



Lenovo ThinkAgile HX1320 and HX1520-R Appliances Product Guide

Lenovo ThinkAgile HX Series appliances are designed to help you simplify IT infrastructure, reduce costs, and accelerate time to value. These hyperconverged appliances from Lenovo combine industry-leading hyperconvergence software from Nutanix with Lenovo enterprise platforms that feature the Intel Xeon Processor Scalable Family.

The ThinkAgile HX1320 appliance is engineered for light to medium workloads (business applications and VDI) and optimized for remote office and branch office (ROBO) environments. Starting with as few as three nodes to keep your acquisition costs down, the HX Series is capable of immense scalability as your needs grow.

The ThinkAgile HX1520-R appliance is a single-node replication target for smaller Nutanix environments. It allows customers to use native backup capabilities and replicate data to a storage heavy node that serves as a destination for backup or snapshot data on the same site or a different remote site.

The ThinkAgile HX1320 and HX1520-R appliances are shown in the following figure.



Figure 1. ThinkAgile HX1320 (top) and HX1520-R (bottom) appliances

Did you know?

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

The ThinkAgile HX Series appliances deliver the industry's most feature-rich hyperconverged infrastructure to enterprise datacenters, bringing the benefits of web-scale technologies to enterprise applications through enterprise storage, data protection, infrastructure resilience, management and analytics, and security.

Key features

The ThinkAgile HX Series appliances deliver the industry's most feature-rich hyperconverged infrastructure to enterprise datacenters (shown in the following figure). Nutanix brings the benefits of web-scale technologies to enterprise applications through enterprise storage, data protection, infrastructure resilience, management and analytics, and security.

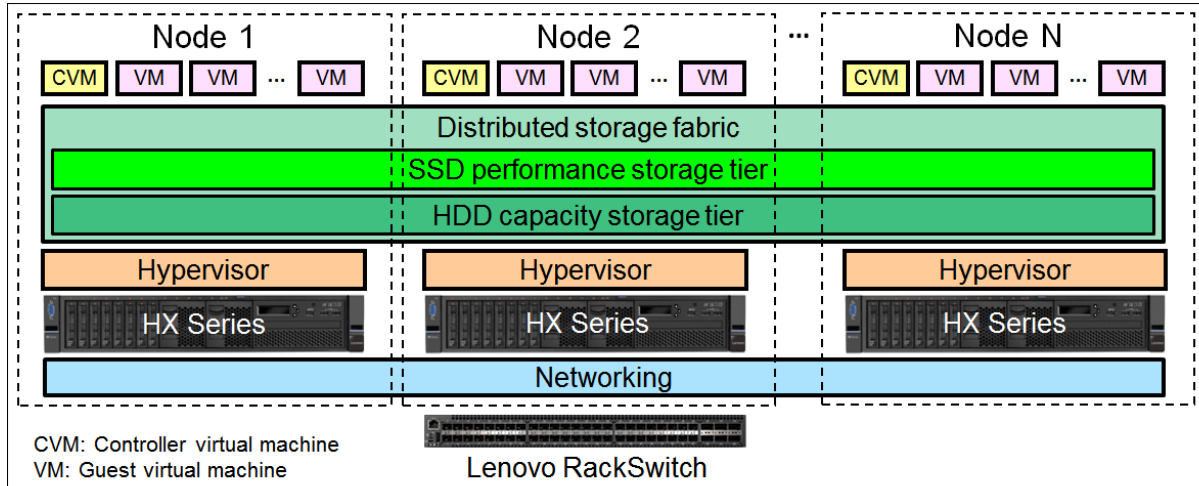


Figure 2. HX Series hyperconverged infrastructure

The ThinkAgile HX Series appliances offer the following key features:

- Enterprise storage

The HX Series appliances deliver enterprise data storage as an on-demand service by employing highly distributed software architecture. The Nutanix Software eliminates the need for traditional SAN and NAS solutions, and delivers a rich set of software-defined services that are entirely VM-centric, including snapshots, high availability, disaster recovery, deduplication and more.

- Inline and post-process compression at the sub-block level increase effective storage capacity by up to four times.
- Redirect-on-write snapshots and writeable clones at the granularity of a single VM increase efficiency.
- Distributed caching of VM data improves performance in multi-reader scenarios, such as VDI with linked clones.
- Inline deduplication in the read cache and post-process deduplication in the capacity tier improve performance and effective capacity.
- Powerful acceleration capabilities such as caching, automatic data tiering and data locality speed storage performance.

- Data protection

The Nutanix Software offers a natively integrated solution for data protection and continuous availability at VM granularity. It gives administrators an affordable range of options to meet the recovery point objectives (RPO) and recovery time objectives (RTO) for different applications.

- Unlimited local backups using VM-centric snapshots and integrated workflows delivering RPO in minutes.
- Natively integrated solution for disaster recovery enables simple VM-centric backup, recovery and replication with application-level consistency.
- Built-in Cloud Connect hybrid cloud technology enables seamless backup of data to public cloud services.
- Metro availability feature provides continuous availability of data across different sites during planned maintenance or disasters through synchronous replication.
- Support for Microsoft Volume Shadow Services (VSS), VMware vStorage API for Data Protection (VADP), and seamless integration with third-party backup providers.

- Infrastructure resilience

The platform for the HX Series appliances is fault resistant, with no single point of failure and no bottlenecks. The system uses a shared-nothing architecture, where all data, metadata and services are distributed to all nodes within the cluster, and is built to detect, isolate and recover from failures anywhere in the system. Lenovo hyperconverged appliances deliver always-on operation, and can survive system hardware, software and hypervisor issues and maintain 100% availability to applications and data.

- Intelligent data placement in different physical failure domains, or availability domains, (for example, separate racks or power sources) delivers greater fault tolerance.
- Data and metadata replicated across multiple nodes provide user-defined resilience against hardware failures.
- Multiple copies of data ensure 100% data availability in the event that a Nutanix controller VM is unavailable due to failure or maintenance.
- Automatic integrity checks during reads and silent at-rest error detection for data consistency.

- Management and analytics

The platform for the HX Series Nutanix Appliances marries web-scale capabilities with an intuitive user-centric management experience to simplify every aspect of the IT infrastructure lifecycle. Nutanix Prism provides a single pane of glass to monitor and control one or more Nutanix clusters, with simplified workflows and rich automation for common administrative tasks.

