGPU	No	Yes	No	No	No

* Requires vCenter Server Standard.
** DRS Maintenance Mode functionality.

VMware HCI Kit License and Subscription

Lenovo offers the following VMware HCI license bundles for ThinkAgile VX Certified Nodes that include both vSphere and vSAN License and Subscription options:

- VMware HCI Kit Essentials (For 3 nodes):
  - vSphere Essentials Plus
  - vSAN Standard
- VMware HCI Kit Standard (Per CPU):
  - vSphere Standard
  - vSAN Standard
- VMware HCI Kit Advanced (Per CPU):
  - vSphere Enterprise Plus
  - vSAN Advanced
- VMware HCI Kit Enterprise (Per CPU):
  - vSphere Enterprise Plus
  - vSAN Enterprise
- VMware HCI Kit with Operations Management (Per CPU):
  - vSphere Enterprise Plus
  - vSAN Enterprise Plus
- VMware HCI Kit ROBO Standard (Per 25 VMs):
  - vSphere ROBO Enterprise
  - vSAN ROBO Standard
- VMware HCI Kit ROBO Advanced (Per 25 VMs):
  - vSphere ROBO Enterprise
  - vSAN ROBO Advanced

Note: *VMware vSphere Essentials Plus* provides server virtualization and consolidation with centralized management and business continuity for up to three nodes, and it includes the following features: vSphere Hypervisor, vMotion, Cross-Switch vMotion, High Availability, Data Protection and Replication, and vCenter Server Essentials.

The following table lists ordering information for the VMware HCI Kit License and Subscription options.

Table 35. VMware HCI Kit License and Subscription options

Description	Part number	Feature code
HCI Kit Essentials		
VMware HCI Kit Essentials for 3 Nodes w/1Yr Support	7S0600A6WW	S04C
VMware HCI Kit Essentials for 3 Nodes w/3Yr Support	7S0600A9WW	S04F
VMware HCI Kit Essentials for 3 Nodes w/5Yr Support	7S0600ACWW	S04J
HCI Kit Standard		
VMware HCI Kit Standard (Per CPU) w/1Yr Support	7S06001XWW	B29A
VMware HCI Kit Standard (Per CPU) w/3Yr Support	7S060057WW	B2CL
VMware HCI Kit Standard (Per CPU) w/5Yr Support	7S06008HWW	B2FW
HCI Kit Advanced		
VMware HCI Kit Advanced (Per CPU) w/1Yr Support	7S06001YWW	B29B
VMware HCI Kit Advanced (Per CPU) w/3Yr Support	7S060058WW	B2CM
VMware HCI Kit Advanced (Per CPU) w/5Yr Support	7S06008JWW	B2FX
HCI Kit Enterprise		
VMware HCI Kit Enterprise (Per CPU) w/1Yr Support	7S06001ZWW	B29C
VMware HCI Kit Enterprise (Per CPU) w/3Yr Support	7S060059WW	B2CN

Description	Part number	Feature code
VMware HCI Kit Enterprise (Per CPU) w/5Yr Support	7S06008KWW	B2FY
HCI Kit Enterprise with Operations Management		
VMware HCI Kit 6 with Operations Management (Per CPU) w/1Y S&S	7S0600GFWW	S22W
VMware HCI Kit 6 with Operations Management (Per CPU) w/3Y S&S	7S0600GGWW	S22X
VMware HCI Kit 6 with Operations Management (Per CPU) w/5Y S&S	7S0600GHWW	S22Y
HCI Kit Standard for Remote Office Branch Office		
VMware HCI Kit 6 for Remote Office Branch Office Standard (25 VM pack) w/1Y S&S	7S0600G6WW	S22M
VMware HCI Kit 6 for Remote Office Branch Office Standard (25 VM pack) w/3Y S&S	7S0600G7WW	S22N
VMware HCI Kit 6 for Remote Office Branch Office Standard (25 VM pack) w/5Y S&S	7S0600G8WW	S22P
HCI Kit Advanced for Remote Office Branch Office		
VMware HCI Kit 6 for Remote Office Branch Office Advanced (25 VM pack) w/1Y S&S	7S0600G3WW	S22J
VMware HCI Kit 6 for Remote Office Branch Office Advanced (25 VM pack) w/3Y S&S	7S0600G4WW	S22K
VMware HCI Kit 6 for Remote Office Branch Office Advanced (25 VM pack) w/5Y S&S	7S0600G5WW	S22L

VMware Horizon 7

Lenovo offers the following VMware Horizon 7 License and Subscription options for Virtual Desktop Infrastructure (VDI) deployments that can be purchased for the ThinkAgile VX Certified Nodes:

- *VMware Horizon 7 Standard* delivers simple, powerful VDI with great user experience, and it includes VMware vSphere Desktop (delivers the full range of vSphere 6 Enterprise Plus features for desktop workloads) and vCenter Server for Desktop.
- *VMware Horizon 7 Advanced* delivers desktops and applications for physical and virtual machines through a unified workspace, and it includes VMware vSphere Desktop, vCenter Server for Desktop, and vSAN Advanced for Desktop with All-Flash.
- *VMware Horizon 7 Enterprise* delivers desktops and applications with closed-loop management and automation, and it includes VMware vSphere Desktop, vCenter Server for Desktop, and vSAN Advanced for Desktop with All-Flash.

The Standard license is available in 10-user or 100-user packs for concurrent users, and the Advanced and Enterprise licenses are available in 10-user or 100-user packs for concurrent or named users.

The following table lists ordering information for the VMware Horizon License and Subscription options.

