

Lenovo ThinkAgile HX3520-G, HX3521-G, HX5520, HX5521, HX7520, HX7521 2U Appliances and Certified Nodes (Intel Xeon SP Gen 2)

Product Guide (withdrawn product)

The Lenovo ThinkAgile HX 2U Appliances & Certified Nodes are 2-socket 1U systems that feature the 2nd Generation Intel Xeon Scalable processors and are designed for deploying industry-leading hyperconvergence software from Nutanix on Lenovo enterprise platforms. Nutanix brings the benefits of web-scale technologies to enterprise applications through enterprise storage, data protection, infrastructure resilience, management and analytics, and security.

The 2U systems are available either as an Appliance (HXnnn0) or Certified Node (HXnnn1):

- HX3520-G and HX3521-G for compute-heavy workloads including those benefiting from the use of GPUs
- HX5520 and HX5521 for storage-heavy workloads
- HX7520 and HX7521 for high performance workloads
- HX7520 for HANA and HX7521 for HANA are 2U offerings designed for SAP HANA-based solutions

HX Appliances deliver fully validated and integrated Lenovo hardware and firmware, certified and preloaded with licensed Nutanix software. They also include ThinkAgile Advantage support with one single point of contact for support of the hardware and software.

HX Certified Nodes deliver fully validated Lenovo hardware and firmware, certified and can be preloaded with Nutanix software. Certified Nodes do not include licenses to Nutanix software and enhanced software support.

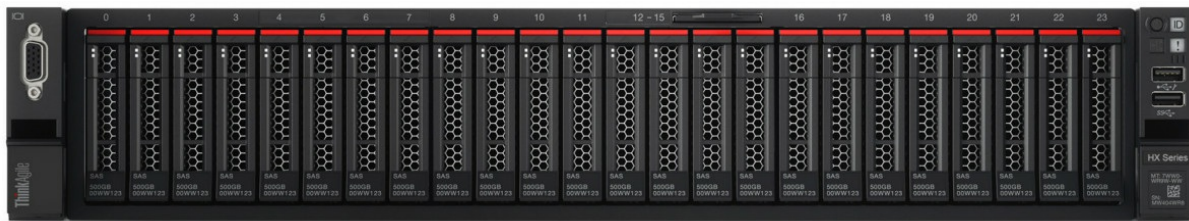


Figure 1. Lenovo ThinkAgile HX7520

Did you know?

The ThinkAgile HX 2U Appliances & Certified Nodes are built on the Lenovo ThinkSystem SR650 server that features enterprise-class reliability, management, and security.

The HX3520-G, HX5520 and HX7520 and HX7520 for HANA Appliances offer ThinkAgile Advantage Single Point of Support for quick 24/7 problem reporting and resolution.

Key features

Combining performance and flexibility, the HX 2U systems are a great choice for enterprises of all sizes. The systems offer a broad selection of processors, memory and drives, and offers high performance features that industries such as finance, healthcare and telco need. Outstanding reliability, availability, and serviceability (RAS) and high-efficiency design can improve your business environment and can help save operational costs.

Appliance features

The HX Series Appliances (HX3520-G, HX5520 and HX7520 and HX7520 for HANA) offer the following key features:

- Factory-integrated, pre-configured ready-to-go appliances built on proven and reliable Lenovo ThinkSystem servers that provide compute power for a variety of workloads and applications and powered by industry's most feature-rich hyperconverged infrastructure software from Nutanix.
- Provide quick and convenient path to implement a hyperconverged solution powered by Nutanix with "one stop shop" and a single point of contact provided by Lenovo for purchasing, deploying, and supporting the solution.
- Meet various workload demands with cost-efficient hybrid or performance-optimized all-flash storage (including all-NVMe) configurations.
- Deliver fully validated and integrated hardware and firmware that is certified with Nutanix software.
- Include Lenovo ThinkAgile Advantage Single Point of Support for quick 24/7 problem reporting and resolution.
- Offer Lenovo deployment services to get customers up and running quickly.

Certified Node features

The HX Certified Nodes (HX3521-G, HX5521 and HX7521 and HX7521 for HANA) offer the following key features:

- Built on proven and reliable Lenovo ThinkSystem servers 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 (Note: 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.
- Offer optional Lenovo Professional Services to get customers up and running quickly

The Nutanix software running on the HX 2U systems delivers 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.

Hardware features

The HX systems are based on the SR650 and have the following hardware features:

Scalability and performance

The HX 2U systems offer numerous features to boost performance, improve scalability, and reduce costs:

- Support one or two second-generation Intel Xeon Scalable processors:
 - Up to 28 cores and 56 threads per processor
 - Core speeds of up to 3.6 GHz
 - TDP ratings of up to 205 W
- Helps maximize system performance for data intensive applications with up to 2933 MHz memory speeds and up to 3 TB of memory capacity with 3DS RDIMMs.
- Offers flexible and scalable internal storage in a 2U rack form factor with up to 24x 2.5-inch and 2x 3.5-inch drives for performance-optimized configurations or up to 14x 3.5-inch drives for capacity-optimized configurations
- Provides flexibility to use SAS, SATA, or NVMe drives in the same drive bays with an AnyBay design.
- Provides I/O scalability with a LOM slot, PCIe 3.0 slot for an internal storage controller, and up to six PCI Express (PCIe) 3.0 I/O expansion slots in a 2U rack form factor.

Availability and serviceability

The HX 2U systems provide many features to simplify serviceability and increase system uptime:

- Offers protection in the event of a non-correctable memory failure with Single Device Data Correction (SDDC, also known as Chipkill, requires x4-based DIMMs), Adaptive Double Device Data Correction (ADDDC, also known as Redundant Bit Steering [RBS], requires x4-based DIMMs and Intel Xeon Gold or Platinum processors), memory mirroring, and memory rank sparing.
- Provides easy access to upgrades and serviceable parts (such as processors, memory DIMMs, and adapter cards) with tool-less cover removal.
- Offers data protection and greater system uptime with hot-swap drives supporting basic or advanced RAID redundancy.
- Provides availability for business-critical applications with redundant hot-swap power supplies and redundant hot-swap system fans.
- Simplifies servicing, speeds up problem resolution, and helps improve system availability with light path diagnostics.
- Allows preventive actions in advance of possible failure, thereby increasing server uptime and application availability with Proactive Platform Alerts (including PFA and SMART alerts) for processors, voltage regulators, memory, internal storage (SAS/SATA HDDs and SSDs, NVMe SSDs, M.2 storage, flash storage adapters), fans, power supplies, and server ambient and sub-component temperatures.
- Continuously monitors system parameters, triggers alerts, and performs recovery actions in case of failure to minimize downtime with Built-in XClarity Controller (XCC).
- Provides quick access to system status, firmware, network, health, and alerts information via Virtual Operator Panel 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.
- Speeds up troubleshooting tasks to reduce service time with diagnostics built into the XClarity Provisioning Manager.

Manageability and security

Powerful systems management features simplify local and remote management of the HX 2U systems and deliver enterprise-class data protection:

- Provides advanced service processor control, monitoring, and alerting functions with XClarity Controller, a next generation service processor.
- Improves Unified Extensible Firmware Interface (UEFI) system setup, configuration, updates, simplified error handling, and operating system deployment with the embedded XClarity Provisioning Manager.
- Offers XClarity Essentials software tools that can help you set up, use, and maintain the server.
- Increases uptime, reduces costs, and improves productivity through advanced server management capabilities with Lenovo XClarity Administrator that provides comprehensive hardware management.
- Provides on-the-go monitoring and management of devices in XClarity Administrator from anywhere with the Lenovo XClarity mobile app, which can help improve efficiency and reduce downtime risks.
- Centralizes infrastructure resource management with Lenovo XClarity Integrators for VMware vCenter and Microsoft System Center, extending XClarity Administrator features to virtualization management software tools and enabling users to deploy and manage infrastructure end-to-end.
- Offers advanced cryptographic functionality (such as digital signatures and remote attestation) with an integrated Trusted Platform Module (TPM)
- Provides faster, stronger encryption with industry-standard AES NI support.
- Helps prevent certain classes of malicious buffer overflow attacks with Intel Execute Disable Bit functionality, when combined with a supporting operating system.
- Enhances security through hardware-based resistance to malicious software attacks with Intel Trusted Execution Technology, allowing an application to run in its own isolated space, protected from all other software running on a system.

Energy efficiency

The HX 2U systems offer the following energy-efficiency features to save energy, reduce operational costs, increase energy availability, and contribute to the green environment:

- Delivers impressive compute power per watt, featuring 80 PLUS Titanium and Platinum redundant power supplies.
- Enables customers to lower energy costs with design to meet ASHRAE A4 standards in select configurations.
- Reduces power drawn with Intel Intelligent Power Capability that powers individual processor elements on and off as needed.
- Helps reduce power consumption with variable speed fans.
- Helps achieve lower heat output and reduced cooling needs with Lenovo XClarity Energy Manager that provides advanced data center power notification, analysis, and policy-based management.

Components and connectors

The ThinkAgile HX 2U Appliances & Certified Nodes are based on the ThinkSystem SR650 server.

The following figure shows the front view of the HX3520-G appliance and HX3521-G Certified Node. These systems have 16x 2.5-inch (SFF) SAS/SATA hot-swap drive bays.

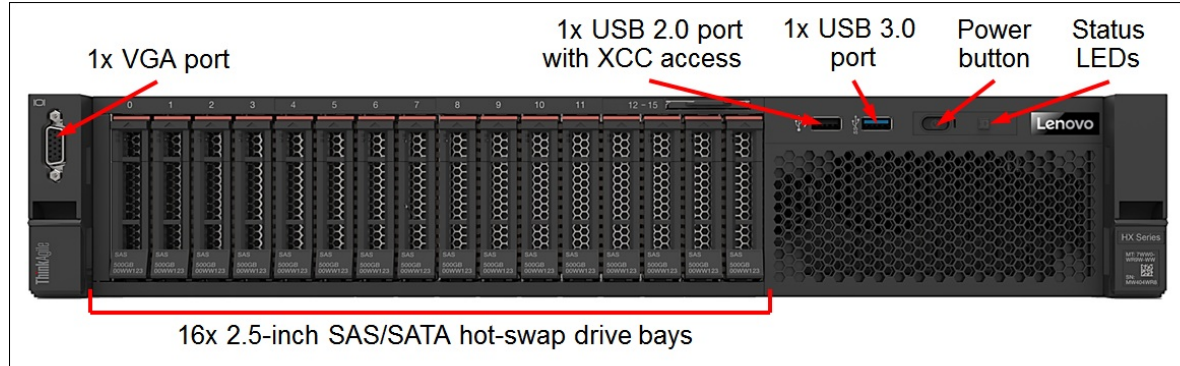


Figure 2. HX3520-G and HX3521-G front view

The following figure shows the front view of the HX5520 appliance and HX5521 Certified Node. These systems have 12x 3.5-inch (LFF) SAS/SATA hot-swap drive bays at the front of the system.

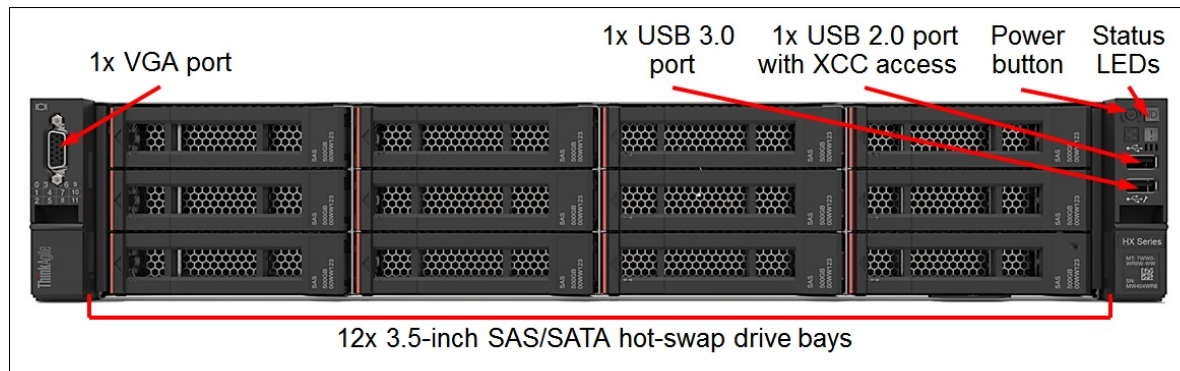


Figure 3. HX5520 and HX5521 front view

The following figure shows the front view of the HX7520 appliance and HX7521 Certified Node. The systems can have up to 24x 2.5-inch hot-swap drive bays, in one of the following configurations:

- 24x SAS/SATA
- 20x SAS/SATA and 4x AnyBay
- 12x SAS/SATA and 4x AnyBay

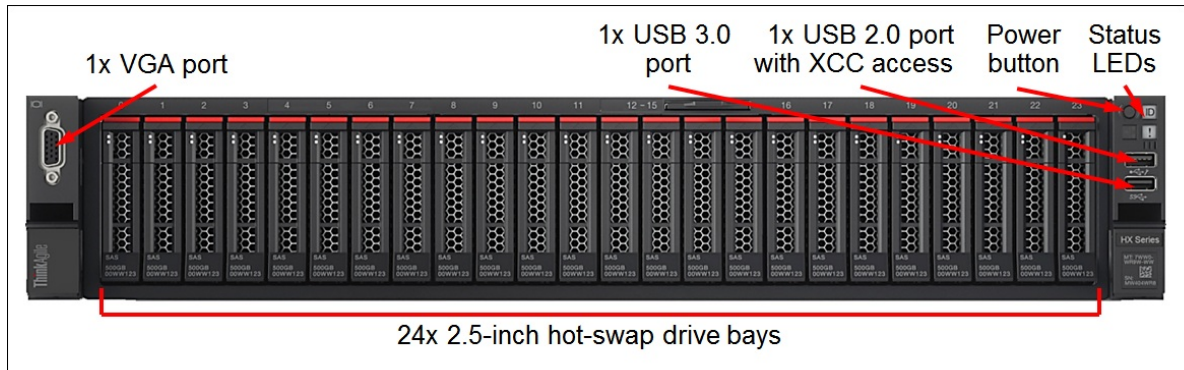


Figure 4. HX7520 and HX7521 front view

The following figure shows the rear view of the HX3520-G, HX3521-G, HX7520 and HX7521. These systems have up to six PCIe expansion slots plus one Ethernet LOM card slot.

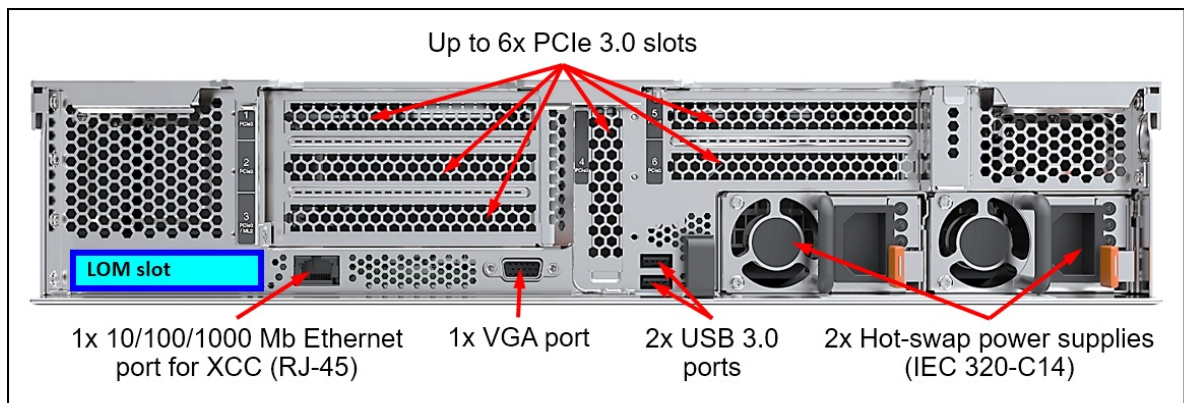


Figure 5. Rear view of HX3520-G, HX3521-G, HX7520 and HX7521

The storage-rich HX5520 and HX5521 optionally support two drive bays at the rear of the server. The following figure shows the rear view of the 14-bay configuration of the HX5520 and HX5521 which includes 3x PCIe slots and 2x drives at the rear of the server.

