Lenovo ThinkAgile HX3721 Certified Node
Product Guide

Lenovo ThinkAgile HX Certified Nodes are designed for deploying industry-leading hyperconvergence software from Nutanix on Lenovo enterprise platforms that feature the Intel Xeon Processor Scalable Family.

The ThinkAgile HX Certified Nodes deliver fully validated and integrated Lenovo hardware and firmware, certified and preloaded with Nutanix software. Nutanix brings the benefits of web-scale technologies to enterprise applications through enterprise storage, data protection, infrastructure resilience, management and analytics, and security.

The ThinkAgile HX3721 Certified Nodes are dense nodes for compute-heavy workloads in the 2U 4-node (2U4N) rack-mount enclosures, and each node supports two processors, up to 768 GB of 2666 MHz TruDDR4 memory, 6x SAS/SATA SFF hot-swap drive bays with an extensive choice of SAS/SATA SSDs and HDDs, and flexible network connectivity options with 1/10 GbE RJ-45, 10 GbE SFP+, and 10/25 GbE SFP28 ports.

Several common uses for the ThinkAgile HX Certified Nodes for compute-heavy workloads include virtual desktop infrastructure (VDI), server virtualization, private/hybrid clouds, enterprise applications, light databases, and remote office and branch office workloads.

The ThinkAgile HX3721 Certified Nodes in the HX Series Enclosure are shown in the following figure.

Figure 1. Lenovo ThinkAgile HX3721 Certified Nodes in the HX Series Enclosure

Did you know?

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

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

Key features

The ThinkAgile HX Certified Nodes are designed for the industry's most feature-rich hyperconverged infrastructure from Nutanix. Nutanix brings the benefits of web-scale technologies to enterprise applications through enterprise storage, data protection, infrastructure resilience, management and analytics, and security.

The ThinkAgile HX Certified Nodes offer the following key features:

- 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.
- Deliver fully validated and integrated hardware and firmware that is certified with Nutanix software.
- Preloaded with Nutanix software and ready for out-of-box deployment (software licenses are not included).
- Provide flexibility in using the existing Nutanix term-based software licenses and active support contracts or purchasing new software licenses and support contracts from Nutanix.
- Include Lenovo ThinkAgile Advantage Single Point of Support for quick 24/7 problem reporting and resolution.
- Offer optional Lenovo Professional Services to get customers up and running quickly.

The Nutanix software running on the HX Certified Nodes deliver the following key features:

- A natively integrated solution for data protection and continuous availability at VM granularity that gives administrators an affordable range of options to meet the recovery point objectives (RPO) and recovery time objectives (RTO) for different applications.
- A fault resistant platform, with no single point of failure and no bottlenecks with shared-nothing architecture, where all data, metadata and services are distributed to all nodes within the cluster, that is built to detect, isolate and recover from failures anywhere in the system.
- An intuitive user-centric management experience to simplify every aspect of the IT infrastructure lifecycle and provide a single pane of glass to monitor and control Nutanix clusters, with simplified workflows and rich automation for common administrative tasks.
- Powerful security features, such as two-factor authentication and data-at-rest encryption, with a security development lifecycle that is integrated into product development to help customers meet the most stringent security requirements.

Components and connectors

The following figure shows the front view of the ThinkAgile Enclosure for HX Certified Node with up to four HX3721 Certified Nodes.

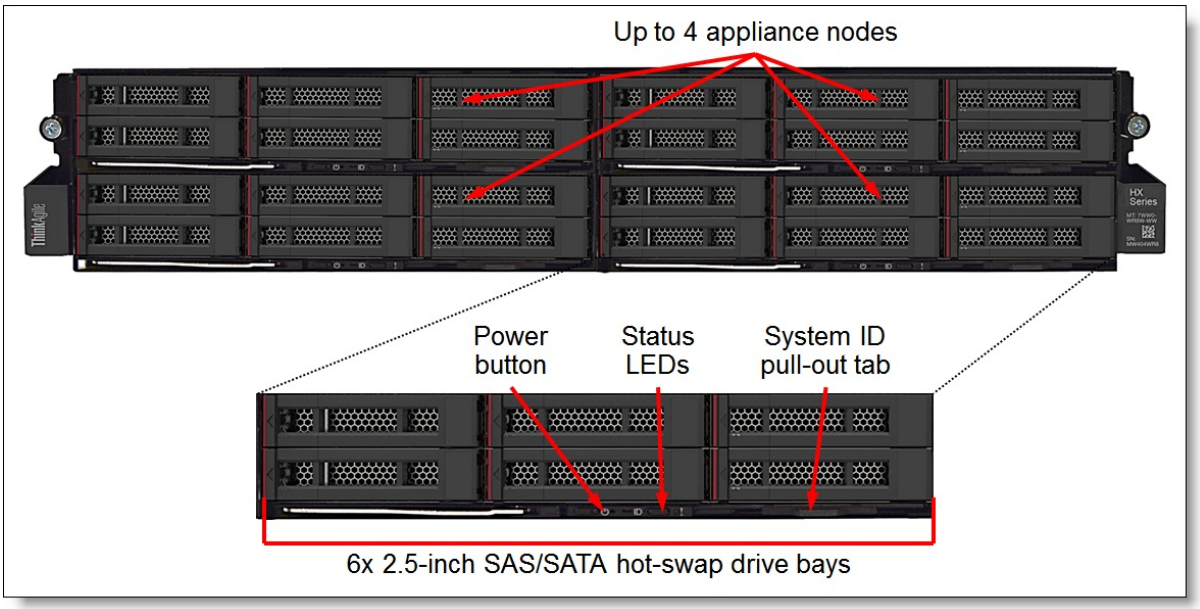

Figure 2. HX Enclosure with up to four HX3721 Certified Nodes front view

The following figure shows the rear view of the ThinkAgile Enclosure for HX Certified Node.