Table 36. VMware Horizon License and Subscription options

Description	Part number	Feature code
Horizon 7 Standard		
VMware Horizon 7 Standard 10 Concurrent User Pack w/1Yr Support	7S06000KWW	B27Y
VMware Horizon 7 Standard 10 Concurrent User Pack w/3Yr Support	7S06003VWW	B2B8
VMware Horizon 7 Standard 10 Concurrent User Pack w/5Yr Support	7S060075WW	B2EJ
VMware Horizon 7 Standard 100 Concurrent User Pack w/1Yr Support	7S06000LWW	B27Z
VMware Horizon 7 Standard 100 Concurrent User Pack w/3Yr Support	7S06003WWW	B2B9
VMware Horizon 7 Standard 100 Concurrent User Pack w/5Yr Support	7S060076WW	B2EK
Horizon 7 Advanced		
VMware Horizon 7 Advanced 10 Concurrent User Pack w/1Yr Support	7S06000PWW	B282
VMware Horizon 7 Advanced 10 Concurrent User Pack w/3Yr Support	7S06003ZWW	B2BC
VMware Horizon 7 Advanced 10 Concurrent User Pack w/5Yr Support	7S060079WW	B2EN
VMware Horizon 7 Advanced 10 Named User Pack w/1Yr Support	7S06000RWW	B284
VMware Horizon 7 Advanced 10 Named User Pack w/3Yr Support	7S060041WW	B2BE
VMware Horizon 7 Advanced 10 Named User Pack w/5Yr Support	7S06007BWW	B2EQ
VMware Horizon 7 Advanced 100 Concurrent User Pack w/1Yr Support	7S06000QWW	B283
VMware Horizon 7 Advanced 100 Concurrent User Pack w/3Yr Support	7S060040WW	B2BD
VMware Horizon 7 Advanced 100 Concurrent User Pack w/5Yr Support	7S06007AWW	B2EP
VMware Horizon 7 Advanced 100 Named User Pack w/1Yr Support	7S06000SWW	B285
VMware Horizon 7 Advanced 100 Named User Pack w/3Yr Support	7S060042WW	B2BF
VMware Horizon 7 Advanced 100 Named User Pack w/5Yr Support	7S06007CWW	B2ER
Horizon 7 Enterprise		
VMware Horizon 7 Enterprise 10 Concurrent User Pack w/1Yr Support	7S06000XWW	B28A
VMware Horizon 7 Enterprise 10 Concurrent User Pack w/3Yr Support	7S060047WW	B2BL
VMware Horizon 7 Enterprise 10 Concurrent User Pack w/5Yr Support	7S06007HWW	B2EW
VMware Horizon 7 Enterprise 10 Named User Pack w/1Yr Support	7S06000ZWW	B28C
VMware Horizon 7 Enterprise 10 Named User Pack w/3Yr Support	7S060049WW	B2BN
VMware Horizon 7 Enterprise 10 Named User Pack w/5Yr Support	7S06007KWW	B2EY
VMware Horizon 7 Enterprise 100 Concurrent User Pack w/1Yr Support	7S06000YWW	B28B
VMware Horizon 7 Enterprise 100 Concurrent User Pack w/3Yr Support	7S060048WW	B2BM
VMware Horizon 7 Enterprise 100 Concurrent User Pack w/5Yr Support	7S06007JWW	B2EX
VMware Horizon 7 Enterprise 100 Named User Pack w/1Yr Support	7S060010WW	B28D
VMware Horizon 7 Enterprise 100 Named User Pack w/3Yr Support	7S06004AWW	B2BP
VMware Horizon 7 Enterprise 100 Named User Pack w/5Yr Support	7S06007LWW	B2EZ

The following table compares key features of the VMware Horizon software editions.

Table 37. VMware Horizon software editions feature comparison

Feature	VMware Horizon software edition		
	Standard	**Advanced**	**Enterprise**
Licensing	User-based (per 10 or 100 users)		
Concurrent Users	Yes	Yes	Yes
Named Users	No	Yes	Yes
Windows Virtual Desktops	Yes	Yes	Yes
Linux Virtual Desktops	No	No	Yes
Packaged Applications	Yes	Yes	Yes
Hosted Applications	No	Yes	Yes
Session-based Desktops	No	Yes	Yes
Single Sign-On for Application and Desktop Access	No	Yes	Yes
Image Management for Physical Desktop	No	Yes	Yes
Virtualization Pack for Skype for Business	No	Yes	Yes
Session Collaboration	No	No	Yes
Real-time Application Delivery	No	No	Yes
Just-in-Time Delivery with Instant Clone Technology	No	No	Yes
User, Profile, and Policy Management	No	No	Yes
Health Monitoring and Performance Analytics	No	No	Yes
Capacity Management: Planning and Optimization	No	No	Yes
Help Desk Tool	No	No	Yes

VMware Cloud Foundation

Lenovo offers VMware Cloud Foundation for hybrid cloud deployments of the ThinkAgile VX Certified Nodes. VMware Cloud Foundation is an integrated software platform that automates the deployment and lifecycle management of a complete software-defined data center (SDDC) in hyperconverged environments.

The following Cloud Foundation License and Subscription options are offered:

- *Cloud Foundation Basic* includes vSphere Enterprise Plus, vSAN Advanced, NSX Data Center Professional, and SDDC Manager.
- *Cloud Foundation Standard* includes vSphere Enterprise plus, vSAN Advanced, NSX Data Center Advanced, vRealize Suite Standard, vRealize Network Insight Advanced, and SDDC Manager.
- *Cloud Foundation Advanced* includes vSphere Enterprise plus, vSAN Advanced, NSX Data Center Advanced, vRealize Suite Enterprise, vRealize Network Insight Advanced, and SDDC Manager.
- *Cloud Foundation Enterprise* includes vSphere Enterprise plus, vSAN Enterprise, NSX Data Center Enterprise plus, vRealize Suite Enterprise, vRealize Network Insight Enterprise, and SDDC Manager.
- *Cloud Foundation for VDI* includes SDDC Manager for Desktop and NSX Data Center Advanced or Enterprise plus for Desktop, and it comes with or without Horizon Enterprise.

Configuration note: vCenter Server that is required for Cloud Foundation is licensed separately; only one vCenter Server license is required for all vCenter Servers deployed in a Cloud Foundation system.

The following table lists ordering information for the VMware Cloud Foundation License and Subscription options.