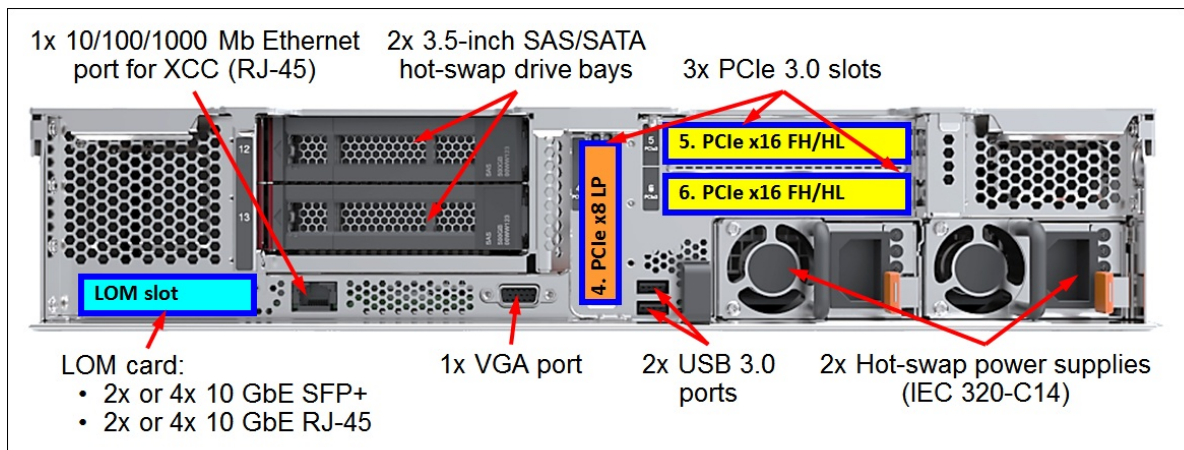


Figure 6. Rear view of HX5520 and HX5521 with 14 drive bays

The following figure shows the rear view of the HX5520 and HX5521 without rear drive bays. It offers 5x PCIe slots.

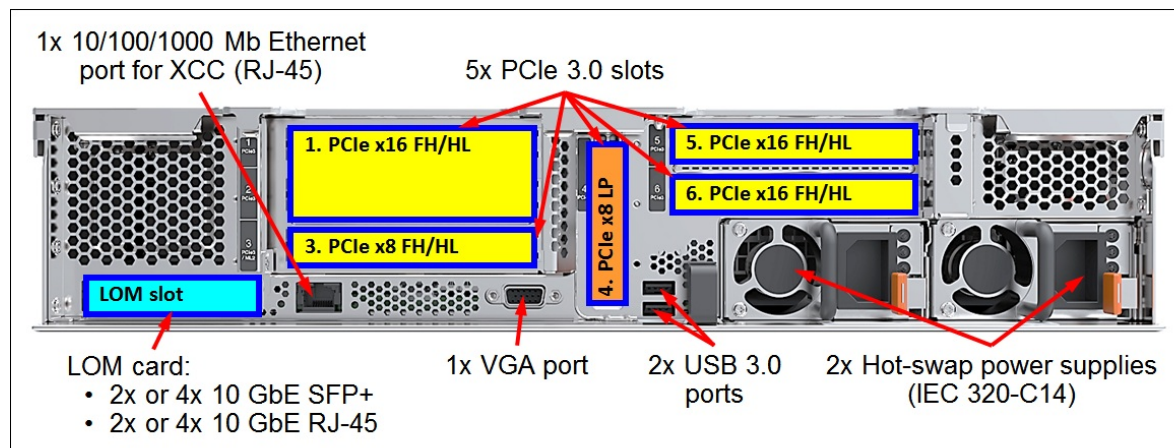


Figure 7. Rear view of HX5520 and HX5521 without rear drive bays

Standard specifications

The ThinkAgile HX 2U Appliances & Certified Nodes are based on the ThinkSystem SR650 server.

The following table provides an overview comparison between the HX systems.

Table 1. Comparison of features

	HX3520-G HX3521-G	HX5520 HX5521	HX7520 HX7521	HX7520 for HANA HX7521 for HANA
HX offering type	Appliance Certified Node	Appliance Certified Node	Appliance Certified Node	Appliance Certified Node
Target workloads	Compute heavy	Storage heavy	High performance	SAP HANA-based solutions
Base MTM	7X84CTO3WW 7Y90CTO3WW	7X84CTO4WW 7Y90CTO4WW	7X84CTO6WW 7Y90CTO6WW	7X84CTO8WW 7Y90CTO8WW
Form Factor	2U	2U	2U	2U
Base platform	SR650	SR650	SR650	SR650
CPU	2x Intel Xeon SP Gen 2	2x Intel Xeon SP Gen 2	2x Intel Xeon SP Gen 2	2x Intel Xeon SP Gen 2
Memory	24x DDR4 2933 MHz (1.5TB maximum)	24x DDR4 2933 MHz (3TB maximum)	24x DDR4 2933 MHz (3TB maximum)	24x DDR4 2933 MHz (3TB maximum)
Drive Bays (hot-swap)	Front: 16x 2.5" SAS/SATA Rear: None	Front: 12x 3.5" SAS/SATA Rear: 2x 3.5" SAS/SATA	Front: 24x 2.5" SAS/SATA or 20x S/S + 4x AnyBay or 12x S/S + 4x AnyBay Rear: None	Front: 24x 2.5" SAS/SATA or 20x S/S + 4x AnyBay or 12x S/S + 4x AnyBay Rear: None
Drive configurations	All Flash Hybrid	All Flash Hybrid	All Flash Hybrid	All Flash
HBA	430-16i HBA	430-16i HBA	430-8i HBA	430-8i HBA
Boot drives	2x M.2 SATA	2x M.2 SATA	2x M.2 SATA	2x M.2 SATA

	HX3520-G HX3521-G	HX5520 HX5521	HX7520 HX7521	HX7520 for HANA HX7521 for HANA
Rear slots	6	5 (3 if rear drive bays configured)	6	6
LOM networking	1x 10Gb LOM adapter	1x 10Gb LOM adapter	1x 10Gb LOM adapter	1x 10Gb LOM adapter
PCIe networking	Up to 3x adapters 10Gb, 25Gb, 40Gb	Up to 4x adapters 10Gb, 25Gb, 40Gb	Up to 3x adapters 10Gb, 25Gb, 40Gb	Up to 4x adapters 10Gb, 25Gb, 40Gb
GPUs	2x Double-wide 5x Single-wide	No support	No support	No support
Hypervisor	Nutanix AHV VMware ESXi Microsoft Windows Hyper-V	Nutanix AHV VMware ESXi Microsoft Windows Hyper-V	Nutanix AHV VMware ESXi Microsoft Windows Hyper-V	Nutanix AHV VMware ESXi

The following table lists the system specifications of the HX 2U systems.

Table 2. System specifications

Attribute	Specification
Machine types	7X84 - Appliances 7Y90 - Certified Nodes
Form factor	2U Rack-mount.
Processor	Two 2nd Gen Intel Xeon Scalable processors.
Chipset	Intel C624.
Memory	24 DIMM slots (up to 12 DIMMs per processor; six memory channels per processor with two DIMMs per channel) with support for RDIMMs and 3DS RDIMMs up to 2933 MHz at 2 DIMMs per channel.
Persistent memory	No support.
Memory capacity	HX3520-G and HX3521-G: Up to 1.5 TB HX5520, HX5521, HX7520 and HX7521: Up to 3.0 TB
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	HX3520-G and HX3521-G: <ul style="list-style-type: none"> ● 16x 2.5-inch SAS/SATA hot-swap HX5520 and HX5521: <ul style="list-style-type: none"> ● 12x or 14x 3.5-inch SAS/SATA hot-swap. HX7520 and HX7521: <ul style="list-style-type: none"> ● 24x 2.5-inch SAS/SATA hot-swap drive bays; or ● 20x SAS/SATA and 4x 2.5-inch AnyBay hot-swap drive bays; or ● 12x 2.5-inch SAS/SATA and 4x 2.5-inch AnyBay hot-swap drive bays.

Attribute	Specification
Internal storage	<p>HX3520-G and HX3521-G:</p> <ul style="list-style-type: none"> ● Hybrid: <ul style="list-style-type: none"> ○ 2 cache SSDs and 6-14 capacity HDDs in increments of 2 drives. ○ 4 cache SSDs and 8-12 capacity HDDs in increments of 2 drives. ● All Flash: 4-16 SSDs in increments of 2 drives. <p>HX5520 and HX5521:</p> <ul style="list-style-type: none"> ● Hybrid: <ul style="list-style-type: none"> ○ 2 cache SSDs and 4-12 capacity HDDs in increments of 2 drives. ○ 4 cache SSDs and 8-10 capacity HDDs in increments of 2 drives. ● All Flash: 4-14 SSDs in increments of 2 drives. <p>HX7520 and HX7521:</p> <ul style="list-style-type: none"> ● 24-drive bay Hybrid: <ul style="list-style-type: none"> ○ 4 cache SSDs and 12-20 capacity HDDs in increments of 2 drives. ○ 6 cache SSDs and 12-18 capacity HDDs in increments of 2 drives. ○ 8 cache SSDs and 16 capacity HDDs. ● 24-drive bay All Flash: <ul style="list-style-type: none"> ○ 4-24 SAS or SATA SSDs in increments of 2 drives. ○ 4 NVMe PCIe SSDs and 8-20 SAS or SATA SSDs in increments of 2 drives. ● 16-drive bay Hybrid: 4 cache SSDs and 12 capacity HDDs. ● 16-drive bay All Flash: <ul style="list-style-type: none"> ○ 4-16 SAS or SATA SSDs in increments of 2 drives. ○ 4 NVMe PCIe SSDs and 8-12 SAS or SATA SSDs in increments of 2 drives.
Storage controller	430-8i HBA or 430-16i HBA
Network interfaces	<ul style="list-style-type: none"> ● 2x or 4x 10 GbE LOM base network ports, either RJ-45 or SFP+ ● 10GBASE-T, 10 GbE SFP+, 25 GbE SFP28, or 40 GbE QSFP28 network adapters. ● 1x RJ-45 10/100/1000 Mb Ethernet port for systems management.
GPU adapters	<p>HX3520-G and HX3521-G:</p> <ul style="list-style-type: none"> ● 5x Single-wide GPUs ● 2x Double-wide GPUs <p>Other HX systems: No support for GPUs</p>
Boot drive	2x M.2 non-hot-swap SATA SSDs (RAID-1).
I/O expansion slots	<p>Up to 7x PCIe 3.0 slots:</p> <ul style="list-style-type: none"> ● Slot 1: PCIe 3.0 x16 or x8; full-height, half-length ● Slot 2: PCIe 3.0 x8; full-height, half-length (not present if Slot 1 is PCIe x16) ● Slot 3: PCIe 3.0 x8; full-height, half-length ● Slot 4: PCIe 3.0 x8; low profile ● Slot 5: PCIe 3.0 x16; full-height, half-length ● Slot 6: PCIe 3.0 x16; full-height, half-length (not available if a DW GPU adapter is installed in Slot 5) ● 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, 1x VGA port. ● Rear: 2x USB 3.0 ports, 1x VGA port.
Cooling	Six hot-swap system fans with N+1 redundancy.

Attribute	Specification
Power supply	Two redundant hot-swap 550 W, 750 W, or 1100 W (100 - 240 V), or 1600 W (200 - 240 V) High Efficiency Platinum AC power supplies, or 750 W (200 - 240 V) High Efficiency Titanium AC power supplies.
Video	Matrox G200 with 16 MB memory integrated into the XClarity Controller. Maximum resolution is 1920x1200 at 60 Hz with 32 bits per pixel.
Hot-swap parts	SSDs 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 and XClarity Pro. XClarity Energy Manager (optional).
Security features	Power-on password, administrator's password, secure firmware updates, Trusted Platform Module (TPM) 2.0. Optional security bezel.
Software	<ul style="list-style-type: none"> ● Appliances: Nutanix Acropolis: Starter, Pro, and Ultimate editions. Nutanix Prism, Nutanix Calm (optional), Nutanix Flow (optional). ● Certified Nodes: Nutanix Acropolis Starter, Pro and Ultimate editions (licenses purchased separately from Nutanix or a Nutanix reseller).
Hypervisors	Nutanix AHV, VMware ESXi, Microsoft Windows Server Hyper-V
Hardware warranty	<ul style="list-style-type: none"> ● Appliances: Three-, four-, or five-year customer-replaceable unit and onsite limited hardware warranty with ThinkAgile Advantage Support and selectable service levels: 9x5 next business day (NBD) parts delivered, 9x5 NBD onsite response, 24x7 coverage with 2-hour or 4-hour onsite response, or 6-hour or 24-hour committed repair (select areas). Also available are YourDrive YourData, Premier Support, and Enterprise Software Support. ● Certified Nodes: Three, four, or five-year customer-replaceable unit and onsite limited warranty with selectable service levels: 9x5 coverage with next business day (NBD) parts delivered (base warranty), 9x5 coverage with NBD onsite response (Foundation Service), 24x7 coverage with 4-hour onsite response or 24-hour committed repair (select areas) (Essential Service), or 24x7 coverage with 2-hour onsite response or 6-hour committed repair (select areas) (Advanced Service). Also available are 1-year and 2-year post-warranty extensions, YourDrive YourData, and Enterprise Software Support.
Software maintenance	Three-, four-, or five-year software support and subscription (matches the duration of the selected warranty period).
Dimensions	Width: 445 mm (17.5 in.), height: 87 mm (3.4 in.), depth: 764 mm (30.1 in.)
Weight	Maximum configuration: 32 kg (70.5 lb)

Models

Factory-integrated models of the appliances and 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/>

Note: You are required to engage a Lenovo representative in the project that includes the ThinkAgile HX Series appliances. ThinkAgile HX Certified Nodes do not have this requirement.

The following table lists the base CTO models.

Table 3. CTO base models

Machine Type/Model	Description
7X84CTO3WW	ThinkAgile HX3520-G Appliance
7Y90CTO3WW	ThinkAgile HX3521-G Certified Node
7X84CTO4WW	ThinkAgile HX5520 Appliance
7Y90CTO4WW	ThinkAgile HX5521 Certified Node
7X84CTO6WW	ThinkAgile HX7520 Appliance
7Y90CTO6WW	ThinkAgile HX7521 Certified Node
7X84CTO8WW	ThinkAgile HX7520 for HANA Appliance
7Y90CTO8WW	ThinkAgile HX7521 for HANA Certified Node

Comparison with the ThinkSystem SR650

The ThinkAgile HX 2U Appliances & Certified Nodes are based on the ThinkSystem SR650 server, however there are key differences:

- No persistent memory support
- No onboard SATA controller support
- No RAID adapter support
- No VROC RAID support
- No SED drive support
- No Fibre Channel support
- No InfiniBand support

For details about the ThinkSystem SR650, see the SR650 product guide: <https://lenovopress.com/lp1050-thinksystem-sr650-server>

To verify what specific hardware components are supported with the HX 2U systems, see the DCSC configurator: <https://dcsc.lenovo.com>

Processors

The HX 2U systems support the following processors. Two processors are required for all HX 2U configurations.

