



Lenovo Converged HX Series Quick Start Guide



Second Edition (June 2016)

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Chapter 1. Overview of the Lenovo Converged HX Series appliances

Lenovo® Converged HX Series appliances are designed to help you simplify IT infrastructure, reduce costs, and accelerate time to value. These hyper-converged appliances from Lenovo combine industry-leading hyper-convergence software from Nutanix with Lenovo enterprise platforms.

Several common uses for the Lenovo Converged HX Series appliances that feature Intel® Xeon® processors:

- Enterprise workloads
- Private and hybrid clouds
- Remote office and branch office (ROBO)
- Server virtualization
- Virtual desktop infrastructure (VDI)
- Small-medium business (SMB) workloads

Starting with as few as three nodes to keep your acquisition costs down, the Lenovo Converged HX Series appliances are capable of immense scalability as your needs grow.

The Lenovo Converged HX Series appliances are available in five families that can be tailored to your needs:

- Lenovo Converged HX1000 Series: optimized for ROBO environments
- Lenovo Converged HX2000 Series: optimized for SMB environments
- Lenovo Converged HX3000 Series: optimized for compute-heavy environments
- Lenovo Converged HX5000 Series: optimized for storage-heavy workloads
- Lenovo Converged HX7000 Series: optimized for high-performance workloads

For more information about the system specifications and supported configurations, refer to the product guides for the Lenovo Converged HX Series appliances:

- E5-2600v3 (Haswell) processor-based appliances
 - Lenovo Converged HX3500/HX5500/HX7500: <https://lenovopress.com/lp0059>
- E5-2600v4 (Broadwell) processor-based appliances
 - Lenovo Converged HX1000 Series: <https://lenovopress.com/lp0503>
 - Lenovo Converged HX2000 Series: <https://lenovopress.com/lp0504>
 - Lenovo Converged HX3000 Series: <https://lenovopress.com/lp0505>
 - Lenovo Converged HX5000 Series: <https://lenovopress.com/lp0506>
 - Lenovo Converged HX7000 Series: <https://lenovopress.com/lp0507>

Chapter 2. Useful Web sites

Get information and support from the following Web sites when you are installing and administering the Lenovo Converged HX Series appliances.

Lenovo Converged HX Series Web site

Lenovo Converged HX Series Web site:
<http://www.lenovo.com/support/converged-hx-series>

This Web site contains the latest information about the Lenovo Converged HX Series appliances including the latest edition of this document.

Nutanix customer Web site

Nutanix customer Web site:
<http://portal.nutanix.com>

Register at this Web site to obtain access to product documentation, licenses, software, patches, the knowledge base, search capabilities, and other helpful information.

In case of any registration issues, send an e-mail to portal-accounts@nutanix.com. For emergency registration assistance, contact Nutanix through the phone number for your country or region listed at: <http://www.nutanix.com/support/phone-numbers>

Chapter 3. Useful documentation

This chapter describes useful documents in addition to this *Quick Start Guide*. All useful documents are available on the Internet.

Lenovo documentation

The following table introduces Lenovo documents that you might find useful for the installation and administration. To obtain the document you need, go to:

<http://www.lenovo.com/support/converged-hx-series>

| Documentation | Type | Description and Web site |
|--|----------------|--|
| <i>Release Notes</i> | Setup | Release notes for the Lenovo Converged HX Series appliances https://support.lenovo.com/us/en/docs/um104472 |
| <i>Rack Mount Installation Guides</i> | Setup | Instructions on how to install the Lenovo Converged HX Series appliances into the rack by using the rack mount kit provided with each Lenovo Converged HX Series appliance To obtain the <i>Rack Mount Installation Guide</i> you need, go to: http://www.lenovo.com/support/converged-hx-series |
| <i>Lenovo XClarity Administrator Planning and Installation Guide</i> | Setup | Instructions on how to plan for and install the Lenovo XClarity Administrator solution into your datacenter environment http://pic.dhe.ibm.com/infocenter/flexsys/information/topic/com.lenovo.lxca.doc/lxca_installation_guide.pdf |
| <i>Lenovo XClarity Administrator User's Guide</i> | Administration | Instructions on how to use the Lenovo XClarity Administrator program to manage Lenovo servers and resources http://pic.dhe.ibm.com/infocenter/flexsys/information/topic/com.lenovo.lxca.doc/lxca_users_guide.pdf |
| <i>Lenovo XClarity Administrator Information</i> | Administration | Links to Web sites containing all of the Lenovo XClarity Administrator information http://pic.dhe.ibm.com/infocenter/flexsys/information/index.jsp?topic=/com.lenovo.lxca.doc/aug_product_page.html |
| <i>Lenovo Converged HX Series Installation and Service Guides</i> | Administration | Instructions on how to install and service the Lenovo Converged HX Series appliances To obtain the <i>Lenovo Converged HX Series Installation and Service Guide</i> you need, go to: http://www.lenovo.com/support/converged-hx-series |

Nutanix documentation

The following table introduces Nutanix documents that you might find useful for the installation and administration.

To obtain the document you need, go to <https://portal.nutanix.com/#/page/docs>. From the filter-by drop-down list boxes, select the correct software type, version (4.5 or later), and platform, and then locate the document by its name.

| Documentation | Type | Description |
|--|----------------|--|
| <i>Field Installation Guide</i> | Setup | Instructions on how to use the Foundation tool to do a field installation, including installing a different hypervisor and creating a cluster |
| <i>Acropolis Advanced Setup Guide</i> | Setup | Instructions on how to set up in advanced situations not covered by the Foundation tool |
| <i>Hardware Replacement Documentation</i> | Administration | Instructions on how to replace failed hardware components used by Lenovo customers |
| <i>Prism Web Console Guide</i> | Administration | Instructions on how to manage your clusters through the Prism Web console (You can monitor and configure entities within a Nutanix cluster through a Prism Web console or a Nutanix command line interface (nCLI).) |
| <i>Acropolis Advanced Administration Guide</i> | Administration | Instructions on how to administer the Nutanix software outside of Prism GUI |
| <i>Acropolis Hypervisor (AHV) Administration Guide</i> | Administration | Instructions on how to use the Nutanix AHV (Lenovo installs the AHV and the Nutanix Controller Virtual Machines (CVM) at the factory before shipping a node to a customer.) |
| <i>Acropolis App Mobility Fabric Guide</i> | Administration | Instructions on how to manage Virtual Machines (VM), including Acropolis command line interface (ACLI) and VM management API reference |
| <i>vSphere Administration Guide for Acropolis</i> | Administration | Instructions on how to manage Nutanix nodes by the VMware ESXi hypervisor |
| <i>Nutanix Cluster Check (NCC) Guide</i> | Administration | A framework of scripts that can help diagnose cluster health |
| <i>Acropolis API Reference</i> | Reference | Reference for the Acropolis REST API, including Powershell cmdlets |
| <i>Acropolis Command Reference</i> | Reference | Reference for the nCLI (The nCLI enables you to run system administration commands against the Nutanix cluster and CVM utilities.) |

Chapter 4. License information

This chapter provides software license information for the Lenovo Converged HX Series appliances.

Nutanix Enterprise software licenses

The Lenovo Converged HX Series appliances for Enterprise are purchased with one of the following Nutanix software licenses:

- Starter
- Pro
- Ultimate

The Lenovo Converged HX Series appliances arrive from the factory with a default Starter license. This license lasts for six years from the date of manufacture and does not require registration at the Nutanix customer Web site.

Both the Pro and Ultimate licenses require you to download a license file from the Nutanix customer Web site at <http://portal.nutanix.com> and install it into the cluster. When you add additional nodes, regenerate and reinstall the license file into the cluster. The Nutanix customer Web site contains information about the license types and expiration dates.

