



Lenovo ThinkAgile VX 2U4N Certified Node Product Guide

Lenovo ThinkAgile VX Certified Nodes are designed for deploying industry-leading Hyper-Converged Infrastructure (HCI) software from VMware. 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 2U4N Certified Nodes are dense nodes in the 2U 4-node rack-mount enclosures that 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 2U4N Certified Nodes are shown in the following figure.



Figure 1. Lenovo ThinkAgile VX 2U4N Certified Nodes

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 offer ThinkAgile Advantage Single Point of Support for quick 24/7 problem reporting and resolution.

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.
- Include Lenovo ThinkAgile Advantage Single Point of Support for quick 24/7 problem reporting and resolution.
- 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 2U4N Certified Enclosure and Nodes.

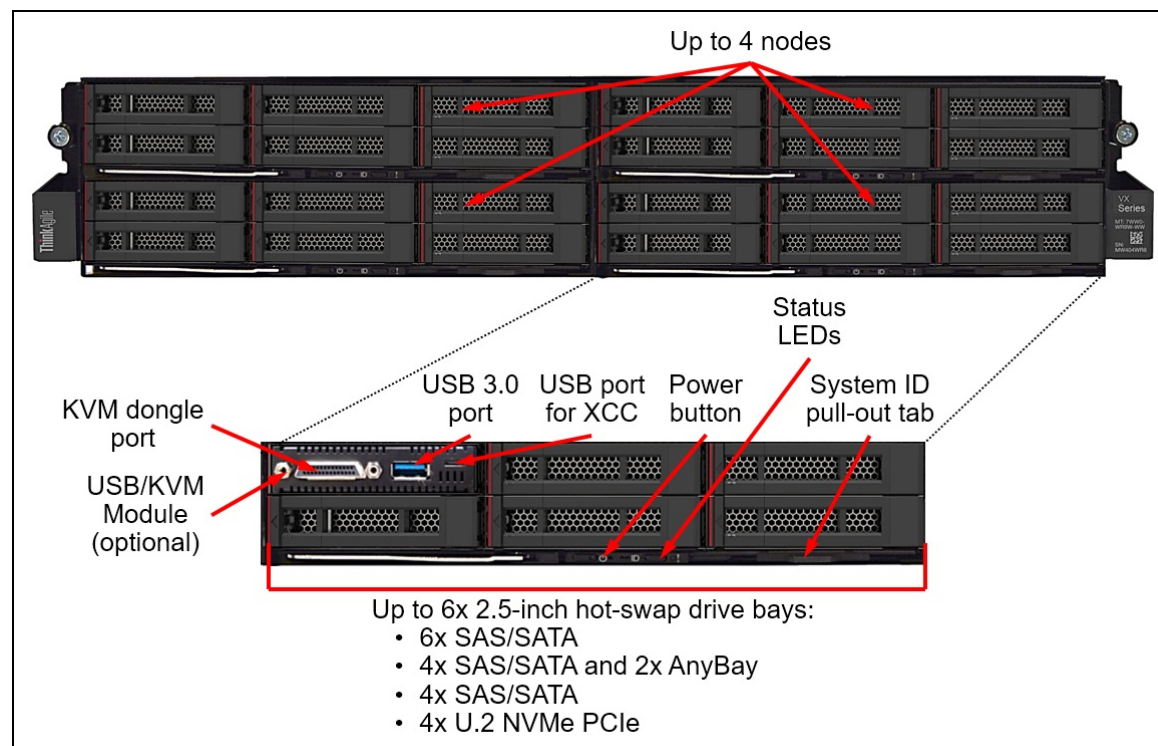


Figure 2. VX 2U4N Certified Enclosure and Nodes front view

The front of the VX 2U4N Certified Enclosure contains up to four Certified Nodes, and each node includes the following components:

- Up to 6x SFF hot-swap drive bays
 - 6x SAS/SATA
 - 4x SAS/SATA and 2x AnyBay
 - 4x SAS/SATA
 - 4x U.2 NVMe PCIe
- Up to one KVM/USB module (optional)
 - One KVM dongle port
 - One USB 3.0 port
 - One USB port for XClarity Controller access
- A Power button
- Status LEDs that display the status of the system
- A System ID pull-out tab that contains system identification information

The following figure shows the rear view of the VX 2U4N Certified Enclosure and Nodes.

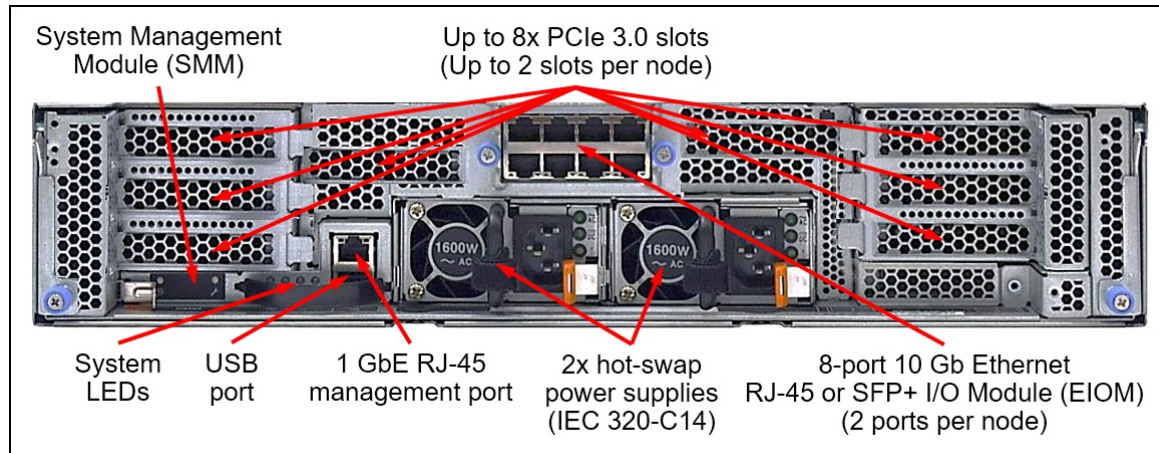


Figure 3. VX 2U4N Certified Enclosure and Nodes rear view

The rear of the VX 2U4N Certified Enclosure and Nodes includes the following components:

- Up to eight PCIe expansion slots (Up to two slots per node)
- Up to eight 10 GbE RJ-45 or SFP+ network ports
- A System Management Module
 - One 1 GbE management port
 - One USB port
 - Status LEDs that display the status of the system
- Two hot-swap power supplies

System specifications

The following table lists the system specifications of the ThinkAgile VX 2U4N Certified Nodes.

Table 1. VX 2U4N system specifications

Attribute	Specification
Form factor	VX 2U4N node: Half-wide, 1U node; up to four nodes per enclosure. VX 2U4N enclosure: 2U 4-node (2U4N) rack-mount.
Processor	One or two Intel Xeon Bronze, Silver, Gold, or Platinum processors.
Chipset	Intel C624.
Memory	16 DIMM sockets (Up to 8 DIMMs per processor). Support for RDIMMs, LRDIMMs, or 3DS RDIMMs. Memory types cannot be intermixed. Memory speed up to 2666 MHz.
Memory capacity	<ul style="list-style-type: none"> • With RDIMMs: Up to 512 GB with 16x 32 GB RDIMMs and two processors. • With LRDIMMs: Up to 1 TB with 16x 64 GB LRDIMMs and two processors. • With 3DS RDIMMs: Up to 1.5 TB with 128 GB 3DS RDIMMs and two processors.
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	<ul style="list-style-type: none"> • 6x 2.5-inch SAS/SATA hot-swap drive bays. • 4x 2.5-inch SAS/SATA and 2x 2.5-inch AnyBay hot-swap drive bays. • 4x 2.5-inch SAS/SATA hot-swap drive bays. • 4x 2.5-inch U.2 NVMe PCIe hot-swap drive bays.

