



ThinkAgile VX Series User Guide



Note

Before using this information and the product it supports, be sure to read and understand the safety information and the safety instructions, which are available at:

http://thinksystem.lenovofiles.com/help/index.jsp?topic=%2Fsafety_documentation%2Fpdf_files.html

In addition, be sure that you are familiar with the terms and conditions of the Lenovo warranty for your server, which can be found at:

<https://datacentersupport.lenovo.com/us/en/warrantylookup>

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Chapter 1. Lenovo ThinkAgile VX series for VMware

Lenovo® ThinkAgile™ VX series are VMware® vSAN software defined hyper-converged cluster solutions. The solutions consolidates software-defined compute, storage, and networking into one cluster to provide high-performance, cost-effective, and easily scalable virtualization.

About this library

- Solution overview
- Creating vSAN clusters
- Managing vSAN clusters
- Replacing hardware parts
- Updating firmware/software/drivers
- Troubleshooting vSAN clusters

Intended Audience

- Network planning engineers
- Software commissioning engineers
- Data configuration engineers
- On-site maintenance engineers
- System maintenance engineers

Chapter 2. What is new

Review this information to learn about new enhancements for ThinkAgile VX series solutions.

What is new (November, 2023)

Lenovo introduces a new version of the VX Deployer and delivers additional hardware support.

Additional hardware support

Product	CTO model	Machine type	Base ThinkSystem model
VX850 V3 Certified Node	7DDKCTO2WW	7DDK	SR850 V3

Note: Refer to the [ThinkAgile VX Best Recipe](#) for the latest supported code levels.

What is new (July, 2023)

Lenovo introduces a new version of the VX Deployer and delivers additional hardware support.

Additional hardware support

Product	CTO model	Machine type	Base ThinkSystem model
VX630 V3 Integrated System	7D6XCTO1WW	7D6X	SR630 V3
VX650 V3 Integrated System	7D6WCTO1WW	7D6W	SR650 V3
VX645 V3 Integrated System	7D9KCTO1WW	7D9K	SR645 V3
VX635 V3 Certified Node	7D9VCTO2WW	7D9V	SR635 V3
VX665 V3 Integrated System	7D9LCTO1WW	7D9L	SR665 V3
VX655 V3 Certified Node	7D9WCTO2WW	7D9W	SR655 V3

Note: Refer to the [ThinkAgile VX Best Recipe](#) for the latest supported code levels.

Software enhancements

The following updates have been made for Release 2.1.0:

- Updated software support.

The ThinkAgile VX Deployer allows you to install and set up one of the following configurations:

Note: You cannot mix versions of VMware vCenter Server and VMware ESXi.

- VMware vSAN 7
 - VMware vCenter Server 7.0 Update 3k, build 21290409
 - VMware ESXi 7.0 Update 3k, build 21313628
 - Lenovo XClarity Integrator (LXCI), version 8.1.0, build 681
- VMware vSAN 8
 - VMware vCenter Server 8.0 Update 1, build 21560480

- VMware ESXi 8.0 Update 1, build 21495797
- Lenovo XClarity Integrator (LXCI), version 8.1.0, build 681
- VLAN support.

The ThinkAgile VX Deployer now allows you to specify a unique VLAN ID (1 to 4094) for each of the ESXi Management, the vMotion, and the vSAN networks. The physical switches must be configured to add the specified VLAN IDs in trunk mode for all the ports connecting the physical NICs of the ESXi hosts.

- Export JSON from Excel.

You can use the Excel template to generate a .JSON configuration file to prepopulate the ThinkAgile VX Deployer. The Excel file does some validation when data are entered.

[ThinkAgile VX Export Configuration XLS](#)

What is new (June, 2023)

Lenovo delivers additional hardware support.

Additional hardware support

Enabled ThinkAgile SR650 V2 based models. (2U 2-Socket with 3rd Gen Intel Xeon scalable processors)

Product	CTO model	Machine type
VX650 V2-DPU Certified Node	7Z63CTO7WW	76Z3

Enabled ThinkAgile SR630 V3 based models. (1U 2-Socket with 4th Gen Intel Xeon scalable processors)

Product	CTO model	Machine type
VX630 V3 Certified Node	7D6XCTO2WW	7D6X

Enabled ThinkAgile SR650 V3 based models. (2U 2-Socket with 4th Gen Intel Xeon scalable processors)

Product	CTO model	Machine type
VX650 V3 Certified Node	7D6WCTO2WW	7D6W
VX650 V3-DPU Certified Node	7D6WCTO5WW	7D6W

Enabled ThinkAgile SR645 V3 based models. (1U 2-Socket with 4th Gen AMD EPYC processors)

Product	CTO model	Machine type
VX645 V3 Certified Node	7D9KCTO2WW	7D9K

Enabled ThinkAgile SR665 V3 based models. (2U 2-Socket with 4th Gen AMD EPYC processors)

Product	CTO model	Machine type
VX665 V3 Certified Node	7D9LCTO2WW	7D9L

What is new (February, 2023)

Lenovo introduces a new version of the VX Deployer, Release 2.0.1

Software enhancements

The following updates have been made for Release 2.0.1:

- Updated software support.

The ThinkAgile VX Deployer allows you to install and set up one of the following configurations:

Note: You cannot mix versions of VMware vCenter Server and VMware ESXi.

- VMware vSAN 7
 - VMware vCenter Server 7.0 Update 3h (7.0.3.01000), build 20395099
 - VMware ESXi 7.0 Update 3g, build 20328353
 - Lenovo XClarity Integrator (LXCI), version 8.0 FP1 659
- VMware vSAN 8
 - VMware vCenter Server 8.0 IA, build 20519528
 - VMware ESXi 8.0 IA, build 20513097
 - Lenovo XClarity Integrator (LXCI), version 8.0 FP1 659

- Enabled dual support for vSAN OSA and ESA.

VMware Express Storage Architecture (ESA) is a new offering from VMware, beginning with VMware vSAN 8. It is supported on systems having specific configurations, such as NVMe drives.

The VX Deployer automatically detects if the hosts in the cluster meet the requirements for ESA. If so, ESA is deployed. If the requirements are not met, the VX Deployer deploys VMware Original Storage Architecture (OSA).

For more information about the requirements for implementing ESA, see the following topic:

[“Implementing a vSAN storage architecture” on page 23](#)

- Single subnet support.

The ThinkAgile VX Deployer now supports environments where both ESXi management and XCC networks are on the same subnet.

- vLCM cluster image configuration.

If you choose to install Lenovo XClarity Integrator (LXCI), the ThinkAgile VX Deployer automatically configures a vLCM cluster image for the new vSAN clusters. Optionally, you can configure the VX Deployer to initiate cluster remediation at the end of the cluster deployment.

For more information about vLCM cluster remediation, see the following topic:

[Remediating hosts in a cluster](#)

Additional hardware support

- The VX Deployer is pre-loaded on additional ThinkAgile VX appliances:

Product	CTO model	Machine type
VX3720	7Y92CTO1WW	7Y92
VX3530-G	7Z63CTO2WW	7Z63
VX5530	7Z63CTO3WW	
VX7820	7Z13CTO1WW	7Z13

For a complete list of servers on which the ThinkAgile VX Deployer is installed, see the following topic:

What is new (July, 2022)

Lenovo introduces a new version of the VX Deployer, Release 1.2.1.

Software enhancements

The following updates have been made for Release 1.2.1:

- Updated software support.

The ThinkAgile VX Deployer installs and configures the following software:

- VMware vCenter Server 7.0 Update 3d (7.0.3.00500) Build 19480866
- VMware ESXi 7.0 Update 3d Build 19482537
- Lenovo XClarity Integrator (LXCI), version 7.6

What is new (April, 2022)

Lenovo introduces a new version of the VX Deployer, version 1.2.0.

Software enhancements

The following updates have been made for Release 1.2.0:

- Support for the use of a configuration file, which can be saved from one vSAN cluster deployment and used for another vSAN cluster deployment.

Note: Passwords are not stored in configuration files.

For more information about using a configuration file, see:

[“Working with configuration files” on page 51](#)

- Navigational enhancements to enable users to jump multiple pages backwards (instead of having to click the Back button multiple times).

For this release, this feature is considered to be a technical preview. It is provided “as is.” For more information about issues related to this function, see:

[“Known issues” on page 17](#)

- Updated software support.

The ThinkAgile VX Deployer installs and configures the following software:

- VMware vCenter Server 7.0 Update 3c (7.0.3.00300) Build 19234570
- VMware ESXi 7.0 Update 3 Build 19193900
- Lenovo XClarity Integrator (LXCI), version 7.6

Note: LXCI 7.6 is not available for expanding an existing cluster.

- Updates to the vSAN/vMotion configuration so that you can use the VX Deployer to deploy multiple vSAN clusters without having to reconfigure your infrastructure.
 - On the Networking page, you must provide the IP address and subnet mask for the following networks:
 - ESXi management network
 - ESXi vSAN network
 - ESXi vMotion network
 - XCC management network

- Each network must be on a different subnet.
- A gateway address is required for the ESXi management network; it is optional for all other networks.

What is new (December, 2021)

Lenovo introduces a new version of the VX Deployer, version 1.1.0.

Software enhancements

Released a new version of the VX Deployer to support adding a ThinkAgile VX node to an existing vSAN cluster.

For details, see: [“Adding a node to an existing cluster” on page 48.](#)

What is new (November, 2021)

Lenovo delivers additional hardware support.

Additional hardware support

Enabled ThinkAgile SR645-based models. (1U 2-Socket with AMD processors)

Product	CTO model	Machine type
VX2375 Integrated System	7D82CTO1WW	7D82
VX3375 Integrated System	7D82CTO2WW	
VX7375-N Integrated System	7D82CTO3WW	
VX3376 Certified Node	7D82CTO4WW	

What is new (August, 2021)

Lenovo delivered significant enhancements to the ThinkAgile VX Deployer.

Additional hardware support

Enabled ThinkAgile SR630 V2-based models. (1U 2-Socket with Intel Xeon processors)

Product	CTO model	Machine type
VX2330 Appliance	7Z62CTO1WW	7Z62
VX3330 Appliance	7Z62CTO2WW	7Z62
VX7330 Appliance	7Z62CTO3WW	7Z62
VX3331 Node	7Z62CTO4WW	7Z62

Enabled ThinkAgile SR650 V2-based models. (2U 2-Socket with 3rd Gen Intel Xeon scalable processors)

Product	CTO model	Machine type
VX3530-G	7Z63CTO2WW	7Z63
VX5530 Appliance	7Z63CTO3WW	7Z63

VX7530 Appliance	7Z63CTO4WW	7Z63
VX7531 Node	7Z63CTO5WW	7Z63

Software enhancements

Released an enhanced version of the VX Deployer, which can be used to simplify the vSAN cluster deployment process. The VX Deployer is now pre-loaded on supported ThinkAgile VX systems.

For details, see https://pubs.lenovo.com/thinkagile-vx/cluster_deployment.html.

What is new (March, 2021)

Lenovo added support for new hardware and introduced the ThinkAgile VX Deployer.

Additional hardware support

Enabled ThinkAgile SR665 based models. (2U 2-Socket with AMD EYPC 7003 series CPUs)

Product	CTO model	Machine type
VX5575 Integrated System	7D43CTO1WW	7D43
VX7576 Certified Node	7D43CTO2WW	7D43
VX7575 Integrated System	7D43CTO3WW	7D43
VX3575-G Integrated System (GPU-rich)	7D43CTO4WW	7D43

Software enhancements

Released the new VX Deployer (previously called VX installer) for simplifying the vSAN cluster deployment process.

For details, see https://pubs.lenovo.com/thinkagile-vx/cluster_deployment.html.

Chapter 3. Solution overview

VX series models

The ThinkAgile VX series includes Appliances, Integrated Systems, and Certified Nodes.

For a list of VX series models on which the ThinkAgile VX Deployer is pre-loaded, see the following topic:

https://pubs.lenovo.com/thinkagile-vx/cluster_deployment_with_vx_deployer.html

ThinkAgile VX series Appliances/Integrated Systems

For a seamless customer experience, the ThinkAgile VX series appliances/integrated systems also include white glove Lenovo deployment services and ThinkAgile VX series Advantage Single Point of Support.

- Fully validated and integrated Lenovo hardware and firmware.
- Pre-loaded VMware software for ready deployment, VMware software licenses are pre-bundled.
- ThinkAgile VX series Advantage Single Point of Support for quick 24/7 problem reporting and resolution.
- Lenovo deployment services.

ThinkAgile VX Series Certified Nodes

For customers who do not require prebundled VMware software licenses or deployment services, ThinkAgile VX series offers another fully validated and certified choice, ThinkAgile VX series certified nodes.

- Fully validated and integrated Lenovo hardware and firmware, certified with VMware software.
- Preloaded VMware software for ready deployment, VMware software licenses need to be obtained separately.
- ThinkAgile VX series Advantage Single Point of Support for quick 24/7 problem reporting and resolution.
- Optional Lenovo deployment services.