Table 38. VMware Cloud Foundation License and Subscription options

Description	Part number	Feature code
VMware Cloud Foundation Basic		
VMware Cloud Foundation Basic (Per CPU) w/1Yr Subscription and Support	7S0600D0WW	S1RQ
VMware Cloud Foundation Basic (Per CPU) w/3Yr Subscription and Support	7S0600D1WW	S1RR
VMware Cloud Foundation Basic (Per CPU) w/5Yr Subscription and Support	7S0600D2WW	S1RS
VMware Cloud Foundation Standard		
VMware Cloud Foundation Standard (Per CPU) w/1Y Subscription and Support	7S0600DMWW	S1SB
VMware Cloud Foundation Standard (Per CPU) w/3Y Subscription and Support	7S0600DNWW	S1SC
VMware Cloud Foundation Standard (Per CPU) w/5Y Subscription and Support	7S0600DPWW	S1SD
VMware Cloud Foundation Advanced		
VMware Cloud Foundation Advanced (Per CPU) w/1Y Subscription and Support	7S0600DQWW	S1SE
VMware Cloud Foundation Advanced (Per CPU) w/3Y Subscription and Support	7S0600DRWW	S1SF
VMware Cloud Foundation Advanced (Per CPU) w/5Y Subscription and Support	7S0600DSWW	S1SG
VMware Cloud Foundation Enterprise		
VMware Cloud Foundation Enterprise (Per CPU) w/1Y Subscription and Support	7S0600DTWW	S1SH
VMware Cloud Foundation Enterprise (Per CPU) w/3Y Subscription and Support	7S0600DUWW	S1SJ
VMware Cloud Foundation Enterprise (Per CPU) w/5Y Subscription and Support	7S0600DVWW	S1SK
VMware Cloud Foundation for VDI with NSX Data Center Advanced and Horizon Enterprise		
VCF for VDI: SDDC Mgr, NSX DC ADV, and Horizon ENT 10 pack (Per CCU) w/1Y S&S	7S0600D6WW	S1RW
VCF for VDI: SDDC Mgr, NSX DC ADV, and Horizon ENT 10 pack (Per CCU) w/3Y S&S	7S0600D7WW	S1RX
VCF for VDI: SDDC Mgr, NSX DC ADV, and Horizon ENT 10 pack (Per CCU) w/5Y S&S	7S0600D8WW	S1RY
VCF for VDI: SDDC Mgr, NSX DC ADV, and Horizon ENT 100 pack (Per CCU) w/1Y S&S	7S0600D3WW	S1RT
VCF for VDI: SDDC Mgr, NSX DC ADV, and Horizon ENT 100 pack (Per CCU) w/3Y S&S	7S0600D4WW	S1RU
VCF for VDI: SDDC Mgr, NSX DC ADV, and Horizon ENT 100 pack (Per CCU) w/5Y S&S	7S0600D5WW	S1RV
VMware Cloud Foundation for VDI with NSX Data Center Advanced (no Horizon included)		
VCF for VDI: SDDC Mgr and NSX DC ADV w/o Horizon ENT 10 pack (per CCU) w/1Y S&S	7S0600DCWW	S1S2
VCF for VDI: SDDC Mgr and NSX DC ADV w/o Horizon ENT 10 pack (per CCU) w/3Y S&S	7S0600DDWW	S1S3
VCF for VDI: SDDC Mgr and NSX DC ADV w/o Horizon ENT 10 pack (per CCU) w/5Y S&S	7S0600DEWW	S1S4
VCF for VDI: SDDC Mgr and NSX DC ADV w/o Horizon ENT 100 pack (per CCU) w/1Y S&S	7S0600D9WW	S1RZ
VCF for VDI: SDDC Mgr and NSX DC ADV w/o Horizon ENT 100 pack (per CCU) w/3Y S&S	7S0600DAWW	S1Z7
VCF for VDI: SDDC Mgr and NSX DC ADV w/o Horizon ENT 100 pack (per CCU) w/5Y S&S	7S0600DBWW	S1Z8
VMware Cloud Foundation for VDI with NSX Data Center Enterprise plus (no Horizon included)		
VCF for VDI: SDDC Mgr and NSX DC ENT+ w/o Horizon ENT 10 pack (Per CCU) w/1Y S&S	7S0600DJWW	S1S8
VCF for VDI: SDDC Mgr and NSX DC ENT+ w/o Horizon ENT 10 pack (Per CCU) w/3Y S&S	7S0600DKWW	S1S9
VCF for VDI: SDDC Mgr and NSX DC ENT+ w/o Horizon ENT 10 pack (Per CCU) w/5Y S&S	7S0600DLWW	S1SA
VCF for VDI: SDDC Mgr and NSX DC ENT+ w/o Horizon ENT 100 pack (Per CCU) w/1Y S&S	7S0600DFWW	S1S5
VCF for VDI: SDDC Mgr and NSX DC ENT+ w/o Horizon ENT 100 pack (Per CCU) w/3Y S&S	7S0600DGWW	S1S6
VCF for VDI: SDDC Mgr and NSX DC ENT+ w/o Horizon ENT 100 pack (Per CCU) w/5Y S&S	7S0600DHWW	S1S7

VMware vCenter Server

VMware vCenter Server provides centralized management of vSphere environments to simplify day-to-day operations and reduce the complexity of managing virtual infrastructure.

vCenter Server is required for managing ThinkAgile VX Certified Nodes. The nodes can be added to an existing installation of vCenter Server, or the software license for the vCenter Server instance can be purchased from Lenovo by selecting one the following License and Subscription options:

- VMware vCenter Server 6 Foundation for vSphere 6 (Per Instance) (manages up to 4 hosts)
- VMware vCenter Server 6 Standard for vSphere 6 (Per Instance) (unlimited hosts)

The vCenter Server licenses purchased from Lenovo include one, three, or five years of support and subscription.

The following table lists ordering information for the VMware vCenter License and Subscription options.

Table 39. VMware vCenter Server License and Subscription options

Description	Part number	Feature code
vCenter Server Foundation		
VMware vCenter Srv 6 Fdn for vSph 6 (Per Instance) w/1Yr Support	7S06000DWW	B27S
VMware vCenter Srv 6 Fdn for vSph 6 (Per Instance) w/3Yr Support	7S06003PWW	B2B2
VMware vCenter Srv 6 Fdn for vSph 6 (Per Instance) w/5Yr Support	7S06006ZWW	B2EC
vCenter Server Standard		
VMware vCenter Srv 6 Std for vSph 6 (Per Instance) w/1Yr Support	7S06000CWW	B27R
VMware vCenter Srv 6 Std for vSph 6 (Per Instance) w/3Yr Support	7S06003NWW	B2B1
VMware vCenter Srv 6 Std for vSph 6 (Per Instance) w/5Yr Support	7S06006YWW	B2EB

VMware vCenter Server offers the following key features:

- Centralized management of virtualized hosts and virtual machines from a single console.
- Centralized inventory of virtual machines, hosts, datastores and networks.
- Alerts and notifications can trigger automated workflows to remedy and preempt problems.
- Host profiles standardize and simplify configuration and management of VMware ESXi hosts.
- Resource management for virtual machines allows to control allocation of processor, memory, disk and network resources.
- Continuously monitors utilization across resource pools and intelligently allocates available resources among virtual machines according to predefined rules
- Automatically restarts virtual machines that have failed without manual intervention with VMware vSphere HA.
- Maintains records of significant configuration changes and exports reports for event tracking.
- Patch management enforces compliance to patch standards through automated scanning and patching of online ESXi hosts and select Microsoft and Linux virtual machines.

Systems management

The ThinkAgile VX 2U Certified Nodes support the following systems management tools:

- Lenovo XClarity Controller
- Light path diagnostics
- Lenovo XClarity Administrator and XClarity Pro
- Lenovo XClarity Integrator for VMware vCenter
- Lenovo XClarity Energy Manager

Lenovo XClarity Controller

The ThinkAgile VX Certified Nodes contain Lenovo XClarity Controller (XCC), which provides advanced service-processor control, monitoring, and alerting functions. XClarity Controller offers three functional levels: Standard, Advanced, and Enterprise.

By default, the VX Certified Nodes include XClarity Controller Standard features, and they can be configured for Advanced or Enterprise functionality by using the Features on Demand (FoD) upgrades.