Attribute	Specification
Drive capacities	2.5-inch drives: <ul style="list-style-type: none"> ● 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 3.84 TB ● U.2 NVMe PCIe 3.0 x4 SSDs up to 4 TB <p>Note: NVMe PCIe SSDs are supported in the AnyBay or U.2 NVMe drive bays and require the second processor to be installed.</p>
Storage controller	1x 430-8i Dense HBA (12 Gbps SAS/6 Gbps SATA).
Network interfaces	<ul style="list-style-type: none"> ● 1/10 GbE RJ-45: 2 - 10 (EIOM + Up to 2 network adapters) ● 10 GbE SFP+: 2 - 6 (EIOM + Up to 2 network adapters) ● 25 GbE SFP28: 1 - 4 (Up to 2 network adapters) ● 40 GbE QSFP+: 1 - 2 (Up to 2 network adapters) ● 100 GbE QSFP28: 1 - 2 (Up to 1 network adapter)
Boot drive	2x 128 GB or 2x 480 GB M.2 non-hot-swap SSDs (RAID-1).
I/O expansion slots	<ul style="list-style-type: none"> ● One PCIe 3.0 x8 on the system board (for an internal storage controller). ● Up to two PCIe slots per node in the VX enclosure: <ul style="list-style-type: none"> ○ PCIe x16 I/O shuttle: <ul style="list-style-type: none"> ■ Slot 1 (Node 1): PCIe 3.0 x16 low-profile ■ Slot 2 (Node 2): PCIe 3.0 x16 low-profile ■ Slot 3 (Node 3): PCIe 3.0 x16 low-profile ■ Slot 4 (Node 4): PCIe 3.0 x16 low-profile ○ PCIe x8 I/O shuttle: <ul style="list-style-type: none"> ■ Slot 1-A (Node 1): PCIe 3.0 x8 low-profile ■ Slot 1-B (Node 1): PCIe 3.0 x8 low-profile ■ Slot 2-A (Node 2): PCIe 3.0 x8 low-profile ■ Slot 2-B (Node 2): PCIe 3.0 x8 low-profile ■ Slot 3-A (Node 3): PCIe 3.0 x8 low-profile ■ Slot 3-B (Node 3): PCIe 3.0 x8 low-profile ■ Slot 4-A (Node 4): PCIe 3.0 x8 low-profile ■ Slot 4-B (Node 4): PCIe 3.0 x8 low-profile
Cooling	Five hot-swap system fans in the VX enclosure.
Power supply	Two redundant hot-swap 1100 W (100 - 240 V), 1600 W (200 - 240 V), or 2000 W (200 - 240 V) High Efficiency Platinum power supplies in the VX enclosure.
Video	Matrox G200 with 16 MB memory integrated into the XClarity Controller. Maximum resolution is 1920x1200 at 60 Hz with 16 bits per pixel.
Hot-swap parts	SSDs, HDDs, power supplies, and fans.
Systems management	Lenovo XClarity Controller (XCC) Enterprise (Pilot 4 chip), proactive platform alerts, 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).
Software	Software licenses that can be purchased from Lenovo or provided by the customer: <ul style="list-style-type: none"> ● VMware vSphere: Standard, Enterprise Plus, Operations Management Enterprise Plus, Standard for ROBO, or Advanced for ROBO. ● VMware vSAN: Standard, Advanced, Enterprise, for ROBO, or for Desktop. ● VMware vCenter Server: Foundation or Standard ● VMware Horizon: Standard, Advanced, or Enterprise.
Hypervisors	VMware ESXi 6.0 U3, 6.5 U1, 6.5 U2, or 6.7 (factory preload).

Attribute	Specification
Hardware warranty	Three-, four-, or five-year customer-replaceable unit and onsite limited warranty with ThinkAgile Advantage Support and selectable service levels: 9x5 next business day (NBD) parts delivered, 24x7x4, or 24x7x2 response (parts delivered or onsite) or 6-hour or 24-hour committed repair (select countries). Also available are 1-year and 2-year post-warranty extensions, Your Drive Your Data, and Premier Support.
Software maintenance	One-, three-, or five-year software support and subscription is included with the VMware software licenses available from Lenovo (optional).
Dimensions	<ul style="list-style-type: none"> Enclosure: Height: 87 mm (3.4 in.), width: 448 mm (17.6 in.), depth: 834 mm (32.8 in.). Node: Height: 41 mm (1.6 in.), width: 222 mm (8.7 in.), depth: 562 mm (21.1 in.).
Weight	<ul style="list-style-type: none"> Enclosure (maximum configuration, with four nodes): 55.0 kg (121.3 lb). Node (maximum configuration): 7.5 kg (16.5 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 base Configure-to-Order (CTO) models first, and then you are selecting components (processors, memory, drives, network 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 base CTO models of the VX 2U4N Certified Nodes.

Table 2. Base CTO models

Description	Machine Type/Model
ThinkAgile VX 2U4N Certified Node	7Y92CTO2WW
ThinkAgile VX 2U4N Certified Enclosure	7Y91CTO2WW

The following table lists the available chassis selection options for the VX 2U4N Certified Nodes.

Table 3. Chassis selection options

Description	Machine Type/Model	Feature code
ThinkAgile VX Dense Node	7Y92CTO2WW	B1DM
ThinkAgile VX Enclosure	7Y91CTO2WW	B1DN

The VX 2U4N Certified Nodes and Enclosures ship with the following items:

- *Electronic Publications Flyer*
- D2 Tool-less Slide Rail Kit with or without CMA (enclosure only; depending on the rack installation option selected)
- Two customer-selected power cables (enclosure only)

Processors

The ThinkAgile VX 2U4N 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	4XG7A07683	AXQX	1 / 2
Intel Xeon Bronze 3106 8C 85W 1.7GHz Processor	4XG7A07682	AXQW	1 / 2
Intel Xeon Silver processors			
Intel Xeon Silver 4108 8C 85W 1.8GHz Processor	4XG7A08337	AXQZ	1 / 2
Intel Xeon Silver 4110 8C 85W 2.1GHz Processor	4XG7A07685	AXQY	1 / 2
Intel Xeon Silver 4112 4C 85W 2.6GHz Processor	4XG7A07680	AXQU	1 / 2
Intel Xeon Silver 4114 10C 85W 2.2GHz Processor	4XG7A07679	AXQT	1 / 2
Intel Xeon Silver 4116 12C 85W 2.1GHz Processor	4XG7A07677	AXNZ	1 / 2
Intel Xeon Gold processors			
Intel Xeon Gold 5115 10C 85W 2.4GHz Processor	4XG7A07678	AXP0	1 / 2
Intel Xeon Gold 5118 12C 105W 2.3GHz Processor	7XG7A06248	AX7D	1 / 2
Intel Xeon Gold 5120 14C 105W 2.2GHz Processor	7XG7A06247	AX7C	1 / 2
Intel Xeon Gold 6126 12C 125W 2.6GHz Processor	7XG7A06234	AWEX	1 / 2
Intel Xeon Gold 6130 16C 125W 2.1GHz Processor	7XG7A06229	AX6D	1 / 2
Intel Xeon Gold 6138 20C 125W 2.0GHz Processor	7XG7A06227	AX6Q	1 / 2
Intel Xeon Gold 6140 18C 140W 2.3GHz Processor	7XG7A06228	AX6R	1 / 2
Intel Xeon Gold 6152 22C 140W 2.1GHz Processor	7XG7A06225	AX6P	1 / 2
Intel Xeon Platinum processors			
Intel Xeon Platinum 8153 16C 125W 2.0GHz Processor	7XG7A06223	AX6L	1 / 2

* For CTO configurations, the feature code represents a processor, and heatsinks are derived by the configuration tool. For field upgrades, the part number includes a processor and a heatsink.