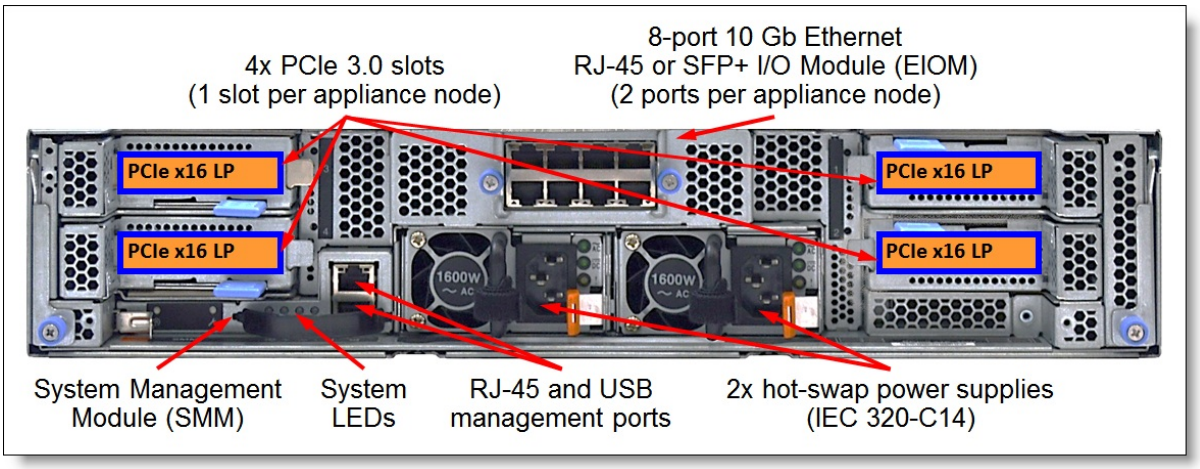

Figure 3. HX Enclosure rear view

System specifications

The following table lists the system specifications of the ThinkAgile HX3721 Certified Node.

Table 1. HX3721 system specifications

Attribute	Specification
Form factor	HX3721: Half-wide, 1U node; up to four nodes per enclosure. HX Series enclosure: 2U Four-node (2U4N) rack-mount.
Processor	Two Intel Xeon Silver, Gold, or Platinum processors.
Chipset	Intel C624.
Memory	Up to 12 TruDDR4 2666 MHz DIMMs. Support for 16 GB and 32 GB RDIMMs or 64 GB LRDIMMs.
Memory capacity	Up to 768 GB with 12x 64 GB LRDIMMs.
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	6x 2.5-inch SAS/SATA hot-swap.
Internal storage	• Hybrid: 2 cache SSDs and 4 capacity HDDs. • All Flash: 4 or 6 SSDs.
Drive capacities	SSDs: • 12 Gbps SAS SSDs up to 3.84 TB • 6 Gbps SATA SSDs up to 1.92 TB HDDs: • 12 Gbps SAS HDDs up to 2.4 TB • 6 Gbps NL SATA HDDs up to 2 TB **Note:** All SSDs in the certified node must be of the same model and capacity. All HDDs in the certified node must be of the same type and capacity.
Storage capacity	• Hybrid: Up to 9.6 TB (HDDs). • All Flash: Up to 23.04 TB (SSDs).
Storage controller	1x 430-8i Dense HBA (12 Gbps SAS/6 Gbps SATA).
Network interfaces	• 2x base 1/10 GbE RJ-45 or 10 GbE SFP+ network ports. • 2x optional 1/10 GbE RJ-45, 10 GbE SFP+, or 25 GbE SFP28 expansion ports.
Boot drive	2x 128 GB M.2 non-hot-swap SSDs (RAID-1).

I/O expansion slots	• One PCIe 3.0 x8 on the system board (for an internal storage controller).
	• One PCIe 3.0 x16 slot per node in the HX Enclosure with the PCIe x16 I/O shuttle:
	  ◦ Slot 1 (Node 1): PCIe 3.0 x16 low-profile (for a network adapter).
	  ◦ Slot 2 (Node 2): PCIe 3.0 x16 low-profile (for a network adapter).
	  ◦ Slot 3 (Node 3): PCIe 3.0 x16 low-profile (for a network adapter).
	  ◦ Slot 4 (Node 4): PCIe 3.0 x16 low-profile (for a network adapter).

Ports	• 1x Gigabit Ethernet RJ-45 port for systems management (in the HX Series enclosure). • 1x USB port (in the HX Series enclosure).
Cooling	Five hot-swap system fans in the enclosure.
Power supply	Two redundant hot-swap 2000 W (200 - 240 V) Platinum power supplies in the enclosure.
Video	Matrox G200 with 16 MB memory integrated into the XClarity Controller. Maximum resolution is 1920x1200 at 60 Hz with 32 bits per pixel.
Hot-swap parts	SSDs, HDDs, power supplies, and fans.