For details about these options, including configuration rules, see the SR650 product guide:
<https://lenovopress.com/lp1050-thinksystem-sr650-server#processors>

Support for additional processors: The table below lists the processors supported across all configurations. Additional processors may also be supported. Please contact your Lenovo representative regarding the support of additional options through our Special Bid ordering process.

Table 4. Processor choices

Part number	Feature	Description	Maximum supported							
			HX3520-G	HX3521-G	HX5520	HX5521	HX7520	HX7521	HX7520 HANA	HX7521 HANA
Intel Xeon Silver processors										
4XG7A37935	B4HT	Intel Xeon Silver 4208 8C 85W 2.1GHz Processor	2	2	2	2	2	2	No	No
4XG7A37932	B4HS	Intel Xeon Silver 4210 10C 85W 2.2GHz Processor	2	2	2	2	No	No	No	No
4XG7A37981	B7N5	Intel Xeon Silver 4210R 10C 100W 2.4GHz Processor	2	2	2	2	No	No	No	No
4XG7A37929	B4HR	Intel Xeon Silver 4214 12C 85W 2.2GHz Processor	2	2	2	2	No	No	No	No
4XG7A37980	B7N6	Intel Xeon Silver 4214R 12C 100W 2.4GHz Processor	2	2	2	2	No	No	No	No
4XG7A37926	B4HQ	Intel Xeon Silver 4215 8C 85W 2.5GHz Processor	2	2	2	2	2	2	2	2
4XG7A63274	BAZU	Intel Xeon Silver 4215R 8C 130W 3.2GHz Processor	2	2	2	2	2	2	2	2
4XG7A37923	B4HP	Intel Xeon Silver 4216 16C 100W 2.1GHz Processor	2	2	2	2	2	2	2	2
Intel Xeon Gold processors										
4XG7A37916	B4HN	Intel Xeon Gold 5215 10C 85W 2.5GHz Processor	2	2	2	2	2	2	2	2
4XG7A37910	B4P9	Intel Xeon Gold 5215L 10C 85W 2.5GHz Processor	2	2	2	2	2	2	2	2
4XG7A37919	B4HM	Intel Xeon Gold 5217 8C 115W 3.0GHz Processor	2	2	2	2	2	2	2	2
4XG7A37895	B4HL	Intel Xeon Gold 5218 16C 125W 2.3GHz Processor	2	2	2	2	2	2	2	2
4XG7A63272	BAZS	Intel Xeon Gold 5218R 20C 125W 2.1GHz Processor	2	2	2	2	2	2	2	2
4XG7A37892	B4HK	Intel Xeon Gold 5220 18C 125W 2.2GHz Processor	2	2	2	2	2	2	2	2
4XG7A37974	B7N9	Intel Xeon Gold 5220R 24C 150W 2.2GHz Processor	2	2	2	2	2	2	2	2
4XG7A38019	B6CW	Intel Xeon Gold 5220S 18C 125W 2.7GHz Processor	2	2	2	2	2	2	2	2
4XG7A38023	B6CV	Intel Xeon Gold 6222V 20C 115W 1.8GHz Processor	2	2	2	2	2	2	2	2
4XG7A38021	B6CL	Intel Xeon Gold 6226 12C 125W 2.7GHz Processor	2	2	2	2	2	2	2	2

Part number	Feature	Description	Maximum supported							
			HX3520-G	HX3521-G	HX5520	HX5521	HX7520	HX7521	HX7520 HANA	HX7521 HANA
4XG7A38082	BAZW	Intel Xeon Gold 6226R 16C 150W 2.9GHz Processor	2	2	2	2	2	2	2	2
4XG7A37889	B4HJ	Intel Xeon Gold 6230 20C 125W 2.1GHz Processor	2	2	2	2	2	2	2	2
4XG7A38028	B5RY	Intel Xeon Gold 6230N 20C 125W 2.3GHz Processor	No	No	No	No	2	2	2	2
4XG7A38081	BAZX	Intel Xeon Gold 6230R 26C 150W 2.1GHz Processor	2	2	2	2	2	2	2	2
4XG7A38001	B6CK	Intel Xeon Gold 6234 8C 130W 3.3GHz Processor	2	2	2	2	2	2	2	2
4XG7A38008	B6CJ	Intel Xeon Gold 6238 22C 140W 2.1GHz Processor	2	2	2	2	2	2	2	2
4XG7A38003	B6CR	Intel Xeon Gold 6238L 22C 140W 2.1GHz Processor	2	2	2	2	2	2	2	2
4XG7A38080	BAZL	Intel Xeon Gold 6238R 28C 165W 2.2GHz Processor	2	2	2	2	2	2	2	2
4XG7A15895	B4HH	Intel Xeon Gold 6240 18C 150W 2.6GHz Processor	2	2	2	2	2	2	2	2
4XG7A38015	B6CS	Intel Xeon Gold 6240L 18C 150W 2.6GHz Processor	2	2	2	2	2	2	2	2
4XG7A38079	BAZM	Intel Xeon Gold 6240R 24C 165W 2.4GHz Processor	2	2	2	2	2	2	2	2
4XG7A37886	B4HG	Intel Xeon Gold 6242 16C 150W 2.8GHz Processor	2	2	2	2	2	2	2	2
4XG7A15874	B4HF	Intel Xeon Gold 6244 8C 150W 3.6GHz Processor	No	No	No	No	2	2	2	2
4XG7A15892	B4HE	Intel Xeon Gold 6248 20C 150W 2.5GHz Processor	2	2	2	2	2	2	2	2
4XG7A15889	B4HC	Intel Xeon Gold 6252 24C 150W 2.1GHz Processor	2	2	2	2	2	2	2	2
4XG7A38010	B6CU	Intel Xeon Gold 6262V 24C 135W 1.9GHz Processor	2	2	2	2	2	2	2	2
Intel Xeon Platinum processors										
4XG7A37898	B5RZ	Intel Xeon Platinum 8253 16C 125W 2.2GHz Processor	2	2	2	2	2	2	2	2
4XG7A15887	B4HB	Intel Xeon Platinum 8260 24C 165W 2.4GHz Processor	2	2	2	2	2	2	2	2
4XG7A15885	B4P7	Intel Xeon Platinum 8260L 24C 165W 2.4GHz Processor	2	2	2	2	2	2	2	2
4XG7A15870	B4HA	Intel Xeon Platinum 8268 24C 205W 2.9GHz Processor	No	No	No	No	2	2	2	2
4XG7A15868	B4H9	Intel Xeon Platinum 8270 26C 205W 2.7GHz Processor	No	No	No	No	2	2	2	2

Part number	Feature	Description	Maximum supported							
			HX3520-G	HX3521-G	HX5520	HX5521	HX7520	HX7521	HX7520 HANA	HX7521 HANA
4XG7A15881	B4H8	Intel Xeon Platinum 8276 28C 165W 2.2GHz Processor	2	2	2	2	2	2	2	2
4XG7A15877	B4P6	Intel Xeon Platinum 8276L 28C 165W 2.2GHz Processor	2	2	2	2	2	2	2	2
4XG7A15866	B4H7	Intel Xeon Platinum 8280 28C 205W 2.7GHz Processor	No	No	No	No	2	2	2	2
4XG7A15862	B4P5	Intel Xeon Platinum 8280L 28C 205W 2.7GHz Processor	No	No	No	No	2	2	2	2

Memory

The HX 2U systems support up to 24 DIMMs with two processors. Each processor has six memory channels (two integrated memory controllers with three memory channels per memory controller), and there are two DIMMs per channel.

Memory maximums are as follows:

- HX3520-G and HX3521-G: 1.5 TB
- HX5520 and HX5521: 3.0 TB
- HX7520 and HX7521: 3.0 TB
- HX7520 and HX7521 for SAP HANA: 3.0 TB

Only specific memory capacities are supported and only with certain DIMM combinations. In most configurations, all DIMMs must be of the same type, speed, rank, and capacity (the same part number or feature code). The only exception is with 576 GB of memory capacity, in which a combination of 16 GB and 32 GB DIMMs is used, and all DIMMs in the appliance must be of the same type and speed.

For more information about memory support, see the SR650 product guide:

<https://lenovopress.com/lp1050-thinksystem-sr650-server#memory>

The following tables list the memory options that are available for selection for each HX system. It is possible to expand memory capacity after the initial deployment by adding more memory DIMMs to match one of the supported memory configurations.

- [Memory for HX3520-G and HX3521-G](#)
- [Memory for HX5520 and HX5521](#)
- [Memory for HX7520 and HX7521](#)
- [Memory for HX7520 and HX7521 for SAP HANA](#)

Memory for HX3520-G and HX3521-G

The following table lists the memory options that are available for the HX3520-G and HX3521-G.

Table 5. Memory selection options for HX3520-G and HX3521-G

Part number	Feature code	Description	Quantity								
			128 GB*	192 GB	256 GB*	384 GB	512 GB*	576 GB	768 GB	1 TB*	1.5 TB
ThinkSystem 2933 MHz Performance+ RDIMMs											
4X77A12184	B5N6	16GB TruDDR4 Performance+ 2933MHz (2Rx8 1.2V) RDIMM	8	12	-	-	-	-	-	-	
4X77A12185	B5N7	32GB TruDDR4 Performance+ 2933MHz (2Rx4 1.2V) RDIMM	-	-	8	12	16	-	24	-	
4X77A12186	B5N8	64GB TruDDR4 Performance+ 2933MHz (2Rx4 1.2V) RDIMM	-	-	-	-	8	-	12	16	24
ThinkSystem 2933 MHz Performance+ 3DS RDIMMs											
4X77A12187	B5N9	128GB TruDDR4 Perf.+ 2933MHz (4Rx4 1.2V) 3DS RDIMM	-	-	-	-	-	-	-	-	12
ThinkSystem 2933 MHz RDIMMs											
4ZC7A08708	B4H2	16GB TruDDR4 2933MHz (2Rx8 1.2V) RDIMM	8	12	-	-	-	12	-	-	-
4ZC7A08709	B4H3	32GB TruDDR4 2933MHz (2Rx4 1.2V) RDIMM	-	-	8	12	16	12	24	-	-
4ZC7A08710	B4H4	64GB TruDDR4 2933MHz (2Rx4 1.2V) RDIMM	-	-	-	-	8	-	12	16	24
ThinkSystem 2933 MHz 3DS RDIMMs											
4ZC7A15113	B587	128GB TruDDR4 2933MHz (4Rx4 1.2V) 3DS RDIMM	-	-	-	-	-	-	-	-	12
ThinkSystem 2666 MHz RDIMMs											
7X77A01303	AUNC	16GB TruDDR4 2666 MHz (2Rx8 1.2V) RDIMM	8	12	-	-	-	12	-	-	-
7X77A01304	AUND	32GB TruDDR4 2666 MHz (2Rx4 1.2V) RDIMM	-	-	8	12	16	12	24	-	-
ThinkSystem 2666 MHz 3DS RDIMMs											
7X77A01307	AUNF	128GB TruDDR4 2666 MHz (8Rx4 1.2V) 3DS RDIMM	-	-	-	-	-	-	-	-	12

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

Memory for HX5520 and HX5521

The following table lists the memory options that are available for the HX5520 and HX5521.

3TB memory configurations: Configurations of 3TB of total memory require that "L" processors be configured. Processors with an L suffix are required when more than 1TB of memory per processor is installed.

Table 6. Memory configuration selection options for HX5520 and HX5521

Part number	Feature code	Description	Quantity										
			128 GB*	192 GB	256 GB*	384 GB	512 GB*	576 GB	768 GB	1 TB*	1.5 TB	3 TB	
ThinkSystem 2933 MHz Performance+ RDIMMs													
4X77A12184	B5N6	16GB TruDDR4 Performance+ 2933MHz (2Rx8 1.2V) RDIMM	8	12	-	-	-	-	-	-	-	-	-
4X77A12185	B5N7	32GB TruDDR4 Performance+ 2933MHz (2Rx4 1.2V) RDIMM	-	-	8	12	16	-	24	-	-	-	-
4X77A12186	B5N8	64GB TruDDR4 Performance+ 2933MHz (2Rx4 1.2V) RDIMM	-	-	-	-	8	-	12	16	24	-	-
ThinkSystem 2933 MHz Performance+ 3DS RDIMMs													
4X77A12187	B5N9	128GB TruDDR4 Perf.+ 2933MHz (4Rx4 1.2V) 3DS RDIMM	-	-	-	-	-	-	-	-	-	12	24
ThinkSystem 2933 MHz RDIMMs													
4ZC7A08708	B4H2	16GB TruDDR4 2933MHz (2Rx8 1.2V) RDIMM	8	12	-	-	-	12	-	-	-	-	-
4ZC7A08709	B4H3	32GB TruDDR4 2933MHz (2Rx4 1.2V) RDIMM	-	-	8	12	16	+12	24	-	-	-	-
4ZC7A08710	B4H4	64GB TruDDR4 2933MHz (2Rx4 1.2V) RDIMM	-	-	-	-	8	-	12	16	24	-	-
ThinkSystem 2933 MHz 3DS RDIMMs													
4ZC7A15113	B587	128GB TruDDR4 2933MHz (4Rx4 1.2V) 3DS RDIMM	-	-	-	-	-	-	-	-	-	12	24
ThinkSystem 2666 MHz RDIMMs													
7X77A01303	AUNC	16GB TruDDR4 2666 MHz (2Rx8 1.2V) RDIMM	8	12	-	-	-	12	-	-	-	-	-
7X77A01304	AUND	32GB TruDDR4 2666 MHz (2Rx4 1.2V) RDIMM	-	-	8	12	16	+12	24	-	-	-	-
ThinkSystem 2666 MHz 3DS RDIMMs													
7X77A01307	AUNF	128GB TruDDR4 2666 MHz (8Rx4 1.2V) 3DS RDIMM	-	-	-	-	-	-	-	-	-	12	24

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

Memory for HX7520 and HX7521

The following table lists the memory options that are available for the HX7520 and HX7521.

3TB memory configurations: Configurations of 3TB of total memory require that "L" processors be configured. Processors with an L suffix are required when more than 1TB of memory per processor is installed.