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
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
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
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

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
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
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
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
6130	2.1 / 3.7 GHz	16 / 32	22 MB	2666 MHz	768 GB	10.4 GT/s	125 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
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
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
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

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 2U4N Certified Nodes supports up to 16 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: 512 GB (256 GB per processor).
 - LRDIMMs: 1 TB (512 GB per processor).
 - 3DS RDIMMs: 1.5 TB (768 GB per processor).

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

Single Device Data Correction (SDDC) works only in the independent channel mode (the default operational mode) and supports only x4-based memory DIMMs.

Adaptive Double Device Data Correction (ADDDC) works with x4-based memory DIMMs and requires two DIMM ranks per channel, Intel Xeon Gold or Platinum processors, and the Closed Page memory access mode.

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

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

Configuration notes:

- 16 DIMMs are supported in configurations with the 4-drive NVMe backplane (configurations with the 6-drive backplane do not support 16 DIMMs).
- Configurations with the Intel Xeon Gold 6126, 6138, 6140, and 6152 processors support up to 12 DIMMs only.

Internal storage

The ThinkAgile VX 2U4N Certified Node supports the following internal drive bay configurations to provide storage capacity:

1. 6 SFF hot-swap drive bays:
 - a. 6x 2.5" SAS/SATA
 - b. 4x 2.5" SAS/SATA & 2x 2.5" AnyBay
2. 4 SFF hot-swap drive bays
 - a. 4x 2.5" SAS/SATA
 - b. 4x 2.5" U.2 NVMe PCIe

In addition, the VX 2U4N Certified Nodes support two internal M.2 SATA SSDs for the hypervisor boot volume.

Lenovo AnyBay is a unique drive bay type that 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.

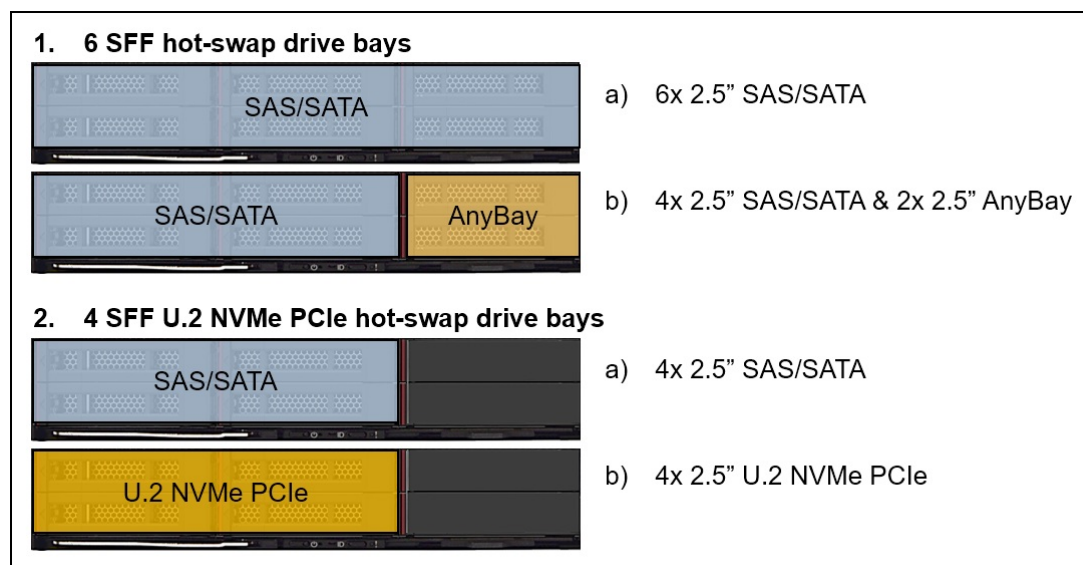


Figure 4. Internal drive bay configurations

The following table lists the internal storage options for the VX 2U4N Certified Node.

Table 7. Internal storage options

Description	Part number	Feature code	Maximum supported
Front drive backplanes			
ThinkSystem SD530 2.5" 6-bay (3x2) SAS/SATA Backplane	None*	AUYG	1
ThinkSystem SD530 2.5" 6-bay (3x2) SAS/SATA/NVMe Backplane	None*	AUYH	1
ThinkSystem SD530 2.5" 4-bay (2x2) SAS/SATA Backplane	None*	AUYJ	1
ThinkSystem SD530 2.5" 4-bay (2x2) NVMe Backplane	None*	B324	1
M.2 enablement kits			
ThinkSystem M.2 with Mirroring Enablement Kit	7Y37A01093	AUMV	1

* Factory-installed only.

Configuration notes:

- NVMe PCIe SSDs are supported in the AnyBay or NVMe-only drive bays and require the second processor to be installed.
- For 6-drive backplane configurations, the optional VGA/USB KVM Breakout Module occupies the upper-left drive bay, limiting the maximum number of drives to 5.
- 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 CV3 128GB SATA 6Gbps Non-Hot-Swap SSD	7N47A00130	AUUV	2
ThinkSystem M.2 5100 480GB SATA 6Gbps Non-Hot-Swap SSD	7SD7A05703	B11V	2

The following table lists the storage controllers for internal storage of the VX 2U4N Certified Node.

Table 9. Controllers for internal storage

Description	Part number	Feature code	Quantity	I/O slots supported
12 Gb SAS/SATA non-RAID HBAs				
ThinkSystem 430-8i SAS/SATA 12Gb Dense HBA	None*	B0SS	1	Dedicated
NVMe PCIe interfaces (non-RAID)				
Onboard NVMe interface (4-port)	None	None	1	-

* Factory-installed only.

The onboard NVMe interface provides 4x PCIe 3.0 x4 ports for JBOD (non-RAID) connectivity to U.2 NVMe PCIe SSDs in the AnyBay or NVMe drive bays.

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

Table 10. Internal storage configurations

Hot-swap drive bay configuration	Backplane kit type and quantity				Storage controller type and quantity*
	6x2.5" SAS/SATA	6x2.5" AnyBay	4x 2.5" SAS/SATA	4x2.5" NVMe	
6x 2.5" SAS/SATA	1	0	0	0	1x 430-8i (6)
4x 2.5" SAS/SATA & 2x 2.5" AnyBay	0	1	0	0	1x 430-8i (6) + 1x NVMe (2)
4x 2.5" SAS/SATA	0	0	1	0	1x 430-8i (4)
4x 2.5" NVMe only	0	0	0	1	1x NVMe (4)

* The number in brackets (x) specifies the quantity of drive bays connected to each of the controllers.

Drives for internal storage

The following tables list drive options for the VX 2U4N Certified Node.