Attribute	Specification
Systems management	XClarity Controller (XCC) Enterprise (Pilot 4 chip), proactive platform alerts, XClarity Provisioning Manager, XClarity Administrator and XClarity Pro, XClarity Integrators for Nutanix and vCenter Server (optional). XClarity Energy Manager (optional).
Security features	Power-on password, administrator's password, Trusted Platform Module (TPM) 1.2 or 2.0 (configurable UEFI setting).
Software	Nutanix Acropolis Pro and Ultimate editions (licenses purchased separately from Nutanix).
Hypervisors	• Nutanix Acropolis Hypervisor (Bundled with AOS; default factory preload). • VMware ESXi 6.0 Update 3 (Optional factory preload). • VMware ESXi 6.5 Update 1 (Optional factory preload). • VMware ESXi 6.5 Update 2 (Field upgrade only). • VMware ESXi 6.7 Update 1 (Field upgrade only).
Warranty services and upgrades	One- (PRC only), 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 or onsite response, 24x7x4 or 24x7x2 onsite response, 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, Premier Support, and Enterprise Server Software Support.
Dimensions	• 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	• 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 HX 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 adding components (processors, memory, drives, and network adapters) to the selected model according to the output from the Nutanix Sizer tool:
http://services.nutanix.com/

The following table lists the base CTO models of the ThinkAgile HX3721 Certified Node and Enclosure.

Table 2. Base CTO models

Description	Machine Type/Model
Models with 3-year warranty (Worldwide)	
Lenovo ThinkAgile HX3721 Certified Node 3YR	7Y88CTO2WW
Lenovo ThinkAgile Enclosure for HX Certified Node 3YR	7Y87CTO1WW
Models with 1-year warranty (PRC only)	
Lenovo ThinkAgile HX3721 Certified Node 1YR	7Z03CTO2WW
Lenovo ThinkAgile Enclosure for HX Certified Node 1YR	7Z02CTO1WW

The following table lists the base chassis for the HX3721 Certified Node.

Table 3. Base chassis

Description	Feature code
ThinkAgile HX372x Base	B0SY

The HX3721 Certified Nodes ship with the following items:

- *Electronic Publications Flyer*
- D2 Tool-less Slide Rail Kit with CMA (enclosure only)
- With or without two rack power cables or country-specific line cords (enclosure only; depending on the power cable option selection)

Processors

The ThinkAgile HX3721 Certified Node ships with two processors. The following table lists the processor options that are available for selection.

Table 4. Processor selection options

Description	Feature code	Quantity
Intel Xeon Silver processors		
Intel Xeon Silver 4116 12C 85W 2.1GHz Processor	AXNZ	2
Intel Xeon Gold processors		
Intel Xeon Gold 5115 10C 85W 2.4GHz Processor	AXP0	2
Intel Xeon Gold 6126 12C 125W 2.6GHz Processor	AWEX	2
Intel Xeon Gold 6130 16C 125W 2.1GHz Processor	AX6D	2
Intel Xeon Gold 6140 18C 140W 2.3GHz Processor	AX6R	2
Intel Xeon Gold 6152 22C 140W 2.1GHz Processor	AX6P	2
Intel Xeon Platinum processors		
Intel Xeon Platinum 8153 16C 125W 2.0GHz Processor	AX6L	2

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

Table 5. CPU 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 Silver processors											
4116	2.1 / 3 GHz	12 / 24	16.5 MB	2400 MHz	768 GB	9.6 GT/s	85W	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	85W	Yes	Yes	Yes	Yes
6126	2.6 / 3.7 GHz	12 / 24	19.25 MB	2666 MHz	768 GB	10.4 GT/s	125W	Yes	Yes	Yes	Yes
6130	2.1 / 3.7 GHz	16 / 32	22 MB	2666 MHz	768 GB	10.4 GT/s	125W	Yes	Yes	Yes	Yes
6140	2.3 / 3.7 GHz	18 / 36	24.75 MB	2666 MHz	768 GB	10.4 GT/s	140W	Yes	Yes	Yes	Yes
6152	2.1 / 3.7 GHz	22 / 44	30.25 MB	2666 MHz	768 GB	10.4 GT/s	140W	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
Intel Xeon Platinum processors											
8153	2.0 / 2.8 GHz	16 / 32	22 MB	2666 MHz	768 GB	10.4 GT/s	125W	Yes	Yes	Yes	Yes

Memory

The ThinkAgile HX3721 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 HX3721 supports up to 12 DIMMs. The following rules apply when selecting the memory configuration:

- The certified node supports RDIMMs or LRDIMMs for up to 768 GB of memory.
- All DIMMs in the certified node must be of the same type (RDIMMs or LRDIMMs).
- All DIMMs in the certified 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 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 selection options

Capacity	Description	Part number	Feature code	Quantity
RDIMMs - 2666 MHz				
192 GB	ThinkSystem 16GB TruDDR4 2666 MHz (2Rx8 1.2V) RDIMM	7X77A01303	AUNC	12
384 GB	ThinkSystem 32GB TruDDR4 2666 MHz (2Rx4 1.2V) RDIMM	7X77A01304	AUND	12
LRDIMMs - 2666 MHz				
384 GB	ThinkSystem 64GB TruDDR4 2666 MHz (4Rx4 1.2V) LRDIMM	7X77A01305	AUNE	6
512 GB*	ThinkSystem 64GB TruDDR4 2666 MHz (4Rx4 1.2V) LRDIMM	7X77A01305	AUNE	8
768 GB	ThinkSystem 64GB TruDDR4 2666 MHz (4Rx4 1.2V) LRDIMM	7X77A01305	AUNE	12

* System performance might be impacted due to unbalanced memory configuration.