XClarity Controller Standard offers the following capabilities:

- Gathering and viewing system information and inventory
- Monitoring system status and health
- Alerting and notifications
- Event logging
- Configuring network connectivity
- Configuring security
- Updating system firmware
- Configuring server settings and devices
- Real-time power usage monitoring
- Remotely controlling server power (Power on, Power off, Restart)
- Managing FoD activation keys
- Redirecting serial console via IPMI
- Capturing the video display contents when an operating system hang condition is detected

XClarity Controller Advanced Upgrade adds the following functionality to the Standard features:

- Remotely viewing video with the following graphics resolutions:
  - Up to 1600x1200 with up to 23 bits per pixel; or
  - Up to 1920x1200 with up to 15 bits per pixel
- Remotely accessing the server using the keyboard and mouse from a remote client
- Remotely deploying an operating system
- Syslog alerting
- Redirecting serial console via SSH
- Displaying graphics for real-time and historical power usage data and temperature

XClarity Controller Enterprise Upgrade adds the following functionality to the Advanced features:

- Capping power usage
- Mapping the ISO and image files located on the local client as virtual drives for use by the server
- Mounting the remote ISO and image files via HTTPS, SFTP, CIFS, and NFS
- Collaborating across up to six users of the virtual console
- Controlling quality and bandwidth usage

The XClarity Controller provides remote server management through the following interfaces:

- Intelligent Platform Management Interface (IPMI) Version 2.0
- Simple Network Management Protocol (SNMP) Version 3
- Common Information Model (CIM)
- Data Center Manageability Interface (DCMI) Version 1.5
- Redfish REpresentational State Transfer (REST) API
- Web browser with HTML5 support
- Command-line interface
- Virtual Operator Panel with XClarity Mobile App via the front USB port with XClarity Controller access

Virtual Operator Panel provides quick access to system status, firmware, network, health, and alerts information. With proper authentication, it also allows to configure systems management and network settings and to control system power (Power on, Power off, Restart). The Virtual Operator Panel can be accessed from the XClarity Mobile App running on the Android or iOS mobile device that is connected to the front USB port with XClarity Controller access (See Components and connectors).

The following table lists the XClarity Controller FoD upgrades.

Table 40. XClarity Controller FoD upgrades

Description	Part number	Feature code	Maximum quantity
ThinkSystem XClarity Controller Standard to Advanced Upgrade	4L47A09132	AVUT	1
ThinkSystem XClarity Controller Standard to Enterprise Upgrade	None*	AUPW	1
ThinkSystem XClarity Controller Advanced to Enterprise Upgrade	4L47A09133	None**	1

* Factory-installed only.
** Field-upgrade only.

Configuration notes:

- For factory-installed upgrades, either Standard to Advanced Upgrade (feature AVUT) or Standard to Enterprise Upgrade (feature AUPW) can be selected, but not both.
- For field upgrades, the Advanced to Enterprise Upgrade (4L47A09133) requires the Standard to Advanced Upgrade to be activated on the server previously with either the factory-installed feature AVUT or field upgrade 4L47A09132.

Light path diagnostics

The ThinkAgile VX 2U Certified Nodes include basic light path diagnostics, which provides the system LEDs on the front of the node and the LEDs near the monitored components (for example, the DIMM error LEDs on the system board).

Lenovo XClarity Administrator and XClarity Pro

Lenovo XClarity Administrator is a centralized systems management solution that helps administrators deliver infrastructure faster. This solution integrates easily with Lenovo x86 servers, appliances, certified nodes, Top-of-Rack Ethernet switches, and storage systems, providing automated agent-less discovery, inventory, monitoring, and alerts across multiple systems. In addition, some managed endpoints support firmware updates and configuration management.

Lenovo XClarity Administrator is an optional software component for managing ThinkAgile VX Certified Nodes which can be downloaded and used at no charge to discover and monitor the nodes and manage firmware upgrades for them.

If software support is required for XClarity Administrator and XClarity Integrator for vCenter, Lenovo XClarity Pro software subscription should be ordered. Lenovo XClarity Pro is licensed on a per managed system basis, that is, each managed Lenovo system requires a license.

The following table lists the geo-specific Lenovo XClarity software license options.

Table 41. Lenovo XClarity software options

Description	Part number (NA, AP, Japan)*	Part number (EMEA, LA)**
Lenovo XClarity Pro, per Managed Endpoint w/1 Yr SW S&S	00MT201	00MT207
Lenovo XClarity Pro, per Managed Endpoint w/3 Yr SW S&S	00MT202	00MT208
Lenovo XClarity Pro, per Managed Endpoint w/5 Yr SW S&S	00MT203	00MT209

* NA = North America; AP = Asia Pacific.
** EMEA = Europe, Middle East, Africa; LA = Latin America.

Lenovo XClarity Administrator offers the following standard features that are available at no charge:

- Auto-discovery and monitoring of VX Certified Nodes
- Firmware updates and compliance enforcement
- External alerts and notifications via SNMP traps, syslog remote logging, and e-mail
- Secure connections to managed endpoints
- NIST 800-131A or FIPS 140-2 compliant cryptographic standards between the management solution and managed endpoints
- Integration into existing higher-level management systems such as cloud automation and orchestration tools through REST APIs, providing extensive external visibility and control over hardware resources
- An intuitive, easy-to-use GUI
- Scripting with Windows PowerShell, providing command-line visibility and control over hardware resources

Lenovo XClarity Administrator offers the following premium features that require an optional Pro license:

- Pattern-based configuration management that allows to define configurations once and apply repeatedly without errors when deploying new servers or redeploying existing servers without disrupting the fabric
- Bare-metal deployment of operating systems and hypervisors to streamline infrastructure provisioning

For more information, refer to the Lenovo XClarity Administrator Product Guide:
http://lenovopress.com/tips1200

Lenovo XClarity Integrator for VMware vCenter

Lenovo XClarity Integrator for VMware vCenter is a software plug-in module for Lenovo XClarity Administrator that allows administrators to manage physical infrastructure from leading external virtualization management software tool from VMware.

Lenovo XClarity Integrator for VMware vCenter offers the following features:

- Ability to discover, manage, and monitor Lenovo node hardware from the virtualization management tool
- Deployment of firmware updates to VX Certified Nodes from the virtualization management tool
- Non-disruptive server maintenance in clustered environments that reduces workload downtime by dynamically migrating workloads from affected hosts during rolling server updates or reboots
- Greater service level uptime and assurance in clustered environments during unplanned hardware events by dynamically triggering workload migration from impacted hosts when impending hardware failures are predicted

Lenovo XClarity Integrator for VMware vCenter can be downloaded and used at no charge. For more information, refer to the Lenovo XClarity Integrator for VMware vCenter web page:
https://support.lenovo.com/us/en/solutions/lnvo-vmware

Lenovo XClarity Energy Manager

Lenovo XClarity Energy Manager provides a stand-alone, web-based agent-less power management console that provides real time data and enables you to observe, plan and manage power and cooling for Lenovo servers, appliances, and certified nodes. Using built-in intelligence, XClarity Energy Manager identifies server power consumption trends and ideal power settings, and it performs cooling analysis so that customers can define and optimize their power-saving policies.