Table 11. Drive options for internal storage: 2.5-inch hot-swap drives

Description	Part number	Feature code	Maximum supported
2.5-inch hot-swap HDDs - 12 Gbps SAS			
ThinkSystem 2.5" 900GB 10K SAS 12Gb Hot Swap 512n HDD	7XB7A00026	AUM0	6
ThinkSystem 2.5" 900GB 15K SAS 12Gb Hot Swap 512e HDD	7XB7A00023	AULX	6
ThinkSystem 2.5" 1.2TB 10K SAS 12Gb Hot Swap 512n HDD	7XB7A00027	AUM1	6
ThinkSystem 2.5" 1.8TB 10K SAS 12Gb Hot Swap 512e HDD	7XB7A00028	AUM2	6

Description	Part number	Feature code	Maximum supported
ThinkSystem 2.5" 2.4TB 10K SAS 12Gb Hot Swap 512e HDD	7XB7A00069	B0YS	6
2.5-inch hot-swap HDDs - 12 Gbps NL SAS			
ThinkSystem 2.5" 1TB 7.2K SAS 12Gb Hot Swap 512n HDD	7XB7A00034	AUM6	6
ThinkSystem 2.5" 2TB 7.2K SAS 12Gb Hot Swap 512n HDD	7XB7A00035	AUM7	6
2.5-inch hot-swap SSDs - SS300 Performance 12 Gbps SAS			
ThinkSystem 2.5" HUSMM32 400GB Performance SAS 12Gb Hot Swap SSD	7N47A00124	AUMG	6
ThinkSystem 2.5" HUSMM32 800GB Performance SAS 12Gb Hot Swap SSD	7N47A00125	AUMH	6
ThinkSystem 2.5" HUSMM32 1.6TB Performance SAS 12Gb Hot Swap SSD	7N47A00126	AVRB	6
2.5-inch hot-swap SSDs - PM1635a Mainstream 12 Gbps SAS			
ThinkSystem 2.5" PM1635a 400GB Mainstream SAS 12Gb Hot Swap SSD	7N47A00117	AUMC	6
ThinkSystem 2.5" PM1635a 800GB Mainstream SAS 12Gb Hot Swap SSD	7N47A00118	AUMD	6
ThinkSystem 2.5" PM1635a 1.6TB Mainstream SAS 12Gb Hot Swap SSD	7N47A00119	AVRG	6
ThinkSystem 2.5" PM1635a 3.2TB Mainstream SAS 12Gb Hot Swap SSD	7N47A00120	AVRJ	6
2.5-inch hot-swap SSDs - 5100 Mainstream 6 Gbps SATA			
ThinkSystem 2.5" 5100 480GB Mainstream SATA 6Gb Hot Swap SSD	7SD7A05764	B10X	6
ThinkSystem 2.5" 5100 960GB Mainstream SATA 6Gb Hot Swap SSD	7SD7A05763	B10Y	6
ThinkSystem 2.5" 5100 1.92TB Mainstream SATA 6Gb Hot Swap SSD	7SD7A05762	B10Z	6
ThinkSystem 2.5" 5100 3.84TB Mainstream SATA 6Gb Hot Swap SSD	7SD7A05761	B110	6
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	6
ThinkSystem 2.5" Intel S4600 960GB Mainstream SATA 6Gb Hot Swap SSD	7SD7A05721	B0ZR	6
ThinkSystem 2.5" Intel S4600 1.92TB Mainstream SATA 6Gb Hot Swap SSD	7SD7A05720	B0ZS	6
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	6
ThinkSystem 2.5" PM1633a 7.68TB Capacity SAS 12Gb Hot Swap SSD	7N47A00122	AUML	6
2.5-inch hot-swap SSDs - 5100 Entry 6 Gbps SATA			
ThinkSystem 2.5" 5100 480GB Entry SATA 6Gb Hot Swap SSD	4XB7A08502	B10N	6
ThinkSystem 2.5" 5100 960GB Entry SATA 6Gb Hot Swap SSD	4XB7A08503	B10P	6
ThinkSystem 2.5" 5100 1.92TB Entry SATA 6Gb Hot Swap SSD	4XB7A08504	B10Q	6
ThinkSystem 2.5" 5100 3.84TB Entry SATA 6Gb Hot Swap SSD	4XB7A08505	B10R	6
2.5-inch hot-swap SSDs - 5200 Entry 6 Gbps SATA			
ThinkSystem 2.5" 5200 960GB Entry SATA 6Gb Hot Swap SSD	4XB7A10154	B2X3	6
ThinkSystem 2.5" 5200 1.92TB Entry SATA 6Gb Hot Swap SSD	4XB7A10155	B2X4	6
ThinkSystem 2.5" 5200 3.84TB Entry SATA 6Gb Hot Swap SSD	4XB7A10156	B2X5	6
ThinkSystem 2.5" 5200 7.68TB Entry SATA 6Gb Hot Swap SSD	4XB7A10157	B2X6	6
2.5-inch hot-swap SSDs - PM863a Entry 6 Gbps SATA			
ThinkSystem 2.5" PM863a 960GB Entry SATA 6Gb Hot Swap SSD	7N47A00113	AVCZ	6
ThinkSystem 2.5" PM863a 1.92TB Entry SATA 6Gb Hot Swap SSD	7N47A00114	AVRC	6
2.5-inch hot-swap SSDs - S4500 Entry 6 Gbps SATA			
ThinkSystem 2.5" Intel S4500 480GB Entry SATA 6Gb Hot Swap SSD	7SD7A05741	B0YZ	6
ThinkSystem 2.5" Intel S4500 960GB Entry SATA 6Gb Hot Swap SSD	7SD7A05740	B0Z0	6

Description	Part number	Feature code	Maximum supported
ThinkSystem 2.5" Intel S4500 1.92TB Entry SATA 6Gb Hot Swap SSD	7SD7A05739	B0Z1	6
ThinkSystem 2.5" Intel S4500 3.84TB Entry SATA 6Gb Hot Swap SSD	7SD7A05738	B0Z2	6
2.5-inch hot-swap SSDs - P4800X Performance U.2 NVMe PCIe			
ThinkSystem U.2 Intel P4800X 375GB Performance NVMe PCIe 3.0 x4 HS SSD	7N47A00081	AUMJ	4
ThinkSystem U.2 Intel P4800X 750GB Performance NVMe PCIe 3.0 x4 HS SSD	7N47A00083	B2ZJ	4
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	4
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	4
ThinkSystem U.2 Intel P4500 2.0TB Entry NVMe PCIe 3.0 x4 Hot Swap SSD	7SD7A05778	B11D	4
ThinkSystem U.2 Intel P4500 4.0TB Entry NVMe PCIe 3.0 x4 Hot Swap SSD	7SD7A05777	B11E	4

I/O expansion

The VX 2U4N Certified Enclosure supports one I/O module with 8x 10 GbE SFP+ or RJ-45 network ports (two ports per VX 2U4N Certified Node) and one I/O shuttle with 4x PCIe x16 or 8x PCIe x8 slots (one PCIe x16 or two PCIe x8 slots per node). The VX 2U4N Certified Node also has one PCIe 3.0 x8 connector for an internal storage controller.