To retrieve, install, and manage your cluster licenses, refer to the “License Management” section in the *Prism Web Console Guide*. To obtain the *Prism Web Console Guide*, see “Nutanix documentation” on page 5 .

The following tables list the features of the Starter, Pro, and Ultimate licenses.

Table 1. Comparison of availability on core data service features

| Core data service features | Starter | Pro | Ultimate |
|----------------------------------|----------|-----------|-----------|
| Cluster size | 12 nodes | Unlimited | Unlimited |
| Heterogeneous clusters | √ | √ | √ |
| VM-Centric snapshots and clones | √ | √ | √ |
| Data tiering | √ | √ | √ |
| Inline compression | √ | √ | √ |
| Inline performance deduplication | √ | √ | √ |
| MapReduce compression | | √ | √ |
| MapReduce deduplication | | √ | √ |
| EC-X | | √ | √ |
| VM pinning | | | √ |

Table 2. Comparison of availability on infrastructure resilience features

| Infrastructure resilience features | Starter | Pro | Ultimate |
|------------------------------------|---------|--------------|--------------|
| Data path redundancy | √ | √ | √ |
| Tunable redundancy factor | Two | Two or three | Two or three |
| Availability domains | | √ | √ |

Table 3. Comparison of availability on data protection features

| Data protection features | Starter | Pro | Ultimate |
|--|---------|-----|----------|
| 1-1 replication and disaster recovery | √ | √ | √ |
| Bi-directional replication and DR | √ | √ | √ |
| Online cluster grow or shrink | √ | √ | √ |
| Volume Shadow Copy Service (VSS) integration | | √ | √ |
| Time stream | | √ | √ |
| Cloud connect | | √ | √ |
| Multi-site DR (1-to-many, many-to-1) | | | √ |
| Metro availability | | | √ |

Table 4. Comparison of availability on security features

| Security features | Starter | Pro | Ultimate |
|-----------------------|---------|-----|----------|
| Client authentication | √ | √ | √ |
| Cluster lockdown | | √ | √ |

Table 5. Comparison of availability on management and analytics features

| Management and analytics features | Starter | Pro | Ultimate |
|-----------------------------------|---------|-----|----------|
| Pulse | √ | √ | √ |
| Cluster health | √ | √ | √ |
| One-click upgrades | √ | √ | √ |
| Rest APIs | | √ | √ |

Table 6. Comparison of availability on virtualization features

| Virtualization features | Starter | Pro | Ultimate |
|-------------------------------|---------|-----|----------|
| vSphere support | √ | √ | √ |
| Built-in Acropolis hypervisor | √ | √ | √ |
| VM operations | √ | √ | √ |
| VM placement | √ | √ | √ |
| VM high availability | √ | √ | √ |

Nutanix SMB software licenses

The Lenovo Converged HX 2000 Series appliances for SMB arrive from the factory with the XPRESS Nutanix software license. This license lasts for six years from the date of manufacture and does not require registration at the Nutanix customer Web site. The Nutanix customer Web site contains information about the license types and expiration dates.

When you add additional nodes, regenerate and reinstall the license file into the cluster. To retrieve, install, and manage your cluster licenses, refer to the “License Management” section in the *Prism Web Console Guide*. To obtain the *Prism Web Console Guide*, see “Nutanix documentation” on page 5 .

The following tables list features of the XPRESS license.

Table 7. Core infrastructure service features

| Core infrastructure service features | XPRESS |
|--------------------------------------|---------|
| Maximum cluster size | 4 nodes |
| Maximum number of clusters | 2 |
| Online cluster grow and shrink | √ |
| Data tiering | √ |
| VM flash mode (pinning) | √ |

Table 8. Space efficiency features

| Space efficiency features | XPRESS |
|----------------------------|--------|
| Inline compression | √ |
| Post-process compression | √ |
| Inline deduplication | √ |
| Post-process deduplication | √ |