Internal storage

The ThinkAgile HX3721 Certified Node provides 6x SAS/SATA SFF hot-swap drive bays for configurable storage capacity, and it contains two internal M.2 SATA non-hot-swap SSDs configured in a RAID-1 drive group for software preload.

The following table lists the internal storage options for the HX3721 Certified Node.

Table 7. Internal storage options

Description	Feature code	Quantity
Backplanes		
ThinkSystem SD530 3x2 SAS/SATA Backplane	AUYG	1
M.2 enablement kit		
ThinkSystem M.2 with Mirroring Enablement Kit	AUMV	1

Configuration notes:

- One SAS/SATA backplane and one M.2 with Mirroring Enablement Kit are derived by the configurator.
- The M.2 with Mirroring Enablement Kit 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 software preload.

The following table lists M.2 drive selection options for software preload.

Table 8. Drive options for software preload

Description	Feature code	Quantity
ThinkSystem M.2 CV3 128GB SATA 6Gbps Non-Hot-Swap SSD	AUUV	2

The following table lists the storage controllers for internal storage of the HX3721 Certified Node.

Table 9. Controllers for internal storage

Description	Feature code	Quantity
ThinkSystem 430-8i SAS/SATA 12Gb Dense HBA (non-RAID)	B0SS	1

Configuration note: A low profile SAS HBA for internal storage are derived by the configurator, and it occupies the internal PCIe slot.

Drives for internal storage

The following tables list the drive selection options for the HX3721 Certified Node.

Table 10. Drive selection options: Hybrid configurations

Description	Part number	Feature code	Quantity
SSD selection (Cache tier): SAS 12Gb SSDs - PM1633a			
ThinkSystem 2.5" PM1633a 3.84TB Capacity SAS 12Gb Hot Swap SSD	7N47A00121	AUMK	2
SSD selection (Cache tier): SAS 12Gb SSDs - PM1635a			
ThinkSystem 2.5" PM1635a 800GB Mainstream SAS 12Gb Hot Swap SSD	7N47A00118	AUMD	2
ThinkSystem 2.5" PM1635a 1.6TB Mainstream SAS 12Gb Hot Swap SSD	7N47A00119	AVRG	2
SSD selection (Cache tier): SAS 12Gb SSDs - PM1645			
ThinkSystem 2.5" PM1645 800GB Mainstream SAS 12Gb Hot Swap SSD	4XB7A13653	B4A0	2
ThinkSystem 2.5" PM1645 1.6TB Mainstream SAS 12Gb Hot Swap SSD	4XB7A13654	B4A1	2
SSD selection (Cache tier): SATA 6Gb SSDs - S4600			
ThinkSystem 2.5" Intel S4600 480GB Mainstream SATA 6Gb Hot Swap SSD	7SD7A05722	B0ZQ	2
ThinkSystem 2.5" Intel S4600 960GB Mainstream SATA 6Gb Hot Swap SSD	7SD7A05721	B0ZR	2
ThinkSystem 2.5" Intel S4600 1.92TB Mainstream SATA 6Gb Hot Swap SSD	7SD7A05720	B0ZS	2
SSD selection (Cache tier): SATA 6Gb SSDs - S4610			
ThinkSystem 2.5" Intel S4610 480GB Mainstream SATA 6Gb Hot Swap SSD	4XB7A13634	B49M	2
ThinkSystem 2.5" Intel S4610 960GB Mainstream SATA 6Gb Hot Swap SSD	4XB7A13635	B49N	2
ThinkSystem 2.5" Intel S4610 1.92TB Mainstream SATA 6Gb Hot Swap SSD	4XB7A13636	B49P	2
HDD selection (Capacity tier): SAS 12Gb HDDs			
ThinkSystem 2.5" 2.4TB 10K SAS 12Gb Hot Swap 512e HDD	7XB7A00069	B0YS	4
HDD selection (Capacity tier): SATA 6Gb HDDs			
ThinkSystem 2.5" 1TB 7.2K SATA 6Gb Hot Swap 512n HDD	7XB7A00036	AUUE	4
ThinkSystem 2.5" 2TB 7.2K SATA 6Gb Hot Swap 512e HDD	7XB7A00037	AUUJ	4

Table 11. Drive selection options: All Flash configurations

Description	Part number	Feature code	Quantity (min / max)
SAS 12Gb SSDs - PM1633a			
ThinkSystem 2.5" PM1633a 3.84TB Capacity SAS 12Gb Hot Swap SSD	7N47A00121	AUMK	4 / 6
SAS 12Gb SSDs - PM1635a			
ThinkSystem 2.5" PM1635a 800GB Mainstream SAS 12Gb Hot Swap SSD	7N47A00118	AUMD	4 / 6
ThinkSystem 2.5" PM1635a 1.6TB Mainstream SAS 12Gb Hot Swap SSD	7N47A00119	AVRG	4 / 6
SAS 12Gb SSDs - PM1645			
ThinkSystem 2.5" PM1645 800GB Mainstream SAS 12Gb Hot Swap SSD	4XB7A13653	B4A0	4 / 6
ThinkSystem 2.5" PM1645 1.6TB Mainstream SAS 12Gb Hot Swap SSD	4XB7A13654	B4A1	4 / 6
SATA 6Gb SSDs - S4600			
ThinkSystem 2.5" Intel S4600 480GB Mainstream SATA 6Gb Hot Swap SSD	7SD7A05722	B0ZQ	4 / 6
ThinkSystem 2.5" Intel S4600 960GB Mainstream SATA 6Gb Hot Swap SSD	7SD7A05721	B0ZR	4 / 6
ThinkSystem 2.5" Intel S4600 1.92TB Mainstream SATA 6Gb Hot Swap SSD	7SD7A05720	B0ZS	4 / 6
SATA 6Gb SSDs - S4610			
ThinkSystem 2.5" Intel S4610 480GB Mainstream SATA 6Gb Hot Swap SSD	4XB7A13634	B49M	4 / 6
ThinkSystem 2.5" Intel S4610 960GB Mainstream SATA 6Gb Hot Swap SSD	4XB7A13635	B49N	4 / 6
ThinkSystem 2.5" Intel S4610 1.92TB Mainstream SATA 6Gb Hot Swap SSD	4XB7A13636	B49P	4 / 6
SATA 6Gb SSDs - 5100			
ThinkSystem 2.5" 5100 1.92TB Mainstream SATA 6Gb Hot Swap SSD	7SD7A05762	B10Z	4 / 6
SATA 6Gb SSDs - 5200			
ThinkSystem 2.5" 5200 480GB Mainstream SATA 6Gb Hot Swap SSD	4XB7A10238	B489	4 / 6
ThinkSystem 2.5" 5200 960GB Mainstream SATA 6Gb Hot Swap SSD	4XB7A10239	B48A	4 / 6