Table 7. Memory configuration selection options for HX7520 and HX7521

Part number	Feature code	Description	Quantity									
			256 GB*	384 GB	512 GB*	576 GB	768 GB	1 TB*	1.125 TB	1.5 TB	3 TB	
ThinkSystem 2933 MHz Performance+ RDIMMs												
4X77A12185	B5N7	32GB TruDDR4 Performance+ 2933MHz (2Rx4 1.2V) RDIMM	8	12	16	-	24	-	-	-	-	-
4X77A12186	B5N8	64GB TruDDR4 Performance+ 2933MHz (2Rx4 1.2V) RDIMM	-	-	8	-	12	16	-	24	-	-
ThinkSystem 2933 MHz Performance+ 3DS RDIMMs												
4X77A12187	B5N9	128GB TruDDR4 Perf.+ 2933MHz (4Rx4 1.2V) 3DS RDIMM	-	-	-	-	-	-	-	12	24	-
ThinkSystem 2933 MHz RDIMMs												
4ZC7A08708	B4H2	16GB TruDDR4 2933MHz (2Rx8 1.2V) RDIMM	-	-	-	12	-	-	-	-	-	-
4ZC7A08709	B4H3	32GB TruDDR4 2933MHz (2Rx4 1.2V) RDIMM	8	12	16	12	24	-	12	-	-	-
4ZC7A08710	B4H4	64GB TruDDR4 2933MHz (2Rx4 1.2V) RDIMM	-	-	8	-	12	16	12	24	-	-
ThinkSystem 2933 MHz 3DS RDIMMs												
4ZC7A15113	B587	128GB TruDDR4 2933MHz (4Rx4 1.2V) 3DS RDIMM	-	-	-	-	-	-	-	12	24	-
ThinkSystem 2666 MHz RDIMMs												
7X77A01303	AUNC	16GB TruDDR4 2666 MHz (2Rx8 1.2V) RDIMM	-	-	-	12	-	-	-	-	-	-
7X77A01304	AUND	32GB TruDDR4 2666 MHz (2Rx4 1.2V) RDIMM	8	12	16	12	24	-	-	-	-	-

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

Memory for HX7520 and HX7521 for SAP HANA

The following table lists the memory options that are available for the HX7520 and HX7521 for SAP HANA.

3TB memory configurations: Configurations of 3TB of total memory require that "L" processors be configured. Processors with an L suffix are required when more than 1TB of memory per processor is installed.

Table 8. Memory configuration selection options for HX7520 and HX7521 for SAP HANA

Part number	Feature code	Description	Quantity						
			192 GB	384 GB	576 GB	768 GB	1.125 TB	1.5 TB	3 TB
ThinkSystem 2933 MHz Performance+ RDIMMs									
4X77A12184	B5N6	16GB TruDDR4 Performance+ 2933MHz (2Rx8 1.2V) RDIMM	12	24	-	-	-	-	-
4X77A12185	B5N7	32GB TruDDR4 Performance+ 2933MHz (2Rx4 1.2V) RDIMM	-	12	-	24	-	-	-
4X77A12186	B5N8	64GB TruDDR4 Performance+ 2933MHz (2Rx4 1.2V) RDIMM	-	-	-	12	-	24	-
ThinkSystem 2933 MHz Performance+ 3DS RDIMMs									
4X77A12187	B5N9	128GB TruDDR4 Perf.+ 2933MHz (4Rx4 1.2V) 3DS RDIMM	-	-	-	-	-	12	24
ThinkSystem 2933 MHz RDIMMs									
4ZC7A08708	B4H2	16GB TruDDR4 2933MHz (2Rx8 1.2V) RDIMM	12	24	12	-	-	-	-
4ZC7A08709	B4H3	32GB TruDDR4 2933MHz (2Rx4 1.2V) RDIMM	-	12	12	24	12	-	-
4ZC7A08710	B4H4	64GB TruDDR4 2933MHz (2Rx4 1.2V) RDIMM	-	-	-	12	12	24	-
ThinkSystem 2933 MHz 3DS RDIMMs									
4ZC7A15113	B587	128GB TruDDR4 2933MHz (4Rx4 1.2V) 3DS RDIMM	-	-	-	-	-	12	24
ThinkSystem 2666 MHz RDIMMs									
7X77A01303	AUNC	16GB TruDDR4 2666 MHz (2Rx8 1.2V) RDIMM	12	24	12	-	-	-	-
7X77A01304	AUND	32GB TruDDR4 2666 MHz (2Rx4 1.2V) RDIMM	-	12	12	24	-	-	-

Internal storage

Internal storage configurations of the HX 2U systems are as follows. All drives are hot-swap and are accessible from the front or rear of the system:

Rear-accessible drives: Only the HX5520 and HX5521 support rear-accessible drives

- HX3520-G and HX3521-G:
 - 16x 2.5-inch SAS/SATA drive bays
- HX5520 and HX5521:
 - 12x 3.5-inch SAS/SATA drive bays (all front-accessible)
 - 14x 3.5-inch SAS/SATA drive bays (includes 2x rear-accessible drives)
- HX7520 and HX7521:
 - 24x 2.5-inch SAS/SATA drive bays
 - 20x 2.5-inch SAS/SATA and 4x 2.5-inch AnyBay drive bays
 - 12x 2.5-inch SAS/SATA and 4x 2.5-inch AnyBay drive bays
- HX7520 and HX7521 for HANA:
 - 24x 2.5-inch SAS/SATA drive bays
 - 20x 2.5-inch SAS/SATA and 4x 2.5-inch AnyBay drive bays
 - 12x 2.5-inch SAS/SATA and 4x 2.5-inch AnyBay drive bays

The server also supports M.2 drives for OS boot, installed in an M.2 adapter internal to the server. Two M.2 SATA SSDs are required for selection, and they must be of the same model and capacity.

Topics in this section:

- [Configuration rules](#)
- [Backplanes](#)
- [Boot drive enablement](#)

Configuration rules

Configuration rules for the HX3520-G and HX3521-G:

- For hybrid configurations, the system supports 6-14 capacity drives (HDDs) depending on the quantity of the cache drives (SSDs):
 - 2 cache drives: 6-14 capacity drives in increments of 2 drives.
 - 4 cache drives: 8-12 capacity drives in increments of 2 drives.
- For All Flash configurations, the system supports 4-16 SSDs in increments of 2 drives.
- All SSDs must be of the same model and capacity. All HDDs must be of the same type and capacity.

Configuration rules for the HX5520 and HX5521:

- If 14 drives are selected, the systems use 12 front and 2 rear drive bays (the Rear HDD Kit is derived by the configurator). If 12 or fewer drives are selected, the configurator selects 12 front drive bays only and the rear drive bays are not configured.
- For Hybrid configurations, the system supports from 4 to 12 capacity drives (HDDs) depending on the quantity of the cache drives (SSDs):
 - 2 cache drives: From 4 to 12 capacity drives in increments of 2 drives.
 - 4 cache drives: From 8 to 10 capacity drives in increments of 2 drives.
- Hybrid configurations with more than 80 TB of storage capacity require AOS 5.11 or later, 12 or more cores per processor and 7.68 TB or more of SSD cache capacity.
- For All Flash configurations, the system supports from 4 to 14 SSDs in increments of 2 drives.
- All SSDs must be of the same model and capacity. All HDDs must be of the same type and capacity.

Configuration rules for the HX7520 and HX7521:

- For Hybrid configurations with 24 drive bays, the system supports 12-20 capacity drives (HDDs) depending on the quantity of the cache drives (SSDs):
 - 4 cache drives: 12-20 capacity drives in increments of 2 drives.
 - 6 cache drives: 12-18 capacity drives in increments of 2 drives.
 - 8 cache drives: 16 capacity drives.
- For Hybrid configurations, SATA and SAS SSDs are supported for cache, however NVMe drives are not supported for cache.
- For All Flash configurations with 24 drive bays, the system supports 4-24 SSDs depending on the selected SSD types:
 - 4-24 SAS or SATA SSDs in increments of 2 drives.
 - 4 NVMe SSDs and 8-20 SAS or SATA SSDs in increments of 2 drives.
- For Hybrid configurations with 16 drive bays, the system supports 12 capacity drives and 4 cache drives.
- For All Flash configurations with 16 drive bays, the system supports 4-16 SSDs depending on the selected SSD types:
 - 4-16 SAS or SATA SSDs in increments of 2 drives.
 - 4 NVMe SSDs and 8-12 SAS or SATA SSDs in increments of 2 drives.
- All NVMe SSDs must be of the same model and capacity. All SAS or SATA SSDs must be of the same model and capacity. All HDDs in the appliance must be of the same type and capacity.

Configuration rules for the HX7520 and HX7521 for HANA:

- Hybrid configurations are not supported
- Internal storage is defined as follows:
 - Cache tier: NVMe SSD
 - Capacity tier: SAS or SATA SSD
- The systems support 4-24 capacity drives (SAS or SATA SSDs) depending on the quantity of the cache drives (NVMe SSDs):
 - No cache drives: 8-24 capacity drives in increments of 2 drives.
 - 4 cache drives: 8-20 capacity drives in increments of 2 drives.
- All cache drives must be of the same model and capacity. All capacity drives must be of the same model and capacity.
- Up to 16 drives can be selected for systems with the processors of 200 W or 205 W TDP, or Gold 6230N or 6244 processors.

Backplanes

The choice of backplanes supported varies by system, as listed in the following table.

For details about these options, including configuration rules, see the SR650 product guide:

<https://lenovopress.com/lp1050-thinksystem-sr650-server#internal-storage>

Table 9. Drive backplanes

Part number	Feature	Description	Maximum supported							
			HX3520-G	HX3521-G	HX5520	HX5521	HX7520	HX7521	HX7520 HANA	HX7521 HANA
Front 3.5-inch drive backplanes										
None	AUR9	ThinkSystem 2U 3.5" SATA/SAS 12-Bay Backplane	No	No	1	1	No	No	No	No
Front 2.5-inch drive backplanes										
None	AURA	ThinkSystem 2U/Twr 2.5" SATA/SAS 8-Bay Backplane	3	3	No	No	3	3	2	2
None	AUR5	ThinkSystem 2U/Twr 2.5" AnyBay 8-Bay Backplane	No	No	No	No	3	3	1	1
Rear 2.5-inch drive backplane										
7XH7A06253	AURZ	ThinkSystem SR590/SR650 Rear HDD/SSD Kit	No	No	1	1	No	No	No	No

Boot drive enablement

For OS boot functions, the systems also support two M.2 drives installed on an adapter internal to the server. The following table lists the supported controllers/enablement kits for M.2 boot drives.

For details about these options, including configuration rules, see the SR650 product guide:

<https://lenovopress.com/lp1050-thinksystem-sr650-server#internal-storage>

Table 10. Boot drive enablement

Part number	Feature	Description	Maximum supported							
			HX3520-G	HX3521-G	HX5520	HX5521	HX7520	HX7521	HX7520 HANA	HX7521 HANA
7Y37A01092	AUMU	ThinkSystem M.2 Enablement Kit	1	1	1	1	1	1	1	1
7Y37A01093	AUMV	ThinkSystem M.2 with Mirroring Enablement Kit	1	1	1	1	1	1	1	1

Controllers for internal storage

The HX 2U systems support the following internal storage controllers.

For details about these options, see the SR650 product guide:

<https://lenovopress.com/lp1050-thinksystem-sr650-server#controllers-for-internal-storage>

Table 11. Controllers for internal storage

Part number	Feature	Description	Maximum supported							
			HX3520-G	HX3521-G	HX5520	HX5521	HX7520	HX7521	HX7520 HANA	HX7521 HANA
7Y37A01088	AUNL	ThinkSystem 430-8i SAS/SATA 12Gb HBA	No	No	No	No	3	3	3	3
7Y37A01089	AUNM	ThinkSystem 430-16i SAS/SATA 12Gb HBA	1	1	1	1	No	No	No	No
4Y37A78602	BM50	ThinkSystem 440-16i SAS/SATA PCIe Gen4 12Gb HBA	No	No	1	1	No	No	No	No

Internal drive options

The following table lists the supported drive options for the HX 2U systems.

Table 12. Internal drive options

Part number	Feature	Description	Maximum supported							
			HX3520-G	HX3521-G	HX5520	HX5521	HX7520	HX7521	HX7520 HANA	HX7521 HANA
2.5-inch hot-swap 12 Gb SAS HDDs										
7XB7A00069	B0YS	ThinkSystem 2.5" 2.4TB 10K SAS 12Gb Hot Swap 512e HDD	14	14	No	No	20	20	No	No
2.5-inch hot-swap 6 Gb SATA HDDs										
7XB7A00036	AUUE	ThinkSystem 2.5" 1TB 7.2K SATA 6Gb Hot Swap 512n HDD	14	14	No	No	20	20	No	No

Part number	Feature	Description	Maximum supported							
			HX3520-G	HX3521-G	HX5520	HX5521	HX7520	HX7521	HX7520 HANA	HX7521 HANA
7XB7A00037	AUUJ	ThinkSystem 2.5" 2TB 7.2K SATA 6Gb Hot Swap 512e HDD	14	14	No	No	20	20	No	No
2.5-inch hot-swap 24 Gb SAS SSDs										
4XB7A80320	BNWF	ThinkSystem 2.5" PM1653 3.84TB Read Intensive SAS 24Gb HS SSD	16	16	No	No	24	24	24	24
4XB7A80321	BP3E	ThinkSystem 2.5" PM1653 7.68TB Read Intensive SAS 24Gb HS SSD	16	16	No	No	24	24	24	24
4XB7A80342	BNW6	ThinkSystem 2.5" PM1655 3.2TB Mixed Use SAS 24Gb HS SSD	16	16	No	No	24	24	24	24
2.5-inch hot-swap 12 Gb SAS SSDs										
4XB7A17062	B8HU	ThinkSystem 2.5" PM1645a 800GB Mainstream SAS 12Gb Hot Swap SSD	16	16	No	No	24	24	24	24
2.5-inch hot-swap 6 Gb SATA SSDs										
4XB7A17126	BA4T	ThinkSystem 2.5" S4620 960GB Mixed Use SATA 6Gb HS SSD	16	16	No	No	24	24	24	24
4XB7A17127	BA4U	ThinkSystem 2.5" S4620 1.92TB Mixed Use SATA 6Gb HS SSD	16	16	No	No	24	24	24	24
4XB7A17128	BK7L	ThinkSystem 2.5" S4620 3.84TB Mixed Use SATA 6Gb HS SSD	16	16	No	No	24	24	24	24
4XB7A72440	BM89	ThinkSystem 2.5" PM893 1.92TB Read Intensive SATA 6Gb HS SSD	16	16	No	No	24	24	24	24
4XB7A72441	BM88	ThinkSystem 2.5" PM893 3.84TB Read Intensive SATA 6Gb HS SSD	16	16	No	No	24	24	24	24
4XB7A17103	BA7J	ThinkSystem 2.5" S4520 1.92TB Read Intensive SATA 6Gb HS SSD	16	16	No	No	24	24	24	24
4XB7A17104	BK77	ThinkSystem 2.5" S4520 3.84TB Read Intensive SATA 6Gb HS SSD	16	16	No	No	24	24	24	24
2.5-inch hot-swap PCIe 4.0 NVMe SSDs										
4XB7A17154	BCFS	ThinkSystem 2.5" U.2 P5600 6.4TB Mixed Use NVMe PCIe 4.0 x4 HS SSD	No	No	No	No	4	4	4	4
4XB7A13967	BNEJ	ThinkSystem 2.5" U.3 7450 MAX 1.6TB Mixed Use NVMe PCIe 4.0 x4 HS SSD	No	No	No	No	4	4	4	4
4XB7A13970	BNEY	ThinkSystem 2.5" U.3 7450 MAX 3.2TB Mixed Use NVMe PCIe 4.0 x4 HS SSD	No	No	No	No	4	4	4	4
4XB7A13971	BNEL	ThinkSystem 2.5" U.3 7450 MAX 6.4TB Mixed Use NVMe PCIe 4.0 x4 HS SSD	No	No	No	No	4	4	4	4
4XB7A79647	BNF2	ThinkSystem 2.5" U.3 7450 PRO 1.92TB Read Intensive NVMe PCIe 4.0 x4 HS SSD	No	No	No	No	4	4	4	4
4XB7A79648	BNF5	ThinkSystem 2.5" U.3 7450 PRO 3.84TB Read Intensive NVMe PCIe 4.0 x4 HS SSD	No	No	No	No	4	4	4	4