Base ThinkSystem system	Model name	Machine type/ Model	SysInfoProdIdent- ifier (VPD)	Form factor
ThinkSystem SD530 For more information, refer to https://pubs.lenovo.com/sd530/	VX3720 Appliance	7Y92CTO1WW	ThinkAgile VX3720 Appliance	2U4N
	VX 2U4N Appliance Enclosure	7Y91CTO1WW	ThinkAgile VX Appliance Enc.	2U4N
	VX 2U4N Certified Node	7Y92CTO2WW	ThinkAgile VX 2U4N Node	2U4N
	VX 2U4N Certified Enclosure	7Y91CTO2WW	ThinkAgile VX Certified Enc.	2U4N
ThinkSystem SR250 For more information, refer to https://pubs.lenovo.com/sr250/	VX1320 Appliance	7Z58CTO1WW	ThinkAgile VX1320 Appliance	1U rack
	VX 1SE Certified Node	7Z58CTO2WW	ThinkAgile VX 1SE Cert Node	1U rack
ThinkSystem SR630 For more information, refer to https://pubs.lenovo.com/sr630/	VX3320 Appliance	7Y93CTO1WW	ThinkAgile VX3320 Appliance	1U rack

Base ThinkSystem system	Model name	Machine type/ Model	SysInfoProIden- tifier (VPD)	Form factor
	VX2320 Appliance	7Y93CTO2WW	ThinkAgile VX2320 Appliance	1U rack
	VX7320-N Appliance (NVMe-rich)	7Y93CTO3WW	ThinkAgile VX7320N Appliance	1U rack
	VX 1U Certified Node	7Y93CTO4WW	ThinkAgile VX 1U Node	1U rack
ThinkSystem SR630 V2 For more information, refer to https://pubs.lenovo.com/sr630-v2/	VX2330 Appliance	7Z62CTO1WW	ThinkAgile VX2330 Appliance	1U rack
	VX3330 Appliance	7Z62CTO2WW	ThinkAgile VX3330 Appliance	1U rack
	VX7330-N Appliance	7Z62CTO3WW	ThinkAgile VX7330-N Appliance	1U rack
	VX3331 Certified Node	7Z62CTO4WW	ThinkAgile VX3331 Node	1U rack
ThinkSystem SR630 V3 For more information, refer to https://pubs.lenovo.com/sr630-v3/	VX630 V3 Integrated System	7D6XCTO1WW	ThinkAgile VX630 V3 IS	1U rack
	VX630 V3 Certified Node	7D6XCTO2WW	ThinkAgile VX630 V3 CN	1U rack
ThinkSystem SR635 V3 For more information, refer to https://pubs.lenovo.com/sr635-v3/	VX635 V3 Certified Node	7D9VCTO2WW	ThinkAgile VX635 V3 CN	1U rack
ThinkSystem SR645 For more information, refer to https://pubs.lenovo.com/sr645/	VX2375 Integrated System	7D82CTO1WW	ThinkAgile VX2375 IS	1U rack
	VX3375 Integrated System	7D82CTO2WW	ThinkAgile VX3375 IS	1U rack
	VX7375-N Integrated System	7D82CTO3WW	ThinkAgile VX7375-N IS	1U rack
	VX3376 Certified Node	7D82CTO4WW	ThinkAgile VX3376 Node	1U rack
ThinkSystem SR645 V3 For more information, refer to https://pubs.lenovo.com/sr645-v3/	VX645 V3 Integrated System	7D9KCTO1WW	ThinkAgile VX645 V3 IS	1U rack
	VX645 V3 Certified Node	7D9KCTO2WW	ThinkAgile VX645 V3 CN	1U rack
ThinkSystem SR650 For more information, refer to https://pubs.lenovo.com/sr650/	VX3520-G Appliance (GPU-rich)	7Y94CTO3WW	ThinkAgile VX3520G Appliance	2U rack
	VX5520 Appliance	7Y94CTO1WW	ThinkAgile VX5520 Appliance	2U rack
	VX7520 Appliance	7Y94CTO2WW	ThinkAgile VX7520 Appliance	2U rack
	VX 2U Certified Node	7Y94CTO5WW	ThinkAgile VX 2U Node	2U rack

Base ThinkSystem system	Model name	Machine type/ Model	SysInfoProdIdent- ifier (VPD)	Form factor
	VX 2U Certified Node for SAP HANA	7Y94CTO6WW	ThinkAgile VX 2U Node	1U rack
ThinkSystem SR650 V2 For more information, refer to https://pubs.lenovo.com/sr650-v2/	VX3530-G Appliance	7Z63CTO2WW	ThinkAgile VX3530-G Appliance	2U rack
	VX5530 Appliance	7Z63CTO3WW	ThinkAgile VX5530 Appliance	2U rack
	VX7530 Appliance	7Z63CTO4WW	ThinkAgile VX7530 Appliance	2U rack
	VX7531 Certified Node	7Z63CTO5WW	ThinkAgile VX7531 Node	2U rack
	VX650 V2-DPU Certified Node	7Z63CTO7WW	ThinkAgile VX650 V2-DPU CN	2U rack
ThinkSystem SR650 V3 For more information, refer to https://pubs.lenovo.com/sr650-v3/	VX650 V3 Integrated System	7D6WCTO1WW	ThinkAgile VX650 V3 IS	2U rack
	VX650 V3 Certified Node	7D6WCTO2WW	ThinkAgile VX650 V3 CN	2U rack
	VX650 V3-DPU Certified Node	7D6WCTO5WW	ThinkAgile VX650 V3-DPU CN	2U rack
ThinkSystem SR655 V3 For more information, refer to https://pubs.lenovo.com/sr655-v3/	VX655 V3 Certified Node	7D9WCTO2WW	ThinkAgile VX655 V3 CN	2U rack
ThinkSystem SR665 For more information, refer to https://pubs.lenovo.com/sr665/	VX5575 Integrated System	7D43CTO1WW	ThinkAgile VX5575 IS	2U rack
	VX7575 Integrated System	7D43CTO3WW	ThinkAgile VX7575 IS	2U rack
	VX3575-G Integrated System (GPU-rich)	7D43CTO4WW	ThinkAgile VX3575-G IS	2U rack
	VX7576 Certified Node	7D43CTO2WW	ThinkAgile VX7576 Node	2U rack
ThinkSystem SR665 V3 For more information, refer to https://pubs.lenovo.com/sr665-v3/	VX665 V3 Integrated System	7D9LCTO1WW	ThinkAgile VX665 V3 IS	2U rack
	VX665 V3 Certified Node	7D9LCTO2WW	ThinkAgile VX665 V3 CN	2U rack
ThinkSystem SR850 V3 For more information, refer to https://pubs.lenovo.com/sr850-v3/	VX850 V3 Certified Node	7DDKCTO2WW	ThinkAgile VX850 V3 CN	2U rack
ThinkSystem SR950 For more information, refer to https://pubs.lenovo.com/sr950/	VX7820 Appliance	7Z13CTO1WW	ThinkAgile VX7820 Appliance	4U rack
	VX 4U Certified Node	7Z12CTO1WW	ThinkAgile VX 4U Node	4U rack

Base ThinkSystem system	Model name	Machine type/ Model	SysInfoProdIdent- ifier (VPD)	Form factor
	VX 4U Certified Node for SAP HANA	7Z12CTO2WW	ThinkAgile VX 4U Node	4U rack

Software offerings

Use this topic to view all available software components and the license options in a solution product.

- [“Lenovo software” on page 12](#)
- [“VMware software” on page 12](#)
- [“License considerations” on page 12](#)

Lenovo software

Software	Type	Function description
Lenovo ThinkAgile VX deployer	GUI-based deployment wizard	Simplifies and automates cluster deployment and configuration processes.
Lenovo XClarity Integrator for vCenter Server	A plugin program for VMware vCenter Server	Integrates Lenovo hardware management utilities to VMware vCenter Server management tool.
Lenovo XClarity Controller	Baseboard management controller	Manages devices of a single appliance and connects the appliance to the management layer.
Lenovo Capacity Planner	Capacity planning tool	Plans the power supply capacity based on server configurations.
Lenovo Energy Manager	Power management tool	Monitors and manages cluster power consumption.

VMware software

Software	Function description
Lenovo-customized vSphere ESXi	Virtualizes, allocates, and manages compute, storage, and network resources of the physical hosts.
VMware vCenter Server	Provides centralized management utilities for virtual machines and ESXi hosts.
VSphere Web Client	Connects remoter users to the vCenter Server platform.
VMware vSAN	Aggregates local devices of a host cluster and creates a single storage pool shared across all hosts in the Virtual SAN cluster.
vSphere Update Manager (VUM)	Keeps the ESXi hosts and firmware the latest. (Supported on vCenter Server 6 or earlier)
vSphere Lifecycle Manager (vLCM)	Keeps the ESXi hosts and firmware the latest. (Supported on vCenter Server 7 or later)

License considerations

The ThinkAgile VX series provide different license options catering to your needs. You can use the default feature set of both Lenovo and VMware software, upgrade your software to an enhanced set, extend your license term, or reassign existing licenses to nodes or clusters as required.

For detailed licensing information, perform the following steps:

1. Go to <https://lenovopress.com/> and choose **SERVERS → ThinkAgile → VX Series for VMware**.
2. Locate and double-click the product name.
3. View the part number and feature code of each license option in the **Software** section.

Product specifications

Use the methods in this section to view the features and specifications of your models.

One product guide is available for each model on Lenovo Press website. Perform the following steps to view the specification details of your product.

1. Go to <https://lenovopress.com/> and choose **SERVERS > ThinkAgile > VX Series for VMware**. All ThinkAgile VX series relevant resources appear in the page.
2. Locate and double-click the product name. The product guide page opens.
3. View the specification details in the **Specifications** section.

Service engagement

Use this topic to understand the Lenovo professional service team engagement in the pre-deployment and post-deployment phases.

Lenovo professional service team performs a specific set of activities to help ensure proper deployment of ThinkAgile VX series products. Additional predeployment services are also available.

The onsite deployment and configuration activities that Lenovo professional will perform include the following:

- Review the deployment worksheet that was completed during the predeployment engagement.
- Verify that the customer network is ready.
- Verify the as-shipped product configuration.
- Connect the switches to the customer network.
- Perform basic network configuration to integrate the rack into the customer environment.
- Set up Lenovo XClarity Administrator management of the product.
- Verify and update the product to the Best Recipe firmware profile.
- Create credentials for BMC access.
- Deploy the vSAN cluster.
- Register the ThinkAgile VX series product with VMware.
- Verify the product environment, to ensure a successful handover.
- Provide a skill transfer to the customer. This includes basic operational tasks and Support processes.

Lenovo professional team will provide information about the configured system, for your records.

The following items are not in the scope of the initial deployment engagement. Many of these can be handled via other available professional service offerings.

- Installation or configuration of server applications.
- Complete administrative or operations training.
- Data migration from existing storage systems and VMware environments.

- Installation assistance for nonstandard hardware components or components not purchased from Lenovo. Note that this activity can affect the support for the product.

Chapter 4. vSAN cluster deployment

The following table describes the process that can be used to deploy a ThinkAgile VX cluster. If you are deploying ThinkAgile VX appliances that have ESXi, version 7.0 Update 2 or later, you can use the ThinkAgile VX Deployer. Otherwise, you can manually deploy the cluster.

Offerings	Model	Deployment method	View document
VX appliances	<ul style="list-style-type: none"> • VX2320 • VX2330 • VX3320 • VX3330 • VX3520-G • VX3530-G • VX3575-G IS • VX3720 • VX5520 • VX5530 • VX5575 IS • VX7320-N • VX7330-N • VX7520 • VX7530 • VX7575 IS • VX7820 • VX630 V3 IS • VX650 V3 IS • VX645 V3 IS • VX665 V3 IS 	Using the ThinkAgile VX deployer	HTML pages PDF
	All other models	Manual deployment	HTML pages PDF
VX Certified Nodes	All models		

Note: For assistance in the deployment of a vSAN cluster on ThinkAgile VX systems, contact Lenovo Support.

Deploying a vSAN cluster with the VX Deployer

The ThinkAgile VX Deployer is a GUI-based wizard that guides you through the deployment of ThinkAgile VX systems within vSAN clusters. It installs ESXi on one or more target hosts and deploys the hosts to a vSAN cluster.

The VX Deployer installs and configures the following software:

- VMware ESXi. Installed on each of the hosts in the vSAN cluster.

Release 2.1.0 of the VX Deployer supports the installation and setup of one of the following versions:

- VMware ESXi 7.0 Update 3k, build 21313628
- VMware ESXi 8.0 Update 1, build 21495797
- VMware vCenter. Manages the vSAN cluster.

Release 2.1.0 of the VX Deployer supports the installation and setup of one of the following versions:

Note: If you choose to install ESXi 7.0 on the hosts, you must choose to install vCenter Server 7.0 as well. You cannot mix ESXi 8.0 with vCenter 7.0.

- VMware vCenter Server 7.0 Update 3k, build 21290409
- VMware vCenter Server 8.0 Update 1, build 21560480
- Lenovo XClarity Integrator (LXCI). Used with VMware Lifecycle Manager (vLCM) to manage firmware and software updates for ThinkAgile VX systems.

Release 2.1.0 of the VX Deployer installs and configures LXCI 8.1.0, build 681.

The ThinkAgile VX Deployer is pre-loaded on the following ThinkAgile VX systems.

- VX2320
- VX2330
- VX3320
- VX3330
- VX3520-G
- VX3530-G
- VX3575-G IS
- VX3720
- VX5520
- VX5530
- VX5575 IS
- VX7320-N
- VX7330-N
- VX7520
- VX7530
- VX7575 IS
- VX7820
- VX630 V3 IS
- VX650 V3 IS
- VX645 V3 IS
- VX665 V3 IS

Note: For assistance in the deployment of a vSAN cluster on these or other ThinkAgile VX systems, contact Lenovo Support.

Complete the following steps to deploy a ThinkAgile VX series vSAN cluster using the VX Deployer.

Task	Description	For more information
Prepare for the deployment	<ol style="list-style-type: none"> 1. Review disk configuration considerations. 2. Fill out the deployment worksheet. 3. Install the hardware in a rack. 4. Cable the network. 5. Configure DNS entries for the cluster. 	“Preparing for the deployment” on page 20
Deploy the cluster	To deploy a new cluster: <ol style="list-style-type: none"> 1. Set up the VX Deployer. 2. Run the VX Deployer to deploy the vSAN cluster. 3. Validate the cluster deployment. 	“Deploying the vSAN cluster” on page 35
	To add a node to an existing cluster: <ol style="list-style-type: none"> 1. Run the VX Deployer to deploy the vSAN cluster. 	“Adding a node to an existing cluster” on page 48
Update the vSAN cluster	<ol style="list-style-type: none"> 1. Update LXCI. 2. Update firmware, device drivers, and ESXi. 	Chapter 5 “Updating a vSAN cluster” on page 63 Upgrading LXCI for VMware vCenter ThinkAgile VX Best Recipe Note: On the Best Recipe page, click the appropriate Best Recipe release. Then, click Solution Stack Guidelines . From that page, click the Cluster remediation nodes using vLCM document for instructions about updating firmware, device drivers, and ESXi.

If you need to open a Support ticket with Lenovo, see [Appendix A “Getting help” on page 73](#).

Known issues

Review the known issues related to the ThinkAgile VX Deployer.

Version 2.1.0

The ThinkAgile VX Deployer, Version 2.0.1, has the following known issues:

- When the deployment of a vSAN cluster is complete, the **Download Log** button might not work. Instead, click the help icon (i) and then click **Download Debug Logs** to download the deployment log.
- When you initiate a deployment, you might briefly see the message **No Data can be found** as the deployment begins. This message has no impact on the deployment process.
- When specifying a cluster location (**6. Cluster location**), the **Organization Name** and **Region Name** cannot be the same. In addition, the name used for the **Organization Name** cannot be a previously used **Region Name**, or vice-versa.

Version 2.0.1

The ThinkAgile VX Deployer, Version 2.0.1, has the following known issues:

- A deployment consists of several steps, which are listed on the Deploy Cluster page. Multiple steps might be running simultaneously. When any of those steps complete, the Elapsed Time is reset to 00:00.
- You can use a configuration file to add hosts to an existing cluster. If you choose to do so, the host names for the new hosts will be generated by the Deployer, but they might not be consistent with the other hosts

in the cluster. After adding the hosts, make sure that you validate the host names on the Host Settings page. From that page, you can modify the host names if desired.