- Elegantly simple management framework with intuitive workflows delivers radical simplicity and powerful control to IT management.
- Single pane of glass delivers centralized visibility and management of multiple Nutanix clusters across the world.
- Rich automation and intuitive workflows simplify deployment, provisioning, orchestration and maintenance of Nutanix clusters.
- End-to-end visibility of VMs, nodes and disks and the ability to visually diagnose potential issues gives administrators total infrastructure control.
- Programmatic control of every aspect of cluster management, including deployment, upgrades, data protection, and performance management enables powerful automation.
- Streamlined management for hypervisor and virtual machines on Nutanix.

- Security

Nutanix software combines powerful 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.

- Security incorporated into every step of the software development process enables verifiably secure software releases.
- Two-step authentication using a client certificate and username/password, along with cluster lockdown, provides protection against unauthorized access.
- Encryption of sensitive data with self-encrypting drives (SEDs) that are FIPS 140-2 Level 2 conformant supports stringent encryption requirements (support is planned for the future).

Components and connectors

The following figure shows the front view of the HX1320 appliance.

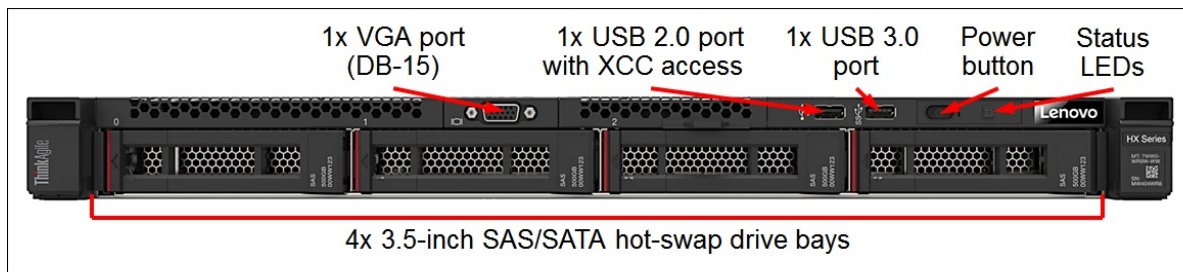


Figure 3. HX1320 front view

The following figure shows the rear view of the HX1320 appliance.

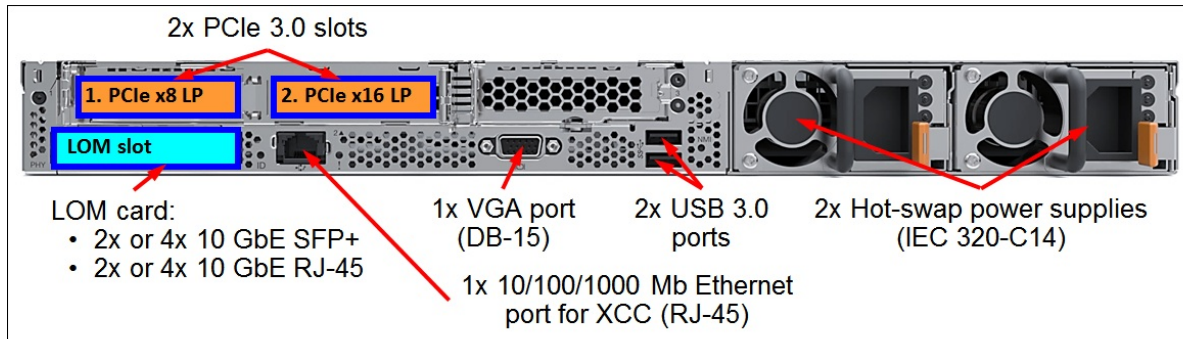


Figure 4. HX1320 rear view

The following figure shows the front view of the HX1520-R appliance.

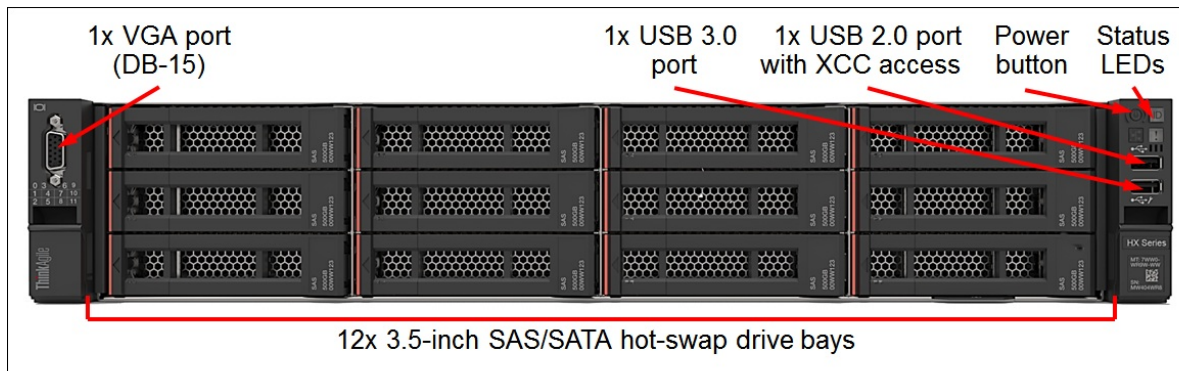


Figure 5. HX1520-R front view

The following figure shows the rear view of the HX1520-R appliance with 12 drives.

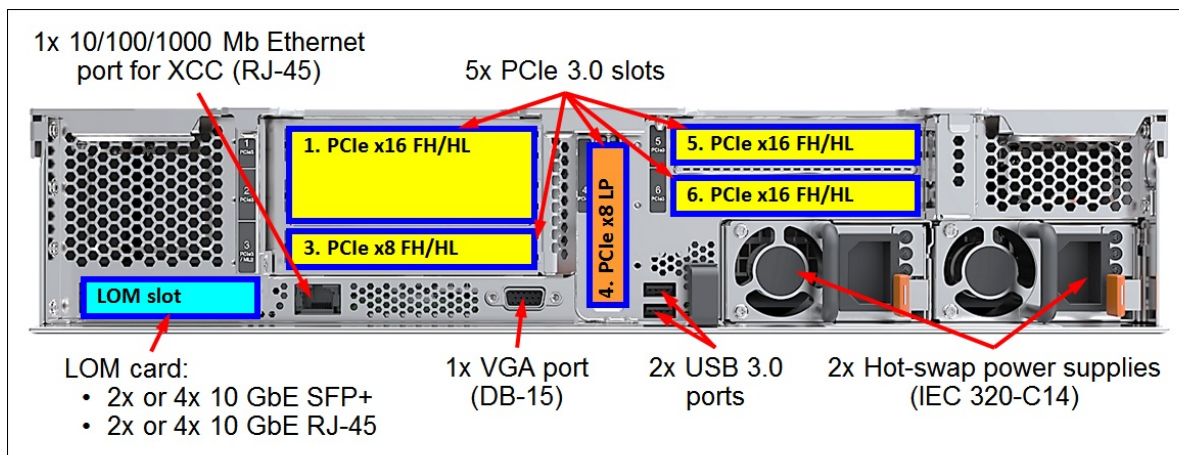


Figure 6. HX1520-R 12-drive rear view

The following figure shows the rear view of the HX1520-R appliance with 14 drives.