Part number	Feature	Description	Maximum supported							
			HX3520-G	HX3521-G	HX5520	HX5521	HX7520	HX7521	HX7520 HANA	HX7521 HANA
4XB7A79649	BNF4	ThinkSystem 2.5" U.3 7450 PRO 7.68TB Read Intensive NVMe PCIe 4.0 x4 HS SSD	No	No	No	No	4	4	4	4
4XB7A83097	BQAV	ThinkSystem 2.5" U.3 7450 PRO 15.36TB Read Intensive NVMe PCIe 4.0 x4 HS SSD	No	No	No	No	4	4	4	4
4XB7A17145	BCFT	ThinkSystem 2.5" U.2 P5500 1.92TB Read Intensive NVMe PCIe 4.0 x4 HS SSD	No	No	No	No	4	4	4	4
4XB7A17146	BCFW	ThinkSystem 2.5" U.2 P5500 3.84TB Read Intensive NVMe PCIe 4.0 x4 HS SSD	No	No	No	No	4	4	4	4
4XB7A17147	BCFU	ThinkSystem 2.5" U.2 P5500 7.68TB Read Intensive NVMe PCIe 4.0 x4 HS SSD	No	No	No	No	4	4	4	4
3.5-inch hot-swap 12 Gb SAS HDDs										
7XB7A00043	AUU6	ThinkSystem 3.5" 4TB 7.2K SAS 12Gb Hot Swap 512n HDD	No	No	12	12	No	No	No	No
7XB7A00044	AUU7	ThinkSystem 3.5" 6TB 7.2K SAS 12Gb Hot Swap 512e HDD	No	No	12	12	No	No	No	No
7XB7A00045	B0YR	ThinkSystem 3.5" 8TB 7.2K SAS 12Gb Hot Swap 512e HDD	No	No	12	12	No	No	No	No
7XB7A00046	AUUG	ThinkSystem 3.5" 10TB 7.2K SAS 12Gb Hot Swap 512e HDD	No	No	12	12	No	No	No	No
7XB7A00067	B117	ThinkSystem 3.5" 12TB 7.2K SAS 12Gb Hot Swap 512e HDD	No	No	12	12	No	No	No	No
4XB7A80353	BPKU	ThinkSystem 3.5" 20TB 7.2K SAS 12Gb Hot Swap 512e HDD	No	No	12	12	No	No	No	No
3.5-inch hot-swap 6 Gb SATA HDDs										
7XB7A00051	AUU8	ThinkSystem 3.5" 4TB 7.2K SATA 6Gb Hot Swap 512n HDD	No	No	12	12	No	No	No	No
7XB7A00052	AUUA	ThinkSystem 3.5" 6TB 7.2K SATA 6Gb Hot Swap 512e HDD	No	No	12	12	No	No	No	No
7XB7A00053	AUU9	ThinkSystem 3.5" 8TB 7.2K SATA 6Gb Hot Swap 512e HDD	No	No	12	12	No	No	No	No
7XB7A00054	AUUB	ThinkSystem 3.5" 10TB 7.2K SATA 6Gb Hot Swap 512e HDD	No	No	12	12	No	No	No	No
7XB7A00068	B118	ThinkSystem 3.5" 12TB 7.2K SATA 6Gb Hot Swap 512e HDD	No	No	12	12	No	No	No	No
4XB7A13914	B7F0	ThinkSystem 3.5" 16TB 7.2K SATA 6Gb Hot Swap 512e HDD	No	No	12	12	No	No	No	No
3.5-inch hot-swap 24 Gb SAS SSDs										
4XB7A80326	BNWH	ThinkSystem 3.5" PM1653 3.84TB Read Intensive SAS 24Gb HS SSD	No	No	14	14	No	No	No	No
4XB7A80327	BP3F	ThinkSystem 3.5" PM1653 7.68TB Read Intensive SAS 24Gb HS SSD	No	No	14	14	No	No	No	No

Part number	Feature	Description	Maximum supported							
			HX3520-G	HX3521-G	HX5520	HX5521	HX7520	HX7521	HX7520 HANA	HX7521 HANA
4XB7A80346	BNWB	ThinkSystem 3.5" PM1655 3.2TB Mixed Use SAS 24Gb HS SSD	No	No	14	14	No	No	No	No
3.5-inch hot-swap 12 Gb SAS SSDs										
4XB7A17066	B8HT	ThinkSystem 3.5" PM1645a 800GB Mainstream SAS 12Gb Hot Swap SSD	No	No	14	14	No	No	No	No
3.5-inch hot-swap 6 Gb SATA SSDs										
4XB7A17138	BA4X	ThinkSystem 3.5" S4620 960GB Mixed Use SATA 6Gb HS SSD	No	No	14	14	No	No	No	No
4XB7A17139	BA4Y	ThinkSystem 3.5" S4620 1.92TB Mixed Use SATA 6Gb HS SSD	No	No	14	14	No	No	No	No
4XB7A17140	BK7P	ThinkSystem 3.5" S4620 3.84TB Mixed Use SATA 6Gb HS SSD	No	No	14	14	No	No	No	No
4XB7A17121	BA7N	ThinkSystem 3.5" S4520 1.92TB Read Intensive SATA 6Gb HS SSD	No	No	14	14	No	No	No	No
4XB7A17122	BK7F	ThinkSystem 3.5" S4520 3.84TB Read Intensive SATA 6Gb HS SSD	No	No	14	14	No	No	No	No
M.2 SATA drives										
4XB7A82286	BQ1Z	ThinkSystem M.2 5400 PRO 240GB Read Intensive SATA 6Gb NHS SSD	2	2	2	2	2	2	2	2
4XB7A82287	BQ1Y	ThinkSystem M.2 5400 PRO 480GB Read Intensive SATA 6Gb NHS SSD	2	2	2	2	2	2	2	2

I/O expansion

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

The slot are as follows:

- HX3520-G, HX3521-G: 7x PCIe 3.0 slots
 - LOM card slot
 - Slot 1: PCIe 3.0 x16 or x8; full-height, half-length (for a GPU adapter or 40 GbE network adapter)
 - Slot 2: PCIe 3.0 x8; full-height, half-length (for a T4 GPU adapter) (not present if Slot 1 is PCIe x16)
 - Slot 3: PCIe 3.0 x8; full-height, half-length (for a network adapter or T4 GPU adapter)
 - Slot 4: PCIe 3.0 x8; low profile (for a network adapter)
 - Slot 5: PCIe 3.0 x16; full-height, half-length (for a GPU adapter or 40 GbE network adapter)
 - Slot 6: PCIe 3.0 x16; full-height, half-length (for a GPU adapter or network adapter) (not available if a double-wide GPU adapter is installed in the Slot 5)
 - Slot 7: PCIe 3.0 x8 (for an internal storage controller)
- HX5520 and HX5521 without rear drive bays: 6x PCIe 3.0 slots
 - LOM card slot

- Slot 1: PCIe 3.0 x16; full-height, half-length (for a network adapter).
 - Slot 3: PCIe 3.0 x8; full-height, half-length (for a 10 GbE network adapter).
 - Slot 4: PCIe 3.0 x8; low profile (for a network adapter).
 - Slot 5: PCIe 3.0 x16; full-height, half-length (for a network adapter).
 - Slot 6: PCIe 3.0 x16; full-height, half-length (for a 25 GbE or 40 GbE network adapter).
 - Slot 7: PCIe 3.0 x8 (for an internal storage controller).
- HX5520 and HX5521 with 2x 3.5-inch rear drive bays: 4x PCIe 3.0 slots
 - LOM card slot
 - Slot 4: PCIe 3.0 x8; low profile (for a network adapter).
 - Slot 5: PCIe 3.0 x16; full-height, half-length (for a network adapter).
 - Slot 6: PCIe 3.0 x16; full-height, half-length (for a network adapter).
 - Slot 7: PCIe 3.0 x8 (for an internal storage controller).
- HX7520 and HX7521: 7x PCIe 3.0 slots
 - Slot 1: PCIe 3.0 x16 or x8; full-height, half-length (for a network adapter).
 - Slot 2: PCIe 3.0 x8; full-height, half-length (for a network adapter) (not present if Slot 1 is PCIe x16).
 - Slot 3: PCIe 3.0 x8; full-height, half-length (for an internal storage controller).
 - Slot 4: PCIe 3.0 x8; low profile (for an internal storage controller).
 - Slot 5: PCIe 3.0 x16; full-height, half-length (for a network adapter).
 - Slot 6: PCIe 3.0 x16; full-height, half-length (for a network adapter).
 - Slot 7: PCIe 3.0 x8 (for an internal storage controller).

The following table lists available PCIe riser card options.

Table 13. Riser cards

Part number	Feature	Description	Maximum supported							
			HX3520-G	HX3521-G	HX5520	HX5521	HX7520	HX7521	HX7520 HANA	HX7521 HANA
x8 Riser Card 1 options (Riser card 1 supplies slots 1, 2, and 3)										
7XH7A02677	AUR4	ThinkSystem 2U x8/x8/x8 PCIe FH Riser 1	1	1	1	1	1	1	1	1
x16 Riser Card 1 options (Riser card 1 supplies slots 1 and 3)										
7XH7A02678	AUR3	ThinkSystem SR550/SR650 x16/x8 PCIe FH Riser 1 Kit	1	1	1	1	1	1	1	1
Riser Card 2 option (Riser card 2 supplies slots 5 and 6)										
7XH7A02679	AURC	ThinkSystem SR550/SR590/SR650 x16/x8(or x16) PCIe FH Riser 2 Kit	1	1	1	1	1	1	1	1

For more information, see the SR650 product guide:

<https://lenovopress.com/lp1050-thinksystem-sr650-server#i-o-expansion>

Network adapters

The HX 2U systems support the following networking options.

For details about these options, including configuration rules, see the SR650 product guide:

<https://lenovopress.com/lp1050-thinksystem-sr650-server#i-o-expansion>

<https://lenovopress.com/lp1050-thinksystem-sr650-server#network-adapters>

Table 14. LOM network adapters

Part number	Feature	Description	Maximum supported							
			HX3520-G	HX3521-G	HX5520	HX5521	HX7520	HX7521	HX7520 HANA	HX7521 HANA
LOM cards - 10 Gb Ethernet										
7ZT7A00548	AUKL	ThinkSystem 10Gb 2-port Base-T LOM	1	1	1	1	1	1	1	1
7ZT7A00546	AUKJ	ThinkSystem 10Gb 2-port SFP+ LOM	1	1	1	1	1	1	1	1
7ZT7A00549	AUKM	ThinkSystem 10Gb 4-port Base-T LOM	1	1	1	1	1	1	1	1
7ZT7A00547	AUKK	ThinkSystem 10Gb 4-port SFP+ LOM	1	1	1	1	1	1	1	1

Table 15. PCIe network adapters

Part number	Feature	Description	Maximum supported							
			HX3520-G	HX3521-G	HX5520	HX5521	HX7520	HX7521	HX7520 HANA	HX7521 HANA
10 Gb Ethernet										
00MM860	ATPX	Intel X550-T2 Dual Port 10GBase-T Adapter	3	3	No	No	4	4	4	4
7ZT7A00537	AUKX	ThinkSystem Intel X710-DA2 PCIe 10Gb 2-Port SFP+ Ethernet Adapter	3	3	No	No	4	4	4	4
25 Gb Ethernet										
4XC7A08316	BD49	ThinkSystem Broadcom 57454 10/25GbE SFP28 4-port PCIe Ethernet Adapter V2	3	3	No	No	2	2	2	2
01GR250	AUAJ	Mellanox ConnectX-4 Lx 10/25GbE SFP28 2-port PCIe Ethernet Adapter	3	3	No	No	4	4	4	4
4XC7A08249	B653	ThinkSystem Mellanox ConnectX-4 Lx 10/25GbE SFP28 2-port PCIe Ethernet Adapter	4	4	No	No	4	4	4	4
40 Gb Ethernet										
4XC7A08229	B31C	ThinkSystem Mellanox ConnectX-5 Ex 25/40GbE 2-port Low-Latency Adapter	3	3	No	No	2	2	2	2

Note: ThinkSystem Mellanox ConnectX-4 is the only adapter enabled for RDMA, minimum required quantity is two identical adapters.

GPU adapters

The HX 2U systems support the following GPU options.

For details about these options, including configuration rules, see the SR650 product guide:
<https://lenovopress.com/lp1050-thinksystem-sr650-server#gpu-adapters>

Table 16. GPU adapters

Part number	Feature	Description	Maximum supported							
			HX3520-G	HX3521-G	HX5520	HX5521	HX7520	HX7521	HX7520 HANA	HX7521 HANA
Single-wide PCIe x16 GPU adapters										
4X67A81547	BP05	ThinkSystem NVIDIA A2 16GB PCIe Gen4 Passive GPU	5	5	No	No	No	No	No	No
CTO Only	BQZT	ThinkSystem NVIDIA A2 16GB PCIe Gen4 Passive GPU w/o CEC	5	5	No	No	No	No	No	No
4X67A14926	B4YB	ThinkSystem NVIDIA T4 16GB PCIe Passive GPU	5	5	No	No	No	No	No	No
Double-wide PCIe x16 GPU adapters										
CTO Only	BQZP	ThinkSystem NVIDIA A100 80GB PCIe Gen4 Passive GPU w/o CEC	2	2	No	No	No	No	No	No
4X67A76581	BJHG	ThinkSystem NVIDIA A30 24GB PCIe Gen4 Passive GPU	2	2	No	No	No	No	No	No
CTO Only	BQZR	ThinkSystem NVIDIA A30 24GB PCIe Gen4 Passive GPU w/o CEC	2	2	No	No	No	No	No	No
7C57A02891	B15V	NVIDIA Tesla M10 GPU, PCIe passive	2	2	No	No	No	No	No	No

NVIDIA T4 support: The NVIDIA T4 GPU is a PCIe x16 adapter, however in the HX3520-G and HX3521-G, the GPU is also supported in PCIe x8 slots. Note, however, that a x8 host connection may result in a performance decrease of approximately 5%.

Software

The systems support the hypervisors listed in the following table. Hypervisors are installed on the 2x M.2 SSDs configured in a RAID-1 drive group.

Table 17. Hypervisors

Feature code	Description	Quantity
B15S	Nutanix SW Stack on Nutanix AHV	1
BG4Z	Nutanix SW Stack on VMware ESXi 6.7	1
BFT6	Nutanix SW Stack on VMware ESXi 7.0	1

Configuration notes:

- In ESXi-based environments, HX Series Appliances require VMware vCenter Server.
- The HX Certified Nodes support the Nutanix Software Starter, Pro and Ultimate editions.

- The HX Certified Nodes can be deployed as a cluster of 3 or more nodes (AOS 5.17.1.3 or later).
- The HX Certified Nodes support firmware updates from Nutanix Prism with the ThinkAgile HX Lifecycle Manager (UEFI, XCC, drives, network adapters, and SAS HBAs)

Nutanix licenses on certified nodes : The certified node ships with the Nutanix software preloaded, however 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.