- When attempting to deploy a new vSAN cluster, you can choose to follow the progress of the ESXi deployment by viewing the XCC console. If you chose vSphere 7 as the installation version, during the installation of ESXi on a host, you might see in the XCC console a message erroneously stating that VMware ESXi 7.0.3c is being installed; the VX Deployer will actually install VMware ESXi 7.0.3g.
- When adding a node to an existing cluster, the Global ESXi Settings page states that you can specify the ESXi version. However, when you add a node to an existing cluster, the ESXi version to be installed on the node is based on the version of ESXi running on the nodes in the existing cluster. Therefore, you can specify the ESXi credentials, but you do not have the option to specify the ESXi version.
- If the VX Deployer VM is shut down during the deployment process, the VM might be left in an indeterminate state. If the VM is inadvertently shut down, you will need to attempt the deployment again to reset the state of the VM. It will not succeed, but the VX Deployer will invoke a cleanup script. Then, you can attempt the deployment again.
- On the LXCI Settings page, the XCC Network VLAN ID might be displayed as 1 by default. Make sure that you specify the correct VLAN ID.
- On the General Networking page, you can specify a custom subnet mask for each of the networks (ESXi management, vSAN, vMotion, and XCC). The following subnet masks, if specified for a network, will cause issues with the deployment:
 - 255.255.255.254 (/31) – specifies a subnet mask for 0 hosts
 - 255.255.255.252 (/30) – specifies a subnet mask for 2 hosts

The VX Deployer requires that you specify a minimum of 3 hosts for a vSAN cluster.

Version 1.2.1

The ThinkAgile VX Deployer, Version 1.2.1, has the following known issues:

- When configuring the VX Deployer, the XCC IP addresses and the ESXi Management IP addresses must be on different subnets. The deployment will not work if they are on the same subnet; intermittent failures can occur during ESXi deployment.
- If you attempt to move from the Review page back to an earlier page in the VX Deployer using the left navigation pane, it is possible that the Next button will no longer be available (it will be greyed out). At that point, the workaround is to stop and restart the VX Deployer virtual machine.
- The fully qualified domain name (FQDN) that you specify for the NTP host name cannot use more than three labels (two dots). If the NTP host name contains more than three labels, specify the IP address instead.
- Specifying both primary and secondary DNS servers on the Network Services page will result in an error on the Network Settings per Physical Host page. The workaround is to specify only a primary DNS server (do not specify a secondary DNS server).

Version 1.2.0

The ThinkAgile VX Deployer, Version 1.2.0, has the following known issues:

- When configuring the VX Deployer, the XCC IP addresses and the ESXi Management IP addresses must be on different subnets. The deployment will not work if they are on the same subnet; intermittent failures can occur during ESXi deployment.
- If you attempt to move from the Review page back to an earlier page in the VX Deployer using the left navigation pane, it is possible that the Next button will no longer be available (it will be greyed out). At that point, the workaround is to stop and restart the VX Deployer virtual machine.

- The fully qualified domain name (FQDN) that you specify for the NTP host name cannot use more than three labels (two dots). If the NTP host name contains more than three labels, specify the IP address instead.
- Specifying both primary and secondary DNS servers on the Network Services page will result in an error on the Network Settings per Physical Host page. The workaround is to specify only a primary DNS server (do not specify a secondary DNS server).

Version 1.1.0

The ThinkAgile VX Deployer, Version 1.1.0, has the following known issues:

- When adding nodes to an existing vSAN cluster, LXCI will not automatically discover and manage those nodes. You will need to manually discover the nodes through vCenter to add them to LXCI. For information about discovering nodes and adding them to LXCI, see the following topic:

[“Configuring LXCI” on page 42](#)

In addition, you will need to upgrade LXCI to version 7.4 if you vSAN cluster contains any of the following systems:

- ThinkAgile VX2375 IS
- ThinkAgile VX3375 IS
- ThinkAgile VX7375-N IS

For more information about upgrading LXCI, see the following topic:

[“Upgrading LXCI” on page 42](#)

- To utilize the full functionality of vLCM, you must enable the VMware Customer Experience Improvement Program (CEIP) in the vSphere client. For information about enabling CEIP, see the following topic:
<https://docs.vmware.com/en/VMware-vSphere/7.0/com.vmware.vsphere.vcenterhost.doc/GUID-F97CD334-CD4A-4592-B7B1-43A49CF74F39.html>
- If you have used the VX Deployer to deploy a vSAN cluster and you are using a shared VLAN for vSAN traffic, attempting to use the VX Deployer to deploy a second vSAN cluster will not succeed. To resolve this issue, choose one of these options:
 - Update the VLAN IP addresses in the existing vSAN cluster to use a different range.
 - Implement a separate VLAN for vSAN traffic on the new vSAN cluster being deployed.
- When adding a new vSAN cluster to an existing vCenter instance, you are required to choose a name for the cluster that is unique within the datacenter. If you specify a cluster name that already exists, the Deployer will **not** generate an error message. However, the deployment will not be successful.
- You must wait for a deployment to complete before attempting to deploy another vSAN cluster using the VX Deployer. If you attempt to start a new deployment while another deployment is running, the new deployment will stop immediately.
- When configuring the VX Deployer, the XCC IP addresses and the ESXi Management IP addresses must be on different subnets. The deployment will not work if they are on the same subnet; intermittent failures can occur during ESXi deployment.
- If ESXi host names are entered in mixed case or uppercase, the deployment will fail, even if the DNS entries are entered in mixed case or uppercase. Host names must be entered in lowercase to meet VMware requirements.
- When adding nodes to an existing cluster, the **General Networking** page indicates that the vMotion and vSAN fields are optional, but that is not necessarily true. If you are using the ESXi management network for vMotion and vSAN traffic, you do not need to add a gateway address. However, if the vMotion and vSAN traffic travel over a separate VMK adapter, you must provide a gateway address.

- On the **Network Settings Per Physical Host** page, IP addresses for discovered hosts might not display correctly, but a message is displayed indicating that the ESXi host names were validated successfully. In this case, you can continue with the deployment.
- The boot script for configuring the networking within the VX Deployer will not work properly in the web console of the vSphere client. Use the VMware Remote Console or ESXi Console to configure networking for the Deployer VM at boot time.
- Intermittent DNS resolution issues have been encountered which cause the 'Install ESXi on hosts' step to fail with one or more nodes not becoming available after installation. Networking connection failures are reported in the /var/log/weasel.log on the ESXi host. If you encounter this situation, restart the VX Deployer and attempt deployment again.

Version 1.0.0

The ThinkAgile VX Deployer, Version 1.0.0, has the following known issues:

- Certain special characters cannot be used in XCC, vCenter, ESXi, or LXCI passwords. These special characters include:
 - Backslash
 - Single quotes
 - Double quotes
- Occasionally, changing the XCC password might not work, even if the password is a valid password. The work around for this issue is to ensure that the password is valid and attempt to change it again.

Preparing for the deployment

Prepare for the vSAN deployment by reviewing security considerations, disk considerations, filling in the deployment worksheet, installing the ThinkAgile VX appliances in a rack, cabling the appliances to the network, and adding entries to the DNS server.

Security considerations

Review the following best practices to ensure that the VX cluster deployment environment is secured and that any potential security exposures are avoided.

Network best practices

- The VX Deployer appliance is a virtual machine that is preloaded on VX Appliance systems. When cabling the systems, you should create a dedicated management network fabric which will be used by the VX Deployer to access the xClarity Controller (XCC) modules on the systems. In addition, the ESXi management fabric should be isolated into its own VLAN, and only authorized management applications should have access to this VLAN.
- Preferably, the ThinkAgile VX systems being deployed should also be isolated into their own network switches, separate from any other systems on the network. This will help isolate any security incidents to only the VX systems in the network.

For more information about networking, see the following topic:

[“Cabling the network” on page 31](#)

VX Deployer best practices

The VX Deployer appliance is preloaded on the ThinkAgile VX systems. When configuring the appliance for network access, only configure the two network interfaces that are required for the operation:

- **External network** - this interface is used to access ESXi, vCenter, and the xClarity Integrator appliance (which are deployed on the VX cluster during the installation). If these management appliances do not

need to be accessible from the campus (data center) network, do not configure the campus network VLAN tag on the portgroup on your vSwitch that connects the VX Deployer. This way, the VX Deployer cannot send any traffic over into the campus (data center) network. Correspondingly, users will not be able to access the VX Deployer from the campus network. Only local administrators having access to the isolated management VLAN will be able to access the appliance.

- **XCC network** - this is the network that connects the VX Deployer to the XCC modules on the hosts. This network is also used by the xClarity Integrator appliance for its operations, including systems monitoring, lifecycle management, and vSAN topology view. You should also isolate this traffic into its own VLAN, protected from other access points on the network.

Credentials

Any passwords configured during the deployment, such as vCenter accounts, ESXi accounts, and XCC credentials, will be removed from the VX Deployer database upon successful deployment of the cluster. However, if a deployment fails, there is a possibility some of these artifacts are still stored in the VX Deployer database. Although there is no direct threat of any information exposure, you should **shutdown the VX Deployer appliance** when you are not actively deploying a cluster. No services running in the VX Deployer are required to be running continuously for any cluster operations. Therefore, it is not necessary to keep the appliance running all the time.

Note: In case a cluster deployment failed and you need to contact Lenovo support for assistance, they might require additional ports to be permitted temporarily. Follow all instructions from the support engineer at that point.

Minimum vCenter user permissions

If you are adding a new vSAN cluster to a vCenter instance, or if you are adding a node to an existing vSAN cluster, the VX Deployer requires that the user account used to authenticate with the vCenter instance has the minimum permission levels.

To create a user account with the minimum permissions from a vSphere client:

1. Add the user to the **SystemConfiguration.Administrators** single sign-on group. Click **Menu → Administration → Single Sign On → Users and Groups → Groups**.
2. Create a new role. Click **Menu → Administration → Access Control → Roles**.

At a minimum, the role must have the following permissions:

- Alarms
 - Acknowledge alarm
 - Create alarm
 - Set alarm status
- dvPort group
 - Create
 - Modify
- Distributed switch
 - Create
 - Host operation
 - Modify
- Datacenter
 - Create datacenter
- Datastore
 - Allocate space
 - Configure datastore
- Extension

- Register extension
- Unregister extension
- Update extension
- Global
 - LogEvent
- HealthUpdateProvider
 - Register
 - Unregister
 - Update
- Host
 - Configuration
 - Maintenance
 - Network configuration
 - Storage partition configuration
 - Inventory
 - Add host to cluster
 - Create cluster
 - Modify cluster
 - Remove host
- vSphere Tagging
 - Assign or Unassign vSphere Tag
 - Assign or Unassign vSphere Tag on Object
 - Create vSphere Tag
 - Create vSphere Tag Category
- Network
 - Assign network
 - Configure
- Resource
 - Assign virtual machine to resource pool
 - Migrate powered on virtual machine
 - Migrate powered off virtual machine
- Sessions.Validate session
- vApp
 - Import
- Virtual machine
 - Change configuration
 - Add new disk
 - Advanced configuration
 - Modify device settings
 - Edit inventory
 - Create new
 - Guest Operations
 - Guest Operation Program Execution
 - Guest Operation Queries
 - Interaction
 - Power on
- vSAN
 - Cluster

- ShallowRekey

3. Assign the role to the user at the vCenter level. Click **Menu → Hosts and Clusters → <vCenter-instance> → Permissions**.

Click the **Propagate to children** checkbox.

Implementing a vSAN storage architecture

Beginning with VMware vSAN 8, VMware introduced a new storage architecture called Express Storage Architecture (ESA), which is optimized for newer hardware.

The VX Deployer automatically detects if the hosts in the cluster meet the requirements for ESA. If so, ESA is deployed. If the requirements are not met, the VX Deployer deploys VMware Original Storage Architecture (OSA).

To configure vSAN ESA, the hosts in the vSAN cluster must meet the following requirements:

- You must install vSphere and vCenter 8
- All servers in the cluster must support vSAN ESA. For Release 2.0.1 of the VX Deployer, the following systems are supported:
 - VX3530-G
 - VX7330-N
 - VX7530 IS
 - VX7575 IS
- Each server must meet the following specifications:
 - A minimum of 512 GB RAM
 - A minimum of 32 CPU cores
 - A minimum of 2 NICs, each having a minimum of 25 Gbps
 - Between 4 and 24 disks
 - A supported NVMe disk model:
 - SSDPF2KE016T1O. ThinkSystem 2.5" U.2 P5620 1.6TB Mixed Use NVMe PCIe 4.0 x4 HS SSD
 - SSDPF2KE032T1O. ThinkSystem 2.5" U.2 P5620 3.2TB Mixed Use NVMe PCIe 4.0 x4 HS SSD
 - SSDPF2KE064T1O. ThinkSystem 2.5" U.2 P5620 6.4TB Mixed Use NVMe PCIe 4.0 x4 HS SSD
 - MTFDKCB3T2TFS-1BC15ABYY. ThinkSystem 2.5" U.3 7450 Max 3.2TB Mixed Use NVMe PCIe 4.0 x4 HS SSD
 - MTFDKCC6T4TFS-1BC15ABYY. ThinkSystem 2.5" U.3 7450 Max 6.4TB Mixed Use NVMe PCIe 4.0 x4 HS SSD

For a comparison between VMware OSA and ESA, see the following topic:

[Comparing the Original Storage Architecture to the vSAN 8 Express Storage Architecture](#)

Disk configuration considerations (vSAN OSA)

Each node in a vSAN Original Storage Architecture (OSA) cluster contributes one or more disk groups to the cluster. A disk group contains one cache disk and one or more capacity disks. Best practice is to include a minimum of two capacity disks per disk group for performance and data availability. Review the disk details before configuring the disks using the VX Deployer.

Note: All ThinkAgile VX nodes in the cluster must use the same disk configuration.