Lenovo XClarity Energy Manager offers the following capabilities:

- Monitors room, row, rack, and device levels in the data center
- Reports vital system information, such as power, temperature and resource utilization
- Monitors inlet temperature to locate hot spots, reducing the risk of data or device damage
- Provides finely-grained controls to limit platform power in compliance with IT policy
- Generates alerts when a user-defined threshold is reached

Lenovo XClarity Energy Manager is an optional software component for VX Certified Nodes that is licensed on a per managed node basis, that is, each managed system requires a license. The 1-node Energy Manager license is included in the XClarity Controller Enterprise upgrade.

To manage systems without XClarity Controller Enterprise licenses, a node license pack should be purchased. The following table lists the geo-specific Lenovo XClarity Energy Manager software license options.

Table 42. Lenovo XClarity Energy Manager software options

Description	Part number (NA, AP, Japan)*	Part number (EMEA, LA)**
Lenovo XClarity Energy Manager, 1 Node w/ 1 Yr S&S	01DA225	01DA228

* NA = North America; AP = Asia Pacific.
** EMEA = Europe, Middle East, Africa; LA = Latin America.

For more information, refer to the Lenovo XClarity Energy Manager web page:
http://datacentersupport.lenovo.com/us/en/solutions/lnvo-lxem

Physical specifications

The ThinkAgile VX 2U Certified Nodes have the following dimensions and weight (approximate):

- Height: 87 mm (3.4 in.)
- Width: 445 mm (17.5 in.)
- Depth: 720 mm (28.3 in.)
- Weight (maximum): 32 kg (70.5 lb)

Operating environment

The ThinkAgile VX 2U Certified Nodes comply with ASHRAE class A2 specifications. The node performance might be impacted when the operating temperature is outside the ASHRAE A2 specifications. Depending on the hardware configuration, some VX Certified Nodes comply with ASHRAE class A3 and class A4 specifications. To comply with ASHRAE class A3 and class A4 specifications, the nodes must meet the following hardware configuration requirements at the same time:

- Two power supplies installed.
- NVMe drives not installed.
- Processors with TDP more than or equal to 150 W not installed.
- Intel Xeon 4112, 5122, 6126, 6128, 6132, 6134, 6134M, and 8156 processors not installed.

Note: The 2U VX Certified Nodes with GPU adapters comply with ASHRAE class A2 specifications only.

The ThinkAgile VX 2U Certified Nodes are supported in the following environment:

- Air temperature:
  - Operating:
    - ASHRAE Class A4: 5 °C - 45 °C (41 °F - 113 °F); for altitudes above 900 m (2,953 ft), decrease the maximum ambient temperature by 1 °C for every 125-m (410-ft) increase in altitude
    - ASHRAE Class A3: 5 °C - 40 °C (41 °F - 104 °F); for altitudes above 900 m (2,953 ft), decrease the maximum ambient temperature by 1 °C for every 175-m (574-ft) increase in altitude
    - ASHRAE Class A2: 10 °C - 35 °C (50 °F - 95 °F); for altitudes above 900 m (2,953 ft), decrease the maximum ambient temperature by 1 °C for every 300-m (984-ft) increase in altitude
  - Non-operating: 5 °C - 45 °C (41 °F - 113 °F)
  - Storage: -40 °C - +60 °C (-40 °F - 140 °F)
- Maximum altitude: 3,050 m (10,000 ft)
- Humidity:
  - Operating:
    - ASHRAE Class A4: 8% - 90% (non-condensing); maximum dew point: 24 °C (75 °F)
    - ASHRAE Class A3: 8% - 85% (non-condensing); maximum dew point: 24 °C (75 °F)
    - ASHRAE Class A2: 8% - 80% (non-condensing); maximum dew point: 21 °C (70 °F)
  - Storage: 8% - 90% (non-condensing)
- Electrical:
  - 100 - 127 (nominal) V AC; 50 Hz / 60 Hz (1100 W power supplies only)
  - 200 - 240 (nominal) V AC; 50 Hz / 60 Hz
  - 180 - 300 V DC (supported in China only)
- Acoustics (maximum configuration, operating): 6.2 bels
- Vibration:
  - Operating: 0.21 G rms at 5 Hz to 500 Hz for 15 minutes across 3 axes
  - Non-operating: 1.04 G rms at 2 Hz to 200 Hz for 15 minutes across 6 surfaces
- Shock:
  - Operating: 15 G for 3 milliseconds in each direction (positive and negative X, Y, and Z axes)
  - Non-operating:
    - 12 kg - 22 kg: 50 G for 152 in./sec velocity change across 6 surfaces
    - 23 kg - 31 kg: 35 G for 152 in./sec velocity change across 6 surfaces

The following table lists the maximum system power load, rated inlet current, and system heat output based on the power supply and source voltage.

Table 43. Rated system power, inlet current, and system heat output

Power supply	Source voltage	Maximum power load per system (two power supplies)	Rated current per inlet	System heat output
1100 W Platinum	100 - 127 V AC	1382 W	12 A	4715 BTU/hour
	200 - 240 V AC	1408 W	6 A	4804 BTU/hour
	180 - 300 V DC	1408 W	5.1 A	4804 BTU/hour
1600 W Platinum	200 - 240 V AC	2068 W	8.7 A	7056 BTU/hour
	180 - 300 V DC	2024 W	7.3 A	6906 BTU/hour

Regulatory compliance

The ThinkAgile VX Certified Nodes conform to the following regulations:

- United States FCC Part 15, Class A
- Canada ICES-003/NMB-03, Class A
- UL/CSA 60950-1
- Mexico NOM-019
- Argentina IEC60950-1
- Japan VCCI, Class A
- Australia/New Zealand AS/NZS CISPR 22, Class A
- China CCC GB4943.1, GB9254 Class A, GB17625.1
- Taiwan BSMI CNS13438, Class A; CNS14336-1
- Korea KN22, Class A; KN24
- Russia/GOST ME01; IEC-60950-1; GOST R 51318.22, 51318.24, 51317.3.2, and 51317.3.3
- IEC 60950-1 (CB Certificate and CB Test Report)
- Europe CE Mark (EN55022 Class A, EN60950-1, EN55024, EN61000-3-2, EN61000-3-3)
- CISPR 22, Class A
- Germany TUV-GS (EN60950-1/IEC60950-1, EK1-ITB2000)
- Reduction of Hazardous Substances (ROHS)
- Energy Star 3.0 (excluding configurations with Bronze 3104, Silver 4112, Gold 5122, or Platinum 8156 processors)

Note: For more information on the Energy Star 3.0 certification, refer to the *Energy Star 3.0 Certifications for ThinkSystem Servers* publication:
http://lenovopress.com/lp1230

Warranty and support

The ThinkAgile VX Certified Nodes can be configured with a three-, four, or five-year hardware warranty and various levels of service coverage with a well-defined scope of services, including service hours, response time, term of service, and service agreement terms and conditions.