The PCIe slots are supplied by the PCIe x16 or x8 I/O shuttles, and the slot form factors are as follows:

- PCIe x16 I/O shuttle:
 - Slot 1 (Node 1): PCIe 3.0 x16 low-profile
 - Slot 2 (Node 2): PCIe 3.0 x16 low-profile
 - Slot 3 (Node 3): PCIe 3.0 x16 low-profile
 - Slot 4 (Node 4): PCIe 3.0 x16 low-profile
- PCIe x8 I/O shuttle:
 - Slot 1-A (Node 1): PCIe 3.0 x8 low-profile
 - Slot 1-B (Node 1): PCIe 3.0 x8 low-profile
 - Slot 2-A (Node 2): PCIe 3.0 x8 low-profile
 - Slot 2-B (Node 2): PCIe 3.0 x8 low-profile
 - Slot 3-A (Node 3): PCIe 3.0 x8 low-profile
 - Slot 3-B (Node 3): PCIe 3.0 x8 low-profile
 - Slot 4-A (Node 4): PCIe 3.0 x8 low-profile
 - Slot 4-B (Node 4): PCIe 3.0 x8 low-profile

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

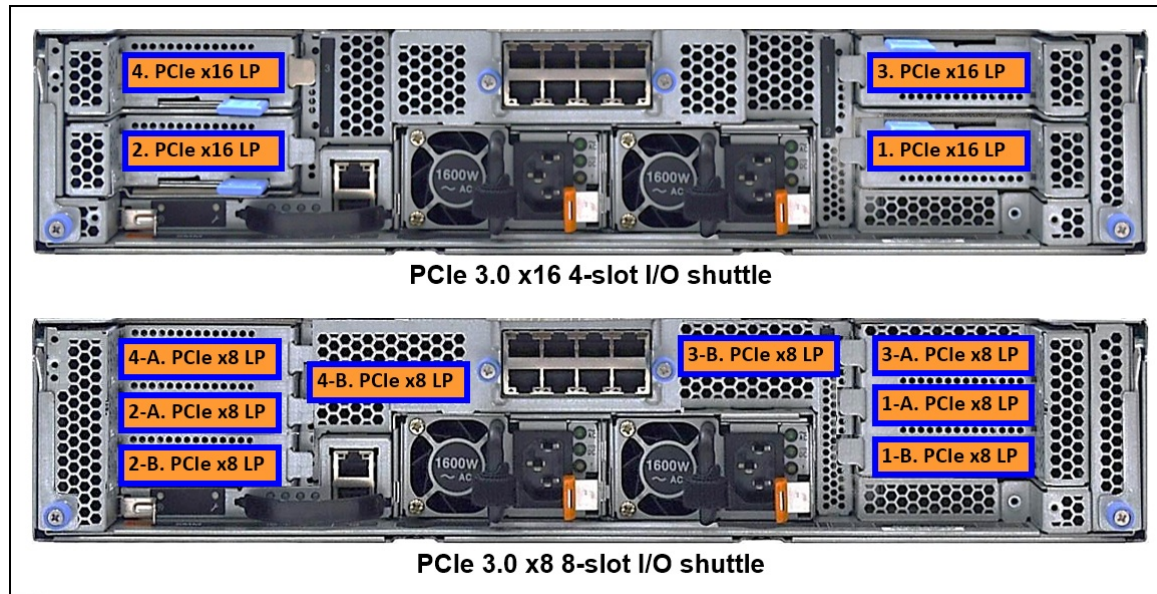


Figure 5. Slot locations

The following table lists available PCIe I/O shuttle options.

Table 12. PCIe I/O shuttles

Description	Part number	Feature code	Maximum supported
ThinkSystem D2 4-slot x16 Shuttle	None*	AUY8	1
ThinkSystem D2 8-slot x8 Shuttle	None*	AUY7	1

* Factory-installed only.

Network connectivity

The ThinkAgile VX 2U4N Certified Nodes provide two-port 1/10 GbE RJ-45 or 10 GbE SFP+ network connectivity with the onboard Intel X722 NIC in the appliance and an Ethernet I/O Module (EIOM) installed in the VX Enclosure. 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 following table lists the network adapter options that are available for selection.

Table 13. Network adapters

Description	Part number	Feature code	Max qty	I/O slots supported#
I/O Modules - 10 Gb Ethernet				
ThinkSystem D2 10Gb 8 port EIOM Base-T RJ-45	7M17A04001	AUYA	1	-
ThinkSystem D2 10Gb 8 port EIOM SFP+	7M17A04000	AUY9	1	-
PCIe x8 Low Profile adapters - 10 Gb Ethernet				
Broadcom NX-E PCIe 10Gb 2-Port Base-T Ethernet Adapter	7ZT7A00496	AUKP	2	1, 2, 3, 4 (-A, B)
Emulex VFA5.2 2x10 GbE SFP+ PCIe Adapter	00AG570	AT7S	2*	1, 2, 3, 4 (-A, B)
Intel X550-T2 Dual Port 10GBase-T Adapter	00MM860	ATPX	2	1, 2, 3, 4 (-A, B)

Description	Part number	Feature code	Max qty	I/O slots supported#
Intel X710-DA2 PCIe 10Gb 2-Port SFP+ Ethernet Adapter	7ZT7A00537	AUKX	2*	1, 2, 3, 4 (-A, B)
QLogic QL41134 PCIe 10Gb 4-Port Base-T Ethernet Adapter	4XC7A08225	B31G	2	1, 2, 3, 4 (-A, B)
PCIe x8 Low Profile adapters - 25 Gb Ethernet				
Broadcom NX-E PCIe 25Gb 1-Port SFP28 Ethernet Adapter	7ZT7A00505	AUKS	2*	1, 2, 3, 4 (-A, B)
Intel XXV710-DA2 PCIe 25Gb 2-Port SFP28 Ethernet Adapter	7XC7A05523	B0WY	2*	1, 2, 3, 4 (-A, B)
Mellanox ConnectX-4 Lx 2x25GbE SFP28 Adapter	01GR250	AUAJ	2*	1, 2, 3, 4 (-A, B)
QLogic QL41262 PCIe 25Gb 2-Port SFP28 Ethernet Adapter	4XC7A08228	B21R	2*	1, 2, 3, 4 (-A, B)
PCIe x8 Low Profile adapters - 40 Gb Ethernet				
Mellanox ConnectX-4 Lx 1x40GbE QSFP+ Adapter	00MM950	ATRN	2*	1, 2, 3, 4 (-A, B)
PCIe x16 Low Profile adapters - 100 Gb Ethernet				
Mellanox ConnectX-4 1x100GbE/EDR IB QSFP28 VPI Adapter	00KH924	ASWQ	1*	1, 2, 3, 4
Mellanox ConnectX-4 2x100GbE/EDR IB QSFP28 VPI Adapter	00MM960	ATRP	1*	1, 2, 3, 4

PCIe slots in the VX Enclosure.

* The adapter comes without transceivers or cables; for ordering transceivers or cables, see the configuration notes below the table.

Configuration notes:

- PCIe x8 Low Profile network adapters are supported in the low-profile PCIe x8 and x16 slots supplied by the 8-slot PCIe x8 or 4-slot PCIe x16 I/O shuttles.
- PCIe x16 Low Profile network adapters are supported in the low-profile PCIe x16 slots supplied by the 4-slot PCIe x16 I/O shuttle.
- Supported transceivers or DAC cables should be purchased for the SFP+, SFP28, QSFP+, and QSFP28 adapters, and UTP Category 6 cables should be purchased for the 10 GbE (Category 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 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 RJ-45 adapters.

Table 14. Cables for 10 GbE RJ-45 adapters

Description	Part number	Feature code
UTP Category 6 cables (Green) for 10 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

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

Table 15. 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

* 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 16. 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
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

Description	Part number	Feature code
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 17. 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

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

Table 18. 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

Description	Part number	Feature code
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>

Power supplies and cables

The VX 2U4N Certified Enclosures ship with two power supplies. The following table lists the power supply options that are available for selection.

Table 19. Power supplies

Description	Part number	Feature code	Quantity
ThinkSystem D2 1100W Platinum PSU	None*	AUZ0	2
ThinkSystem D2 1600W Platinum PSU	None*	AUZ1	2
ThinkSystem D2 2000W Platinum PSU	None*	AUZ2	2

* Factory-installed only.

Configuration notes:

- Two 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 appliance configuration using the latest version of the Lenovo Capacity Planner:
<http://datacentersupport.lenovo.com/us/en/solutions/Invo-lcp>
- The power supplies support AC (Worldwide) and HVDC (China only) power sources.