Form factor	Product	vSAN ESA ready ¹	Maximum disk configuration	Maximum number of cache disks (vSAN OSA)	Maximum number of capacity disks (vSAN OSA)
1U	VX2320		4	1	1 disk group: 2, 3
1U	VX2330		4	2	1 disk group: 2, 3 2 disk groups: 2
1U	VX3320		10	2	1 disk group: 2, 3, 4, 5, 6, 7 2 disk groups: 4, 6, 8 3 disk groups: 6
1U	VX3330		12	4	1 disk group: 2, 3, 4, 5, 6, 7 2 disk groups: 4, 6, 8, 10 3 disk groups: 6, 9 4 disk groups: 8
1U	VX7320-N		6	2	1 disk group: 2, 3 2 disk groups: 4
1U	VX7330-N	Yes	12	4	1 disk group: 2, 3, 4, 5, 6, 7 2 disk groups: 4, 6, 8, 10 3 disk groups: 6, 9 4 disk groups: 8
1U	VX630 V3		12	4	1 disk group: 2, 3, 4, 5, 6, 7 2 disk groups: 4, 6, 8, 10 3 disk groups: 6, 9 4 disk groups: 8
1U	VX635 V3		12	4	1 disk group: 2, 3, 4, 5, 6, 7 2 disk groups: 4, 6, 8, 10 3 disk groups: 6, 9 4 disk groups: 8
1U	VX645 V3		12	4	1 disk group: 2, 3, 4, 5, 6, 7 2 disk groups: 4, 6, 8, 10 3 disk groups: 6, 9 4 disk groups: 8
2U	VX3520-G		16	4	1 disk group: 2, 3, 4, 5, 6, 7 2 disk groups: 4, 6, 8, 10, 12, 14 3 disk groups: 6, 9, 12 4 disk groups: 8, 12
2U	VX3530-G		24	5	1 disk group: 2, 3, 4, 5, 6, 7 2 disk groups: 4, 6, 8, 10, 12, 14 3 disk groups: 6, 9, 12, 15, 18, 21 4 disk groups: 8, 12, 16, 20 5 disk groups: 10, 15
2U	VX3575-G		24	5	1 disk group: 2, 3, 4, 5, 6, 7 2 disk groups: 4, 6, 8, 10, 12, 14 3 disk groups: 6, 9, 12, 15, 18, 21 4 disk groups: 8, 12, 16, 20 5 disk groups: 10, 15

Form factor	Product	vSAN ESA ready ¹	Maximum disk configuration	Maximum number of cache disks (vSAN OSA)	Maximum number of capacity disks (vSAN OSA)
2U	VX5520		14	2	1 disk group: 2, 3, 4, 5, 6, 7 2 disk groups: 4, 6, 8, 10, 12 3 disk groups: 6, 9 4 disk groups: 8
2U	VX5575		16	5	1 disk group: 2, 3, 4, 5, 6, 7 2 disk groups: 4, 6, 8, 10, 12, 14 3 disk groups: 6, 9, 12 4 disk groups: 8, 12 5 disk groups: 10
2U	VX7520		24	4	1 disk group: 2, 3, 4, 5, 6, 7 2 disk groups: 4, 6, 8, 10, 12, 14 3 disk groups: 6, 9, 12, 15, 18, 21 4 disk groups: 8, 12, 16, 20
2U	VX7530	Yes	40	5	1 disk group: 2, 3, 4, 5, 6, 7 2 disk groups: 4, 6, 8, 10, 12, 14 3 disk groups: 6, 9, 12, 15, 18, 21 4 disk groups: 8, 12, 16, 20, 24, 28 5 disk groups: 10, 15, 20, 25, 30, 35
2U	VX7575	Yes	35	5	1 disk group: 2, 3, 4, 5, 6, 7 2 disk groups: 4, 6, 8, 10, 12, 14 3 disk groups: 6, 9, 12, 15, 18, 21 4 disk groups: 8, 12, 16, 20, 24, 28 5 disk groups: 10, 15, 20, 25, 30
2U	VX5530		16	5	1 disk group: 2, 3, 4, 5, 6, 7 2 disk groups: 4, 6, 8, 10, 12, 14 3 disk groups: 6, 9, 12 4 disk groups: 8, 12 5 disk groups: 10
2U	VX650 V3		32	5	1 disk group: 2, 3, 4, 5, 6, 7 2 disk groups: 4, 6, 8, 10, 12, 14 3 disk groups: 6, 9, 12, 15, 18, 21 4 disk groups: 8, 12, 16, 20, 24, 28 5 disk groups: 10, 15, 20, 25
2U	VX655 V3		32	5	1 disk group: 2, 3, 4, 5, 6, 7 2 disk groups: 4, 6, 8, 10, 12, 14 3 disk groups: 6, 9, 12, 15, 18, 21 4 disk groups: 8, 12, 16, 20, 24, 28 5 disk groups: 10, 15, 20, 25

Form factor	Product	vSAN ESA ready ¹	Maximum disk configuration	Maximum number of cache disks (vSAN OSA)	Maximum number of capacity disks (vSAN OSA)
2U	VX665 V3		32	5	1 disk group: 2, 3, 4, 5, 6, 7 2 disk groups: 4, 6, 8, 10, 12, 14 3 disk groups: 6, 9, 12, 15, 18, 21 4 disk groups: 8, 12, 16, 20, 24, 28 5 disk groups: 10, 15, 20, 25
2U / 4N	VX3720		6	2	1 disk group: 2, 3 2 disk groups: 4
4U	VX7820		24	5	1 disk group: 2, 3, 4, 5, 6, 7 2 disk groups: 4, 6, 8, 10, 12, 14 3 disk groups: 6, 9, 12, 15, 18, 21 4 disk groups: 8, 12, 16, 20 5 disk groups: 10, 15

Notes:

1. If the hosts in the cluster are vSAN ESA ready (Yes is listed in the vSAN ESA Ready column), the VX Deployer automatically deploys VMware ESA if all hosts in the cluster meet the requirements for ESA. For more information, see the following topic:

[“Implementing a vSAN storage architecture” on page 23](#)

Deployment configuration worksheet

Use this worksheet to record values for the settings that you will need to deploy the vSAN cluster.

Record values for the following sections:

- [“VX Deployer” on page 26](#)
- [“XClarity controller \(BMC\) and ESXi” on page 27](#)
- [“Global Network Services Settings” on page 28](#)
- [“vSAN implementation” on page 28](#)

ThinkAgile VX deployer

The following settings are required for the VX Deployer.

Property	Description	Example	Value
Deployer Hostname (without DNS suffix)	Host name portion of the Deployer appliance VM.	vxdeployer	
DNS domain name	Domain name suffix	prod.acme.com	
External Network IP	IPv4 address of the external network interface of the appliance. This is the IP address you will use to access the VX Deployer user interface. This is also the interface used by the VX deployer to access vCenter and the ESXi hosts that are being installed.	10.0.10.5	

External Network Net mask	Net mask for the IPv4 address of the external interface.	255.255.255.0	
External Network Gateway	Gateway IPv4 address for the external interface.	10.0.10.1	
XCC Network IP	IPv4 address of the internal network interface used to access the XCC modules.	192.168.10.5	
XCC Network Net mask	Net mask for the IPv4 address of the XCC interface.	255.255.255.0	
DNS Server #1	Primary DNS server IP address.	10.0.10.100	
DNS Server #2	Secondary DNS server IP address (optional)	10.0.10.101	

Note: The XCC Network IP address and XCC Network net mask are not necessary when the XCC (BMC) and ESXi hosts are in the same network.

XClarity Controller (BMC) and ESXi

The following settings are required for the XClarity Controller (BMC) and ESXi hosts.

Properties	Appliance 1	Appliance 2	Appliance 3	Appliance 4
Serial number				
XClarity Controller (BMC)				
Management IP address				
Management net mask				
Management gateway				
Default credentials				
Desired credentials				
ESXi				
Host name				
IP address				
Net mask				
Gateway				
ESXi VLAN				
vSAN IP address				
vSAN net mask				
vSAN gateway				
vSAN VLAN				
vMotion IP address				
vMotion netmask				

vMotion gateway				
vMotion vLAN				

Notes:

- The information on service labels are helpful for support technicians to identify your products and provide faster services. After receiving the product, peel the labels away and store them in a safe place.
 - The machine type and serial number are on the ID label of each product.
 - The BMC network access label is attached on the top side of the pull-out information tab.
- The new credentials should be the same for all hosts.

Global Network

Deployer Page Number	Name of the Deployer page	Type	Values
4	Network Services	Primary and secondary (optional) DNS servers IP addresses	
		Primary and secondary (optional) NTP servers IP addresses	
5	New or Existing vCenter	vCenter hostname (if installing a new vCenter) during deployment	Valid FQDN name
5	New or Existing vCenter	vCenter hostname (if installing a new vSAN cluster in an existing vCenter)	Valid FQDN name
7	Cluster Hierarchy	Valid Region and Site Name Strings	<< Could be any user specified string >>

vSAN cluster implementation

Virtual Appliances (VMs)				
	IPv4 IP address	Host name	User ID	Password
XClarity Integrator (optional)				
Infrastructure				
Domain				
DNS/NTP				
Default Gateway				

Installing hardware into rack

Install the ThinkAgile VX appliances in a rack. See the following table for instructions on installing the appliances.

Note: See [Solution overview](#) to determine the ThinkSystem server model on which your ThinkAgile VX appliances are based.

Phase	Task	Description
1	Unpack the server and install any separately shipped components/peripherals into the server.	<ul style="list-style-type: none"> • SR250-based models https://pubs.lenovo.com/sr250/install_server_hardware_options.html • SR630-based models https://pubs.lenovo.com/sr630/install_server_hardware_options.html • SR630 V2-based models https://pubs.lenovo.com/sr630-v2/install_server_hardware_options.html • SR630 V3-based models https://pubs.lenovo.com/sr630-v3/hardware_replacement_procedures.html • SR635 V3-based models https://pubs.lenovo.com/sr635-v3/hardware_replacement_procedures.html • SR645-based models https://pubs.lenovo.com/sr645/install_server_hardware_options.html • SR645 V3-based models https://pubs.lenovo.com/sr645-v3/hardware_replacement_procedures.html • SR650-based models https://pubs.lenovo.com/sr650/install_server_hardware_options.html • SR650 V2-based models https://pubs.lenovo.com/sr650-v2/install_server_hardware_options.html • SR650 V3-based models https://pubs.lenovo.com/sr650-v3/hardware_replacement_procedures.html • SR655 V3-based models https://pubs.lenovo.com/sr655-v3/hardware_replacement_procedures.html • SR665-based models https://pubs.lenovo.com/sr665/install_server_hardware_options.html • SR665 V3-based models https://pubs.lenovo.com/sr665-v3/hardware_replacement_procedures.html • SR850 V3-based models https://pubs.lenovo.com/sr850-v3/hardware_replacement_procedures.html • SR950-based models https://pubs.lenovo.com/sr950/install_server_hardware_options.html • SD530-based models https://pubs.lenovo.com/sd530/install_server_hardware_options.html

2	Connect required internal cables if applicable.	<ul style="list-style-type: none"> • SR250-based models https://pubs.lenovo.com/sr250/internal_cable_routing.html • SR630-based models https://pubs.lenovo.com/sr630/internal_cable_routing.html • SR630 V2-based models https://pubs.lenovo.com/sr630-v2/internal_cable_routing.html • SR630 V3-based models https://pubs.lenovo.com/sr630-v3/internal_cable_routing.html • SR635 V3-based models https://pubs.lenovo.com/sr635-v3/internal_cable_routing.html • SR645-based models https://pubs.lenovo.com/sr645/internal_cable_routing.html • SR645 V3-based models https://pubs.lenovo.com/sr645-v3/internal_cable_routing.html • SR650-based models https://pubs.lenovo.com/sr650/internal_cable_routing.html • SR650 V2-based models https://pubs.lenovo.com/sr650-v2/internal_cable_routing.html • SR650 V3-based models https://pubs.lenovo.com/sr650-v3/internal_cable_routing.html • SR655 V3-based models https://pubs.lenovo.com/sr655-v3/internal_cable_routing.html • SR665-based models https://pubs.lenovo.com/sr665/internal_cable_routing.html • SR665 V3-based models https://pubs.lenovo.com/sr665-v3/internal_cable_routing.html • SR850 V3-based models https://pubs.lenovo.com/sr850-v3/internal_cable_routing.html • SR950-based models https://pubs.lenovo.com/sr950/internal_cable_routing.html • SD530-based models https://pubs.lenovo.com/sd530/internal_cable_routing.html
3	Install the server in the rack.	<ul style="list-style-type: none"> • SR250-based models https://pubs.lenovo.com/sr250/SR250_rack_installation_guide.pdf • SR630-based models https://pubs.lenovo.com/sr630/sr630_rack_install_guide.zip • SR630 V2-based models https://pubs.lenovo.com/sr630-v2/sr630_v2_rack_install_guide.zip • SR630 V3-based models https://serveroption.lenovo.com/rail_options/rail_options_rack_servers/ • SR635 V3-based models https://serveroption.lenovo.com/rail_options/rail_options_rack_servers/ • SR645-based models https://serveroption.lenovo.com/rail_options/rail_options_rack_servers/ • SR645 V3-based models https://serveroption.lenovo.com/rail_options/rail_options_rack_servers/ • SR650-based models https://pubs.lenovo.com/sr650/sr650_rack_install_guide.zip • SR650 V2-based models https://pubs.lenovo.com/sr650/SR650V2_v2_rack_install_guide.zip • SR650 V3-based models

	<ul style="list-style-type: none"> • https://serveroption.lenovo.com/rail_options/rail_options Rack_servers/ • SR655 V3-based models https://serveroption.lenovo.com/rail_options/rail_options Rack_servers/ • SR665-based models https://pubs.lenovo.com/sr665/sr665 Rack_install_guide.zip • SR665 V3-based models https://serveroption.lenovo.com/rail_options/rail_options Rack_servers/ • SR850 V3-based models https://serveroption.lenovo.com/rail_options/rail_options Rack_servers/ • SR950-based models https://pubs.lenovo.com/sr950/sr950 Rack_instructions.pdf • SD530-based models https://pubs.lenovo.com/sd530/install_server_hardware_options.html
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Cabling the network

Review the following information to understand how to cable the ThinkAgile VX appliances to the network.

Logical network design for deployment

- [Figure 1 “Logical network design - cluster cabling perspective” on page 31](#) shows the logical network architecture for the various components in the vSAN cluster deployment.
- [Figure 3 “Physical network cabling for VX cluster deployment” on page 33](#) shows details about physical cabling.

Note: When XCC networks are in the same network as ESXi, the XCC interface should be connected directly to the ESXi network.

The VX Deployer Appliance is a virtual machine that can run on the VMware vSphere ESXi hypervisor. In the diagram, the **Management ESXi host** is a designated system on which various management appliances run, including Lenovo xClarity and vCenter Server Appliance (VCSA).

In a preloaded ThinkAgile VX appliance, the VX Deployer virtual appliance is preloaded on the VX appliance. In this case, the Deployer will be running on one of the VX appliances and the cluster deployment will be performed from there.

From the cluster cabling perspective, the system on which the VX Deployer is running needs to be wired for both ESXi management and XCC management networks as shown in this diagram.