The base warranty provides 9x5 Next Business Day response with parts delivered. Lenovo's additional support services provide a sophisticated, unified support structure for a customer's data center, with an experience consistently ranked number one in customer satisfaction worldwide.

The following Lenovo support services are available for selection:

- **Warranty service level upgrades (Preconfigured Support)** are available to meet the on-site response time targets that match the criticality of customer's systems:
  - 3, 4, or 5 years of service coverage.
  - 1-year or 2-year post-warranty extensions.
  - **Foundation Service:** 9x5 service coverage with next business day onsite response, with optional YourDrive YourData.
  - **Essential Service:** 24x7 service coverage with 4-hour onsite response or 24-hour committed repair (available only in select regions), bundled with YourDrive YourData.
  - **Advanced Service:** 24x7 service coverage with 2-hour onsite response or 6-hour committed repair (available only in select regions), bundled with YourDrive YourData.
- **Managed Services**
  Lenovo Managed Services provide continuous 24x7 remote monitoring (plus 24x7 call center availability) and proactive management of a customer's data center using state of the art tools, systems, and practices by a team of highly skilled and experienced Lenovo services professionals.

  Quarterly reviews check error logs, verify firmware and operating system device driver levels, and software as needed. Lenovo will also maintain records of latest patches, critical updates, and firmware levels, to ensure customer's systems are providing business value through optimized performance.

- **Technical Account Management (TAM)**
  A Lenovo Technical Account Manager helps customers optimize operations of their data centers based on a deep understanding of customer's business. Customers gain direct access to a Lenovo TAM, who serves as their single point of contact to expedite service requests, provide status updates, and furnish reports to track incidents over time. Also, a TAM helps proactively make service recommendations and manage service relationship with Lenovo to make certain that customer's needs are met.
- **Enterprise Software Support**
  Lenovo Enterprise Software Support is an additional support service that provides customers with software support on Microsoft, Red Hat, SUSE, and VMWare applications and systems. Around the clock availability for critical problems plus unlimited calls and incidents helps customers address challenges fast, without incremental costs. Support staff can answer troubleshooting and diagnostic questions, address product compatibility and interoperability issues, isolate causes of problems, report defects to software vendors, and more.
- **YourDrive YourData**
  Lenovo's YourDrive YourData service is a multi-drive retention offering that ensures that customer's data is always under their control, regardless of the number of drives that are installed in their Lenovo server. In the unlikely event of a drive failure, customers retain possession of their drive while Lenovo replaces the failed drive part. Customer's data stays safely on customer premises, in their hands. The YourDrive YourData service can be purchased in convenient bundles with Foundation, Essential, or Advanced services.
- **Health Check**
  Having a trusted partner who can perform regular and detailed health checks is central to maintaining efficiency and ensuring that customer systems and business are always running at their best. Health Check supports Lenovo-branded server, storage, and networking devices, as well as select Lenovo-supported products from other vendors that are sold by Lenovo or a Lenovo-Authorized Reseller.

Some regions might have different warranty terms and conditions than the standard warranty. This is due to local business practices or laws in the specific region. Local service teams can assist in explaining region-specific terms when needed. Examples of region-specific warranty terms are second or longer business day parts delivery or parts-only base warranty.

If warranty terms and conditions include onsite labor for repair or replacement of parts, Lenovo will dispatch a service technician to the customer site to perform the replacement. Onsite labor under base warranty is limited to labor for replacement of parts that have been determined to be field-replaceable units (FRUs). Parts that are determined to be customer-replaceable units (CRUs) do not include onsite labor under base warranty.

If warranty terms include parts-only base warranty, Lenovo is responsible for delivering only replacement parts that are under base warranty (including FRUs) that will be sent to a requested location for self-service. Parts-only service does not include a service technician being dispatched onsite. Parts must be changed at customer's own cost and labor and defective parts must be returned following the instructions supplied with the spare parts.

Lenovo support services are region-specific. Not all support services are available in every region. For information about Lenovo support services that are available in a specific region, refer to the following resources:

- Service part numbers in Data Center Solution Configurator (DCSC):
  http://dcsc.lenovo.com/#/services
- Lenovo Services Availability Locator
  https://lenovolocator.com/

For service definitions, region-specific details, and service limitations, refer to the following documents:

- Lenovo Statement of Limited Warranty for Infrastructure Solutions Group (ISG) Servers and System Storage
  http://pcsupport.lenovo.com/us/en/solutions/ht503310
- Lenovo Data Center Services Agreement
  http://support.lenovo.com/us/en/solutions/ht116628

Software maintenance

For the VMware software and subscription licenses provided by the customer, software support that is provided by VMware is based on the support level included with these licenses.

Lenovo offers optional one-, three-, or five-year VMware software support and subscription for ThinkAgile VX Certified Nodes that entitles customers to submit service requests to troubleshoot VMware software issues and receive code updates, including fixes, patches, and new software releases.

For the VMware vSphere, vSAN, and vCenter Server software and subscription licenses purchased from Lenovo together with the ThinkAgile VX Certified Nodes, software support that is provided by VMware includes Production-level support with 24x7 phone and web coverage with the following target response times (priorities are defined by VMware based on the impact on productivity):

- Severity 1 (Critical: Substantial loss or disruption of service, significant risk of data loss): 30 minutes
- Severity 2 (Major: Operations are severely constrained, significant impact): 4 business hours
- Severity 3 (Minor: Non-critical loss of functionality, minimal impact): 8 business hours
- Severity 4 (Cosmetic: General questions): 12 business hours

Deployment services

The following optional Lenovo basic installation services are available for the ThinkAgile VX Certified Nodes:

- Unpacking and inspecting the systems
- Mounting the systems in a rack cabinet
- Connecting the systems to electrical power and network
- Checking and updating firmware to the latest levels
- Verifying operations
- Disposal of the packaging materials (within the customer site)

The following optional Lenovo deployment services are available for the ThinkAgile VX Certified Nodes to get customers up and running quickly:

- Conducting remote preparation and planning
- Verifying firmware versions and performing firmware updates, if needed
- Configuring XCC management settings
- Configuring hypervisor settings
- Configuring vSAN
- Configuring VMware vCenter Server and discovering hosts and storage
- Configuring Lenovo XClarity network settings and performing discovery and inventory
- Transferring knowledge
- Developing post-installation documentation

For more information, refer to the Data Center Deployment Services web page:
http://www.lenovo.com/us/en/data-center/services/deployment

Ethernet LAN switches

The following table lists the Ethernet LAN switches that are offered by Lenovo that can be used with the ThinkAgile VX 2U Certified Nodes for network connectivity.