Table 9. Infrastructure resilience features

| Infrastructure resilience features | XPRESS |
|------------------------------------|--------|
| Data path redundancy | √ |
| Tunable redundancy factor | 2 |

Table 10. Data protection features

| Data protection features | XPRESS |
|--|--------|
| Time stream snapshots | √ |
| VM-Centric snapshots and clones | √ |
| VSS integration | √ |
| Cloud connect | √ |
| 1-1 replication and disaster recovery | √ |
| Bi-directional replication and disaster recovery | √ |
| Metro availability | √ |

Table 11. Management and analytics features

| Management and analytics features | XPRESS |
|-----------------------------------|---------|
| Single site cluster management | √ |
| Multi-site cluster management | 2 sites |
| PulseHD remote monitoring | √ |
| Cluster health | √ |
| One-click upgrades | √ |

Table 12. Virtualization features

| Virtualization features | XPRESS |
|-------------------------------|--------|
| ESXi and Hyper-V support | √ |
| Built-in Acropolis hypervisor | √ |
| VM operations | √ |
| Host profiles | √ |
| Virtual network configuration | √ |
| VM intelligent placement | √ |
| VM high availability | √ |

Other software licenses

To launch other software on the Lenovo Converged HX Series appliances, ensure that the software has appropriate licenses. For example, if you choose to use the VMware ESXi hypervisor in the cluster, you must obtain the appropriate licenses from VMware. Note that the Nutanix AHV does not need any additional license.

Chapter 5. Deployment of the Lenovo Converged HX Series appliances

Lenovo Professional Services personnel and their partners deploy Lenovo Converged HX Series appliances to the best practices. This chapter gives an overview of the considerations, options, and deployment steps involved in installing and building a cluster of the Lenovo Converged HX Series appliances.

Deployment of a cluster requires the following steps:

1. Gathering the prerequisites
2. Installing the appliances
3. Building the network
4. Turning on the appliances
5. Using the Foundation deployment tool

Gathering the prerequisites

It is the customer's responsibility to provide the following prerequisite hardware and software:

- One 1 GbE top of rack (TOR) switch for connection to the integrated management module (IMM)
- Two 10 GbE TOR switches
- VMware licenses (if required)

Besides, ensure that the appliance is connected to an ac power source (two power cables per appliance) and in a proper cooling environment.

Installing the appliances

To install the appliances, do the following:

1. Unpack the appliances and ensure that all components such as drives, power supplies, and fans are properly seated and not dislodged or damaged during shipping.
2. Each appliance comes with a rack mount kit. If the appliances are not in a rack, refer to the *Rack Mount Installation Guide* and install the servers into your rack by using rack mount kit. To obtain the *Rack Mount Installation Guide*, see "Lenovo documentation" on page 5 .
3. Connect the two redundant power supplies on each appliance to the rack-mounted power distribution units.

Note: Lenovo Professional Services personnel can also help you with the correct installation.

Building the network

Each Lenovo Converged HX Series appliance contains one or two dual-port 10 GbE network interface cards as well as on-board 1 GbE ports. The Nutanix software configures the hypervisors so that all of the network ports on the appliance (both 10 GbE and 1 GbE) are pooled. All of the hypervisor VM management should use the same 10 GbE network.

It is recommended that two TOR switches are used for redundancy. The second network interface card provides both improved performance and an additional level of redundancy in case one of the network interface cards fails.

To network the appliances, do the following:

1. Install and power both of the 10 GbE TOR switches. The switches must be interconnected using InterSwitch Links (ISLs).
2. Connect each 10 GbE switch to each 10 GbE network port on the appliance. For n appliances (n represents the quantity), $2n$ or $4n$ cables are needed depending on the number of the network interface cards.
3. Install and power the 1 GbE TOR switch.
4. Connect the 1 GbE switch to the dedicated IMM port on each appliance, one 1 GbE cable for each.