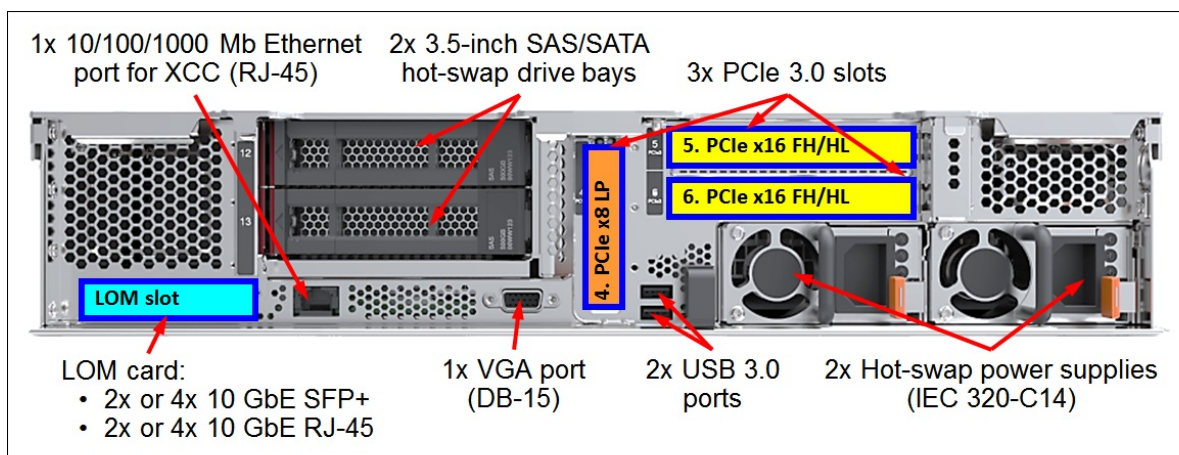


Figure 7. HX1520-R 14-drive rear view

System specifications

The following table lists the system specifications of the ThinkAgile HX1320 appliance.

Table 1. HX1320 system specifications

Attribute	Specification
Form factor	1U Rack-mount.
Processor	<ul style="list-style-type: none"> • One or two Intel Xeon Silver or Gold processor: <ul style="list-style-type: none"> ◦ Up to 10 cores (2.4 GHz core speeds) per processor. ◦ Two UPI links up to 10.4 GT/s each per processor. ◦ Up to 2400 MHz memory speed. ◦ Up to 85 W TDP.
Chipset	Intel C624.
Memory	Up to 12 DIMMs. Support for 8 GB, 16 GB, and 32 GB TruDDR4 2666 MHz RDIMMs.
Memory capacity	Up to 384 GB with 12x 32 GB RDIMMs.
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	4x 3.5-inch SAS/SATA hot-swap.
Storage capacity	<ul style="list-style-type: none"> • Hybrid: Up to 16 TB (HDDs) + Up to 3.84 TB (SSDs). • All Flash: Up to 7.68 TB (SSDs).
Storage controller	1x 430-8i HBA (12 Gbps SAS/6 Gbps SATA).
Network interfaces	<ul style="list-style-type: none"> • 2x or 4x 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. • 1x RJ-45 10/100/1000 Mb Ethernet systems management port.
Boot drive	2x 128 GB M.2 non-hot-swap SSDs (RAID-1).
I/O expansion slots	3x PCIe 3.0 slots: <ul style="list-style-type: none"> • Slot 1: PCIe 3.0 x8; low profile (for a network adapter). • Slot 2: PCIe 3.0 x16; low profile (not used). • Slot 4: PCIe 3.0 x8 (for an internal storage controller).
Ports	<ul style="list-style-type: none"> • Front: 1x USB 2.0 port with XClarity Controller access, 1x USB 3.0 port, and 1x DB-15 VGA port. • Rear: 2x USB 3.0 ports and 1x DB-15 VGA port.
Cooling	Five hot-swap system fans with N+1 redundancy.
Power supply	Two redundant hot-swap 550 W or 750 W (100 - 240 V) High Efficiency Platinum, or 750 W (200 - 240 V) High Efficiency Titanium AC power supplies. HVDC support (China only).
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 and HDDs, power supplies, and fans.
Systems management	XClarity Controller (XCC) Enterprise (Pilot 4 chip), proactive platform alerts, light path diagnostics, XClarity Provisioning Manager, XClarity Administrator, XClarity Energy Manager, Nutanix Prism.
Security features	Power-on password, administrator's password, secure firmware updates, Trusted Platform Module (TPM) 1.2 or 2.0 (configurable UEFI setting).
Software	Nutanix Acropolis: Starter, Pro, and Ultimate editions.

Attribute	Specification
Hypervisors	<ul style="list-style-type: none"> Nutanix Acropolis Hypervisor (default factory preload). VMware ESXi 6.0 Update 3 and 6.5 (optional factory preload).
Hardware warranty	Three-year or five-year customer-replaceable unit and onsite limited warranty with selectable service levels: 9x5 next business day (NBD), 24x7x4, and 24x7x2.
Software maintenance	Three-year or five-year software support and subscription (matches the duration of the selected warranty period).
Dimensions	Height: 43 mm (1.7 in.), width: 434 mm (17.1 in.), depth: 715 mm (28.1 in.).
Weight	Maximum configuration: 18.8 kg (41.4 lb).

The following table lists the system specifications of the ThinkAgile HX1520-R appliance.