Table 44. Ethernet LAN switches

Description	Part number
1 Gb Ethernet switches (Out-of-band hardware management or 1 GbE host connectivity)	
Lenovo ThinkSystem NE0152T RackSwitch (Rear to Front)	7Y810011WW
Lenovo ThinkSystem NE0152TO RackSwitch (Rear to Front, ONIE)	7Z320O11WW
Lenovo RackSwitch G7028 (Rear to Front)	7159BAX
Lenovo RackSwitch G7052 (Rear to Front)	7159CAX
Lenovo CE0128TB Switch (3-Year Warranty)	7Z340011WW
Lenovo CE0128TB Switch (Limited Lifetime Warranty)	7Z360011WW
Lenovo CE0128PB Switch (3-Year Warranty)	7Z340012WW
Lenovo CE0128PB Switch (Limited Lifetime Warranty)	7Z360012WW
Lenovo CE0152TB Switch (3-Year Warranty)	7Z350021WW
Lenovo CE0152TB Switch (Limited Lifetime Warranty)	7Z370021WW
Lenovo CE0152PB Switch (3-Year Warranty)	7Z350022WW
Lenovo CE0152PB Switch (Limited Lifetime Warranty)	7Z370022WW
10 Gb Ethernet switches (10 GbE host connectivity)	
Lenovo ThinkSystem NE1032 RackSwitch (Rear to Front)	7159A1X
Lenovo ThinkSystem NE1032T RackSwitch (Rear to Front)	7159B1X
Lenovo ThinkSystem NE1064TO RackSwitch (Rear to Front, ONIE)	7Z330O11WW
Lenovo ThinkSystem NE1072T RackSwitch (Rear to Front)	7159C1X
Lenovo RackSwitch G8272 (Rear to Front)	7159CRW
25 Gb Ethernet switches (25 GbE host connectivity)	
Lenovo ThinkSystem NE2572 RackSwitch (Rear to Front)	7159E1X
Lenovo ThinkSystem NE2572O RackSwitch (Rear to Front, ONIE)	7Z210O21WW
Lenovo ThinkSystem NE2580O RackSwitch (Rear to Front, ONIE)	7Z330O21WW
100 Gb Ethernet switches (40 GbE/100 GbE aggregation layer; 10 GbE/25 GbE breakout host connectivity)	
Lenovo ThinkSystem NE10032 RackSwitch (Rear to Front)	7159D1X
Lenovo ThinkSystem NE10032O RackSwitch (Rear to Front, ONIE)	7Z210O11WW

For more information, see the list of Product Guides in the Top-of-rack Switches category:
http://lenovopress.com/servers/options/switches#rt=product-guide

Rack cabinets

The following table lists the rack cabinets that are currently offered by Lenovo that can be used for mounting the ThinkAgile VX 2U Certified Nodes and other IT infrastructure building blocks.

Table 45. Rack cabinets

Description	Part number
12U 1200mm Deep Micro Datacenter Rack (no sidewall compartments), 1YR Warranty	7D2B0001WW
12U 1200mm Deep Micro Datacenter Rack (no sidewall compartments), 3YR Warranty	7D2N0001WW
18U 1200mm Deep Micro Datacenter Rack (no sidewall compartments), 1YR Warranty	7D2C0001WW
18U 1200mm Deep Micro Datacenter Rack (no sidewall compartments), 3YR Warranty	7D2P0001WW
25U S2 Standard Rack (1000 mm deep; 2 sidewall compartments)	93072RX
25U Static S2 Standard Rack (1000 mm deep; 2 sidewall compartments)	93072PX
42U S2 Standard Rack (1000 mm deep; 6 sidewall compartments)	93074RX
42U 1100mm Enterprise V2 Dynamic Rack (6 sidewall compartments)	93634PX
42U 1100mm Enterprise V2 Dynamic Expansion Rack (6 sidewall compartments)	93634EX
42U 1200mm Deep Dynamic Rack (6 sidewall compartments)	93604PX
42U 1200mm Deep Static Rack (6 sidewall compartments)	93614PX
42U Enterprise Rack (1105 mm deep; 4 sidewall compartments)	93084PX
42U Enterprise Expansion Rack (1105 mm deep; 4 sidewall compartments)	93084EX

For more information, see the list of Product Guides in the Rack Cabinets category:
http://lenovopress.com/servers/options/racks#rt=product-guide

Power distribution units

The following table lists the power distribution units (PDUs) that are currently offered by Lenovo that can be used for distributing electrical power to the ThinkAgile VX 2U Certified Nodes and other IT infrastructure building blocks mounted in a rack cabinet.

Table 46. Power distribution units

Description	Part number
0U Basic PDUs	
0U 36 C13/6 C19 24A/200-240V 1 Phase PDU with NEMA L6-30P line cord	00YJ776
0U 36 C13/6 C19 32A/200-240V 1 Phase PDU with IEC60309 332P6 line cord	00YJ777
0U 21 C13/12 C19 32A/200-240V/346-415V 3 Phase PDU with IEC60309 532P6 cord	00YJ778
0U 21 C13/12 C19 48A/200-240V 3 Phase PDU with IEC60309 460P9 line cord	00YJ779
Switched and Monitored PDUs	
0U 20 C13/4 C19 Switched and Monitored 24A/200-240V/1Ph PDU w/ NEMA L6-30P cord	00YJ781
0U 20 C13/4 C19 Switched and Monitored 32A/200-240V/1Ph PDU w/ IEC60309 332P6 cord	00YJ780
0U 18 C13/6 C19 Switched and Monitored 32A/200-240/346-415V/3Ph PDU w/ IEC60309 532P6 cord	00YJ782
0U 12 C13/12 C19 Switched and Monitored 48A/200-240V/3Ph PDU w/ IEC60309 460P9 cord	00YJ783
1U 9 C19/3 C13 Switched and Monitored DPI PDU (without line cord)	46M4002
1U 9 C19/3 C13 Switched and Monitored 60A 3Ph PDU with IEC 309 3P+Gnd cord	46M4003
1U 12 C13 Switched and Monitored DPI PDU (without line cord)	46M4004
1U 12 C13 Switched and Monitored 60A 3 Phase PDU with IEC 309 3P+Gnd line cord	46M4005