The following illustrations show how to build network connectivity in various situations:

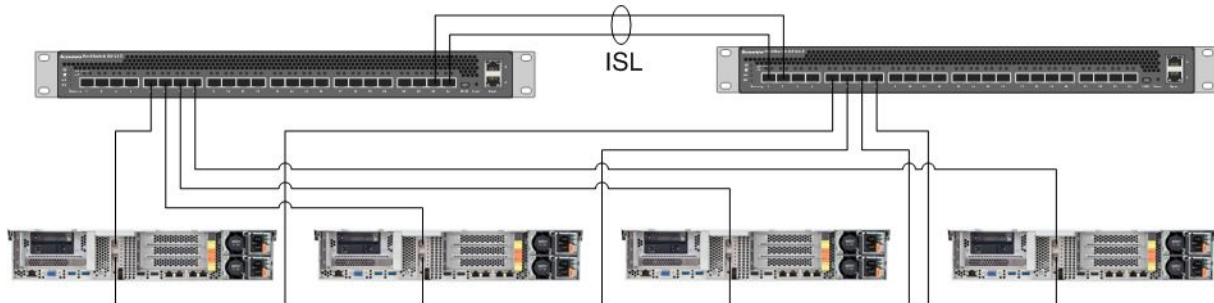


Figure 1. Networking for four appliances each with one network interface card connected to two 10 GbE TOR switches

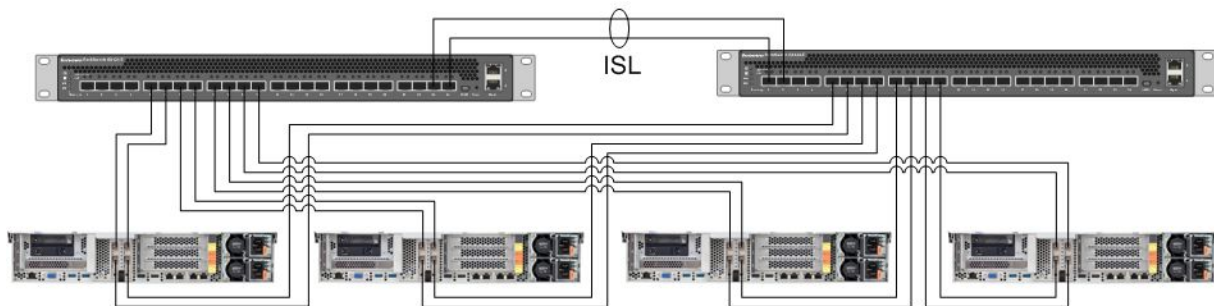


Figure 2. Networking for four appliances each with two network interface cards connected to two 10 GbE TOR switches

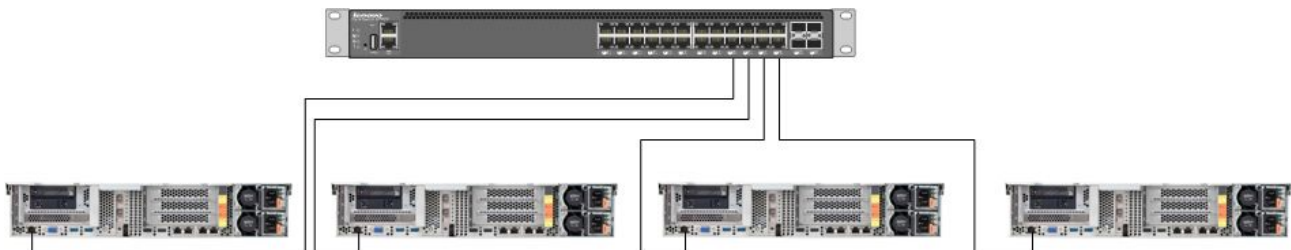


Figure 3. Networking for the dedicated IMM port connected to the 1 GbE TOR switch

Because all of the network ports are pooled, each appliance only needs two network IP addresses: one for the hypervisor and one for the Nutanix CVM. These addresses should be all on the same subnet.