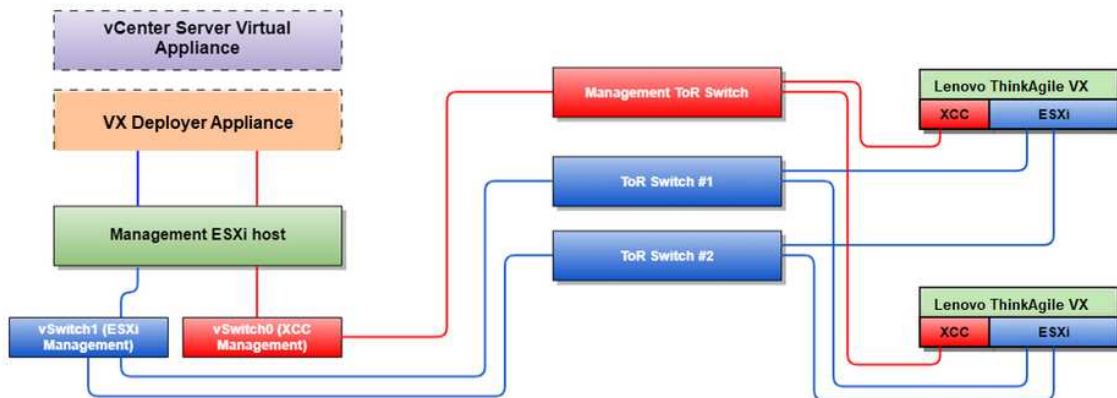


Figure 1. Logical network design - cluster cabling perspective

Figure 2 “Logical network architecture for cluster deployment operations” on page 32 shows the logical network architecture from the cluster operations perspective:

- Each VX server has dedicated connections to the onboard 10 Gbps Ethernet ports used for in-band management (ESXi management, vCenter, etc.).
- The XClarity Controller (XCC) interfaces have dedicated connections for out-of-band management access.
- The VX Deployer virtual appliance needs access to the ESXi management and XCC management networks via the virtual switches. Therefore, the respective port groups on the switch should be configured.

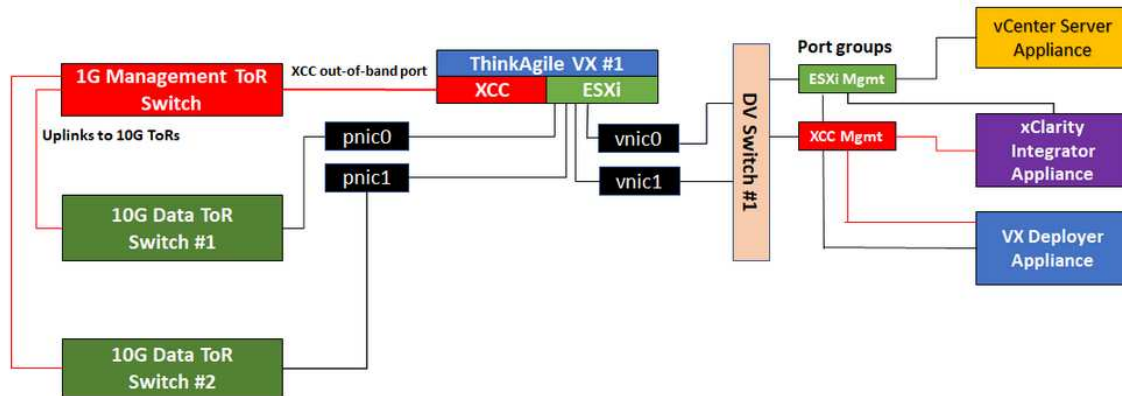


Figure 2. Logical network architecture for cluster deployment operations

Physical network cabling

Figure 3 “Physical network cabling for VX cluster deployment” on page 33 shows how to physically cable the ThinkAgile VX appliances to the network.

Note: In Figure 3 “Physical network cabling for VX cluster deployment” on page 33, the respective network VLAN IDs shown are examples only. You can define your own VLAN IDs on the switches for the different traffic types.

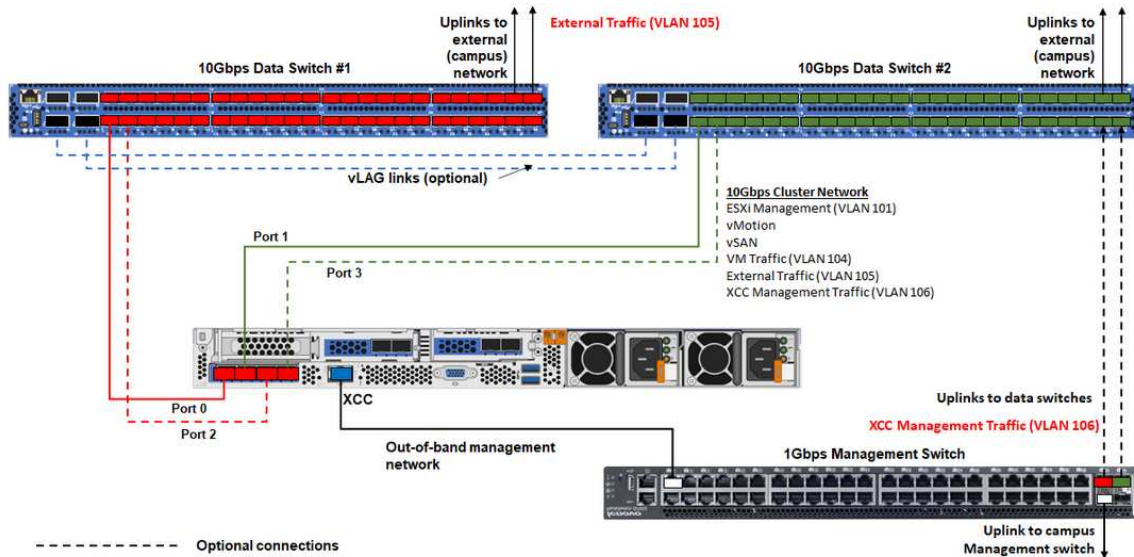


Figure 3. Physical network cabling for VX cluster deployment

Table 1. Network cabling diagram

Network type	Required/optional	From	To
In-band management network: <ul style="list-style-type: none"> • Communication with ESXi hosts • Communication between the vCenter server appliance and ESXi hosts • vSAN storage traffic • vMotion (virtual machine migration) traffic • iSCSI storage traffic (if present) 	Required	Port 0 on NIC	10 Gbps Data Switch #1
	Required	Port 1 on NIC	10 Gbps Data Switch #2
	Optional	Port 2 on NIC	10 Gbps Data Switch #1
	Optional	Port 3 on NIC	10 Gbps Data Switch #2
Out-of-band management network: <ul style="list-style-type: none"> • Initial server discovery on the network via the SLP protocol • Server power control • LED management • Inventory • Events and alerts • BMC logs • Firmware updates • OS provisioning via remote media mount 	Required	BMC network connector	1 Gbps Management Switch
Data or user network	Required	10 Gbps Data Switch #1 and #2	External network

Notes:

- **On Out-of-band network**

- The out-of-band management network does not need to be on a dedicated physical network. It can be included as part of a larger management network.
 - The ThinkAgile VX Deployer, Lenovo XClarity Integrator (LXCI) must be able to access this network to communicate with the XCC modules.
 - During the initial cluster deployment and subsequent operations, the XCC interfaces should be accessible over this network to the VX Deployer as well as to xClarity Integrator (LXCI), xClarity Administrator (LXCA), etc., management software.
 - If a VLAN is used for the out-of-band network, the native VLAN must be configured on the physical switches for the out-of-band ESXi network ports.
- **On In-band network**
 - If a VLAN is used for the in-band network, the native VLAN must be configured on the physical switches for the in-band ESXi network ports.
 - A maximum transmission unit (MTU) of 9000 must be configured on the physical switches for the in-band ESXi network ports.
- **On network redundancy**
 - Active-standby redundancy mode:
When only 2 ports (ports 0 to 1) are connected to the 2 top-of-rack switches, you can configure the redundancy mode as active-standby mode. If the primary connection fails or the primary switch fails, the connection fails over.
 - Active-active redundancy mode:
When 4 ports (ports 0 to 3) are connected to the 2 top-of-rack switches, you can configure the redundancy mode as active-active mode. If one connection fails, the other connections are still active. Also, loads are balanced across the ports.
 - Optionally, some switches might also support the virtual link aggregation (vLAG) protocol or equivalent, which connects the two top-of-rack switches via dedicated links and makes the switches appear as a single logical switch to the downstream hosts. In this case, the two connections going to the switches from the host can be configured as active-active links so that you can get load-balancing across the ports as well as a 20 Gb aggregate bandwidth.

Distributed vSwitches

The VX Deployer will create Distributed vSwitches when installing the VX/vSAN cluster.

The distributed vSwitches essentially form a logical switch that spans all hosts in the cluster. The physical ports on each host become logical uplink ports on the distributed vSwitch. As opposed to a *standard* vSwitch, distributed vSwitches provide advanced configuration options, such as traffic policy, link aggregation (LACP), and traffic shaping.

The number of created distributed switches is determined by the number of physical ports on each host that are connected to top-of-rack switches:

- If only two ports on each host are connected, a single distributed vSwitch will be created to carry all types of traffic, including ESXi management, vMotion, internal VM, XCC management, vSAN storage traffic, and external network traffic.
- If four ports are connected, two distributed vSwitches will be created. The vSAN storage traffic will be carried on the second distributed vSwitch.

[Figure 4 “vSAN distributed vSwitch configuration” on page 35](#) shows the logical design of the distributed vSwitches that will be created by the VX Deployer.

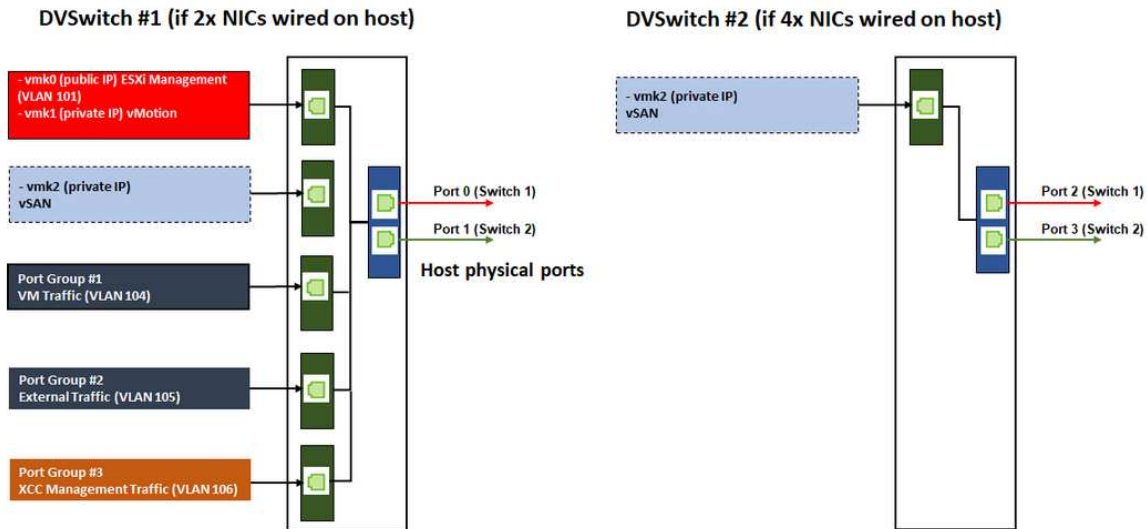


Figure 4. vSAN distributed vSwitch configuration

Configuring DNS entries

Make sure that you have configured the hostnames and IP addresses for the nodes in the cluster with the DNS server.

Minimally, you will need to configure the following DNS entries:

- Each of the ESXi hosts that will be included in the vSAN cluster
- The ThinkAgile VX Deployer VM
- Optionally, the Lenovo XClarity Integrator (LXCI) appliance. You need to configure a DNS entry for LXCI if you are using LXCI and vSphere Lifecycle Manager (vCLM) to manage the hardware from vCenter.
- Optionally, vCSA if you are planning to install vSphere as part of the vSAN cluster.

Deploying the vSAN cluster

To deploy the vSAN cluster using the VX Deployer, set up the VX Deployer, and then run the VX Deployer. When the deployment is complete, validate that the deployment was successful.

Setting up the VX Deployer

Before running the VX Deployer to deploy a vSAN cluster, make sure that you have cabled the VX appliances to the network.

For information about cabling the VX appliances, see the following topic:

[“Cabling the network” on page 31](#)

Complete the following steps to set up the VX Deployer:

1. Configure the networking for the XClarity Controller on the host where the VX Deployer appliance will be run. All ThinkAgile VX appliances have the same image preinstalled. Therefore, you can choose any of the hosts that will be deployed in the vSAN cluster.
 - a. Power on the host.

When the host is powered on, the XClarity Controller (XCC) will attempt to obtain an IP address from DHCP if one is set up in your network. If you do not have DHCP set up in your network, you will need to set up a KVM console to connect to the XCC.

- b. Log in to the XCC.

For more information about connecting to the XCC, see the following topic:

[Accessing the XCC web interface](#)

- c. From the XCC, launch a remote console to the ESXi host.

For more information about working with the remote console, see the following topic:

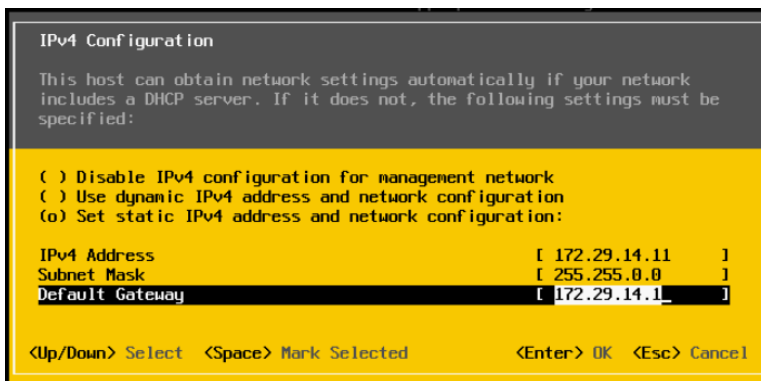
[Remote Console](#)

- d. From the ESXi welcome page, log in using the default password (P@ssw0rd).

Important: Do not change the factory password for ESXi at this time. It must be the same password for all hosts in the vSAN cluster when you start the VX Deployer. You will change the ESXi password for the ESXi host during the deployment process.

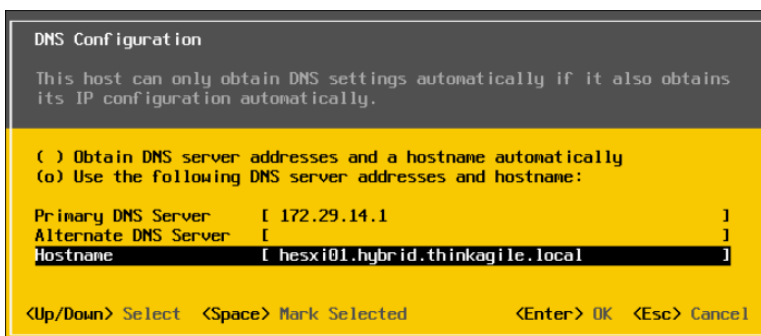
- e. Click **Configure Management Network** to begin the network configuration.
- f. Click the first IPv4 interface and provide an IP address, subnet mask, and default gateway and click **Enter**. The best practice is to configure a static IP address for the host.

Important: This host will be included in the vSAN cluster. Therefore, make sure that you configure an IP address that can be used as the final IP address for this host.



- g. Click **DNS configuration** to specify the primary DNS server (and optionally, the secondary DNS server). In addition, you need to specify a fully qualified host name for the host.

Note: The hostname and IP address for this host must already be configured in the DNS server.