Table 2. HX1520-R system specifications

Attribute	Specification
Form factor	2U Rack-mount.
Processor	Two Intel Xeon Silver or Gold processors: <ul style="list-style-type: none"> Up to 12 cores (2.6 GHz core speeds) per processor. Two UPI links up to 10.4 GT/s each per processor. Up to 2666 MHz memory speed. Up to 125 W TDP.
Chipset	Intel C624.
Memory	24 DIMM sockets. Support for 16 GB or 32 GB RDIMMs, or 64 GB LRDIMMs. Memory speed up to 2666 MHz.
Memory capacity	Up to 768 GB with 24x 32 GB RDIMMs or 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	12x or 14x 3.5-inch SAS/SATA hot-swap.
Storage capacity	<ul style="list-style-type: none"> Hybrid: Up to 80 TB (HDDs) + Up to 3.84 TB (SSDs). All Flash: Up to 12.88 TB (SSDs).
Storage controller	1x 430-16i HBAs (12 Gbps SAS/6 Gbps SATA).
Network interfaces	<ul style="list-style-type: none"> 2x or 4x base 1/10 GbE RJ-45 or 10 GbE SFP+ network ports. 2x or 4x optional 1/10 GbE RJ-45, 10 GbE SFP+, or 25 GbE SFP28 expansion ports. 1x RJ-45 10/100/1000 Mb Ethernet systems management port.
Boot drive	2x 128 GB M.2 non-hot-swap SSDs (RAID-1).

Attribute	Specification
I/O expansion slots	<p>Six PCIe 3.0 slots (configurations with 12 drive bays):</p> <ul style="list-style-type: none"> Slot 1: PCIe 3.0 x16; full-height, half-length (not used). Slot 3: PCIe 3.0 x8; full-height, half-length (not used). Slot 4: PCIe 3.0 x8; low profile (for the second expansion network adapter). Slot 5: PCIe 3.0 x16; full-height, half-length (not used). Slot 6: PCIe 3.0 x16; full-height, half-length (for the first expansion network adapter). Slot 7: PCIe 3.0 x8 (for an internal storage controller). <p>Four PCIe 3.0 slots (configurations with 14 drive bays):</p> <ul style="list-style-type: none"> Slot 4: PCIe 3.0 x8; low profile (for the second expansion network adapter). Slot 5: PCIe 3.0 x16; full-height, half-length (not used). Slot 6: PCIe 3.0 x16; full-height, half-length (for the first expansion network adapter). Slot 7: PCIe 3.0 x8 (for an internal storage controller).
Ports	<ul style="list-style-type: none"> Front: 1x USB 2.0 port with XClarity Controller access, 1x USB 3.0 port, and 1x DB-15 VGA port. Rear: 2x USB 3.0 ports and 1x DB-15 VGA port.
Cooling	Six hot-swap system fans with N+1 redundancy.
Power supply	Two redundant hot-swap 750 W (100 - 240 V) High Efficiency Platinum power supplies.
Video	Matrox G200 with 16 MB memory integrated into the XClarity Controller. Maximum resolution is 1920x1200 at 60 Hz with 16 bits per pixel.
Hot-swap parts	SSDs and HDDs, power supplies, and fans.
Systems management	XClarity Controller (XCC) Enterprise (Pilot 4 chip), proactive platform alerts, light path diagnostics, XClarity Provisioning Manager, XClarity Administrator, XClarity Energy Manager, Nutanix Prism.
Security features	Power-on password, administrator's password, secure firmware updates, Trusted Platform Module (TPM) 1.2 or 2.0 (configurable UEFI setting).
Software	Nutanix Acropolis: Starter, Pro, and Ultimate editions.
Hypervisors	Nutanix Acropolis Hypervisor (factory preload).
Hardware warranty	Three-year or five-year customer-replaceable unit and onsite limited warranty with selectable service levels: 9x5 next business day (NBD), 24x7x4, and 24x7x2.
Software maintenance	Three-year or five-year software support and subscription (matches the duration of the selected warranty period).
Dimensions	Height: 87 mm (3.4 in.), width: 445 mm (17.5 in.), depth: 720 mm (28.3 in.)
Weight	Maximum configuration: 32 kg (70.5 lb)

Factory-integrated models

Factory-integrated models of the ThinkAgile HX Series appliances 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 system components (processors, memory, drives, and network adapters) to the selected model according to the output from the Nutanix Sizer tool:

<http://services.nutanix.com/>

Note: You are required to engage a Lenovo representative in the project that includes the ThinkAgile HX Series appliances.

The following table lists the base CTO models of the ThinkAgile HX1320 and HX1520-R appliances.

Table 3. Base CTO models

Description	Machine Type/Model
ThinkAgile HX1320 Appliance	7X83CTO1WW
ThinkAgile HX1520-R Appliance	7X84CTO1WW

The following table lists the default configurations of each appliance.

Table 4. Default configurations

Model	Intel processor	Memory (RDIMMs)	Storage controller	SSDs	HDDs	M.2 SSD boot drive	NIC	Power supply	Tool-less rail kit	CMA
HX1320	2x 4110 8C	96GB (12x 8GB)	1x 430-8i	960GB (2x 480GB)	8TB (2x 4TB)	2x 128GB (RAID-1)	2x 10GbE RJ-45	2x 550W Platinum	Y	N
HX1520-R	2x 4114 10C	192GB (12x 16GB)	1x 430-16i	960GB (2x 480GB)	60TB (10x 6TB)	2x 128GB (RAID-1)	2x 10GbE RJ-45	2x 750W Platinum	Y	Y

The HX1320 and HX1520-R appliances ship with the following items:

- Documentation package
- Tool-less Slide Rail Kit
 - HX1320: With or without 1U CMA depending on the rack installation option
 - HX1520-R: With or without 2U CMA depending on the rack installation option
- Two 2.8 m IEC 320-C13 to C14 rack power cables

It is possible to perform a hardware upgrade after the initial deployment, such as adding more memory or network adapters, by purchasing the hardware upgrade option listed in the following table.

Table 5. Hardware upgrade option

Description	Part number	Quantity
Nutanix HW Upgrade	01KT971	1

Configuration note: You should request a quote for the Nutanix HW Upgrade part number from Lenovo and provide additional details on the existing installation and planned upgrade.

Processors

The ThinkAgile HX1320 appliance ships with one processor, and the ThinkAgile HX1520-R appliance ships with two processors. The following table lists the processor options that are available for selection.

Table 6. Processor selection options

Description	Quantity (min / max)	HX1320	HX1520-R
Intel Xeon Silver processors			
Intel Xeon Silver 4108 8C 85W 1.8GHz Processor	1 / 2	Y	Y*
Intel Xeon Silver 4110 8C 85W 2.1GHz Processor	1 / 2	Y	Y*
Intel Xeon Silver 4114 10C 85W 2.2GHz Processor	1 / 2	Y	Y*
Intel Xeon Silver 4116 12C 85W 2.1GHz Processor	2 / 2	N	Y
Intel Xeon Gold processors			
Intel Xeon Gold 5115 10C 85W 2.4GHz Processor	1 / 2	Y	Y*
Intel Xeon Gold 6126 12C 125W 2.6GHz Processor	2 / 2	N	Y

* The HX1520-R appliances support configurations with two processors only.