In addition, the IMM port needs a network address. This address could be on the same subnet as the pooled ports or on a completely different subnet depending on customer requirements. One advantage of the IMM ports on the same network is that Lenovo XClarity Administrator hardware management VM can run within the ESXi cluster rather than on a separate server connected to the 1 GbE network switch for the IMM ports.

Turning on the appliances

After you complete all the hardware installation and cabling, turn on the Lenovo Converged HX Series appliances.

The appliances are preinstalled with all of the Nutanix software including the AHV. The appliances will boot to hypervisor and a command line is available on the console. The default hypervisor root password is *nutanix/4u*.

Using the Foundation deployment tool

The best and most common way to configure and deploy a Nutanix cluster is to use the Foundation tool. Refer to Chapter 2 in the *Field Installation Guide* for more details. To obtain the *Field Installation Guide*, see “Nutanix documentation” on page 5 .

Lenovo installs the AHV and the CVM at the factory before shipping a node to a customer. The Foundation tool is used to deploy a cluster and requires the following prerequisites:

- MAC address of each node to verify nodes discovered by the Foundation tool
- IP address, netmask, and gateway for each node to be deployed
- IP address, netmask, and gateway for each CVM on each node (They should be on the same subnet as the node.)
- IP address, netmask, and gateway for the IMM on each node (They could be on the same subnet as or different subset from the node.)
- IP address and name of the cluster (They must be on the same subnet as the CVM.)

For example, to deploy four nodes, a total of 17 IP addresses are needed.

In addition, you can use the Foundation tool to change the hypervisor on the nodes. The ISO image for each hypervisor is a required prerequisite before starting the Foundation tool. Go to the official Web site to download the ISO image for the supported hypervisor you need:

- ESXi 5.5 U2 download Web site:
<https://www-947.ibm.com/support/entry/portal/docdisplay?Indocid=migr-5097258>
- ESXi 5.5 U3 download Web site:
https://my.vmware.com/web/vmware/info/slug/datacenter_cloud_infrastructure/vmware_vsphere/5_5#custom_iso
- ESXi 6.0 U1 download Web site:
https://my.vmware.com/web/vmware/info/slug/datacenter_cloud_infrastructure/vmware_vsphere/6_0#custom_iso

After successfully creating the cluster, the next step is to create storage pools and deploy VMs. Refer to the *Prism Web Console Guide* for more information. To obtain the *Prism Web Console Guide*, see “Nutanix documentation” on page 5 .

To install Lenovo XClarity Administrator, see the *Lenovo XClarity Administrator Planning and Installation Guide* for more information. To obtain the *Lenovo XClarity Administrator Planning and Installation Guide*, see “Lenovo documentation” on page 5 .

Chapter 6. System upgrade

Lenovo Converged HX Series appliances contain several different components that can be upgraded. You can maintain your Lenovo Converged HX Series appliances by replacing hardware and upgrading certain firmware and software.

Hardware

The hardware for the Lenovo Converged HX Series cannot be upgraded and is finalized at the time of configuration and ordering.

You can replace non-functioning hardware. Refer to the *Lenovo Converged HX Series Installation and Service Guide* for more details. To obtain this guide, see “Lenovo documentation” on page 5 .

Firmware

Note: Disk firmware cannot be upgraded with Prism and should be done with Lenovo XClarity Administrator.

You can upgrade the following firmware:

- Front solid-state drives (SSDs)
- Front hard disk drives (HDDs)
- Integrated Management Module (IMM)
- Network interface cards (NICs)
- Host bus adapters (HBAs)
- Unified Extensible Firmware Interface (UEFI)

It is recommended that you use Lenovo XClarity Administrator to upgrade firmware versions which eases the task of monitoring and upgrading firmware. You can also upgrade the firmware out of band by using the IMM console, or by performing a virtual image load of a suitable OS and then running the firmware upgrade scripts to complete upgrade.