The VX 2U2N Certified Enclosures ship with two customer-configured power cords. The following table lists the rack power cables and country-specific line cords that can be ordered for the VX 2U4N Certified Enclosures.

Table 20. 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
1.5m, 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

Description	Part number	Feature code
2.0m, 13A/125V-10A/250V, C13 to IEC 320-C14 Rack Power Cable	4L67A08369	6570
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
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
Country-specific 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
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/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/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

Description	Part number	Feature code
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/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 (feature code AUZ0) in the VX 2U4N Enclosure are connected to a low-voltage power source (100 - 125 V), the only supported power cables are those that are rated above 10A; cables that are rated at 10A are not supported.

Rack installation

The VX 2U4N Certified Enclosures 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 2U4N Certified Enclosures and Nodes.

Table 21. Rack installation options

Description	Part number	Feature code	Maximum supported
4-post rail kit for VX Enclosure			
ThinkSystem D2 Slide Rail	None*	AUYC	1
Cable management arm (CMA) upgrade			
ThinkSystem D2 CMA (Cable Management Arm)	7XF7A03997	AUYD	1
Front VGA/USB ports			
ThinkSystem SD530 Front VGA/USB KVM Breakout Module	7M17A04002	AUYM	1
System Console Breakout Cable	81Y5286	A1NF	1

* CTO only.

Configuration note: For 6-drive backplane configurations, the VGA/USB KVM Breakout Module occupies the upper-left drive bay, limiting the maximum number of drives to 5.

The following table summarizes the rail kit features and specifications.

Table 22. Rail kit features and specifications summary

Feature	D2 Slide Rail without CMA
Feature code	AUYC
CMA	7XF7A03997
Rail length	853 mm (33.58 in.)
Rail type	Full-out slide (ball bearing)
Tool-less installation	Yes
In-rack server maintenance	Yes
1U PDU support	Yes
0U PDU support	No
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.)

Feature	D2 Slide Rail without CMA
Distance between front and rear mounting flanges [^]	609.6 mm (24 in.) – 812.8 mm (32 in.)

[^] 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 128 GB or 2x 480 GB M.2 SSDs configured in a RAID-1 drive group.

The following table lists the VMware ESXi hypervisor versions that are available for selection for the VX2U4N Certified Nodes.

Table 23. VMware ESXi hypervisor selection options

Description	Feature code
VMware ESXi 6.0 U3 (Factory installed)	AXFS
VMware ESXi 6.5 U1 (Factory installed)	AXFT
VMware ESXi 6.5 U2 (Factory Installed)	B3VW
VMware ESXi 6.7 (Factory Installed)	B3VX

Configuration note: If the ESXi 6.0 U3 preload is selected, the NVMe SSDs cannot be used.

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 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 can be specified based on VM 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 for 1 Processor
Virtual SAN Standard provides support for hybrid and all-flash storage configurations.
- VMware Virtual SAN 6 Advanced for 1 Processor
Virtual SAN Advanced provides support for hybrid and all-flash storage configurations with space efficiency features (compression, deduplication, and erasure coding).
- VMware Virtual SAN 6 Enterprise for 1 Processor
Virtual SAN 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 for Remote Office Branch Office (25 VM Pack)
Virtual SAN for 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 (10 or 100 Concurrent User Pack)
Virtual SAN 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 24. 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 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 (ROBO)		
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 (ROBO)		
VMware vSAN 6 Enterprise for Rmt Off Brnch Off 25VM Pk w/1Yr Support	7S06001UWW	B297

Description	Part number	Feature code
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
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 25. VMware vSAN software editions feature comparison

Feature	VMware vSAN software edition		
	Standard	Advanced	Enterprise
Licensing for data center	Processor-based (per 1 processor)		
Licensing for ROBO	VM-based (per 25 VMs)*		
Licensing for Desktop	Concurrent user-based (per 10 or 100 users)		
Cluster size	2 - 64	2 - 64	2 - 64
Storage-Policy Based Management	Yes	Yes	Yes
Flash Read/Write Caching	Yes	Yes	Yes
Distributed RAID	Yes	Yes	Yes
Virtual Distributed Switch	Yes	Yes	Yes
Rack Awareness	Yes	Yes	Yes
vSphere Replication	Yes	Yes	Yes
Software Checksum	Yes	Yes	Yes
All-Flash Hardware	Yes	Yes	Yes
iSCSI Target Service	Yes	Yes	Yes
IOPS Limit	Yes	Yes	Yes
Deduplication and Compression	No	Yes**	Yes**
RAID-5/6 Erasure Coding	No	Yes**	Yes**
Data-at-Rest Encryption	No	No	Yes
Stretched Cluster with Local Failure Protection	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 for 1 Processor
vSphere Standard Edition provides an entry-level solution for basic server consolidation and business continuity.
- VMware vSphere 6 Enterprise Plus for 1 Processor
vSphere Enterprise Plus Edition offers resource management with enhanced application availability and performance for server virtualization and cloud solutions.
- VMware vSphere 6 with Operations Management Enterprise Plus for 1 Processor
vSphere with Operations Management Enterprise Plus offers intelligent operations management and automation with predictive analytics, along with resource management and enhanced application availability and performance, for server virtualization and cloud solutions.
- VMware vSphere 6 for Remote Office Branch Office (ROBO) Standard (25 VM Pack)
vSphere for ROBO Standard provides remote site server virtualization platform with business continuity and backup features.
- VMware vSphere 6 for Remote Office Branch Office Advanced (25 VM Pack)
vSphere for ROBO Advanced provides remote site server virtualization platform that offers business continuity and backup with advanced features such as standardization of host configurations.

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

Table 26. 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 with Operations Management Enterprise Plus		
VMware vSphere 6 w/Operations Mgmt Ent Plus for 1 Proc w/1Yr Support	7S060005WW	B27J
VMware vSphere 6 w/Operations Mgmt Ent Plus for 1 Proc w/3Yr Support	7S06003FWW	B2AU
VMware vSphere 6 w/Operations Mgmt Ent Plus for 1 Proc w/5Yr Support	7S06006RWW	B2E4
vSphere 6 Standard for Remote Office Branch Office		
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 Advanced for Remote Office Branch Office		
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 27. VMware vSphere software editions feature comparison

Feature	VMware vSphere software edition				
	Standard	Enterprise Plus	Operations Management Enterprise Plus	Standard for ROBO	Advanced for ROBO
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	Yes	No	No
High Availability and Fault Tolerance	2 vCPU	4 vCPU	4 vCPU	2 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	Yes	No	No
APIs for Array Integration, Multipathing	Yes	Yes	Yes	No	No
Content Library	Yes	Yes	Yes	No	No
vCenter High Availability	Yes*	Yes*	Yes*	No	No
vCenter Backup and Restore	Yes*	Yes*	Yes*	No	No
vCenter Server Appliance Migration Tool	Yes*	Yes*	Yes*	No	No
Virtual Machine Encryption	No	Yes	Yes	No	No
Proactive High Availability	No	Yes	Yes	No	No
vSphere Integrated Containers	No	Yes	Yes	No	Yes
Distributed Resource Scheduler (DRS)	No	Yes	Yes	No	No
Distributed Power Management	No	Yes	Yes	No	No
Big Data Extensions	No	Yes	Yes	No	No
Distributed Switch	No	Yes	Yes	No	Yes
Storage DRS	No	Yes	Yes	No	No
I/O Controls (Network and Storage) and SR-IOV	No	Yes	Yes	No	No
Host Profiles and Auto Deploy	No	Yes	Yes	No	Yes
Flash Read Cache	No	Yes	Yes	No	No
Cross-vCenter and Long Distance vMotion	No	Yes	Yes	No	No
vGPU	No	Yes	Yes	No	No
Predictive DRS	No	Yes**	Yes	No	No
vSphere Monitoring	No	No	Yes	No	No
Capacity Optimization	No	No	Yes	No	No
Operations Visibility	No	No	Yes	No	No

* Requires vCenter Server Standard.