The following table lists the specifications of the processors for the appliances.

Table 7. 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											
4108	1.8 / 3 GHz	8 / 16	11 MB	2400 MHz	768 GB	9.6 GT/s	85W	Yes	Yes	Yes	Yes
4110	2.1 / 3 GHz	8 / 16	11 MB	2400 MHz	768 GB	9.6 GT/s	85W	Yes	Yes	Yes	Yes
4114	2.2 / 3 GHz	10 / 20	13.75 MB	2400 MHz	768 GB	9.6 GT/s	85W	Yes	Yes	Yes	Yes
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

Memory

The ThinkAgile HX1320 and HX1520-R appliances 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 HX1320 supports up to 12 DIMMs, and the HX1520-R supports up to 24 DIMMs. The following rules apply when selecting the memory configuration:

- The appliances support RDIMMs or LRDIMMs (HX1520-R only).
- All DIMMs in the appliance must be of the same type and capacity.
- All DIMMs in the appliance 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

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

Table 8. Memory selection options

Selection option	Description	Quantity	HX1320	HX1520-R
64 GB	ThinkSystem 16GB TruDDR4 2666 MHz (2Rx8 1.2V) RDIMM	4	Y	N
96 GB	ThinkSystem 16GB TruDDR4 2666 MHz (2Rx8 1.2V) RDIMM	6	Y	N
96 GB	ThinkSystem 8GB TruDDR4 2666 MHz (1Rx8 1.2V) RDIMM	12	Y	N
128 GB*	ThinkSystem 16GB TruDDR4 2666 MHz (2Rx8 1.2V) RDIMM	8	Y	Y
192 GB	ThinkSystem 16GB TruDDR4 2666 MHz (2Rx8 1.2V) RDIMM	12	Y	Y
256 GB*	ThinkSystem 32GB TruDDR4 2666 MHz (2Rx4 1.2V) RDIMM	8	Y	Y
384 GB	ThinkSystem 32GB TruDDR4 2666 MHz (2Rx4 1.2V) RDIMM	12	Y	Y
512 GB*	ThinkSystem 32GB TruDDR4 2666 MHz (2Rx4 1.2V) RDIMM	16	N	Y
768 GB	ThinkSystem 32GB TruDDR4 2666 MHz (2Rx4 1.2V) RDIMM	24	N	Y
768 GB	ThinkSystem 64GB TruDDR4 2666 MHz (4Rx4 1.2V) LRDIMM	12	N	Y

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

Internal storage

The ThinkAgile HX1320 and HX1520-R appliances support the internal drive configurations listed in the following tables.

Table 9. Internal drive configurations: Hybrid

Model	Hot-swap drive quantity (min / max)			Hypervisor boot drive	
	3.5" HDDs (6 Gb NL SATA)	3.5" SSDs (6 Gb SATA)	Storage controller	M.2 SSDs (6 Gb SATA)	Storage controller
HX1320 Hybrid	2 / 2	2 / 2	1x 430-8i	2x 128 GB	M.2 with Mirroring
HX1520-R Hybrid	6 / 12*	2 / 2	1x 430-16i	2x 128 GB	M.2 with Mirroring

* If more than 10 HDDs are selected, the appliance provides 12 front and 2 rear drive bays. If 10 or fewer HDDs are selected, the appliance provides 12 front drive bays (the rear drive bays are not present).

Table 10. Internal drive configurations: All Flash

Model	Hot-swap drive quantity (min / max)		Hypervisor boot drive	
	3.5" SSDs (6 Gb SATA)	Storage controller	M.2 SSDs (6 Gb SATA)	Storage controller
HX1320 All Flash	4 / 4	1x 430-8i	2x 128 GB	M.2 with Mirroring
HX1520-R All Flash	6 / 14*	1x 430-16i	2x 128 GB	M.2 with Mirroring

* If more than 12 SSDs are selected, the appliance provides 12 front and 2 rear drive bays. If 12 or fewer SSDs are selected, the appliance provides 12 front drive bays (the rear drive bays are not present).

The following tables lists the drive selection options for hybrid and all flash configurations.

Table 11. Drive selection options: Hybrid configurations

Description	Quantity (min / max)	
	HX1320	HX1520-R
SSD selection: Cache tier		
ThinkSystem 3.5" Intel S4600 480GB Mainstream SATA 6Gb Hot Swap SSD	2 / 2	2 / 2
ThinkSystem 3.5" Intel S4600 960GB Mainstream SATA 6Gb Hot Swap SSD	2 / 2	2 / 2
ThinkSystem 3.5" Intel S4600 1.92TB Mainstream SATA 6Gb Hot Swap SSD	2 / 2	2 / 2
HDD selection: Capacity tier		
ThinkSystem 3.5" 4TB 7.2K SATA 6Gb Hot Swap 512n HDD	2 / 2	6 / 12
ThinkSystem 3.5" 6TB 7.2K SATA 6Gb Hot Swap 512e HDD	2 / 2	6 / 12
ThinkSystem 3.5" 8TB 7.2K SATA 6Gb Hot Swap 512e HDD	2 / 2	6 / 10

Table 12. Drive selection options: All Flash configurations

Description	Quantity (min / max)	
	HX1320	HX1520-R
ThinkSystem 3.5" Intel S4600 480GB Mainstream SATA 6Gb Hot Swap SSD	4 / 4	6 / 12
ThinkSystem 3.5" Intel S4600 960GB Mainstream SATA 6Gb Hot Swap SSD	4 / 4	6 / 12
ThinkSystem 3.5" Intel S4600 1.92TB Mainstream SATA 6Gb Hot Swap SSD	4 / 4	6 / 12

Configuration note: All SSD drives in the appliance must be of the same type and capacity. All HDD drives in the appliance must be of the same type and capacity.

Network connectivity

The ThinkAgile HX1320 appliances provide base two- or four-port 1/10 GbE RJ-45 or 10 GbE SFP+ network connectivity with the onboard Intel X722 NIC and a LOM card installed in the appliance. Two additional 1/10 GbE RJ-45, 10 GbE SFP+, or 25 GbE SFP28 expansion ports can be selected, if needed.