To upgrade nodes in a rotating basis, do the following:

1. Shut down the guest VMs or move them to other nodes in the cluster.
2. Stop the CVM.
3. Put the hypervisor into the maintenance mode.
4. If necessary, load a virtual image and restart the node into the operating system for the upgrade.
5. Apply the firmware update by Lenovo XClarity Administrator or the remote console firmware.
6. Restart the server if necessary.
7. Change the hypervisor out of maintenance mode.
8. Start the CVM.

To upgrade all the nodes in a cluster at the same time, you can first stop the cluster, perform the upgrade, and then start the cluster. Note that it is the best practice to first upgrade one node to ensure that there are no unforeseen problems before performing the upgrade on the remaining nodes.

See the “Common Procedures” chapter in the *Hardware Replacement Documentation* for more details on stopping and starting a node or the cluster. To obtain the *Hardware Replacement Documentation*, see “Nutanix documentation” on page 5 .

Software

You can upgrade the following software:

- Acropolis software (NOS)
- Acropolis Hypervisor (AHV)
- Nutanix Cluster Check (NCC)
- ESXi but only using offline upgrade bundles. Minor or major releases need to be done using VMware vCenter

To upgrade the software mentioned above with the Prism Web console, refer to “Software and Firmware Upgrades” in Chapter 2 of the *Prism Web Console Guide*. To obtain the *Prism Web Console Guide*, see “Nutanix documentation” on page 5 .

Chapter 7. Hardware management and monitoring

This chapter contains information about hardware management and monitoring with Prism Web console and Lenovo XClarity Administrator respectively.

Prism Web console

The Prism Web console provides a wide range of health checks on the cluster including VMs, performance, events, and alerts. It should be the primary user interface for monitoring a cluster of the Lenovo Converged HX Series appliances. To use Prism, refer to the following chapters in the *Prism Web Console Guide*:

- Alert and event monitoring
- Health management
- Performance monitoring
- Virtual machine management

To obtain the *Prism Web Console Guide*, see “Nutanix documentation” on page 5 .

Lenovo XClarity Administrator

Lenovo XClarity Administrator provides a wide range of hardware management functions and can verify alerts from nodes and update firmware. Note that Lenovo XClarity Administrator cannot install operating systems. To use Lenovo XClarity Administrator, refer to the following chapters in the *Lenovo XClarity Administrator User's Guide* for more information.

- Managing servers
- Updating firmware on managed endpoints
- Working with alerts
- Working with events

To obtain the *Lenovo XClarity Administrator User's Guide*, see “Lenovo documentation” on page 5 .

Appendix A. Getting help and technical assistance

If you need help, service, technical assistance, or more information about Lenovo products, you can find a wide variety of sources available from Lenovo to assist you.

Obtain additional information about Lenovo and Lenovo products, and determine what to do if you experience a problem with your Lenovo system or optional device.

Before you call

Before you call, ensure that you have taken these steps to try to solve the problem yourself.

If you believe that you require warranty service for your Lenovo product, the service technicians are able to assist you efficiently if you prepare before you call.

- Ensure that all cables are properly connected.
- Ensure that the system and any optional devices are turned on.
- Check for updated software, firmware, and operating-system device drivers for your Lenovo product. The Lenovo Warranty terms and conditions state that you, the owner of the Lenovo product, are responsible for maintaining and updating all software and firmware for the product (unless it is covered by an additional maintenance contract). Your service technician will request that you upgrade your software and firmware if the problem has a documented solution within a software upgrade.
- To check for information to help you solve the problem, go to <http://www.lenovo.com/support/converged-hx-series>
- Gather the following information to provide to the service technician. This data will help the service technician quickly provide a solution to your problem and ensure that you receive the level of service for which you might have contracted. Ensure that you mention that this is a Lenovo Converged HX Series appliance.
 - Hardware and Software Maintenance agreement contract numbers, if applicable
 - Machine type number (5462 for Lenovo Converged HX Series)
 - Model number
 - Serial number
 - Current system UEFI and firmware levels
 - Other pertinent information such as error messages and logs
- Submit an Electronic Service Request at http://www.ibm.com/support/entry/portal/Open_service_request to make the pertinent information available to the service technicians. As soon as you complete this action, the IBM service technicians can start working on your solution.