Configuration notes:

- For hybrid configurations, the HX3721 Certified Node supports 2 cache drives (SSDs) and 4 capacity drives (HDDs).
- For All Flash configurations, the HX3721 Certified Node supports 4 or 6 SSDs.
- All SSDs in the certified node must be of the same model and capacity. All HDDs in the certified node must be of the same type and capacity.

Network connectivity

The ThinkAgile HX3721 Certified Nodes provide base 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 HX Series enclosure. Two additional 1/10 GbE RJ-45, 10 GbE SFP+, or 25 GbE SFP28 expansion ports can be selected, if required.

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

Table 12. Network adapter selection options

Description	Part number	Feature code	Quantity (min / max)
1/10 GbE RJ-45 base ports			
ThinkSystem D2 10Gb 8 port EIOM Base-T RJ-45	7M17A04001	AUYA	0 / 1*
1/10 GbE RJ-45 expansion ports			
Intel X550-T2 Dual Port 10GBase-T Adapter (RJ-45)	00MM860	ATPX	0 / 1
10 GbE SFP+ base ports			
ThinkSystem D2 10Gb 8 port EIOM SFP+	7M17A04000	AUY9	0 / 1*
10 GbE SFP+ expansion ports			
Intel X710-DA2 PCIe 10Gb 2-Port SFP+ Ethernet Adapter	7ZT7A00537	AUKX	0 / 1
10/25 GbE SFP28 expansion ports			
Mellanox ConnectX-4 Lx 10/25GbE SFP28 2-Port PCIe Ethernet Adapter	01GR250	AUAJ	0 / 1

* Per HX Series enclosure.

Configuration notes:

- One of the 1/10 GbE RJ-45 or 10 GbE SFP+ EIOMs is required for selection, and it provides base network connectivity. Optional expansion ports can be selected, if needed.
- Supported transceivers or DAC cables should be purchased for the SFP+ and SFP28 ports, and UTP Category 6 cables should be purchased for the 10 GbE RJ-45 ports. 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 1/10 GbE RJ-45 ports
  - Transceivers and cables for 10 GbE SFP+ ports
  - Transceivers and cables for 25 GbE SFP28 ports

The following table lists cables for the 1/10 GbE RJ-45 ports.

Table 13. Cables for 1/10 GbE RJ-45 ports

Description	Part number	Feature code
UTP Category 6 cables (Green) for 1/10 GbE RJ-45 ports		
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+ ports.

Table 14. Transceivers and cables for 10 GbE SFP+ ports

Description	Part number	Feature code
10 GbE SFP+ SR transceivers for 10 GbE SFP+ ports		
Lenovo 10GBASE-SR SFP+ Transceiver	46C3447	5053
Lenovo 10GBASE-LR SFP+ Transceiver (for X710-DA2)	00FE331	B0RJ
Lenovo 10Gb SFP+ LR Transceiver (10GBASE-LR) (for SFP+ EIOM)	90Y9412	A1PM
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
Passive SFP+ DAC cables for 10 GbE SFP+ ports		
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+ ports		
Lenovo 1m Active DAC SFP+ Cable	00VX111	AT2R
Lenovo 3m Active DAC SFP+ Cable	00VX114	AT2S
Lenovo 5m Active DAC SFP+ Cable	00VX117	AT2T

Description	Part number	Feature code
SFP+ active optical cables for 10 GbE SFP+ ports		
Lenovo 1m SFP+ to SFP+ Active Optical Cable	00YL634	ATYX
Lenovo 3m SFP+ to SFP+ Active Optical Cable	00YL637	ATYY
Lenovo 5m SFP+ to SFP+ Active Optical Cable	00YL640	ATYZ
Lenovo 7m SFP+ to SFP+ Active Optical Cable	00YL643	ATZ0
Lenovo 15m SFP+ to SFP+ Active Optical Cable	00YL646	ATZ1
Lenovo 20m SFP+ to SFP+ Active Optical Cable	00YL649	ATZ2

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

Table 15. Transceivers and cables for 25 GbE SFP28 ports

Description	Part number	Feature code
25 GbE SFP28 SR transceivers for 25 GbE SFP28 ports		
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
Passive copper cables for 25 GbE SFP28 ports		
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 ports		
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

Power supplies and cables

The ThinkAgile HX Series enclosures ship with two 2000 W (230V) Platinum hot-swap power supplies listed in the following table.