For the information on appliance firmware levels, hypervisor versions, and software versions that have been tested for interoperability, refer to the Lenovo ThinkAgile HX Series Best Recipes:

<http://datacentersupport.lenovo.com/us/en/solutions/ht505413>

The ThinkAgile Appliances support the following software components:

- [Nutanix Acropolis](#)
- [Nutanix Prism](#)
- [Nutanix Calm](#)
- [Nutanix Flow](#)
- [Nutanix Portfolio 2.0 \(PnP\) Licensing Model](#)

Nutanix Acropolis

The integrated system can be configured with one of the Nutanix software editions that are listed in the following table. The Nutanix software is factory-preloaded and the appropriate license for the selected software edition can be downloaded from the Nutanix website to match the serial number of the integrated system.

Table 18. Nutanix software options (HX Integrated System only)

Feature code	Description	Quantity (per node)
B0VU	Nutanix Starter Edition	1
B0VV	Nutanix Pro Edition	1
B0VW	Nutanix Ultimate Edition	1

The editions have the following characteristics:

- 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.

The following table compares key features of the Nutanix software editions. For more information, see the following web page:

<https://www.nutanix.com/products/software-options>

Table 19. Nutanix software editions feature comparison

Feature	Starter Edition	Pro Edition	Ultimate Edition
Enterprise Storage			

Feature	Starter Edition	Pro Edition	Ultimate Edition
Cluster Size	12	No enforced limits on-prem. 16 nodes validated in AWS	No enforced limits on-prem. 16 nodes validated in AWS
Heterogeneous Clusters	Included	Included	Included
VM-centric Snapshots & Clones	Included	Included	Included
Data Tiering	Included	Included	Included
Online Cluster Grow/Shrink	Included	Included	Included
Data Path Redundancy	Included	Included	Included
Tunable Redundancy Factor	2	2 or 3	2 or 3
Availability Domains	Node	Node, Block, Rack	Node, Block, Rack
Basic Compression (LZ4) - Inline and post process	Included	Included	Included
Deep Compression (LZ4HC) - Greater efficiency for cold data	No	Included	Included
Cache Deduplication	Included	Included	Included
Capacity Tier Deduplication	No	Included	Included
Erasur Coding (EC-X)	No	Included	Included
VM Centric Storage QoS	No	Included	Included
VM Flash Mode	No	No	Included
Consolidated Storage Services			
Volume Groups - for in-cluster VMs	Included	Included	Included
Volume Groups - external access	No	Included	Included
Nutanix Files	1 TiB Free Capacity	1 TiB Free Capacity	1 TiB Free Capacity
Nutanix Objects	2 TiB Free Capacity	2 TiB Free Capacity	2 TiB Free Capacity
Data Protection and Disaster Recovery			
Async Replication (RPO = 1 hr or greater)	Included	Included	Included
Application Consistent Snapshots	Included	Included	Included
Self Service Restore	No	Included	Included
Multiple Site DR (many to one, one to many, many to many)	No	Adv Replication add-on license	Included
Metro Availability	No	Adv Replication add-on license	Included
Sync Replication (RPO = 0)	No	Adv Replication add-on license	Included
NearSync Replication (RPO = 1-15 min)	No	Adv Replication add-on license	Included
Advanced Orchestration with Runbook Automation	No	Adv Replication add-on license	Included
Security			
Client Authentication	Included	Included	Included

Feature	Starter Edition	Pro Edition	Ultimate Edition
Cluster Lockdown	No	Included	Included
Data-at-Rest Encryption (Software-based & SED)	No	Add-on license available	Included
Native KMS	No	Add-on license available	Included
Management & Analytics			
Prism Starter	Included	Included	Included
Insights	Included	Included	Included
LCM	Included	Included	Included
Foundation	Included	Included	Included
Foundation Central	Included	Included	Included
Supported Hypervisors			
Nutanix AHV	Included	Included	Included
VMware ESXi	Included	Included	Included
Included Hypervisor and Container Runtime			
Nutanix AHV (All Hypervisor Features Included)	Included	Included	Included
Nutanix Karbon	Included	Included	Included

Configuration notes:

- When adding software licenses after the initial deployment, customers should request a quote for the selected license part numbers from Lenovo and provide additional details on the existing installation.
- The total file/object storage capacity in Tebibytes (TiB) can be calculated by multiplying the total file/object storage capacity in Terabytes (TB) by 0.909495.

Nutanix Prism

Nutanix Prism gives administrators an easy way to manage virtual environments running on Acropolis, and it simplifies and streamlines common workflows for hypervisor and virtual machine lifecycle management.

Nutanix Prism is a part of the Nutanix software preloaded on the integrated system, 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.
- Prism Ultimate (selectable software license; optional): Multiple Site DR, Sync Replication (RPO = 0), Data-at-Rest Encryption, VM Flash Mode, Metro Availability, Native KMS

The Prism Pro or Prism Ultimate software license can be added during the initial purchase by selecting one of the software options listed in the following table. These feature codes are only for HX integrated systems, not for certified nodes.

Table 20. Prism Pro selection options (HX Integrated Systems only)

Feature code	Description	Quantity (per node)
B0W4	Prism Pro	1
B0W5	XClarity Pro and Prism Pro	1
BMUM	Prism Ultimate	1
BMUN	XClarity Pro and Prism Ultimate	1

Also, Prism Starter can be upgraded to Prism Pro or Prism Ultimate after the initial deployment by purchasing one of the software license options listed in the following table. These part numbers are only for HX Integrated Systems, not for certified nodes.

Table 21. Prism Pro software license options (HX Integrated Systems only)

Part number	Feature code	Description	Quantity (per node)
Prism Pro licenses			
7S0P000UWW	AW87	Nutanix Prism Pro with 1Yr Support	1
7S0P000VWW	AW88	Nutanix Prism Pro with 2Yr Support	1
7S0P000WWW	AW89	Nutanix Prism Pro with 3Yr Support	1
7S0P000XWW	AW8A	Nutanix Prism Pro with 4Yr Support	1
7S0P000YWW	AW8B	Nutanix Prism Pro with 5Yr Support	1
Prism Ultimate licenses			
7S0P002BWW	S6Q6	Nutanix Prism Ultimate per Node 1 Year	1
7S0P002CWW	S6Q7	Nutanix Prism Ultimate per Node 2 Year	1
7S0PCTO1WW	S6Q9	Nutanix Prism Ultimate per Node 4 Year	1
7S0PCTO1WW	S6Q8	Nutanix Prism Ultimate per Node 3 Year	1
7S0PCTO1WW	S6QA	Nutanix Prism Ultimate per Node 5 Year	1

Configuration note: When upgrading Prism Starter after the initial deployment, customers should request a quote for the selected Prism part numbers 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
 - Manages firmware updates with the ThinkAgile HX Lifecycle Manager (UEFI, XCC, drives, network adapters, and SAS HBAs)

- 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

Nutanix Calm

Nutanix Calm enables advanced application-level orchestration by providing a powerful, common management framework that can be leveraged by IT teams to rapidly create and deliver applications. The Calm software offers the following key features:

- Fully automates the provisioning, scaling, and deletion of traditional multi-tiered applications and distributed services.
- Simplifies the set-up and management of custom enterprise applications by incorporating all elements of each application, including relevant VMs, configurations, and related binaries, into an easy-to-use-blueprint.
- Publishes blueprints through the Nutanix Marketplace, giving end users the ability to request IT services that can then be instantly provisioned.
- Maintains control with role-based governance that limits user operations based on permissions and logs all activities for end-to-end traceability.

The Calm software is licensed on a per-VM basis in 25 VM packs. The Calm software licenses can be added during the initial purchase by selecting the software option listed in the following table. Calm licenses are only for HX integrated systems, not for certified nodes.

Table 22. Calm software selection options (HX Integrated Systems only)

Feature code	Description	Quantity (per 25 VMs)
B4E4	Calm 25 License Pack	1

Also, Calm licenses can be added after the initial deployment by purchasing one of the software license options listed in the following table.

Table 23. Calm software license options (HX Integrated Systems only)

Part number	Feature code	Description	Quantity (per 25 VMs)
7S0P000ZWW	B3D7	Nutanix Calm Standard, Per 25 VMs w/1Yr Support	1
7S0P0010WW	B3D8	Nutanix Calm Standard, Per 25 VMs w/2Yr Support	1
7S0P0011WW	B3D9	Nutanix Calm Standard, Per 25 VMs w/3Yr Support	1
7S0P0012WW	B3DA	Nutanix Calm Standard, Per 25 VMs w/4Yr Support	1
7S0P0013WW	B3DB	Nutanix Calm Standard, Per 25 VMs w/5Yr Support	1

Configuration notes:

- Calm supports the AHV and ESXi hypervisors.
- When adding the Calm software licenses after the initial deployment, customers should request a quote for the selected Calm part numbers from Lenovo and provide additional details on the existing installation.

Nutanix Flow

Nutanix Flow delivers advanced networking and security services, providing visibility into the virtual network, application-centric protection from network threats, and automation of common networking operations. The Flow software offers the following key features:

- Real-time visualization of communications between VMs helps implement appropriate network policies in a Nutanix environment.
- Micro-segmentation provides granular control and governance of all traffic into and out of a virtual machine with network policies attached to individual VMs and applications, rather than specific network segments.
- API-based notifications enable third party network devices to automate network configuration changes, such as VLAN provisioning or policy updates, in response to VM lifecycle events, such as adding a new VM.
- Service insertion and chaining enables virtualized network functions from third-party software (such as virtual firewalls and load balancers) to be deployed with VM traffic in a Nutanix environment.

The Flow software is licensed on a per-node basis. The Flow software license can be added during the initial purchase by selecting the software option listed in the following table, These part numbers are only for HX integrated systems, not for certified nodes.

Table 24. Flow software selection options (HX Integrated Systems only)

Feature code	Description	Quantity (per node)
B4E5	Flow Single Node License	1

Also, Flow licenses can be added after the initial deployment by purchasing one of the software license options listed in the following table.

Table 25. Flow software license options (HX Integrated Systems only)

Part number	Feature code	Description	Quantity (per node)
7S0P0014WW	B3DC	Nutanix Flow, Per Node w/1Yr Support	1
7S0P0015WW	B3DD	Nutanix Flow, Per Node w/2Yr Support	1
7S0P0016WW	B3DE	Nutanix Flow, Per Node w/3Yr Support	1
7S0P0017WW	B3DF	Nutanix Flow, Per Node w/4Yr Support	1
7S0P0018WW	B3DG	Nutanix Flow, Per Node w/5Yr Support	1

Configuration notes:

- Flow supports the AHV hypervisors only.
- When adding the Flow software licenses after the initial deployment, customers should request a quote for the selected Flow part numbers from Lenovo and provide additional details on the existing installation.

Nutanix Portfolio 2.0 (PnP) Licensing Model

Nutanix is introducing an enterprise-ready unified cloud platform with our HCI solution as the foundation. The new, simplified product portfolio includes: Nutanix Cloud Platform (NCP), Nutanix Cloud Infrastructure (NCI) and Nutanix Cloud Manager (NCM), NCI-Data with 3 license tiers for each software edition. There are additional packages, Nutanix Unified Storage, Nutanix Database Service (NDB), and Nutanix Desktop Services (NDS), Virtual Desktop Infrastructure (VDI) & Nutanix Frame that are available.

The Nutanix software is available for all base CTO models.

The editions have the following characteristics:

Table 26. Software Editions

License Tier	Nutanix Cloud Platform (NCP)	Nutanix Cloud Infrastructure (NCI)	Nutanix Cloud Manager (NCM)	NCI-Data
Ultimate	<ul style="list-style-type: none"> • NCI Ultimate • NCM Ultimate 	<ul style="list-style-type: none"> • Advanced DR: Sync, Near-Sync, • Runbook Security: Micro-segmentation, Encryption • Cloud Native: Kubernetes Services 	<ul style="list-style-type: none"> • Application Automation • Security General 	<ul style="list-style-type: none"> • No Mseg • No Karbon
Pro	<ul style="list-style-type: none"> • NCI Ultimate • NCM Pro 	<ul style="list-style-type: none"> • Multisite Async DR • Overlay Networking 	<ul style="list-style-type: none"> • Self Service Cost Governance 	<ul style="list-style-type: none"> • No Flow Networking
Starter	<ul style="list-style-type: none"> • NCI Pro • NCM Pro 	<ul style="list-style-type: none"> • AOS Storage + Compression + Dedup 	<ul style="list-style-type: none"> • AI Operations 	<ul style="list-style-type: none"> • No AHV Support

Nutanix Cloud Platform (NCP)

Nutanix Cloud Platform is the complete software edition package that includes both Nutanix Cloud Infrastructure (NCI) and Nutanix Cloud Manager (NCM). It is available in several editions to meet your infrastructure needs with the right set of capabilities.

Nutanix Cloud Infrastructure (NCI)

Nutanix Cloud Infrastructure (NCI) is a complete software stack to unify your hybrid cloud infrastructure including compute, storage and network, hypervisors and containers, in public or enterprise clouds; all with built-in resilience, self-healing, disaster recovery capabilities, and security. It includes enterprise data services and consolidated storage, data protection and disaster recovery, native virtualization and container management, networking and security.

For details on software editions see <https://www.nutanix.com/products/cloud-platform/software-options#nci>

Nutanix Cloud Manager (NCM)

Nutanix Cloud Manager (NCM) offers our customers simplicity and ease of use to build and grow their cloud deployments faster and realize rapid ROI, by providing intelligent operations, self service and orchestration, visibility and governance of spend, security and teams, all through a unified Multi-cloud management solution.

For details on software editions see <https://www.nutanix.com/products/cloud-platform/software-options#ncm>

Nutanix Unified Storage

Nutanix Unified Storage provides software-defined, scale-out storage solutions for enterprise NAS and object workloads for unstructured data, block storage for structured data, and backup storage. Nutanix Unified Storage replaces traditional independent storage services and brings NAS, object, and block workloads into a consolidated unified storage platform with all its benefits, including a unified control plane.

Nutanix Data Lens delivers cloud-based data governance for unstructured data stored in the Nutanix Unified Storage platform, including data lifecycle management, data security, ransomware protection, and audit compliance.

Nutanix Unified Storage and Data Lens are purchased and licensed on a per TiB usable basis.

For details on software editions see <https://www.nutanix.com/products/cloud-platform/software-options#nus>

Nutanix Database Service

Nutanix Database Service (NDB) is a Hybrid Multicloud DBaaS that enables small, nimble teams of DBAs to easily manage large fleets of databases using a single console and API, while enabling developers to self-service their database requests. NDB is purchased and licensed on a per core basis and is available either as a standalone or as an add-on to NCI. In the standalone version, NDB includes NCI Ultimate functionality in addition to database-specific capabilities and is licensed on a per-core basis.

For details on software editions see <https://www.nutanix.com/products/cloud-platform/software-options#database>

Nutanix Virtual Desktop Infrastructure (VDI) & Nutanix Frame

The Nutanix VDI per user model offers hybrid cloud infrastructure capabilities appropriate for on-prem virtual desktop infrastructure (VDI) and Desktop as a Service (DaaS) use cases with pricing based on a Maximum Concurrent User basis (maximum number of provisioned end-user VMs). VDI per user is an alternative to the core-based NCI licensing option and is designed to provide simple, transparent licensing for all VDI users, regardless of the underlying hardware, hypervisor, or cloud.

- Agnostic: Works with any EUC management platform including Citrix Virtual Apps & Desktops and VMware Horizon
- Term license: 1-year through 5-year options
 - Term license must run on a dedicated software licensed VDI cluster with no core-based licensing. Mixing of non-VDI workloads is not supported.
- Unified Storage: Built-in and also available as a per TiB base add-on
- No additional license cost for DR site
- Portable across on-premises and public cloud, public cloud use requires Ultimate edition

- Available in Starter, Pro, and Ultimate editions
- Cloud Native and Database Service Add-ons not available with NCI VDI. Advanced Replication and Security Add-on features require NCI Ultimate edition

For details on software editions see <https://www.nutanix.com/products/cloud-platform/software-options#vdi>

License Options

ThinkAgile HX can be configured with one of the latest Nutanix software editions that are listed in the following table.