- h. Click **Custom DNS Suffixes** to specify the suffix that can be used by all nodes in the cluster.
- i. Click **Test Management Network** to make sure that the DNS server and default gateway are valid, and that the hostname can be reached.

2. Configure the networking for the ESXi host to set up the port groups that will be used by the VX Deployer.
 - a. From a browser, log in to web interface for the ESXi host. The VX Deployer appliance is listed under Virtual Machines.

Note: If you do not see the VX Deployer appliance listed under Virtual Machines, contact Lenovo Support.

- b. Click **Networking** to set up the port groups.
- c. Create an XCC Management port group. If a VLAN is configured for the XCC Management network, make sure that you specify the VLAN ID.

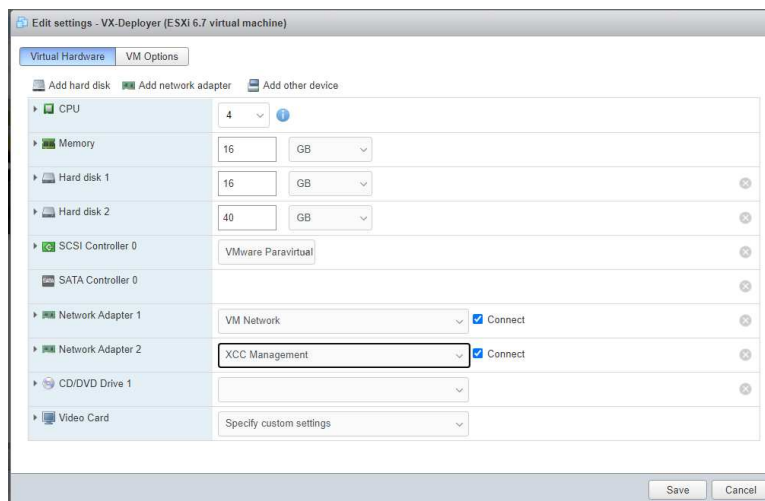
Note: The XCC Management network is required only while using the VX Deployer for the initial deployment of the vSAN cluster. That network can be removed after the deployment is completed, if desired.

Name	XCC Management
VLAN ID	104
Virtual switch	vSwitch0
▶ Security	Click to expand
▶ NIC teaming	Click to expand
▶ Traffic shaping	Click to expand

- d. Create the VM Network port group, which is used for ESXi access.

3. Configure the networking for the ThinkAgile VX Deployer.

- a. From the ESXi web interface, edit the settings for the ThinkAgile VX Deployer VM.
- b. Make sure that the VX Deployer is connected to the port groups:
 - The first interface (Network Adapter 1) should be connected to the VM Network port group.
 - The second interface (Network Adapter 2) should be connected to the XCC Management port group.



4. Power on the VX Deployer VM.

- a. During the VM boot process, you are prompted to configure the VX Deployer networking (**Configure network**).

Note: This networking configuration step is for the VX Deployer VM, which is not the same as the ESXi networking configuration.

```

VX-Deployer
---- Current configuration ----
Platform:          centos, release 7
Hostname:          vxpreload.hybrid.thinkagile.local
External IP:       172.29.14.5
XCC network IP:   10.249.104.106
Gateway:          172.29.14.1
DNS:              172.29.14.1

ThinkAgile VX Deployer available at: https://172.29.14.5/deployer

... Press any key to go back to the configuration menu ...

-----
ThinkAgile VX Deployer configuration menu
-----
Choose an option:
  1) Display current configuration
  2) Configure network
  x) Exit and go to normal startup
Response: _

```

Property name	Description
Hostname	Hostname to be configured on the VX Deployer appliance. This is just the host part of the name, without the domain name suffix. This name should be resolvable by DNS.
DNS Domain Name	DNS domain suffix of the VX Deployer hostname.
External IP Type	Type of the IP address assignment - static or dhcp. If dhcp is selected, the IP address will be assigned via a DHCP server.
External Network IP	IPv4 address of the external network interface of the appliance. This is the IP address used to access the VX Deployer user interface. This is also the interface for the deployer to access vCenter and ESXi hosts that are being installed.
External Network Netmask	Netmask for the IPv4 address of the external interface.
External Network Gateway	Gateway IPv4 address for the external interface.
XCC IP Type	Type of the IP address assignment - static or dhcp. If dhcp is selected, the IP address will be assigned via a DHCP server. Notes: <ul style="list-style-type: none"> Specify the XCC IP type, address, and netmask only if the XCC Management network is different from the ESXi Management network. Leave the XCC fields blank if: <ul style="list-style-type: none"> The XCC and ESXi management networks are on the same subnet. The XCC and ESXi management networks are on different subnets, you have configured routing between the two networks, and you do not want to use separate IP addresses for the XCC network.
XCC Network IP	IPv4 address of the internal network interface used to access the XCC modules.
XCC Network Netmask	Netmask for the IPv4 address of the XCC interface.
DNS Server #1	DNS server IP address.
DNS Server #2	DNS server IP address #2 (optional).

- b. After confirming the settings, click “y” to save them. The URL for the VX Deployer is displayed.
- c. From your browser, navigate to the URL for the VX Deployer to begin the deployment process.

Running the VX Deployer

Use the VX Deployer to install the vSAN cluster. You can install a new vCenter instance as well, or you can use an existing vCenter instance to manage the cluster.

Before you begin

Before you begin to deploy the vSAN cluster, make sure that you have completed the following activities:

1. Install all ThinkAgile VX appliances. See [“Install hardware into rack” on page 28](#).
2. Cable the networks. See [“Cabling network” on page 31](#).
3. Set up the VX Deployer. See [“Setting up the VX Deployer” on page 35](#).

Procedure

After navigating to the URL for the VX Deployer, step through the VX Deployer wizard:

Important: If you need to return to a previous page in the Deployer, make sure that you click the page in the left navigation or that you use the **Back** button within the VX Deployer. Do **not** use the Back button on the browser, which will return you to the first page of the Deployer (all data entered in the VX Deployer will be lost).

1. On the Getting Started page, specify the deployment process to be used. Click **Install new cluster** and specify the name of your organization.
 - Click **Install new cluster** to proceed through the deployment process.
 - Click **Use Configuration File** to choose a configuration file that you saved when you created a new vSAN cluster previously.

For more information about using a configuration file, see:

[“Working with configuration files” on page 51](#)

Click **Next** to continue.

2. On the License Agreements page, you can view the Lenovo license, open-source information, and the VMware EULA.
 - Click **I have read and agree to the License Agreements**.
 - Click **Your data will be handled in accordance with Lenovo’s Privacy Statement**.

Click **Next** to continue.

3. On the Add Hosts to Cluster, select the hosts that will make up the vSAN cluster.

The VX Deployer uses SLP discovery to find the ThinkAgile VX host that are in your network. If you do not see an expected host, make sure that the host is cabled to the network correctly, and click **Rediscover**.

4. On the Network Services page, specify a primary DNS server and NTP server. Optionally, you can specify a secondary DNS server and NTP server.

Click **Next** to continue.

5. On the New or Existing vCenter page, specify details about the vCenter instance to be used to manage the vSAN cluster, such as the fully qualified domain name for the vCenter instance and the Single Sign-On (SSO) domain name. In addition, specify the passwords for the vSphere administrator ID and the vCenter root ID.

Note: If you are adding the vSAN cluster to an existing vCenter instance, the user account used to authenticate with the vCenter instance must include a minimum set of permissions. For a list of the required permissions, see the following topic:

[“Minimum vCenter user permissions” on page 21](#)

Click **Next** to continue.

6. On the Cluster Location page, specify the location of your vSAN cluster (vCenter Datacenter, vSAN Cluster, Organization name, Region name, and Site name).

Click **Next** to continue.

7. Optionally, install Lenovo XClarity Integrator (LXCI) and enable it as the hardware support manager for vSphere Lifecycle Manager (vLCM). If you choose to install LXCI, provide the host name, XCC IP address, and XCC VLAN ID. In addition, you will need to provide the password for the LXCI admin account.

Note: If you configured the VX Deployer to not use an XCC IP address, the XCC IP address and the XCC VLAN ID fields are not available; you will not be required to provide this information.

If you install LXCI, the vSAN cluster will be configured to use a vSphere Lifecycle Manager (vLCM) image. For more information about vLCM, see the following topic:

[Introducing vSphere Lifecycle Management \(vLCM\)](#)

Click **Start vLCM Cluster Remediation** to verify that all hosts are compliant with the vLCM image. After the cluster has been configured, LXCI triggers the cluster remediation process. You can monitor the remediation task from the vSphere client. For more information about vLCM cluster remediation, see the following topic:

[Remediating a cluster against a single image](#)

Note: If you decide not to install LXCI during the deployment, you can choose to install it later. After installation, you will need to register LXCI with vCenter and discover all vSAN nodes from LXCI. For more information, see [“Configuring LXCI” on page 42](#).

Click **Next** to continue.

8. On the Global ESXi Settings page, choose the version and level of ESXi to be installed on the nodes, and specify the root password.

The ThinkAgile VX Deployer allows you to install and set up one of the following configurations:

Note: You cannot mix versions of VMware vCenter Server and VMware ESXi.

- VMware vSAN 7
 - VMware vCenter Server 7.0 Update 3k, build 21290409
 - VMware ESXi 7.0 Update 3k, build 21313628
 - Lenovo XClarity Integrator (LXCI), version 8.1.0, build 681
- VMware vSAN 8
 - VMware vCenter Server 8.0 Update 1, build 21560480
 - VMware ESXi 8.0 Update 1, build 21495797
 - Lenovo XClarity Integrator (LXCI), version 8.1.0, build 681

Click **Next** to continue.

9. On the General Networking page, provide the networking information (subnet and gateway) for the ESXi management network, the ESXi vSAN network, the ESXi vMotion network, and the XCC management

network. For the ESXi management network, include the hostname prefix that will be applied to each of the nodes in the cluster.

Provide the following network information:

- The ESXi management subnet mask. You can specify the hostname prefix that will be applied to each of the new nodes. Make sure that you validate the name for each new host on the Host Settings page. The gateway is required.
- Specify a valid vSAN subnet mask. The gateway is optional.
- Specify a valid vMotion subnet mask. The gateway is optional.
- Specify a valid XCC management subnet mask if the XCC management network is different than the ESXi management network. The gateway is optional.

Notes:

- If you specified an XCC network IP address when you configured networking during the setup of the VX Deployer, you must specify the XCC management subnet mask. For more information about setting up the VX Deployer, see:

[“Setting up the VX Deployer” on page 35](#)

- Specify a unique VLAN ID (1 to 4094) for each of the ESXi Management, the vMotion, and the vSAN networks. The physical switches must be configured to add the specified VLAN IDs in trunk mode for all the ports connecting the physical NICs of the ESXi hosts.

For more information about configuring the physical switches, see the following topic: [VLAN Configuration](#)

Click **Next** to continue. The VX Deployer validates the network settings.

10. For each host listed on the Network Settings per Physical Host page, specify the IP address for the vSAN, vMotion, and XCC networks. Validate the ESXi host name and IP addresses for each of the nodes in the cluster. If changes are required, you must click **Revalidate**.

Note: A numeric identifier is automatically added to the host name prefix that you specified on the General Networking page. The identifier starts at “01.” Modify the host name as needed to make sure that the host name is unique within the cluster.

Click **Next** to continue.

11. On the XCC Credentials page, specify a common password that will be used to access the XCC USERID user account on each VX appliance. In addition, you must specify the existing password for each VX appliance in the cluster.

The VX Deployer requires a common password that can be used to log in to the XCC for each VX appliance. However, after the vSAN cluster has been deployed, you can change the XCC passwords to be unique for each appliance, if desired.

Click **Next**. The VX Deployer validates the current XCC USERID passwords and configures the common XCC USERID password.

12. On the Review page, validate the information that you specified.

All existing data on the nodes in the cluster will be deleted when you deploy the new cluster.

From the Review page, you can perform the following actions:

- Click **Export Configuration** to export the details of this deployment into a .JSON file. You can then use that file to pre-populate the VX Deployer for another deployment. For more information about configuration files, see:

[“Working with configuration files” on page 51](#)

- Click **Deploy Cluster** to proceed with the vSAN cluster deployment.

13. Deploy the cluster. The status of the deployment process is displayed.

Note: This process might take some time, depending on the network and the number of nodes being deployed in the cluster.

Important: Make sure that the VX Deployer VM is not shut down during the deployment process. If the VX Deployer VM is shut down during the deployment process, the VM might be left in an indeterminate state. If the VM is inadvertently shut down, you will need to attempt the deployment again to reset the state of the VM. It will not succeed, but the VX Deployer will invoke a cleanup script. Then, you can attempt the deployment again.

From the Deploy Cluster page, you can perform the following actions:

- Click **Download Log Bundle** to download the log files associated with this deployment. For more information about the log bundle, see [“Troubleshooting the deployment” on page 48](#).
- Click **Launch vCenter** to launch the vCenter instance so that you can validate the deployment. For more information about validating the deployment, see [“Validating the deployment” on page 43](#).
- Click **Shutdown VX Deployer** to shut down the VX Deployer virtual machine.

Configuring LXCI

If you are using LXCI to manage the hardware in the vSAN cluster, you need to register LXCI with vCenter and discover the nodes that make up the vSAN cluster.

For more information about LXCI and vLCM features, see the following:

- [Cluster topology](#)
- [Host and disk overview](#)
- [Removing a disk](#)
- [Replacing a disk](#)
- [vLCM demonstration](#)

After configuring LXCI, enable LXCI as the hardware support manager for vSphere Lifecycle Manager (vLCM). For more information about working with LXCI and vLCM, see the following topic:

[Enabling vSphere Lifecycle Manager](#)

Upgrading LXCI

The ThinkAgile VX Deployer ships with a base release of LXCI. However, you might need to apply a patch to LXCI manually to meet the requirements of the ThinkAgile VX Best Recipe.

To determine if an LXCI patch is available, to go the ThinkAgile VX Best Recipe.

[ThinkAgile VX Best Recipe](#)

Note: On the Best Recipe page, click the appropriate Best Recipe release. Then, click **Solution Stack Guidelines**. The most current requirement for LXCI is listed.

If you need to apply an LXCI patch, you can find the latest patch at the following location:

https://datacentersupport.lenovo.com/us/en/documents/Invo-vmware#Fix_Patch

To upgrade LXCI to the latest patch, see the following procedure:

https://sysmgt.lenovofiles.com/help/topic/com.lenovo.lxci_vcenter.doc/vcenter_update_esxi.html

Validating the deployment

After completing the deployment, the vSAN cluster should be available.

Log in to vCenter and verify the following:

- vCenter server
- vSAN cluster
- Distributed virtual switches

Verifying vCenter

Make sure that the vCenter server is running and that the datacenter and vSAN cluster objects have been created.