Table 16. Power supplies

Description	Feature code	Quantity
ThinkSystem D2 2000W Platinum PSU	AUZ2	2

The ThinkAgile HX Series enclosures ship with or without power cords depending on the selected option. The following table lists the rack power cables and country-specific line cords that are available for selection.

Table 17. Power cables

Description	Part number	Feature code
Rack power cables		
1.0m, 10A/100-250V, C13 to IEC 320-C14 Rack Power Cable	00Y3043	A4VP
1.5m, 10A/100-250V, C13 to IEC 320-C14 Rack Power Cable	39Y7937	6201
2.0m, 10A/100-250V, C13 to IEC 320-C14 Rack Power Cable	4L67A08365	B0N4
2.0m, 13A/125V-10A/250V, C13 to IEC 320-C14 Rack Power Cable	4L67A08369	6570
2.8m, 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

Description	Part number	Feature code
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/250V, C13 to JIS C-8303 Line Cord	4L67A08357	6533
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 4.3m, 10A/250V, C13 to CNS 10917-3 Line Cord	81Y2389	6531
United Kingdom 2.8m, 10A/250V, C13 to BS 1363/A Line Cord	39Y7923	6215
United Kingdom 4.3m, 10A/250V, C13 to BS 1363/A Line Cord	81Y2377	6577
United States 2.8m, 10A/250V, C13 to NEMA 6-15P Line Cord	46M2592	A1RF
United States 4.3m, 10A/250V, C13 to NEMA 6-15P Line Cord	4L67A08361	6373

Rack installation

The HX Series enclosures ship with a rail kit listed in the following table.

Table 18. Rail kit

Description	Feature code	Quantity
ThinkSystem D2 Slide Rail	AUYC	1

The following table summarizes the rail kit features and specifications.

Table 19. Rail kit features and specifications summary

Feature	D2 Slide Rail
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.)
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 HX Certified Nodes support the following hypervisors that are installed on the 2x 128 GB M.2 SSDs configured in a RAID-1 drive group:

- Nutanix Acropolis Hypervisor (AHV) (Bundled with AOS; default factory preload)
- VMware ESXi 6.0 Update 3 (Optional factory preload)
- VMware ESXi 6.5 Update 1 (Optional factory preload)
- VMware ESXi 6.5 Update 2 (Field upgrade only)
- VMware ESXi 6.7 Update 1 (Field upgrade only)

The following table lists the hypervisors available for factory preload selection.

Table 20. Hypervisors

Description	Feature code	Quantity
Nutanix SW Stack on Nutanix AHV (default selection)	B15S	1
Nutanix SW Stack on VMware ESXi 6.0 U3	B15T	1
Nutanix SW Stack on VMware ESXi 6.5 U1	B15R	1

The ThinkAgile HX Certified Nodes are shipped with the Nutanix software preloaded. Nutanix software licenses and software support are not included. Customers can use the existing Nutanix term-based software licenses and active support contracts, or they can purchase term-based software licenses and support contracts from Nutanix.

Configuration notes:

- The HX Certified Nodes support the Nutanix Software Pro and Ultimate editions; the Starter edition is not supported.
- The HX3721 Certified Nodes can be deployed as a cluster of 3 or more nodes (AOS 5.1.3 or later).

Systems management

The ThinkAgile HX Certified Nodes support the following systems management tools:

- Lenovo XClarity Controller
- Lenovo XClarity Administrator and XClarity Pro
- Lenovo XClarity Integrator for Nutanix
- Lenovo XClarity Integrator for VMware vCenter
- Lenovo XClarity Energy Manager

Lenovo XClarity Controller

The ThinkAgile HX Certified Nodes contain Lenovo XClarity Controller (XCC) Enterprise, which provides advanced service-processor control, monitoring, and alerting functions.

XClarity Controller Enterprise offers the following capabilities for the HX Certified Nodes:

- Gathering and viewing system information and inventory
- Monitoring system status and health
- Alerting and notifications
- Event logging
- Syslog alerting
- Configuring security
- Updating system firmware
- Real-time power usage monitoring
- Displaying graphics for real-time and historical power usage data and temperature
- Capping power usage
- Remotely controlling power (Power on, Power off, Restart)

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).

Lenovo XClarity Administrator and XClarity Pro

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

Lenovo XClarity Administrator is an optional software component for the ThinkAgile HX Certified Nodes which can be used to manage firmware upgrades outside of the Nutanix Prism software.

Notes:

- Lenovo XClarity Administrator can be downloaded and used at no charge to discover and monitor HX Certified Nodes and manage firmware upgrades for them.
- Optional Lenovo XClarity Pro subscription license that can be selected in the configurator provides software support for XClarity Administrator for the duration of the selected warranty period. If Lenovo XClarity software support is required, the XClarity Pro option must be selected.

Lenovo XClarity Administrator is available from Lenovo at no charge, and it offers the following features:

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

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

In addition, Lenovo XClarity Administrator offers the following software plug-in modules (Lenovo XClarity Integrators) for the HX Certified Nodes at no charge:

- Lenovo XClarity Integrator for Nutanix
- Lenovo XClarity Integrator for VMware vCenter

Lenovo XClarity Integrator for Nutanix

Lenovo XClarity Integrator for Nutanix allow administrators to manage physical server infrastructure from Nutanix Prism in AHV hypervisor-based environments. Lenovo XClarity Integrator for Nutanix offers the following features:

- Ability to discover, manage, and monitor HX Certified Node hardware from Nutanix Prism.
- Managing hardware and firmware events and logs, including proactive platform alerts.
- Integrated service and support with access to the warranty status, automated or manual diagnostics data collection, and a call home feature.