The ThinkAgile HX1520-R appliances provide base two- or four-port 1/10 GbE RJ-45 or 10 GbE SFP+ network connectivity with the onboard Intel X722 NIC and a LOM card installed in the appliance. Two or four additional 1/10 GbE RJ-45, 10 GbE SFP+, or 25 GbE SFP28 expansion ports can be selected, if needed.

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

Table 13. Network adapter selection options

Description	Quantity (min / max)	HX1320	HX1520-R
1/10 GbE RJ-45 base ports			
ThinkSystem 10Gb 2-port Base-T LOM (RJ-45)	0 / 1	Y	Y
ThinkSystem 10Gb 4-port Base-T LOM (RJ-45)	0 / 1	Y	Y
1/10 GbE RJ-45 expansion ports			
Intel X550-T2 Dual Port 10GBase-T Adapter (RJ-45)	0 / 2	Y	Y
10 GbE SFP+ base ports			
ThinkSystem 10Gb 2-port SFP+ LOM	0 / 1	Y	Y
ThinkSystem 10Gb 4-port SFP+ LOM	0 / 1	Y	Y
10 GbE SFP+ expansion ports			
ThinkSystem Intel X710-DA2 PCIe 10Gb 2-Port SFP+ Ethernet adapter	0 / 2*	Y*	Y
25 GbE SFP+ expansion ports			
Mellanox ConnectX-4 Lx 2x25GbE SFP28 Adapter	0 / 2*	Y*	Y

* The maximum number of expansion network adapters supported in the HX1320 appliance is one.

Configuration notes:

- One of the 1/10 GbE RJ-45 or 10 GbE SFP+ LOM cards is required for selection, and it provides base network connectivity. Optional expansion ports can be selected, if needed.
- The SFP+/SFP28 ports require SFP+/SFP28 transceivers or direct-attach copper (DAC) cables that should be ordered for the appliance. 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:

- [Transceivers and cables for 10 GbE SFP+ adapters](#)
- [Transceivers and cables for 25 GbE SFP28 adapters](#)

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

Table 14. 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
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 following table lists transceivers and cables for the 25 GbE SFP28 adapters.

Table 15. Transceivers and cables for 25 GbE SFP28 adapters

Description	Part number	Feature code
25 GbE SFP28 SR transceivers for 25 GbE SFP28 network 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
Lenovo 30m LC-LC OM3 MMF Cable	00MN520	ASRC

Description	Part number	Feature code
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

Power supplies

The HX Series appliances ship with two power supplies. The following table lists the power supply options that are available for selection.

Table 16. Power supply selection options

Description	Quantity	HX1320	HX1520-R
ThinkSystem 550W(230V/115V) Platinum Hot-Swap Power Supply	2	Y	N
ThinkSystem 750W(230/115V) Platinum Hot-Swap Power Supply	2	Y	Y
ThinkSystem 750W (230V) Titanium Hot-Swap Power Supply	2	Y	Y

Configuration notes:

- 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/lnvo-lcp>
- The power supplies support AC (Worldwide) and HVDC (China only) power sources.

Rack installation

The HX Series appliances and enclosures ship with a rail kit. The following table lists the rail kit options that are available for selection.

Table 17. Rail kit selection options

Description	Quantity	HX1320	HX1520-R
ThinkSystem Tool-less Slide Rail	1	Y	Y
ThinkSystem Tool-less Slide Rail Kit with 1U CMA	1	Y	N
ThinkSystem Tool-less Slide Rail Kit with 2U CMA	1	N	Y

The following table summarizes the features of the rail kits that are available for selection.

Table 18. Rail kit features and specifications summary

Feature	1U (HX1320) or 2U (HX1520-R) Tool-less Slide Rail	
	Without CMA	With CMA
CMA	Not included	Included
Rail length	730 mm (28.74 in.)	807 mm (31.8 in.)
Rail type	Full-out slide (ball bearing)	
Tool-less installation	Yes	
In-rack maintenance	Yes	
1U PDU support	Yes	
0U PDU support	Limited*	
Rack type	IBM and Lenovo 4-post, IEC standard-compliant	
Mounting holes	Square or round	
Mounting flange thickness	2 mm (0.08 in.) – 3.3 mm (0.13 in.)	
Distance between front and rear mounting flanges [^]	609.6 mm (24 in.) – 863.6 mm (34 in.)	

* If a 0U PDU is used, the rack cabinet must be at least 1100 mm (43.31 in.) deep if no CMA is used, or at least 1200 mm (47.24 in.) deep if a CMA is used.

[^] Measured when mounted on the rack, from the front surface of the front mounting flange to the rear most point of the rail.

Hypervisors

The ThinkAgile HX Series appliances support the following hypervisors:

- Nutanix Acropolis Hypervisor (AHV)
- VMware ESXi 6.0 Update 3
- VMware ESXi 6.5

Notes:

- The HX Series appliances ship with Nutanix AHV (default) or VMware ESXi (optional) preloaded.
- The HX1520-R appliances support AHV only.
- Microsoft Windows Server 2016 DataCenter Edition (Hyper-V) is currently not supported.

Software

The ThinkAgile HX Series appliances can be configured with one of the Nutanix Software editions that are listed in the following table. The Starter edition is factory-preloaded and the appropriate license can be downloaded from the Nutanix website to match the serial number of the appliance.

Table 19. Nutanix software options

Description	Quantity
Nutanix Starter Edition	1
Nutanix Pro Edition (default selection)	1
Nutanix Ultimate Edition	1

The Starter edition offers the core set of Nutanix software functionality. This edition is ideal for small-scale deployments with a limited set of workloads.

The Pro edition offers rich data services, along with resilience and management features. This edition is ideal for enterprises running multiple applications on a Nutanix cluster or with large-scale single workload deployments.

The Ultimate edition offers the full suite of Nutanix software capabilities to tackle complex infrastructure challenges. This edition is ideal for multi-site deployments.

It is possible to upgrade a software edition after the installation by purchasing one of the software upgrade options listed in the following table.

Table 20. Nutanix software upgrade options

Description	Part number
Nutanix Starter to Pro Upgrade	01GU985
Nutanix Starter to Ultimate Upgrade	01GU986
Nutanix Pro to Ultimate Upgrade	01GU987

Configuration note: You should request a quote for the selected Nutanix SW Upgrade part number from Lenovo and provide additional details on the existing installation and planned upgrade.

The following table compares features of the Nutanix software editions.