Table 27. Nutanix license options

Feature code	Description	Quantity Required
BVKU	Nutanix Cloud Platform Starter Edition	1 per node
BVKW	Nutanix Cloud Platform Pro Edition	1 per node
BVKY	Nutanix Cloud Platform Ultimate Edition	1 per node
BSPJ	Nutanix Cloud Infrastructure Starter Edition	1 per node
BSPG	Nutanix Cloud Infrastructure Pro Edition	1 per node
BSPL	Nutanix Cloud Infrastructure Ultimate Edition	1 per node
BSQ0	Nutanix Cloud Manager Starter Edition	1 per node
BSPY	Nutanix Cloud Manager Pro Edition	1 per node
BSQ2	Nutanix Cloud Manager Ultimate Edition	1 per node
BSPQ	NCI-Data Starter Edition	1 per node
BSPN	NCI-Data Pro Edition	1 per node
BSPS	NCI-Data Ultimate Edition	1 per node
BSQH	Nutanix Database Service (NDB) Platform	1 per node
BSQ7	End User Computing (EUC) Starter	1 for every 200 concurrent users
BSQ5	End User Computing (EUC) Pro	1 for every 200 concurrent users
BSQ9	End User Computing (EUC) Ultimate	1 for every 200 concurrent users
BSQD	Nutanix Unified Storage (NUS) Starter	1 per Tib
BSQB	Nutanix Unified Storage (NUS) Pro	1 per Tib

Warranty and Support

The ThinkAgile HX Series appliances can be configured with a three-, four-, or five-year hardware warranty with 24x7 ThinkAgile Advantage Single Point of Support (Lenovo appliance hardware and Nutanix software) 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.

For more information refer to the Lenovo Support Plan - ThinkAgile HX Appliance and Lenovo Converged HX Series

<https://datacentersupport.lenovo.com/us/en/solutions/ht505404>

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

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

For more information refer to the Lenovo Support Plan - ThinkAgile HX Certified Nodes

<https://support.lenovo.com/us/en/solutions/HT510301>

Hardware warranty

The ThinkAgile HX 2U Appliances & Certified Nodes have a 3-year warranty:

- 7X84 - 2U Appliance - 3 year warranty
- 7Y90 - 2U Certified Node - 3 year warranty

The standard warranty terms are customer-replaceable unit (CRU) and onsite (for field-replaceable units FRUs only) with standard call center support during normal business hours and 9x5 Next Business Day Parts Delivered.

Lenovo's additional support services provide a sophisticated, unified support structure for your data center, with an experience consistently ranked number one in customer satisfaction worldwide. Available offerings include:

- **Premier Support**

Premier Support provides a Lenovo-owned customer experience and delivers direct access to technicians skilled in hardware, software, and advanced troubleshooting, in addition to the following:

- Direct technician-to-technician access through a dedicated phone line
- 24x7x365 remote support
- Single point of contact service
- End to end case management
- Third-party collaborative software support
- Online case tools and live chat support
- On-demand remote system analysis

- **Warranty Upgrade (Preconfigured Support)**

Services are available to meet the on-site response time targets that match the criticality of your systems.

- 3, 4, or 5 years of service coverage
- 1-year or 2-year post-warranty extensions
- **Foundation Service:** 9x5 service coverage with next business day onsite response. YourDrive YourData is an optional extra (see below).
- **Essential Service:** 24x7 service coverage with 4-hour onsite response or 24-hour committed repair (available only in select markets). Bundled with YourDrive YourData.
- **Advanced Service:** 24x7 service coverage with 2-hour onsite response or 6-hour committed repair (available only in select markets). Bundled with YourDrive YourData.

- **Managed Services**

Lenovo Managed Services provides continuous 24x7 remote monitoring (plus 24x7 call center availability) and proactive management of your data center using state-of-the-art tools, systems, and practices by a team of highly skilled and experienced Lenovo services professionals.

Quarterly reviews check error logs, verify firmware & OS device driver levels, and software as needed. We'll also maintain records of latest patches, critical updates, and firmware levels, to ensure you systems are providing business value through optimized performance.

- **Technical Account Management (TAM)**

A Lenovo Technical Account Manager helps you optimize the operation of your data center based on a deep understanding of your business. You gain direct access to your Lenovo TAM, who serves as your single point of contact to expedite service requests, provide status updates, and furnish reports to track incidents over time. In addition, your TAM will help proactively make service recommendations and manage your service relationship with Lenovo to make certain your needs are met.

- **Enterprise Server Software Support**

Enterprise Software Support is an additional support service providing customers with software support on Microsoft, Red Hat, SUSE, and VMware applications and systems. Around the clock availability for critical problems plus unlimited calls and incidents helps customers address challenges fast, without incremental costs. Support staff can answer troubleshooting and diagnostic questions, address product comparability and interoperability issues, isolate causes of problems, report defects to software vendors, and more.

- **YourDrive YourData**

Lenovo's YourDrive YourData 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 and is optional with Foundation Service. It is bundled with Essential Service and Advanced Service.

- **Health Check**

Having a trusted partner who can perform regular and detailed health checks is central to maintaining efficiency and ensuring that your systems and business are always running at their best. Health Check supports Lenovo-branded server, storage, and networking devices, as well as select Lenovo-supported products from other vendors that are sold by Lenovo or a Lenovo-Authorized Reseller.

Examples of region-specific warranty terms are second or longer business day parts delivery or parts-only base warranty.

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

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

Lenovo Service offerings are region-specific. Not all preconfigured support and upgrade options are available in every region. For information about Lenovo service upgrade offerings that are available in your region, refer to the following resources:

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

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

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

Deployment services

The following optional Lenovo Professional Services are available 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 and integrating a virtualized environment
 - Nutanix containers and Acropolis (AHV) cluster
 - VMware vCenter Server and vSphere cluster (for VMware installations)
 - Microsoft Hyper-V cluster and System Center Virtual Machine Manager (for Microsoft installations)
 - Transferring knowledge

- Nutanix deployment services - Advanced with XClarity (per cluster)
 - Nutanix deployment services - Advanced
 - Installing Lenovo XClarity
 - Configuring Lenovo XClarity network settings and performing discovery and inventory
 - Installing system updates

The following table lists ThinkAgile Health Check & Deployment offerings are available for ThinkAgile HX customers. These offerings are performed by Lenovo Professional Services.

- **Onsite Deployment:** Install, configure, and validate solution on-site, and conduct knowledge transfer.
- **Remote Deployment:** Install, configure, and validate solution remotely, and conduct knowledge transfer.
- **Remote Health Check:** Report & remediation of hardware and cluster health issues, including firmware and software updates.

Note: For custom Hardware Installation and Deployment Services, please contact the Lenovo Professional Services team for sizing and pricing.

Table 28. Deployment offerings

Part number	Description
Onsite deployment services	
5MS7B00043	ThinkAgile HX Onsite Deployment (up to 3 nodes)
5MS7B00044	ThinkAgile HX Onsite Deployment (additional node)
Remote deployment services	
5MS7B00045	ThinkAgile HX Remote Deployment (up to 3 nodes)
5MS7B00046	ThinkAgile HX Remote Deployment (additional node)
5MS7A27430	ThinkAgile HX SAP HANA Deployment - Custom
Remote Health Check	
5MS7B00065	ThinkAgile HX 1X Remote Health Check (up to 3 node cluster)
5MS7B00066	ThinkAgile HX 1X Remote Health Check (additional node)
5MS7B00067	ThinkAgile HX 1X Remote Health Check & Update (up to 3 node cluster)
5MS7B00068	ThinkAgile HX 1X Remote Health Check & Update (additional node)

For more information, refer to the Data Center Implementation Services web page:
<https://www.lenovo.com/us/en/data-center/services/implementation-services/>

Lenovo Financial Services

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

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

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

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

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

For your region-specific offers, please ask your Lenovo sales representative or your technology provider about the use of Lenovo Financial Services. For more information, see the following Lenovo website:

<https://www.lenovo.com/us/en/landingpage/lenovo-financial-services/>

Seller training courses

The following sales training courses are offered for employees and partners (login required). Courses are listed in date order.

1. **Lenovo Data Center Product Portfolio**
2024-04-22 | 20 minutes | Employees and Partners

This course introduces the Lenovo data center portfolio, and covers servers, storage, storage networking, and software-defined infrastructure products. After completing this course about Lenovo data center products, you will be able to identify product types within each data center family, describe Lenovo innovations that this product family or category uses, and recognize when a specific product should be selected.

Published: 2024-04-22

Length: 20 minutes

Employee link: Grow@Lenovo

Partner link: [Lenovo Partner Learning](#)

Course code: SXXW1110r7

2. **VTT Cloud and Edge Architecture: Principal Consultant Overview**

2024-04-10 | 50 minutes | Employees Only

Join Ruth Miller, Lenovo Principal Consultant, SSG Services for a data-led discussions to examine in detail customer IT environments, highlighting pain points, performance issues, edge and hybrid cloud strategy and carbon reduction capability.

Examples of workshop deliverables and outcomes will be discussed to illustrate the value of early engagement and discovery.

Published: 2024-04-10

Length: 50 minutes

Employee link: Grow@Lenovo

Course code: DVCLD211

3. **VTT Data Management How to sell storage - April 2024**

2024-04-10 | 60 minutes | Employees Only

In this course, you will know:

- Why do we sell storage?
- What are the basics you need to get an opportunity rolling?
- Why Lenovo for Storage?
- What is happening in the market today?
- How to determine traction?

Published: 2024-04-10

Length: 60 minutes

Employee link: Grow@Lenovo

Course code: DVDAT209

4. **Data management Overview**

2024-03-14 | 25 minutes | Employees and Partners

After completing this course you will be able to:

1. Know more about the data management trends and challenges
2. Understand the data management portfolio
3. Find out how data drives business value

Published: 2024-03-14

Length: 25 minutes

Employee link: Grow@Lenovo

Partner link: [Lenovo Partner Learning](#)

Course code: DSTOO201

5. **Technical Overview: ThinkAgile HCI and Cloud Platforms**

2024-03-07 | 35 minutes | Employees and Partners

This course is designed to give Lenovo sales and partner representatives a technical overview of Lenovo's ThinkAgile hyperconverged infrastructure and cloud platforms. Turnkey cloud platforms along with their architectural makeup, and container and data protection solutions are also covered.

Learning Objectives:

- Describe Lenovo's ThinkAgile hyperconverged infrastructure and cloud platforms
- Explain do-it-yourself and turnkey cloud platforms along with their architectural makeup
- Describe container and data protection solutions

Published: 2024-03-07

Length: 35 minutes

Employee link: [Grow@Lenovo](#)

Partner link: [Lenovo Partner Learning](#)

Course code: DCLDT2001r3

6. **Lenovo HX Business Conversations**

2024-03-06 | 20 minutes | Employees and Partners

This course covers business conversations for Lenovo HX Hyperconverged solutions.

Course objectives:

- Identify a potential Lenovo HX opportunity
- Conduct effective discovery to reveal the customer's data center needs
- Probe the customer
- Ensure the customer knows you understand their issue(s)

Published: 2024-03-06

Length: 20 minutes

Employee link: [Grow@Lenovo](#)

Partner link: [Lenovo Partner Learning](#)

Course code: DCGHXB001

7. **Whats new with ThinkAgile HX AI-Ready solutions and enabling edge to cloud**

2024-02-15 | 70 minutes | Employees Only

Join Scott Ellis, Nutanix Solution Architect, Ritu Jain, Lenovo Product Manager and Adam Mandelbloom, Lenovo Technical Product Manager for a discussion on why many customers are looking for VMware alternatives these days, ThinkAgile HX is a compelling choice, learn how easy it is to migrate from VMWare to Nutanix and some of the benefits it can provide. Another hot topic these days is Artificial intelligence, and many times this takes place at the edge. Learn how Lenovo and Nutanix solve these challenges with compelling edge to cloud solutions.

Published: 2024-02-15

Length: 70 minutes

Employee link: [Grow@Lenovo](#)

Course code: DVCLD209

8. **Family Introduction: Converged and Hyperconverged**

2024-01-25 | 15 minutes | Employees and Partners

This course is designed to give Lenovo sales a foundation on the characteristics of the Converged and Hyperconverged family. As an introduction to each family, this course also includes positioning, when to use a family and product, and keywords a client may use when discussing a converged or hyperconverged product.

Objectives:

- Family characteristics
- Priority positioning
- Product usage
- Key words and phrases

Published: 2024-01-25

Length: 15 minutes

Employee link: [Grow@Lenovo](#)

Partner link: [Lenovo Partner Learning](#)

Course code: SXSU1101r2

9. **FY24Q3 Hybrid Cloud Update**

2023-12-11 | 15 minutes | Employees and Partners

This update is designed to help you discuss the features and customer benefits of Lenovo ThinkAgile systems that use the 5th Gen Intel® Xeon® processors. Lenovo has also introduced a new service, Lenovo TruScale Hybrid Cloud for Edge, which provides agile and reliable infrastructure as a service where you need it, when you need it. New Professional Services for AI with NVIDIA provides customers with expert guidance for designing and implementing tailored AI solutions. Reasons to call your customer and talk about refreshing their infrastructure are also included as a guideline.

Published: 2023-12-11

Length: 15 minutes

Employee link: [Grow@Lenovo](#)

Partner link: [Lenovo Partner Learning](#)

Course code: SXXW2523a

10. **VEEAM Solutions Sales Training**

2023-09-27 | 20 minutes | Employees and Partners

In this course you will learn about Hyper-availability for the Always-On Enterprise.

By the end of this training, you should be able to:

Identify and explain the core products and solutions offered by Veeam.

Explain the key benefits and value propositions of integrating Veeam solutions with Lenovo products.

Published: 2023-09-27

Length: 20 minutes

Employee link: [Grow@Lenovo](#)

Partner link: [Lenovo Partner Learning](#)

Course code: DSTOO100

11. **A Seller's Guide to Nutanix OEM 2.0**

2023-08-24 | 90 minutes | Employees Only

In this Sales Team webinar, Mike Tilt, Ritu Jain and Brandon Saxton will cover the new Nutanix 2.0 pricing and packaging options to guide sellers on what the different types of offers, sales process and how to sell Nutanix 2.0. You will get an overview of OEM 2.0, Sales Process, PNP Pricing and Zone Information, and additional resources on Upgrade & Renewal SKUs and process.

Course Objectives

- Defining Nutanix 2.0 Pricing and Packaging
- Describing OEM 2.0 Sales Process
- Identifying resources and support

Published: 2023-08-24

Length: 90 minutes

Employee link: Grow@Lenovo

Course code: DSXNS101

12. **Empowering Technical Sellers: Excelling In Transactional Workloads**

2023-08-18 | 60 minutes | Employees and Partners

This training abstract outlines a comprehensive program designed to equip technical sellers with the knowledge and expertise required to effectively promote and sell Lenovo and Nutanix solutions for transactional workloads. By focusing on the unique capabilities and advantages of Lenovo and Nutanix infrastructure in handling high-performance transactional applications, this training program empowers technical sellers to engage with customers, understand their specific workload requirements, and articulate the value proposition of Lenovo and Nutanix offerings in this domain. The training program encompasses the following key areas:

1. Transactional Workloads Overview:
2. Lenovo and Nutanix Solutions for Transactional Workloads:
3. Product Portfolio Deep Dive:
4. Addressing Customer Requirements:
5. Solution Positioning and Sales Techniques:
6. Competitor Analysis:

Through this training, technical sellers will acquire the expertise necessary to engage with customers, understand their transactional workload requirements, and effectively position Lenovo and Nutanix solutions as the ideal choice for high-performance, mission-critical applications. By understanding the intricacies of Lenovo and Nutanix offerings in the transactional workload space, technical sellers will be empowered to drive successful sales engagements, build strong customer relationships, and contribute to the growth and success of their organization.