You can solve many problems without outside assistance by following the troubleshooting procedures that Lenovo provides in the online help or in the Lenovo product documentation. The Lenovo product documentation also describes the diagnostic tests that you can perform. The documents for most systems, operating systems, and programs contain troubleshooting procedures and explanations of error messages and error codes. If you suspect a software problem, see the documentation for the operating system or program.

Using the documentation

Information about your Lenovo system, preinstalled software (if any), or optional device is available in the product documentation. These documents can include printed documents, online documents, readme files, and help files. See Chapter 3 “Useful documentation” on page 5 for a list of documentation of the Lenovo Converged HX Series appliances.

See the troubleshooting information in your system documentation for instructions on how to use the diagnostic programs. The troubleshooting information or the diagnostic programs might tell you that you need additional or updated device drivers or other software. Lenovo maintains pages on the World Wide Web where you can get the latest technical information and download device drivers and updates. To access these pages, go to:

<http://www.lenovo.com/support/converged-hx-series>

Getting help and information from the World Wide Web

Lenovo provides up-to-date product and support information on the World Wide Web. For more information about the Lenovo Converged HX Series appliances, go to:

<http://www.lenovo.com/support/converged-hx-series>

Sending the diagnostic data

Note: This section includes references to IBM Web sites and information about obtaining service. IBM is Lenovo's preferred service provider for the Lenovo Converged HX Series Appliances.

You can use the Enhanced Customer Data Repository to send diagnostic data to IBM.

Before you send diagnostic data to IBM, read the terms of use at:

<http://www.ibm.com/de/support/ecurep/terms.html>

You can use any of the following methods to send diagnostic data:

- Standard upload: http://www.ibm.com/de/support/ecurep/send_http.html
- Standard upload with the system serial number: http://www.ecurep.ibm.com/app/upload_hw
- Secure upload: http://www.ibm.com/de/support/ecurep/send_http.html#secure
- Secure upload with the system serial number: https://www.ecurep.ibm.com/app/upload_hw

Creating a personalized support Web page

You can create a personalized support Web page by identifying Lenovo products that are of interest to you.

To create a personalized support Web page, go to:

<http://www.ibm.com/support/mynotifications>

From this personalized page, you can subscribe to weekly e-mail notifications about new technical documents, search for information and downloads, and access various administrative services.

Getting software service and support

Note: This section includes references to IBM Web sites and information about obtaining service. IBM is Lenovo's preferred service provider for the Lenovo Converged HX Series Appliances.

Through IBM Support Line, you can get telephone assistance, for a fee, with usage, configuration, and software problems with your Lenovo products. If it is determined to be a Nutanix software problem, it will be transferred to Nutanix for further problem determination and resolution.

For more information about the Support Line and other IBM services, go to:
<http://www.ibm.com/services>

For the IBM support telephone numbers, go to:
<http://www.ibm.com/planetwide>

In the U.S. and Canada, call 1-800-IBM-SERV (1-800-426-7378).

Getting hardware service and support

Note: This section includes references to IBM Web sites and information about obtaining service. IBM is Lenovo's preferred service provider for the Lenovo Converged HX Series Appliances.

IBM is Lenovo's preferred service provider for the System x, Flex System, and NeXtScale System products. You can receive hardware service from your Lenovo reseller or from IBM.

To locate a Lenovo-authorized reseller for warranty service, go to:
<http://www.ibm.com/partnerworld>

For the IBM support telephone numbers, go to:
<http://www.ibm.com/planetwide>

In the U.S. and Canada, call 1-800-IBM-SERV (1-800-426-7378).

In the U.S. and Canada, hardware service and support is available 24 hours a day, 7 days a week. In the U.K., these services are available Monday through Friday, from 9 a.m. to 6 p.m.

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