Complete the following steps below to validate the setup:

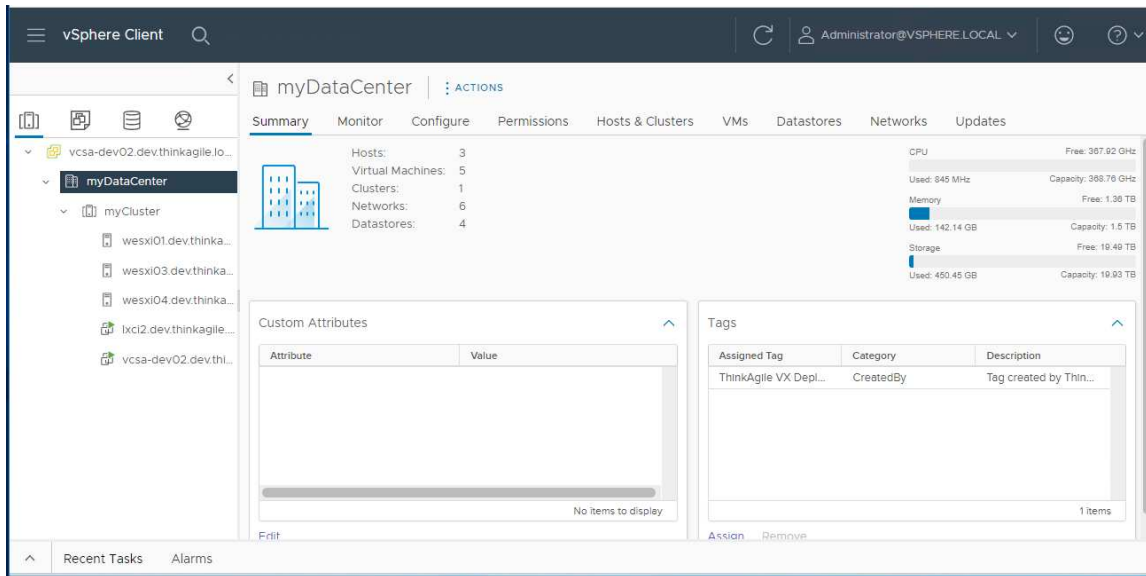
1. Login to the newly deployed vCenter server (if you selected the option to install a new vCenter during deployment), or an existing vCenter server in which a new vSAN cluster has been deployed.
2. Verify that:
 - The new datacenter appears in the inventory if you created a new datacenter.
 - The new vSAN cluster appears in the inventory.
 - All ESXi hosts appear under the newly created vSAN cluster.

Note: Select a host and click **Monitor** to view the hardware topology for a host. The hardware topology function provides an embedded graphical view for ThinkAgile VX appliance servers. From this interface, you can view server layout, detailed hardware inventory, and health information and manage the vSAN disks. For more information about hardware topology, see the following topic:

[Host hardware topology](#)

- The vCenter Server virtual machine appears under the newly created vSAN cluster.
- No alerts are displayed for the hosts or vSAN cluster.

In the following example, the myDataCenter and the myCluster vSAN cluster were created during the deployment. The vCenter server is also hosted on the same vSAN cluster.



Verifying the vSAN cluster

Make sure that the vSAN cluster is fully functional.

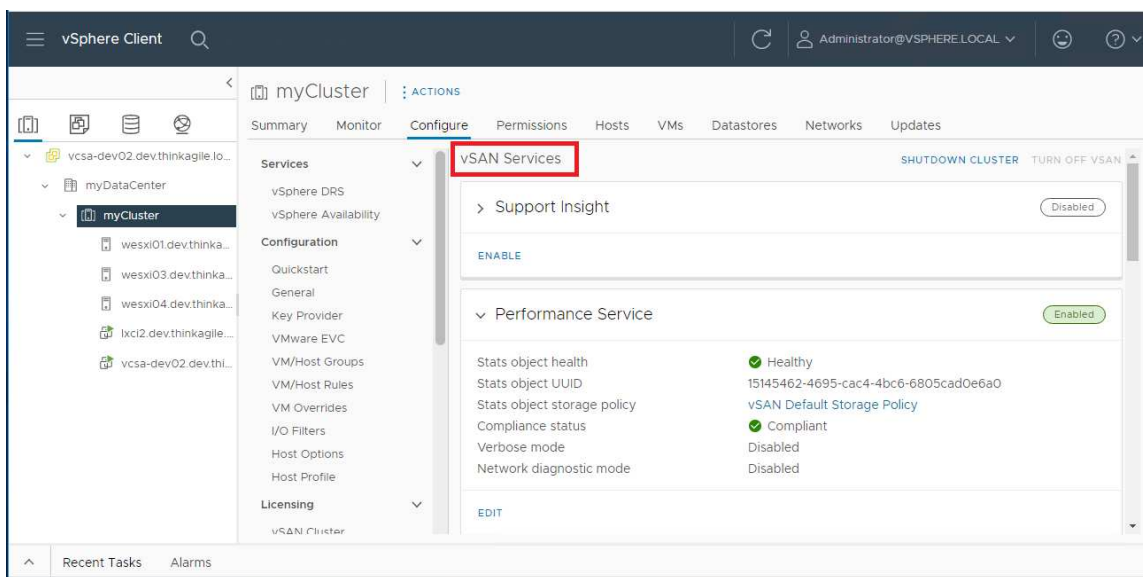
Verify the following components:

- “vSAN cluster services” on page 44
- “vSAN datastore” on page 45
- “vSAN OSA disk group configuration” on page 45
- “vSAN health monitoring” on page 46
- “vSAN proactive tests” on page 47

vSAN cluster services

Complete the following steps to validate vSAN cluster services:

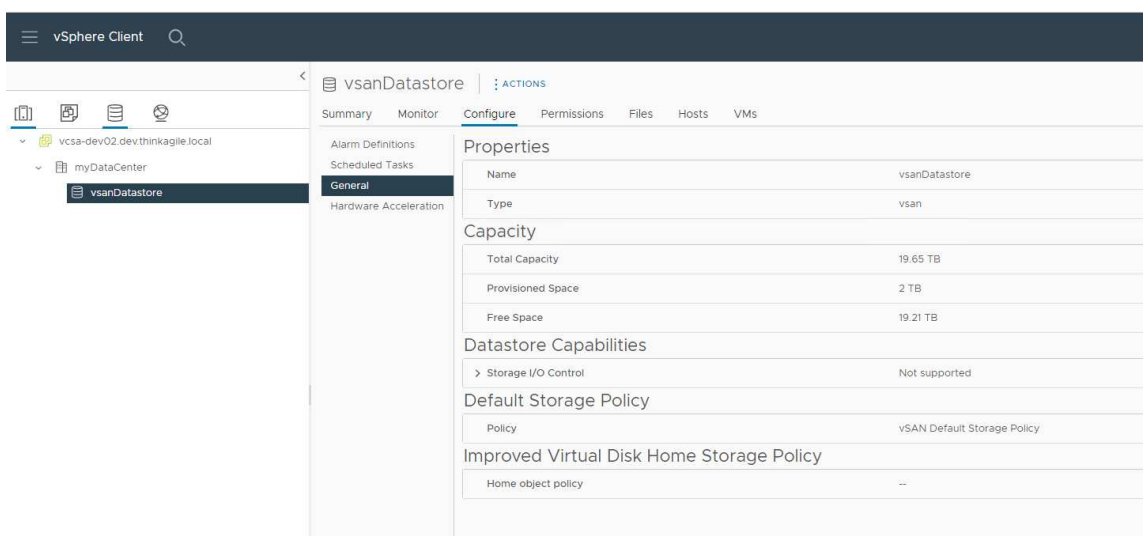
1. Select the newly created vSAN cluster in the inventory. The cluster tab page appears.
2. Choose **Configure > vSAN > Services**. The vSAN Service tab page appears.
3. Verify the settings for the services.



vSAN datastore

Complete the following steps to validate the vSAN datastore:

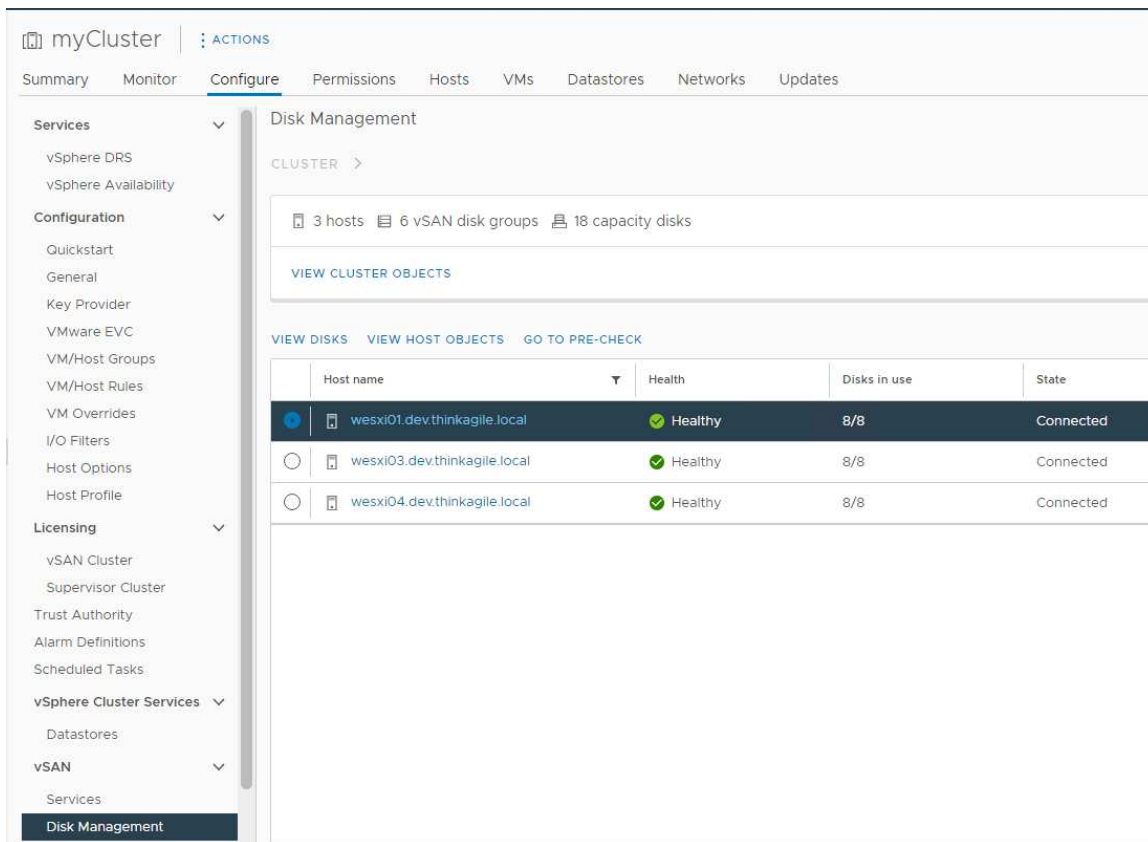
1. Click the **Storage** icon from the main vCenter page. Then, select the target datacenter.
2. Choose **vSAN Datastore > Configure**.
3. Verify the settings for the storage properties under the tab page.



vSAN OSA disk group configuration

Complete the following steps to validate the vSAN OSA disk group configuration:

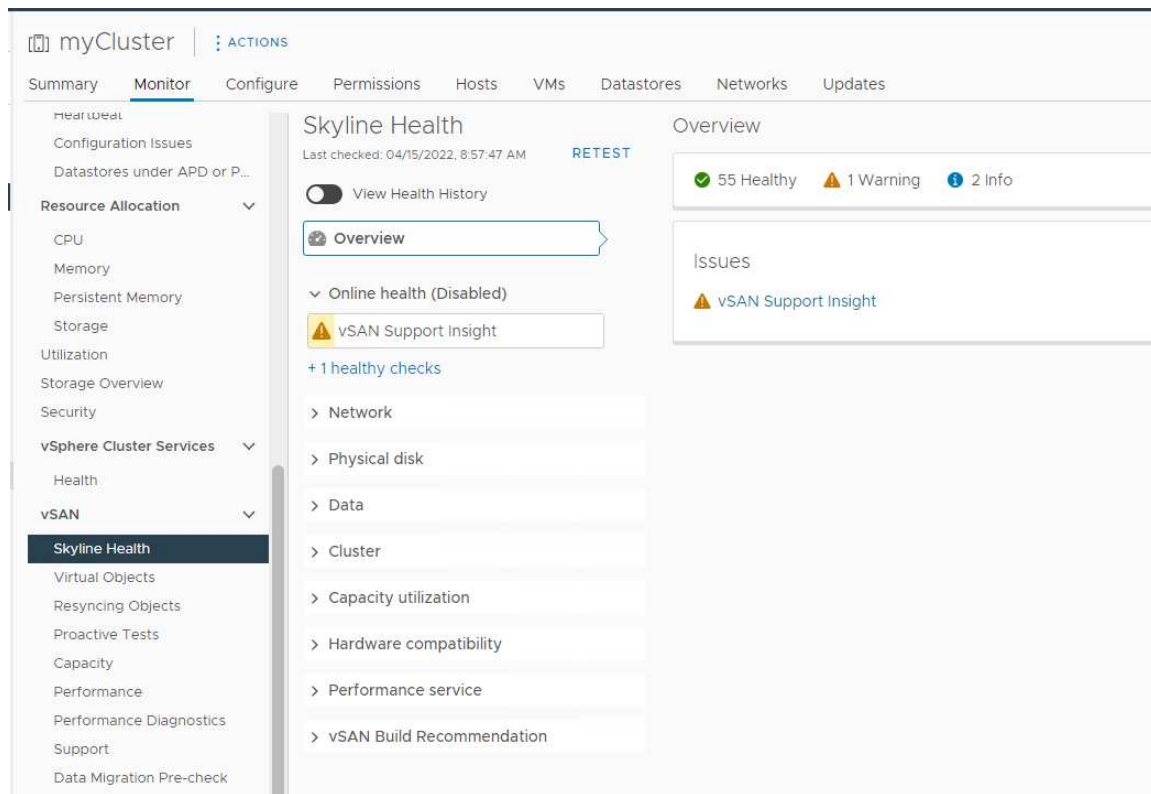
1. Select the newly created vSAN cluster in the inventory. The cluster tab page appears.
2. Click **Configure > vSAN > Disk Management**. The Disk Management page appears.
3. Verify the settings for the disks.



vSAN health monitoring

Complete the following steps to monitor the health of the vSAN:

1. Select the newly created vSAN cluster in the inventory. The cluster tab page appears.
2. Choose **Monitor > vSAN > Skyline Health**. The Skyline Health page appears.
3. Check the cluster health status. You should not see any failures on the tests conducted. If there are failures, examine the failures and the suggested remediation.



vSAN Proactive Tests

Make sure that the cluster components are working by running proactive health tests on the cluster.