Published: 2023-08-18

Length: 60 minutes

Employee link: Grow@Lenovo

Partner link: [Lenovo Partner Learning](#)

Course code: DHXD201

13. Empowering Technical Sellers: Accelerating Lenovo and Nutanix Cloud Native-Container Application Solutions

2023-08-18 | 60 minutes | Employees and Partners

This training abstract outlines a comprehensive program specifically designed to equip technical sellers with the knowledge and expertise needed to effectively promote and sell Lenovo and Nutanix cloud native/container application solutions. By focusing on the integration of Lenovo and Nutanix technologies with modern application development practices, this training enables tech sellers to engage with customers, understand their requirements, and articulate the unique value proposition of Lenovo and Nutanix offerings in the cloud native and containerization landscape.

The training encompasses the following key areas:

1. Cloud Native and Containerization Fundamentals:
2. Lenovo and Nutanix Solutions Overview:
3. Product Portfolio Deep Dive:
4. Addressing Customer Needs:
5. Solution Positioning and Sales Techniques:
6. Competitor Analysis:
7. Technical Demonstration and Proof-of-Concept:

Throughout the training, tech sellers will gain the expertise necessary to engage with customers, understand their unique requirements, and effectively position Lenovo and Nutanix solutions as the go-to choice for cloud native and containerized application needs. By learning the intricacies of Lenovo and Nutanix offerings, technical sellers will be equipped to drive successful sales engagements, strengthen customer relationships, and contribute to the overall growth and success of the organization.

Published: 2023-08-18

Length: 60 minutes

Employee link: Grow@Lenovo

Partner link: [Lenovo Partner Learning](#)

Course code: DHXC201

14. ThinkAgile Accelerating Cloud Agility: HX Series Technical Presentation

2023-07-28 | 40 minutes | Employees and Partners

Amalu Santhosh, Lenovo Technical Product Manager, reviews the ThinkAgile HX product portfolio. She will walk you through a technical deep dive into HX workloads and discuss technical details and performance of the latest ThinkAgile HX solutions.

Published: 2023-07-28

Length: 40 minutes

Employee link: Grow@Lenovo

Partner link: [Lenovo Partner Learning](#)

Course code: DHXT201

15. Lenovo Data Center Product Portfolio

2023-07-21 | 15 minutes | Employees and Partners

This course introduces the Lenovo data center portfolio, and covers servers, storage, storage networking, and software-defined infrastructure products. After completing this course about Lenovo data center products, you will be able to identify product types within each data center family, describe Lenovo innovations that this product family or category uses, and recognize when a specific product should be selected.

Published: 2023-07-21

Length: 15 minutes

Employee link: Grow@Lenovo

Partner link: [Lenovo Partner Learning](#)

Course code: SXXW1110r6

16. **VTT: SAP HANA Transition and Refresh Opportunity - July 2023**

2023-07-14 | 60 minutes | Employees Only

In this session, we cover:

- What Next for SAP Clients?
- Lenovo Opportunity
- Lenovo Portfolio for SAP Solutions
- RISE with SAP

Published: 2023-07-14

Length: 60 minutes

Employee link: Grow@Lenovo

Course code: DVDAT202

17. **Cloud and HCI or Somewhere in Between**

2023-07-11 | 40 minutes | Employees and Partners

Provides a brief overview of Lenovo Portfolio for HCI and Cloud including ThinkAgile HX, VX, MX Certified Nodes and Appliances, Azure, and Engineered Cloud Solutions. Review Scenarios and complete questions "choose your own adventure" to identify and qualify an opportunity as HCI or Cloud and which portfolio solution would be the best option.

Course objectives:

- Where in the Sales Cycle we are
- What is Cloud
- What is Hyperconverged Infrastructure (HCI)
- Review Lenovo Offerings in Cloud and HCI
- Scenarios

Published: 2023-07-11

Length: 40 minutes

Employee link: Grow@Lenovo

Partner link: [Lenovo Partner Learning](#)

Course code: DCLDS104r2

18. **What's New with Nutanix 2.0? Portfolio and Licensing**

2023-06-08 | 15 minutes | Employees and Partners

Nutanix has updated and simplified their licensing for our joint customers. This course is created to give sales and partners representatives an overview for the recent Nutanix licensing changes and their current options.

Course Objectives:

After completing this course, you should be able to:

- Describe the new Nutanix licensing rollout
- List the new pricing and packaging options

Published: 2023-06-08

Length: 15 minutes

Employee link: Grow@Lenovo

Partner link: [Lenovo Partner Learning](#)

Course code: DHXL001

19. **Partner Technical Webinar - HX vs VX vs MX Panelist Discussion**

2023-04-11 | 60 minutes | Employees and Partners

In this 60-minute replay, Joe Murphy moderated a panelist discussion on ThinkAgile SHI. Baker Hull, VMware represented VX; Mike Tilt, Lenovo Technical Sales Manager presented HX; Phil Searles, Lenovo Solution Architect represented MX; and Brandon Saxton Lenovo NA Product Manager for ThinkAgile made up the panelist. The focus was less on the differences but how to elevate the conversation to get to the best solution. No slides were presented.

Published: 2023-04-11

Length: 60 minutes

Employee link: [Grow@Lenovo](#)

Partner link: [Lenovo Partner Learning](#)

Course code: 033123

20. **Partner Technical Webinar - ThinkAgile V3 Overview and SMB Express**

2023-02-13 | 60 minutes | Employees and Partners

In this 60-minute replay, Joe Murphy and Dave Brown, Lenovo Solution Architects reviewed the new ThinkAgile V3 solutions. In addition, Dave did a lengthy demo and explanation of the new SMB Express feature of DCSC.

Published: 2023-02-13

Length: 60 minutes

Employee link: [Grow@Lenovo](#)

Partner link: [Lenovo Partner Learning](#)

Course code: 021023

21. **Family Portfolio: ThinkAgile HX**

2022-12-13 | 20 minutes | Employees and Partners

This course is designed to give Lenovo sales an introduction to Lenovo ThinkAgile HX appliances. This course also includes why a customer should choose Lenovo for their hyperconverged products.

Course objectives:

- Learn to identify products and features within the ThinkAgile HX family
- Describe Lenovo innovations that the ThinkAgile HX family uses
- Recognize when a specific product or products should be selected

Published: 2022-12-13

Length: 20 minutes

Employee link: [Grow@Lenovo](#)

Partner link: [Lenovo Partner Learning](#)

Course code: SXSW2109r3

22. **ThinkAgile HX Seller Presentation**

2022-11-01 | 25 minutes | Employees Only

Join Ritu Jain, Worldwide Product Manager for ThinkAgile, as she shares how ThinkAgile HX unique values, routes to market, how to position HX, and competitive landscape.

By the end of this training, you should be able to:

- Describe the ThinkAgile HX advantages
- Discover the routes to market & models available to sell
- Explain the HX solution positioning

Published: 2022-11-01

Length: 25 minutes

Employee link: [Grow@Lenovo](#)

Course code: DHXSP101

23. ThinkAgile HX Customer Presentation
2022-10-31 | 25 minutes | Employees Only

Join Ritu Jain, Worldwide ThinkAgile Product Manager for ThinkAgile, as she shares trends shaping cloud deployment models, customer Hybrid cloud strategy and how ThinkAgile HX is helping customers in their journey.

By the end of this training, you should be able to:

- Describe the ThinkAgile HX Solution
- Discover the trends in the cloud industry
- Explain how HX is helping customers with evolving trends

Published: 2022-10-31

Length: 25 minutes

Employee link: Grow@Lenovo

Course code: DHXCP101

24. Data Infrastructure Management - DM Series Storage
2022-10-28 | 25 minutes | Employees Only

This course provides a technical overview of the ThinkSystem DM series products. Course DDMO101 – Lenovo ThinkSystem DM & DE Series Overview is recommended prior to this course.

By the end of this course, you should be able to:

- Recognize the components of the Lenovo Data Management portfolio
- Discuss the features of the Lenovo Data Management components
- Describe the features of the SnapCenter software components

Published: 2022-10-28

Length: 25 minutes

Employee link: Grow@Lenovo

Course code: DDM200

25. Lenovo ThinkAgile HX VDI Solution
2022-08-26 | 10 minutes | Employees Only

In this lightboard video, Eric Kern whiteboards Lenovo's ThinkAgile HX VDI Solution. Sellers will learn how it works and customer benefits. Updated August 26th, 2022.

Objectives for this course:

- Understand how the VDI solution leverages the ThinkAgile HX platform with Citrix.
- Describe what actions a system administrator can perform in the Citrix portal.
- Explain how to manage the system remotely from a cloud infrastructure with Citrix.

Published: 2022-08-26

Length: 10 minutes

Employee link: Grow@Lenovo

Course code: DSVC129

26. **Lenovo's value-added Solutions Software and SDI -ThinkAgile HX - Best practices for Selling Software/ SDI Process**

2022-08-23 | 60 minutes | Employees Only

ThinkAgile HX is one of the most important parts of the ThinkAgile Lenovo Portfolio of SDI, Software Defined Infrastructure but it can be challenging to manage the deal registration and quoting for ThinkAgile HX. Listen in on Part 1 of this recent North America webinar where Mike Tilt, Sales Engineer Director, discusses the overview of ThinkAgile HX sales process and how to obtain Deal protection. He also discusses best practices for interactions with Nutanix sellers and shares personal experiences as a former SDI focused seller.

Published: 2022-08-23

Length: 60 minutes

Employee link: Grow@Lenovo

Course code: DCLDO121

27. **Lenovo's value-added Solutions Software and SDI -ThinkAgile HX - Best practices for Selling Software/ SDI Process**

2022-08-23 | 60 minutes | Employees Only

In this Part 2, a continuation of a recent North American Webinar, Mike Tilt, Sales Engineer Director, continues discussion of ThinkAgile HX sales process and dives into VLS. He also discusses best practices for interactions with Nutanix sellers and shares personal experiences as a former SDI focused seller.

Published: 2022-08-23

Length: 60 minutes

Employee link: Grow@Lenovo

Course code: DCLDO122

28. **Lenovo TruScale for Hosted Desktops with Nutanix**

2022-08-22 | 15 minutes | Employees and Partners

By exemplifying the case of a customer who wants to move to a remote desktop public cloud solution, this 15-minute course offers an overview of the Lenovo TruScale for Hosted Desktops with Nutanix solution, including benefits, architecture, and value proposition.

Published: 2022-08-22

Length: 15 minutes

Employee link: Grow@Lenovo

Partner link: [Lenovo Partner Learning](#)

Course code: DSOLO109

29. **Lenovo's value-added Solutions Software and SDI - ThinkAgile HX Licensing Update from Nutanix**

2022-08-22 | 60 minutes | Employees Only

In this continuous series of recorded webinar for ThinkAgile, Ed Stickney, Nutanix Worldwide OEM Sales Strategy and Enablement Leader, reviews with the North American region the recent changes made to the Nutanix simplified licensing model and how it benefits your customers. He also discusses how the new licensing maps to the current licensing and how you can migrate your customers to the new licensing. Ed also provides you valuable feedback from audience questions.

Published: 2022-08-22

Length: 60 minutes

Employee link: Grow@Lenovo

Course code: DCLDO120

30. **Partner Technical Webinar - sizing ThinkAgile HX & VX**

2022-08-01 | 60 minutes | Partners Only

In this 60-minute replay, we demonstrated how to size ThinkAgile VX and ThinkAgile HX. First Lenovo Solution Architect Joe Murphy reviewed the sizing methodology. Next, Lenovo Solution Architect Richard Smutzer demonstrated how to size ThinkAgile HX using Nutanix's sizing tool. Lenovo Solution Architect David Cianchetta closed the webinar by demonstrating ThinkAgile VX sizing using the VSAN sizer from VMware.

Published: 2022-08-01

Length: 60 minutes

Partner link: [Lenovo Partner Learning](#)

Course code: 072922

31. **Partner Technical Webinar - Nutanix and ThinkAgile HX**

2022-07-20 | 60 minutes | Partners Only

In this 60-minute replay, Brandon Saxton, Lenovo NA Product Manager, and Brendan McDermott, Senior Sales Engineer, reviewed the Nutanix Lenovo Partnership, the technology and the ThinkAgile HX offerings including both Integrated Systems and Certified Nodes. Based on some questions, a few slides were added at the end to compare ThinkAgile HX with the other ThinkAgile offerings.

Published: 2022-07-20

Length: 60 minutes

Partner link: [Lenovo Partner Learning](#)

Course code: 071522

32. **ThinkAgile Advantage Services**

2022-07-20 | 15 minutes | Employees and Partners

The goal of this training is to go through the details of ThinkAgile Advantage, and to provide everything you need to have customer conversations and to order ThinkAgile Advantage and recommended services.

Course objectives:

1. Learn about the customer challenges and benefits of ThinkAgile Advantage
2. Discover what it includes
3. Understand how to make the most of ThinkAgile products and solutions with the elevator pitch for customer conversations.

Published: 2022-07-20

Length: 15 minutes

Employee link: [Grow@Lenovo](#)

Partner link: [Lenovo Partner Learning](#)

Course code: DSVC121r2

33. **Start the Conversation - Lenovo Cloud Strategy**

2021-10-25 | 25 minutes | Employees and Partners

The purpose of this course is to help sellers use the Lenovo cloud strategy as a foundation to start the customer cloud conversation. Topics include:

- Why customers choose the cloud
- The Lenovo Cloud Strategy
- Starting the customer cloud conversation

Published: 2021-10-25

Length: 25 minutes

Employee link: [Grow@Lenovo](#)

Partner link: [Lenovo Partner Learning](#)

Course code: DCLDS103r2

Related publications and links

For more information, see these resources:

- Lenovo ThinkAgile HX Series
<https://www.lenovo.com/us/en/data-center/software-defined-infrastructure/ThinkAgile-HX-Series/p/WMD00000326>
- ThinkAgile HX Series Comparison reference
<https://lenovopress.com/lp1336-thinkagile-hx-series-comparison>
- Interactive 3D Tour of ThinkAgile HX Series offerings:
<https://lenovopress.com/lp0454-lenovo-thinkagile-hx-series-interactive-3d-tour>
- Lenovo Data Center Solution Configurator (DCSC):
<http://dcsc.lenovo.com>
- Lenovo ThinkAgile product publications (user manuals):
<https://thinkagile.lenovofiles.com/help/index.jsp>
- Nutanix documentation
<https://my.nutanix.com/>
- Lenovo ThinkAgile HX Series Best Recipes
<http://datacentersupport.lenovo.com/us/en/solutions/ht505413>
- Lenovo Data Center Support
<http://datacentersupport.lenovo.com>

Related product families

Product families related to this document are the following:

- [2-Socket Rack Servers](#)
- [Hyperconverged Infrastructure](#)
- [Hyperconverged Infrastructure](#)
- [ThinkAgile HX Series for Nutanix](#)

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