Table 21. Nutanix software editions feature comparison

Feature	Nutanix software edition		
	Starter	Pro	Ultimate
Enterprise storage			
Cluster size	12 nodes max	Unlimited	Unlimited
Heterogeneous clusters	Yes	Yes	Yes
VM-centric snapshots and clones	Yes	Yes	Yes
Volume groups	Yes	Yes	Yes
Data tiering	Yes	Yes	Yes
Online cluster grow/shrink	Yes	Yes	Yes
Acropolis container services	Yes	Yes	Yes
Inline compression	Yes	Yes	Yes

Feature	Nutanix software edition		
	Starter	Pro	Ultimate
Inline performance deduplication	Yes	Yes	Yes
MapReduce compression	No	Yes	Yes
MapReduce deduplication	No	Yes	Yes
Erasure Coding (EC-X)	No	Yes	Yes
Acropolis block services	No	Yes	Yes
Acropolis file services	No	No	Yes
VM Flash Mode (Pin to SSD)	No	No	Yes
Infrastructure resilience			
Data path redundancy	Yes	Yes	Yes
Redundancy factor	2 (Fixed)	2 or 3 (Tunable)	2 or 3 (Tunable)
Availability domains	No	Yes	Yes
Data protection			
Asynchronous replication and disaster recovery (DR)	Yes	Yes	Yes
Application-consistent snapshots	Yes	Yes	Yes
Time Stream (Converged local backups)	Yes	Yes	Yes
VSS integration	No	Yes	Yes
Cloud Connect (Backup to public clouds)	No	Yes	Yes
Self-service restore	No	Yes	Yes
Multiple site DR (many to many)	No	No	Yes
Metro availability	No	No	Yes
Synchronous replication and disaster recovery	No	No	Yes
Security			
Client authentication	Yes	Yes	Yes
Cluster lockdown	No	Yes	Yes
Data-at-rest encryption	No	No	Yes*
Management and analytics			
Prism Starter (Single- and multi-cluster management)	Yes	Yes	Yes
Pulse (Automated service agent)	Yes	Yes	Yes
Cluster health	Yes	Yes	Yes
One-click upgrades (Nutanix OS and Hypervisor)	Yes	Yes	Yes
Rest APIs	No	Yes	Yes
Virtualization			
VMware vSphere support	Yes	Yes	Yes
Microsoft Hyper-V support	Yes	Yes	Yes
Built-in Acropolis Hypervisor	Yes	Yes	Yes
VM operations	Yes	Yes	Yes
Intelligent VM placement	Yes	Yes	Yes
Virtual network configuration	Yes	Yes	Yes
Host profiles	Yes	Yes	Yes
VM high availability	Yes	Yes	Yes

Feature	Nutanix software edition		
	Starter	Pro	Ultimate
Self-service portal	Yes	Yes	Yes

* Support is planned for the future.

Note: The HX1520-R appliance supports single-node backup/replication target operations only; VMs are not supported.

Systems management

The ThinkAgile HX Series appliances support the following systems management tools:

- Lenovo XClarity Controller
- Light path diagnostics
- Lenovo XClarity Administrator
- Nutanix Prism
- Lenovo XClarity Energy Manager

Lenovo XClarity Controller

The ThinkAgile HX appliances 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 Series appliances:

- 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](#)).

Light path diagnostics

The HX1320 and HX1520-R appliances include basic light path diagnostics, which provides the system LEDs on the front of the appliance (see [Components and connectors](#)) and the LEDs near the monitored components (for example, the DIMM error LEDs on the system board).

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, HX Series appliances, 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 the ThinkAgile HX Series appliances 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 Series appliances 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 and XClarity Integrators 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 Series appliances
- 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

In addition, Lenovo XClarity Administrator offers two software plug-in modules (Lenovo XClarity Integrators) at no charge:

- Lenovo XClarity Integrator for Microsoft System Center
- Lenovo XClarity Integrator for VMware vCenter

Lenovo XClarity Integrators allow administrators to manage physical infrastructure from leading external virtualization management software tools from Microsoft and VMware.

Lenovo XClarity Integrators offer the following additional features:

- Ability to discover, manage, and monitor Lenovo server hardware from VMware vCenter or Microsoft System Center
- Deployment of firmware updates to HX Series appliances 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

Nutanix Prism

Nutanix Prism gives administrators a simple and elegant way to manage virtual environments. Powered by advanced data analytics and heuristics, Prism simplifies and streamlines common workflows within a datacenter eliminating the need to have disparate management solutions.

Nutanix Prism is a part of the Nutanix software preloaded on the appliances, and it includes the following components:

- Prism Starter (included in Starter, Pro, and Ultimate Nutanix software editions): Provides ability to configure, manage, and monitor a Nutanix cluster and centralized management of multiple local and remote Nutanix clusters.
- Prism Pro (Selectable software license; optional): Enables efficiency evaluation, capacity planning, expansion recommendations, custom dashboards, and advanced search capabilities.

The Prism Pro software license can be selected during the initial purchase. Also, Prism Starter can be upgraded to Prism Pro after the initial deployment by purchasing one of the software license options listed in the following table.

Table 22. Prism Pro software license options

Description	Part number
Nutanix Prism Pro with 1Yr Support	01GU988
Nutanix Prism Pro with 2Yr Support	01GU989
Nutanix Prism Pro with 3Yr Support	01GU990
Nutanix Prism Pro with 4Yr Support	01GU991
Nutanix Prism Pro with 5Yr Support	01GU992

Configuration note: You should request a quote for the selected Prism Pro part number from Lenovo and provide additional details on the existing installation.

Nutanix Prism offers the following features:

- Single point of control
 - Accelerates enterprise-wide deployment
 - Manages capacity centrally
 - Adds nodes in minutes
 - Supports non-disruptive software upgrades with zero downtime
 - Integrates with REST APIs and PowerShell

- Monitoring and alerting
 - Tracks infrastructure utilization (storage, processor, memory)
 - Centrally monitors multiple clusters across multiple sites
 - Monitors per-VM performance and resource usage
 - Checks system health
 - Generates alerts and notifications
- Integrated data protection
 - Offers customizable RPO/RTO and retention policies
 - Supports configurable per-VM replication (1:1, 1:many and many:1)
 - Provides efficient VM recovery
 - Deploys affordable DR and backup to the cloud
- Diagnostics and troubleshooting
 - Provides time-based historical views of VM activity
 - Performs proactive alert analysis
 - Correlates alerts and events to quickly diagnose issues
 - Generates actionable alerts and reduces resolution times
 - Analyzes trending patterns for accurate capacity planning

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 and appliances. 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.