Note: Lenovo XClarity Integrator for Nutanix is supported with the AHV version 5.5.0.1 or later and Prism version 5.5.0.4 or later.

For more information, refer to the Lenovo XClarity Integrator for Nutanix web page:
http://support.lenovo.com/us/en/solutions/lnvo-lxci-nutanix

Lenovo XClarity Integrator for vCenter Server

Lenovo XClarity Integrator for vCenter Server allow administrators to manage physical server infrastructure from VMware vCenter in ESXi hypervisor-based environments.

Lenovo XClarity Integrator for vCenter offers the following features:

- Ability to discover, manage, and monitor HX Certified Node hardware from vCenter Server.
- Deployment of firmware updates from vCenter Server.
- 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.

For more information, refer to the Lenovo XClarity Integrator for VMware vCenter web page:
http://support.lenovo.com/us/en/solutions/lnvo-vmware

Lenovo XClarity Energy Manager

Lenovo XClarity Energy Manager provides a stand-alone, web-based agent-less power management console that provides real time data and enables you to observe, plan and manage power and cooling for Lenovo servers, appliances, and certified nodes. Using built-in intelligence, it identifies server 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 license is included in the XClarity Controller Enterprise upgrade.

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

Physical specifications

The ThinkAgile HX3721 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 HX 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 HX3721 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 requirement: Processors with TDP more than or equal to 125 W not installed.

The ThinkAgile HX 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:
  - 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 21. 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
2000 W 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 HX 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 HX Certified Nodes can be configured with a one- (PRC only), three-, four, or five-year hardware warranty with 24x7 ThinkAgile Advantage Single Point of Support (Lenovo server hardware and Nutanix software; requires an active software support contract from Nutanix) 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 Nutanix, on behalf of the customer, for software-related problem determination. Nutanix 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.

Also available are Lenovo Services warranty upgrades and post-warranty maintenance agreements, with a well-defined scope of services, including service hours, response time, term of service, and service agreement terms and conditions.

Lenovo warranty service upgrade offerings are country-specific. Not all warranty service upgrades are available in every country. For information about Lenovo warranty service upgrade offerings 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 HX Certified Nodes:

- 1 (PRC only), 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 server. 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.

- Enterprise Server Software Support
  Lenovo Enterprise Server Software Support can help you troubleshoot your entire server software stack. Choose support for server operating systems from Microsoft, Red Hat, SUSE, and VMware; Microsoft server applications; or operating systems and applications. Support staff can help answer troubleshooting and diagnostic questions, address product compatibility and interoperability issues, isolate causes of problems, report defects to software vendors, and more.

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

Deployment services

The following optional Lenovo Professional Services are available for the ThinkAgile HX Certified Nodes to get customers up and running quickly:

- Basic Hardware Installation Services
  - Unpacking and inspecting the systems
  - Installing options and 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)
- Nutanix deployment services - Base (per node)
  - Conducting remote preparation and planning
  - Verifying firmware versions and performing firmware updates, if needed
  - Installing and configuring hypervisor and Nutanix controller VM
  - Creating Nutanix cluster
  - Configuring storage
  - Configuring administrative features
- Nutanix deployment services - Advanced (per cluster)
  - Configuring VMware vCenter Server and vSphere cluster (ESXi-based environments)
    Configuring Nutanix container and Acropolis (AHV) cluster (AHV-based environments)
  - Configuring networking
  - Transferring knowledge
- Nutanix deployment services - Advanced with XClarity (per cluster)
  - Nutanix deployment services - Advanced
  - Installing Lenovo XClarity
  - Installing system updates
  - Setting up XClarity Pro for upward integration

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

Ethernet LAN switches

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

Table 22. Ethernet LAN switches

Description	Part number
1 Gb Ethernet switches (IPMI management)	
Lenovo ThinkSystem NE0152T RackSwitch (Rear to Front)	7Y810011WW
Lenovo ThinkSystem NE0152TO RackSwitch (Rear to Front, ONIE)	7Z320O11WW
Lenovo RackSwitch G7028 (Rear to Front)	7159BAX
Lenovo RackSwitch G7052 (Rear to Front)	7159CAX
Lenovo RackSwitch G8052 (Rear to Front)	7159G52
Lenovo CE0128TB Switch (3-Year Warranty)	7Z340011WW
Lenovo CE0128TB Switch (Limited Lifetime Warranty)	7Z360011WW
Lenovo CE0128PB Switch (3-Year Warranty)	7Z340012WW
Lenovo CE0128PB Switch (Limited Lifetime Warranty)	7Z360012WW
Lenovo CE0152TB Switch (3-Year Warranty)	7Z350021WW
Lenovo CE0152TB Switch (Limited Lifetime Warranty)	7Z370021WW
Lenovo CE0152PB Switch (3-Year Warranty)	7Z350022WW
Lenovo CE0152PB Switch (Limited Lifetime Warranty)	7Z370022WW
10 Gb Ethernet switches (10 GbE host connectivity)	
Lenovo ThinkSystem NE1032 RackSwitch (Rear to Front)	7159A1X
Lenovo ThinkSystem NE1032T RackSwitch (Rear to Front)	7159B1X
Lenovo ThinkSystem NE1072T RackSwitch (Rear to Front)	7159C1X
Lenovo RackSwitch G8272 (Rear to Front)	7159CRW
Lenovo RackSwitch G8296 (Rear to Front)	7159GR6
25 Gb Ethernet switches (25 GbE host connectivity)	
Lenovo ThinkSystem NE2572 RackSwitch (Rear to Front)	7159E1X
Lenovo ThinkSystem NE2572O RackSwitch (Rear to Front, ONIE)	7Z210O21WW
100 Gb Ethernet switches (40 GbE/100 GbE aggregation layer; 10 GbE/25 GbE breakout host connectivity)	
Lenovo ThinkSystem NE10032 RackSwitch (Rear to Front)	7159D1X
Lenovo ThinkSystem NE10032O RackSwitch (Rear to Front, ONIE)	7Z210O11WW