** Requires vRealize Operations Standard.

VMware HCI Kit License and Subscription

Lenovo offers the following VMware HCI license bundles that include both vSphere and vSAN License and Subscription options:

- 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 with Operations Management Enterprise Plus
 - vSAN Enterprise
- VMware HCI Kit Standard for ROBO (Per 25 VMs):
 - vSphere Standard for ROBO
 - vSAN Standard for ROBO
- VMware HCI Kit Advanced for ROBO (Per 25 VMs):
 - vSphere Advanced for ROBO
 - vSAN Advanced for ROBO

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

Table 28. VMware HCI Kit License and Subscription options

Description	Part number	Feature code
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
VMware HCI Kit Enterprise (Per CPU) w/5Yr Support	7S06008KWW	B2FY
HCI Kit Standard for Remote Office Branch Office		
VMware HCI Kit for Rmt Off Brnch Off Std (25 VM Pack) w/1Yr Support	7S060021WW	B29E
VMware HCI Kit for Rmt Off Brnch Off Std (25 VM Pack) w/3Yr Support	7S06005BWW	B2CQ
VMware HCI Kit for Rmt Off Brnch Off Std (25 VM Pack) w/5Yr Support	7S06008MWW	B2G0
HCI Kit Advanced for Remote Office Branch Office		
VMware HCI Kit for Rmt Off Brnch Off Adv (25 VM Pack) w/1Yr Support	7S060022WW	B29F
VMware HCI Kit for Rmt Off Brnch Off Adv (25 VM Pack) w/3Yr Support	7S06005CWW	B2CR
VMware HCI Kit for Rmt Off Brnch Off Adv (25 VM Pack) w/5Yr Support	7S06008NWW	B2G1

VMware Horizon 7

Optionally, Lenovo offers VMware Horizon 7 Standard, Advanced, and Enterprise licenses for Virtual Desktop Infrastructure (VDI) deployments of the ThinkAgile VX Certified Nodes. The Standard license is available in 10-user or 100-user packs for concurrent users, and it includes VMware vSphere Desktop (delivers the full range of vSphere 6 Enterprise Plus features for desktop workloads) and vCenter Server for Desktop. The Advanced and Enterprise licenses are available in 10-user or 100-user packs for concurrent or named users, and they include VMware vSphere Desktop, vCenter Server for Desktop, and vSAN Advanced for Desktop with All-Flash.

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

Table 29. 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

Description	Part number	Feature code
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 30. 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 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 of 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 31. 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 2U4N Certified Nodes support the following systems management tools:

- Lenovo XClarity Controller
- Lenovo XClarity Administrator
- 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 graphics resolutions up to 1920x1200 at 60 Hz with 16 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 32. XClarity Controller FoD upgrades

Description	Part number	Feature code	Maximum supported
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.

Lenovo XClarity Administrator

Lenovo XClarity Administrator is a centralized systems management solution that helps administrators deliver infrastructure faster. This solution integrates easily with Lenovo x86 servers, ThinkAgile VX Series appliances and certified nodes, RackSwitch switches, and DS Series storage, providing automated agent-less discovery, monitoring, firmware updates, and configuration management across multiple systems.

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 33. Lenovo XClarity software options

Description	Part number (NA, AP, Japan)*	Part number (EMEA, LA)**
Lenovo XClarity Pro, per Mngd Server w/1 Yr SW S&S	00MT201	00MT207
Lenovo XClarity Pro, per Mngd Server w/3 Yr SW S&S	00MT202	00MT208
Lenovo XClarity Pro, per Mngd Server 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 Lenovo x86 servers, appliances, certified nodes, RackSwitch switches, Flex System chassis, and DS Series storage systems
- 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 appliance 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/lvno-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, it identifies system power consumption trends and ideal power settings and performs cooling analysis so that you can define and optimize 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 34. 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/lvno-lxem>

Physical specifications

The ThinkAgile VX 2U4N Certified Nodes have the following dimensions and weight (approximate):

- Enclosure
 - Height: 87 mm (3.4 in.)
 - Width: 448 mm (17.6 in.)
 - Depth: 834 mm (32.8 in.)
 - Weight (maximum, with four nodes): 55.0 kg (121.3 lb)
- Node
 - Height: 41 mm (1.6 in.)
 - Width: 222 mm (8.7 in.)
 - Depth: 562 mm (22.1 in.)
 - Weight (maximum): 7.5 kg (16.5 lb)

Operating environment

The ThinkAgile VX 2U4N 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 125 W not installed.

The ThinkAgile VX 2U4N 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): 6.8 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 35. 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
1100W AC 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
1600W AC 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
2000W AC Platinum	200 - 240 V AC	2610 W	11 A	8905 BTU/hour
	180 - 300 V DC	2597 W	9.2 A	8861 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 2.1

Warranty services and upgrades

The ThinkAgile VX Certified Nodes can be configured with a three-, four, or five-year hardware warranty with 24x7 ThinkAgile Advantage Single Point of Support (Lenovo server hardware and VMware software; requires an active software support contract purchased either from VMware or Lenovo) and various levels of coverage with a well-defined scope of services, including service hours, response time, term of service, and service agreement terms and conditions.

The Lenovo local support centers perform problem determination and resolution for hardware-related issues and escalate to VMware, on behalf of the customer, for software-related problem determination. VMware will contact the customer and will own the software-related problem resolution until closure.

Some countries might have different warranty terms and conditions than the standard warranty. This is due to local business practices or laws in the specific country. Local service teams can assist in explaining country-specific terms when needed. Examples of country-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 spares parts.

Lenovo warranty service coverage levels are country-specific. Not all warranty service levels are available in every country. For information about Lenovo warranty services that are available in your country or area, 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/>

The following Lenovo warranty service levels are available for the ThinkAgile VX Certified Nodes:

- 3, 4, or 5 years of warranty service coverage with 1-year or 2-year post-warranty extensions:
 - Base warranty: 9x5 Next Business Day response with parts delivered
 - Foundation Service: 9x5 service coverage with next business day onsite response
 - Essential Service: 24x7 service coverage with 4-hour onsite response or 24-hour committed repair (available only in select countries)
 - Advanced Service: 24x7 service coverage with 2-hour onsite response or 6-hour committed repair (available only in select countries)
- Premier Support
Premier Support service offers direct access to Lenovo's most advanced technicians for faster troubleshooting with single point of contact for end-to-end problem resolution and collaborative third-party software support.
- YourDrive YourData
Lenovo's YourDrive YourData service (where applicable) is a multi-drive retention offering that ensures your data is always under your control, regardless of the number of drives that are installed in your Lenovo system. In the unlikely event of a drive failure, you retain possession of your drive while Lenovo replaces the failed drive part. Your data stays safely on your premises, in your hands. The YourDrive YourData service can be purchased in convenient bundles with Foundation, Essential, or Advanced Service upgrades and extensions.

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

- Lenovo Statement of Limited Warranty for Data Center Group (DCG) 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.

The Lenovo local support centers perform problem determination and resolution for hardware-related issues and escalate to VMware, on behalf of the customer, for software-related problem determination. VMware will contact the customer and will own the software-related problem resolution until closure.