Physical specifications

The ThinkAgile HX1320 appliances have the following dimensions and weight (approximate):

- Height: 43 mm (1.7 in.)
- Width: 434 mm (17.1 in.)
- Depth: 715 mm (28.1 in.)
- Weight (maximum): 18.8 kg (41.4 lb)

The ThinkAgile HX1520-R appliances have the following dimensions and weight (approximate):

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

Operating environment

The HX Series appliances comply with ASHRAE class A2 specifications. The appliance performance might be impacted when the operating temperature is outside the ASHRAE A2 specifications.

The HX1320 appliance complies with ASHRAE class A3 and class A4 specifications in any supported configuration, and the HX1520-R appliance complies with ASHRAE class A3 and class A4 specifications when Intel Xeon Gold 6126 processors are not installed.

The HX Series appliances 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
 - 200 - 240 (nominal) V AC; 50 Hz / 60 Hz
 - 180 - 300 V DC (supported in China only)
- Acoustics (maximum configuration, operating):
 - HX1320: 6.5 bels
 - HX1520-R: 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 23. 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
550 W AC Platinum	100 - 127 V AC	722 W	6.2 A	2463 BTU/hour
	200 - 240 V AC	704 W	3 A	2402 BTU/hour
	180 - 300 V DC	702 W	2.5 A	2395 BTU/hour
750 W AC Platinum	100 - 127 V AC	984 W	8.4 A	3357 BTU/hour
	200 - 240 V AC	958 W	4.1 A	3269 BTU/hour
	180 - 300 V DC	958 W	3.5 A	3269 BTU/hour
750 W Titanium	200 - 240 V AC	949 W	4.1 A	3238 BTU/hour
	180 - 300 V DC	948 W	3.5 A	3235 BTU/hour

Regulatory compliance

The ThinkAgile HX Series appliances 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

Hardware warranty

The ThinkAgile HX Series appliances can be configured with a three-year or five-year hardware warranty and software support with 24x7 call center support 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.

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://lenovocator.com/>

The following Lenovo warranty service levels are available for the ThinkAgile HX Series appliances:

- 3 or 5 years of warranty service coverage
 - 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)
- 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

The ThinkAgile HX Series appliances include a three-year or five-year software support and subscription (matches the duration of the selected hardware warranty period) that entitles you to submit service requests to troubleshoot Nutanix 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 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.

Software support that is provided by Nutanix includes 24x7 phone and web coverage with the following target response times (priorities are assigned by Nutanix based on the impact on productivity):

- Priority 1 (Emergency: Productivity halted): 2 hours
- Priority 2 (Critical: Significant impact on productivity): 4 hours
- Priority 3 (Normal: Minimal impact on productivity): 8 hours (by next business day)

Deployment services

The following Lenovo Professional Services are available for the ThinkAgile HX Series solutions to get customers up and running quickly:

- Nutanix deployment services - Base
 - 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
 - Installing and configuring VMware vCenter Server or Microsoft SCVMM
 - Configuring Nutanix container and Acropolis (AHV) clusters
 - Transferring knowledge
- Nutanix deployment services - Advanced with XClarity
 - Nutanix deployment services - Advanced
 - Installing Lenovo XClarity
 - Installing system updates
 - Setting up XClarity Pro for upward integration

Ethernet LAN switches

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

Table 24. Ethernet LAN switches

Description	Part number	Feature code
1 Gb Ethernet switches (IPMI management)		
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 (25 GbE host connectivity)		
Lenovo ThinkSystem NE2572 RackSwitch (Rear to Front)	7159E1X	AV19
40 Gb Ethernet switches (40 GbE aggregation layer; 10 GbE breakout host connectivity)		
Lenovo RackSwitch G8332 (Rear to Front)	7159BRX	ASY4
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	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 HX Series appliances.

Table 25. 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 HX Series appliances.

Table 26. 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

Description	Part number	Feature code
Ultra Density Enterprise C19/C13 PDU 60A/208V/3ph with IEC 309 3P+Gnd line cord	71763NU	6051
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
NEMA PDUs (6x NEMA 5-15R outlets)		
DPI 100-127V PDU with fixed NEMA L5-15P line cord	39Y8905	5900
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 lists the uninterruptible power supply (UPS) units that are offered by Lenovo that can be used with the ThinkAgile HX Series appliances.

Table 27. Uninterruptible power supply units

Description	Part number	Feature code
RT1.5kVA 2U Rack or Tower UPS (100-125VAC) (8x NEMA 5-15R 12A outlets)	55941AX	A53S
RT1.5kVA 2U Rack or Tower UPS (200-240VAC) (8x IEC 320 C13 10A outlets)	55941KX	A53T
RT2.2kVA 2U Rack or Tower UPS (100-125VAC) (8x NEMA 5-20R 16A outlets)	55942AX	A53U
RT2.2kVA 2U Rack or Tower UPS (200-240VAC) (8x IEC 320 C13 10A, 1x C19 16A outlets)	55942KX	A53V
RT3kVA 2U Rack or Tower UPS (100-125VAC) (6x NEMA 5-20R 16A, 1x L5-30R 24A outlets)	55943AX	A53W
RT3kVA 2U Rack or Tower UPS (200-240VAC) (8x IEC 320 C13 10A, 1x C19 16A outlets)	55943KX	A53X
RT5kVA 3U Rack or Tower UPS (200-240VAC) (8x IEC 320 C13 10A, 2x C19 16A outlets)	55945KX	A540
RT6kVA 3U Rack or Tower UPS (200-240VAC) (8x IEC 320 C13 10A, 2x C19 16A outlets)	55946KX	A541
RT8kVA 6U Rack or Tower UPS (200-240VAC) (4x IEC 320-C19 16A outlets)	55948KX	A543
RT11kVA 6U Rack or Tower UPS (200-240VAC) (4x IEC 320-C19 16A outlets)	55949KX	A544
RT8kVA 6U 3:1 Phase Rack or Tower UPS (380-415VAC) (4x IEC 320-C19 16A outlets)	55948PX	A546
RT11kVA 6U 3:1 Phase Rack or Tower UPS (380-415VAC) (4x IEC 320-C19 16A outlets)	55949PX	A547

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>

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Related publications and links

For more information, see these resources:

- Lenovo ThinkAgile HX Series
<http://www3.lenovo.com/us/en/p/WMD00000326>
- Lenovo Data Center Solution Configurator (DCSC):
<http://dcsc.lenovo.com>
- System x and Cluster Solutions Configurator (x-config)
<http://lesc.lenovo.com/products/hardware/configurator/worldwide/bhui/asit/>
- Nutanix documentation
<http://portal.nutanix.com/#/page/docs>
- 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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