Description	Part number
Ultra Density Enterprise PDUs (9x IEC 320 C13 + 3x IEC 320 C19 outlets)	
Ultra Density Enterprise C19/C13 PDU Module (without line cord)	71762NX
Ultra Density Enterprise C19/C13 PDU 60A/208V/3ph with IEC 309 3P+Gnd line cord	71763NU
C13 Enterprise PDUs (12x IEC 320 C13 outlets)	
DPI C13 Enterprise PDU+ (without line cord)	39M2816
DPI Single Phase C13 Enterprise PDU (without line cord)	39Y8941
C19 Enterprise PDUs (6x IEC 320 C19 outlets)	
DPI Single Phase C19 Enterprise PDU (without line cord)	39Y8948
DPI 60A 3 Phase C19 Enterprise PDU with IEC 309 3P+G (208 V) fixed line cord	39Y8923
Front-end PDUs (3x IEC 320 C19 outlets)	
DPI 30amp/125V Front-end PDU with NEMA L5-30P line cord	39Y8938
DPI 30amp/250V Front-end PDU with NEMA L6-30P line cord	39Y8939
DPI 32amp/250V Front-end PDU with IEC 309 2P+Gnd line cord	39Y8934
DPI 60amp/250V Front-end PDU with IEC 309 2P+Gnd line cord	39Y8940
DPI 63amp/250V Front-end PDU with IEC 309 2P+Gnd line cord	39Y8935
Universal PDUs (7x IEC 320 C13 outlets)	
DPI Universal 7 C13 PDU (with 2 m IEC 320-C19 to C20 rack power cord)	00YE443
Line cords for PDUs that ship without a line cord	
DPI 30a Line Cord (NEMA L6-30P)	40K9614
DPI 32a Line Cord (IEC 309 P+N+G)	40K9612
DPI 32a Line Cord (IEC 309 3P+N+G)	40K9611
DPI 60a Cord (IEC 309 2P+G)	40K9615
DPI 63a Cord (IEC 309 P+N+G)	40K9613
DPI Australian/NZ 3112 Line Cord (32A)	40K9617
DPI Korean 8305 Line Cord (30A)	40K9618

For more information, see the list of Product Guides in the Power Distribution Units category:
http://lenovopress.com/servers/options/pdu#rt=product-guide

Uninterruptible power supply units

The following table lists the uninterruptible power supply (UPS) units that are currently offered by Lenovo that can be used for providing electrical power protection to the ThinkAgile VX 2U Certified Nodes and other IT infrastructure building blocks.

Table 47. Uninterruptible power supply units

Description	Part number
Worldwide models	
RT1.5kVA 2U Rack or Tower UPS (100-125VAC) (8x NEMA 5-15R 12A outlets)	55941AX
RT1.5kVA 2U Rack or Tower UPS (200-240VAC) (8x IEC 320 C13 10A outlets)	55941KX
RT2.2kVA 2U Rack or Tower UPS (100-125VAC) (8x NEMA 5-20R 16A outlets)	55942AX
RT2.2kVA 2U Rack or Tower UPS (200-240VAC) (8x IEC 320 C13 10A, 1x IEC 320 C19 16A outlets)	55942KX
RT3kVA 2U Rack or Tower UPS (100-125VAC) (6x NEMA 5-20R 16A, 1x NEMA L5-30R 24A outlets)	55943AX
RT3kVA 2U Rack or Tower UPS (200-240VAC) (8x IEC 320 C13 10A, 1x IEC 320 C19 16A outlets)	55943KX
RT5kVA 3U Rack or Tower UPS (200-240VAC) (8x IEC 320 C13 10A, 2x IEC 320 C19 16A outlets)	55945KX
RT6kVA 3U Rack or Tower UPS (200-240VAC) (8x IEC 320 C13 10A, 2x IEC 320 C19 16A outlets)	55946KX
RT8kVA 6U Rack or Tower UPS (200-240VAC) (4x IEC 320-C19 16A outlets)	55948KX
RT11kVA 6U Rack or Tower UPS (200-240VAC) (4x IEC 320-C19 16A outlets)	55949KX
RT8kVA 6U 3:1 Phase Rack or Tower UPS (380-415VAC) (4x IEC 320-C19 16A outlets)	55948PX
RT11kVA 6U 3:1 Phase Rack or Tower UPS (380-415VAC) (4x IEC 320-C19 16A outlets)	55949PX
ASEAN, HTK, INDIA, and PRC models	
ThinkSystem RT3kVA 2U Standard UPS (200-230VAC) (2x C13 10A, 2x GB 10A, 1x C19 16A outlets)	55943KT
ThinkSystem RT3kVA 2U Long Backup UPS (200-230VAC) (2x C13 10A, 2x GB 10A, 1x C19 16A outlets)	55943LT
ThinkSystem RT6kVA 5U UPS (200-230VAC) (2x C13 10A outlets, 1x Terminal Block output)	55946KT
ThinkSystem RT10kVA 5U UPS (200-230VAC) (2x C13 10A outlets, 1x Terminal Block output)	5594XKT

For more information, see the list of Product Guides in the Uninterruptible Power Supply Units category:
http://lenovopress.com/servers/options/ups#rt=product-guide

Lenovo Financial Services

Lenovo Financial Services reinforces Lenovo's commitment to deliver pioneering products and services that are recognized for their quality, excellence, and trustworthiness. Lenovo Financial Services offers financing solutions and services that complement your technology solution anywhere in the world.

We are dedicated to delivering a positive finance experience for customers like you who want to maximize your purchase power by obtaining the technology you need today, protect against technology obsolescence, and preserve your capital for other uses.

We work with businesses, non-profit organizations, governments and educational institutions to finance their entire technology solution. We focus on making it easy to do business with us. Our highly experienced team of finance professionals operates in a work culture that emphasizes the importance of providing outstanding customer service. Our systems, processes and flexible policies support our goal of providing customers with a positive experience.

We finance your entire solution. Unlike others, we allow you to bundle everything you need from hardware and software to service contracts, installation costs, training fees, and sales tax. If you decide weeks or months later to add to your solution, we can consolidate everything into a single invoice.

Our Premier Client services provide large accounts with special handling services to ensure these complex transactions are serviced properly. As a premier client, you have a dedicated finance specialist who manages your account through its life, from first invoice through asset return or purchase. This specialist develops an in-depth understanding of your invoice and payment requirements. For you, this dedication provides a high-quality, easy, and positive financing experience.

For your region-specific offers please ask your Lenovo sales representative or your technology provider about the use of Lenovo Financial Services. For more information, see the following Lenovo website:
http://www.lenovo.com/us/en/landingpage/lenovo-financial-services

Related publications and links

For more information, see these resources:

- Lenovo ThinkAgile VX Series
  http://www3.lenovo.com/us/en/p/WMD00000340
- Lenovo Data Center Solution Configurator (DCSC):
  http://dcsc.lenovo.com
- ThinkAgile VX - Best Recipes
  http://datacentersupport.lenovo.com/us/en/solutions/HT505302
- VMware documentation
  https://docs.vmware.com/
- Lenovo Data Center Support
  http://datacentersupport.lenovo.com

Related product families

Product families related to this document are the following:

- Hyperconverged Infrastructure
- ThinkAgile VX Series for VMware
- VMware Alliance

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