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 network switches
- 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:

<https://www.lenovo.com/us/en/p/Deployment-Services>

Ethernet LAN switches

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

Table 36. Ethernet LAN switches

Description	Part number	Feature code
1 Gb Ethernet switches (Out-of-band hardware management or 1 GbE host connectivity)		
Lenovo RackSwitch G7028 (Rear to Front)	7159BAX	AT09
Lenovo RackSwitch G7052 (Rear to Front)	7159CAX	AT0A
Lenovo RackSwitch G8052 (Rear to Front)	7159G52	ASY2
10 Gb Ethernet switches (10 GbE host connectivity)		
Lenovo ThinkSystem NE1032 RackSwitch (Rear to Front)	7159A1X	AU3A
Lenovo ThinkSystem NE1032T RackSwitch (Rear to Front)	7159B1X	AU38
Lenovo ThinkSystem NE1072T RackSwitch (Rear to Front)	7159C1X	AU36
Lenovo RackSwitch G8124E (Rear to Front)	7159BR6	AT0B
Lenovo RackSwitch G8272 (Rear to Front)	7159CRW	ASRD
Lenovo RackSwitch G8296 (Rear to Front)	7159GR6	ASVM
25 Gb Ethernet switches (10/25 GbE host connectivity)		
Lenovo ThinkSystem NE2572 RackSwitch (Rear to Front)	7159E1X	AV19
40 Gb Ethernet switches (40 GbE host connectivity; 10 GbE breakout host connectivity)		
Lenovo RackSwitch G8332 (Rear to Front)	7159BRX	ASY4
100 Gb Ethernet switches (40 GbE/100 GbE host connectivity; 10 GbE/25 GbE breakout host connectivity)		
Lenovo ThinkSystem NE10032 RackSwitch (Rear to Front)	7159D1X	AV17

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 offered by Lenovo that can be used with the ThinkAgile VX Certified Nodes.

Table 37. Rack cabinets

Description	Part number	Feature code
25U S2 Standard Rack (1000 mm deep; 2 sidewall compartments)	93072RX	1042
25U Static S2 Standard Rack (1000 mm deep; 2 sidewall compartments)	93072PX	6690
42U S2 Standard Rack (1000 mm deep; 6 sidewall compartments)	93074RX	1043
42U 1100mm Enterprise V2 Dynamic Rack (6 sidewall compartments)	93634PX	A1RC
42U 1100mm Enterprise V2 Dynamic Expansion Rack (6 sidewall compartments)	93634EX	A1RD
42U 1200mm Deep Dynamic Rack (6 sidewall compartments)	93604PX	7649
42U 1200mm Deep Static Rack (6 sidewall compartments)	93614PX	7651
42U Enterprise Rack (1105 mm deep; 4 sidewall compartments)	93084PX	5621
42U Enterprise Expansion Rack (1105 mm deep; 4 sidewall compartments)	93084EX	5622

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 offered by Lenovo that can be used with the ThinkAgile VX Certified Nodes.

Table 38. Power distribution units

Description	Part number	Feature code
0U Basic PDUs		
0U 36 C13/6 C19 24A/200-240V 1 Phase PDU with NEMA L6-30P line cord	00YJ776	ATZY
0U 36 C13/6 C19 32A/200-240V 1 Phase PDU with IEC60309 332P6 line cord	00YJ777	ATZZ
0U 21 C13/12 C19 32A/200-240V/346-415V 3 Phase PDU with IEC60309 532P6 cord	00YJ778	AU00
0U 21 C13/12 C19 48A/200-240V 3 Phase PDU with IEC60309 460P9 line cord	00YJ779	ATZX
Switched and Monitored PDUs		
0U 20 C13/4 C19 Switched and Monitored 24A/200-240V/1Ph PDU w/ NEMA L6-30P cord	00YJ781	AU03
0U 20 C13/4 C19 Switched / Monitored 32A/200-240V/1Ph PDU w/ IEC60309 332P6 cord	00YJ780	AU01
0U 18 C13/6 C19 Sw. / Mon. 32A/200-240/346-415V/3Ph PDU w/ IEC60309 532P6 cord	00YJ782	AU02
0U 12 C13/12 C19 Switched / Monitored 48A/200-240V/3Ph PDU w/ IEC60309 460P9 cord	00YJ783	AU04
1U 9 C19/3 C13 Switched and Monitored DPI PDU (without line cord)	46M4002	5896
1U 9 C19/3 C13 Switched and Monitored 60A 3Ph PDU with IEC 309 3P+Gnd cord	46M4003	5897
1U 12 C13 Switched and Monitored DPI PDU (without line cord)	46M4004	5894
1U 12 C13 Switched and Monitored 60A 3 Phase PDU with IEC 309 3P+Gnd line cord	46M4005	5895
Ultra Density Enterprise PDUs (9x IEC 320 C13 + 3x IEC 320 C19 outlets)		
Ultra Density Enterprise C19/C13 PDU Module (without line cord)	71762NX	6050
Ultra Density Enterprise C19/C13 PDU 60A/208V/3ph with IEC 309 3P+Gnd line cord	71763NU	6051

Description	Part number	Feature code
C13 Enterprise PDUs (12x IEC 320 C13 outlets)		
DPI C13 Enterprise PDU+ (without line cord)	39M2816	6030
DPI Single Phase C13 Enterprise PDU (without line cord)	39Y8941	6010
C19 Enterprise PDUs (6x IEC 320 C19 outlets)		
DPI Single Phase C19 Enterprise PDU (without line cord)	39Y8948	6060
DPI 60A 3 Phase C19 Enterprise PDU with IEC 309 3P+G (208 V) fixed line cord	39Y8923	6061
Front-end PDUs (3x IEC 320 C19 outlets)		
DPI 30amp/125V Front-end PDU with NEMA L5-30P line cord	39Y8938	6002
DPI 30amp/250V Front-end PDU with NEMA L6-30P line cord	39Y8939	6003
DPI 32amp/250V Front-end PDU with IEC 309 2P+Gnd line cord	39Y8934	6005
DPI 60amp/250V Front-end PDU with IEC 309 2P+Gnd line cord	39Y8940	6004
DPI 63amp/250V Front-end PDU with IEC 309 2P+Gnd line cord	39Y8935	6006
Universal PDUs (7x IEC 320 C13 outlets)		
DPI Universal 7 C13 PDU (with 2 m IEC 320-C19 to C20 rack power cord)	00YE443	5950
Line cords for PDUs that ship without a line cord		
DPI 30a Line Cord (NEMA L6-30P)	40K9614	6500
DPI 32a Line Cord (IEC 309 P+N+G)	40K9612	6502
DPI 32a Line Cord (IEC 309 3P+N+G)	40K9611	6504
DPI 60a Cord (IEC 309 2P+G)	40K9615	6501
DPI 63a Cord (IEC 309 P+N+G)	40K9613	6503
DPI Australian/NZ 3112 Line Cord (32A)	40K9617	6505
DPI Korean 8305 Line Cord (30A)	40K9618	6506

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 list the uninterruptible power supply (UPS) units that are currently offered by Lenovo that can be used with the ThinkAgile VX Certified Nodes.

Table 39. Uninterruptible power supply units

Description	Part number
Worldwide models	
RT1.5kVA 2U Rack or Tower UPS (100-125VAC) (8x NEMA5-15R 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 NEMA5-20R 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.lenovofs.com>

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:

- [ThinkAgile VX Series for VMware vSAN](#)
- [VMware Alliance](#)
- [Hyperconverged Infrastructure](#)
- [Hyperconverged Infrastructure](#)

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