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

Rack cabinets

The following table lists the rack cabinets that are offered by Lenovo that can be used with the ThinkAgile HX Certified Nodes.

Table 23. Rack cabinets

Description	Part number
25U S2 Standard Rack (1000 mm deep; 2 sidewall compartments)	93072RX
25U Static S2 Standard Rack (1000 mm deep; 2 sidewall compartments)	93072PX
42U S2 Standard Rack (1000 mm deep; 6 sidewall compartments)	93074RX
42U 1100mm Enterprise V2 Dynamic Rack (6 sidewall compartments)	93634PX
42U 1100mm Enterprise V2 Dynamic Expansion Rack (6 sidewall compartments)	93634EX
42U 1200mm Deep Dynamic Rack (6 sidewall compartments)	93604PX
42U 1200mm Deep Static Rack (6 sidewall compartments)	93614PX
42U Enterprise Rack (1105 mm deep; 4 sidewall compartments)	93084PX
42U Enterprise Expansion Rack (1105 mm deep; 4 sidewall compartments)	93084EX

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

Power distribution units

The following table lists the power distribution units (PDUs) that are offered by Lenovo that can be used with the ThinkAgile HX Certified Nodes.

Table 24. Power distribution units

Description	Part number
0U Basic PDUs	
0U 36 C13/6 C19 24A/200-240V 1 Phase PDU with NEMA L6-30P line cord	00YJ776
0U 36 C13/6 C19 32A/200-240V 1 Phase PDU with IEC60309 332P6 line cord	00YJ777
0U 21 C13/12 C19 32A/200-240V/346-415V 3 Phase PDU with IEC60309 532P6 line cord	00YJ778
0U 21 C13/12 C19 48A/200-240V 3 Phase PDU with IEC60309 460P9 line cord	00YJ779
Switched and Monitored PDUs	
0U 20 C13/4 C19 Switched and Monitored 24A/200-240V/1Ph PDU w/ NEMA L6-30P line cord	00YJ781
0U 20 C13/4 C19 Switched and Monitored 32A/200-240V/1Ph PDU w/ IEC60309 332P6 line cord	00YJ780
0U 18 C13/6 C19 Switched / Monitored 32A/200-240V/346-415V/3Ph PDU w/ IEC60309 532P6 cord	00YJ782
0U 12 C13/12 C19 Switched and Monitored 48A/200-240V/3Ph PDU w/ IEC60309 460P9 line cord	00YJ783
1U 9 C19/3 C13 Switched and Monitored DPI PDU (without line cord)	46M4002
1U 9 C19/3 C13 Switched and Monitored 60A 3Ph PDU with IEC 309 3P+Gnd cord	46M4003
1U 12 C13 Switched and Monitored DPI PDU (without line cord)	46M4004
1U 12 C13 Switched and Monitored 60A 3 Phase PDU with IEC 309 3P+Gnd line cord	46M4005
Ultra Density Enterprise PDUs (9x IEC 320 C13 + 3x IEC 320 C19 outlets)	
Ultra Density Enterprise C19/C13 PDU Module (without line cord)	71762NX

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

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

Uninterruptible power supply units

The following table lists the uninterruptible power supply (UPS) units that are offered by Lenovo that can be used with the ThinkAgile HX Certified Nodes.

Table 25. Uninterruptible power supply units

Description	Part number
Worldwide models	
RT1.5kVA 2U Rack or Tower UPS (200-240VAC) (8x IEC 320 C13 10A outlets)	55941KX
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 (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

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

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

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

Related publications and links

For more information, see these resources:

- Lenovo ThinkAgile
  http://www.lenovo.com/thinkagile
- Lenovo Data Center Solution Configurator (DCSC):
  http://dcsc.lenovo.com
- Lenovo XClarity Integrator for Nutanix download
  http://datacentersupport.lenovo.com/us/en/solutions/ht505781
- Lenovo XClarity Integrator for Nutanix documentation
  http://sysmgt.lenovofiles.com/help/topic/com.lenovo.lxci_nutanix.doc/nutanix_welcome.html
- Nutanix documentation
  http://portal.nutanix.com/#/page/docs
- Lenovo ThinkAgile HX Series Best Recipes
  http://datacentersupport.lenovo.com/us/en/solutions/ht505413
- Lenovo Data Center Support
  http://datacentersupport.lenovo.com
- Lenovo Converged HX Series TCO Calculator
  http://lenovo-hx.esgcalculator.com
- Lenovo Hyperconverged Decision Tool
  http://www.lenovo.com/hxdecisiontool

Related product families

Product families related to this document are the following:

- ThinkAgile HX Series for Nutanix
- Nutanix Alliance
- Hyperconverged Infrastructure
- Hyperconverged Infrastructure

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