For more information about running proactive tests, see the following topics:

- <https://docs.vmware.com/en/VMware-vSphere/7.0/com.vmware.vsphere.vsan-monitoring.doc/GUID-B88B5900-33A4-4821-9659-59861EF70FB8.html>
- <https://www.youtube.com/watch?v=tLEuxzXducl>

For more information about proactive rebalancing and automatic rebalancing of workloads, see the following topic:

<https://kb.vmware.com/s/article/2149809>

Verifying the distributed virtual switches

Make sure that the network configuration and distributed vSwitch configuration are functional.

If your servers have four network interfaces wired, the VX Deployer will configure two distributed virtual switches. The management, vMotion, and VM traffic will run on the first distributed vSwitch, and the vSAN traffic will run on the second distributed vSwitch. If the servers only have two network interfaces wired, then the VX Deployer will configure a single distributed vSwitch and configure all traffic to run on that switch.

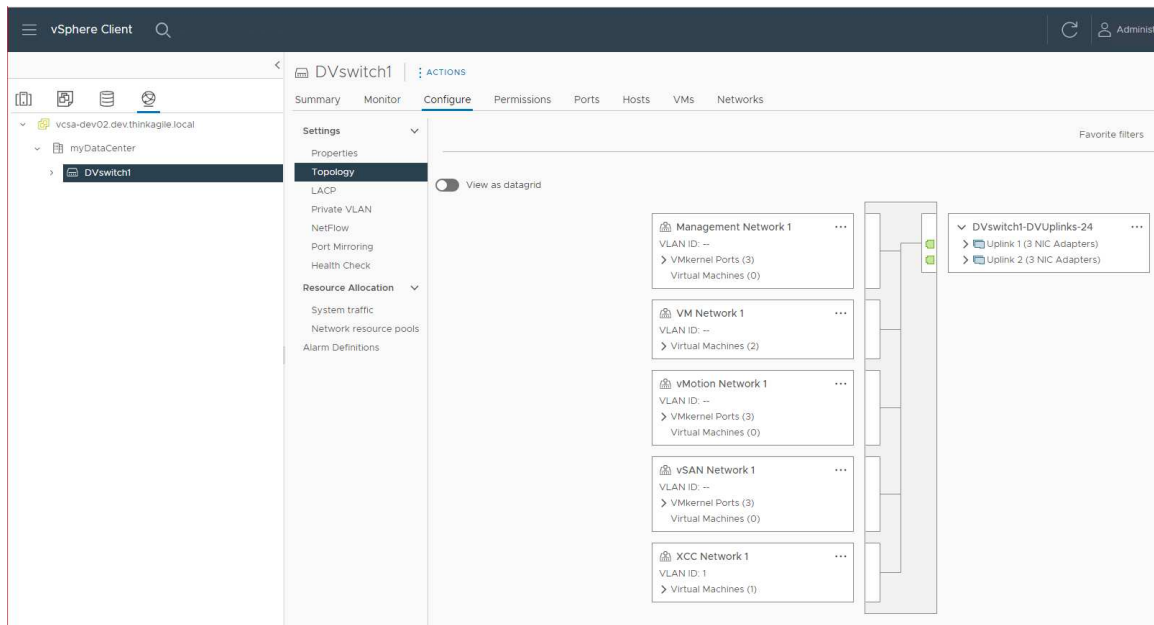
Complete the following steps to verify the distributed vSwitches:

1. Select your datacenter (myDataCenter).
2. Click the **Networks** tab.
3. Click **Distributed Switches**.

You will see one or two distributed vSwitch objects.

4. Select a DVswitch and click the **Configure** tab.
5. Click **Topology**.

You will see the properties of the DVswitch.



Troubleshooting the deployment

This process may take some time, depending on the network and the number of nodes being deployed in the cluster.

If there are issues with the deployment:

1. Click **Download Log Bundle**. The log file is named:
lenovo-thinkagile-servicelog-date-time.tgz.gz
2. Contact Lenovo Support by opening a Support service request:

<https://support.lenovo.com/us/en/servicerequest>

When you open a service request, you are prompted to upload the log file.

Notes:

- If you submit a service request to Lenovo Support, make sure that you preserve the existing environment in case it is needed for further troubleshooting by Lenovo.
 - If a cluster deployment failed and you need to contact Lenovo Support for assistance, they might require additional ports to be permitted temporarily.
3. Shut down the VX Deployer VM.

If there are issues with the deployment, it is possible that system artifacts can remain. Therefore, you should shut down the VX Deployer.

Adding a node to an existing cluster

To add one or more nodes to an existing vSAN cluster using the VX Deployer, set up the VX Deployer, and then run the VX Deployer. When the deployment is complete, validate that the deployment was successful.

Before you begin

Before you begin to deploy the vSAN cluster, make sure that you have completed the following activities:

1. Install any ThinkAgile VX nodes that will be added to an existing cluster. See [“Install hardware into rack” on page 28](#).
2. Cable the networks. See [“Cabling network” on page 31](#).
3. Set up the VX Deployer. See [“Setting up the VX Deployer” on page 35](#).

Procedure

After navigating to the URL for the VX Deployer, step through the VX Deployer wizard:

Important: If you need to return to a previous page in the Deployer, make sure that you click the page in the left navigation or that you use the **Back** button within the VX Deployer. Do **not** use the Back button on the browser, which will return you to the first page of the Deployer (all data entered in the VX Deployer will be lost).

1. On the Getting Started page, determine the deployment process to be used.
 - Click **Add Nodes to an existing cluster** to proceed through the deployment process.
 - Click **Use Configuration File** to choose a configuration file that you saved when you added a node to a vSAN cluster previously.

For more information about using a configuration file, see the following topic:

[“Working with configuration files” on page 51](#)

Specify the fully qualified domain name or IP address of the vCenter server and provide the access credentials for the administrator account.

Note: The user account used to authenticate with the vCenter instance must include a minimum set of permissions. For a list of the required permissions, see the following topic:

[“Minimum vCenter user permissions” on page 21](#)

Click **Next**. The VX Deployer validates the details for the vCenter server.

2. On the License Agreements page, you can view the Lenovo license, open-source information, and the VMware EULA.
 - Click **I have read and agree to the License Agreements**.
 - Click **Your data will be handled in accordance with Lenovo’s Privacy Statement**.

Click **Next** to continue.

3. On the Cluster Selection page, choose an existing vCenter datacenter and an existing vSAN cluster.
The nodes in the cluster are displayed in the Existing Physical Hosts section.

Click **Next** to continue.

4. On the Select Nodes page, choose the ThinkAgile VX nodes to be added to the vSAN cluster.

Note: The nodes to be added to the cluster must be the same machine type and model of the nodes that are already in the cluster, and they must have the same hardware configuration. Only nodes meeting these criteria are displayed in the Discovered Nodes section.

Click **Next** to continue.

5. On the Physical Location page, specify the location of your vSAN cluster (organization name, region name, and site name). You can select existing names or choose new names.

Click **Next** to continue.

6. On the General Networking page, provide the networking information (IP address, subnet, and gateway). For the ESXi management network, include the hostname prefix that will be applied to each of the nodes in the cluster, the ESXi vSAN network, the ESXi vMotion network, and the XCC management network. For the ESXi management network, include the hostname prefix that will be applied to each of the new nodes.

Provide the following network information:

- The ESXi management subnet mask. You can specify the hostname prefix that will be applied to each of the new nodes. Make sure that you validate the name for each new host on the Host Settings page. The gateway is required.
- Specify a valid vSAN subnet mask. The gateway is optional.
- Specify a valid vMotion subnet mask. The gateway is optional.
- Specify a valid XCC management subnet mask if the XCC management network is different than the ESXi management network. The gateway is optional.

Notes:

- If you specified an XCC network IP address when you configured networking during the setup of the VX Deployer, you must specify the XCC management subnet mask. For more information about setting up the VX Deployer, see:

[“Setting up the VX Deployer” on page 35](#)

Click **Next** to continue. The VX Deployer validates the network settings.

7. For each host listed on the Host Settings page, specify the IP addresses for the vSAN, vMotion, and XCC networks. Validate the ESXi host name and IP addresses for the node to be added. If changes are required, you must click **Revalidate**.

Notes:

- A unique numeric identifier is automatically added to the host name prefix that you specified on the General Networking page.
- You can use a configuration file to add hosts to an existing cluster. If you choose to do so, the host names for the new hosts will be generated by the Deployer, but they might not be consistent with the other hosts in the cluster. After adding the hosts, make sure that you validate the host names on the Host Settings page. From that page, you can modify the host names if desired.

Click **Next** to continue.

8. On the XCC Credentials page, specify a common password that will be used to access the XCC USERID user account on each new VX appliance. In addition, you must specify the existing password for that VX appliance.

Click **Next**. The VX Deployer validates the current XCC USERID password and configures the common XCC USERID password.

9. Deploy the cluster.

Note: Only data on the new nodes being added to the cluster will be lost by the deployment process. Data on existing nodes will not be affected.

This process may take some time, depending on the network and the number of nodes being added to the cluster.

Important: Make sure that the VX Deployer VM is not shut down during the deployment process. If the VX Deployer VM is shut down during the deployment process, the VM might be left in an indeterminate state. If the VM is inadvertently shut down, you will need to attempt the deployment again to reset the

state of the VM. It will not succeed, but the VX Deployer will invoke a cleanup script. Then, you can attempt the deployment again.

From the Deploy Cluster page, you can perform the following actions:

- Click **Download Log Bundle** to download the log files associated with this deployment. For more information about the log bundle, see [“Troubleshooting the deployment” on page 48](#).
- Click **Launch vCenter** to launch the vCenter instance so that you can validate the deployment. For more information about validating the deployment, see [“Validating the deployment” on page 43](#).
- Click **Shutdown VX Deployer** to shut down the VX Deployer virtual machine.

Working with configuration files

When you use the VX Deployer to create a new vSAN cluster or to add a node to an existing vSAN cluster, you have the option to save the configuration into a .JSON file. Then, you can use the configuration file to populate the VX Deployer for the next deployment.

Notes:

- Using a configuration file enables you to update the VX Deployer, but you must still step through the VX Deployer to deploy a vSAN cluster or add a node to an existing cluster. Passwords are not stored in the configuration file.
- You can use the Excel template to generate a .JSON configuration file to prepopulate the ThinkAgile VX Deployer. The Excel file does some validation when data are entered.

[ThinkAgile VX Export Configuration XLS](#)

There are three types of configuration files supported by the VX Deployer:

- Creating a new vSAN cluster in a new vCenter instance.
[New configuration file](#)
- Creating a new vSAN cluster in an existing vCenter instance.

[Existing configuration file](#)

- Expanding an existing vSAN cluster by adding one or more nodes.

[Expand configuration file](#)

VX Deployer configuration files contain the following objects:

- globalSettings
- hosts

globalSettings

The globalSettings object provides the information needed for the deployment, such as vCenter, cluster, and network details. It includes the following objects and arrays:

- **vCenterSettings**. Specifies the vCenter details.

```
"vcenterSettings": {  
  "installationType": "new",  
  "adminUsername": "administrator@vsphere.local",  
  "fqdn": "my-vCenter.thinkagile.local",  
  "ssoDomain": "vsphere.local"  
},
```

It includes the following name-value pairs:

- **installationType**. Specifies the type of deployment. It can have the following values:
 - **new**. Create a new vSAN cluster in a new vCenter instance.
 - **existing**. Create a new vSAN cluster in an existing vCenter instance.
 - **expand**. Add one or more nodes to an existing vSAN cluster
- **adminUsername**. The vCenter admin user account.
- **fqdn**. The fully qualified domain name for the vCenter instance.
- **ssoDomain**. The Single Sign-On (SSO) domain name. Only specify **ssoDomain** if **installationType** is set to **new** or **existing**.
- **clusterSettings**. The details about the cluster location, such as the organization and cluster name.

```
"clusterSettings": {
  "orgName": "Lenovo",
  "regionName": "EMEA",
  "datacenterName": "myDatacenter",
  "siteName": "RO",
  "vSanClusterName": "MyCluster"
},
```

It includes the following name-value pairs:

- **orgName**. The organization to which the cluster belongs.
- **regionName**. The region where the cluster is located.
- **datacenterName**. The name to be used for the datacenter.
- **siteName**. The site where the cluster is located.
- **vSANClusterName**. The name to be used for the vSAN cluster.
- **dns**. The IP address of a primary DNS server. Optionally, it includes the IP address of a secondary server as well.

```
"dns": [
  "111.11.1.111",
  "222.22.2.222"
],
```

- **ntp**. The IP address of a primary NTP server. Optionally, it includes the IP address of a secondary server as well.

```
"ntp": [
  "33.33.3.33",
  "44.44.4.44"
],
```

- **clusterNetworks**. The details for the networking information (IP gateway and netmask) for the ESXi Management network, the ESXi vSAN network, and the ESXi vMotion network. If the XCC Management network is on a network that is separate from the ESXi Management network, specify the gateway and netmask for the XCC Management network as well.

Note: Each network must be on a different subnet.

- **esxiManagementNetwork**. The details for the ESXi management network.


```
"esxiManagementNetwork": {
  "gateway": "111.11.1.111",
  "netmask": "255.255.0.0",
  "vlan": 20
}
```

It includes the following name-value pairs:

- **gateway**. The gateway IP address is mandatory for the ESXi management network.
- **netmask**. The netmask.
- **vlan**. Optionally, specify a unique VLAN ID (1 to 4094) for the ESXi Management network. The physical switches must be configured to add the specified VLAN IDs in trunk mode for all the ports connecting the physical NICs of the ESXi hosts.

For more information about configuring the physical switches, see the following topic: [VLAN Configuration](#)

– vsanNetwork

```
"xccNetwork": {
  "gateway": "22.222.222.222",
  "netmask": "255.255.0.0",
  "vlan": 30
}
```

It includes the following name-value pairs:

- **gateway**. The gateway IP address is mandatory for the vSAN network.
- **netmask**. The netmask.
- **vlan**. Optionally, specify a unique VLAN ID (1 to 4094) for the ESXi Management network. The physical switches must be configured to add the specified VLAN IDs in trunk mode for all the ports connecting the physical NICs of the ESXi hosts.

For more information about configuring the physical switches, see the following topic: [VLAN Configuration](#)

– vmotionNetwork

```
"vmotionNetwork": {
  "gateway": "44.44.44.4",
  "netmask": "255.255.255.0",
  "vlan": 40
}
```

It includes the following name-value pairs:

- **gateway**. The gateway IP address is optional for the vMotion network.
- **netmask**. The netmask.
- **vlan**. Optionally, specify a unique VLAN ID (1 to 4094) for the ESXi Management network. The physical switches must be configured to add the specified VLAN IDs in trunk mode for all the ports connecting the physical NICs of the ESXi hosts.

For more information about configuring the physical switches, see the following topic: [VLAN Configuration](#)

– xccNetwork

Note: Specify the **xccNetwork** details only if the XCC Management network is on a network that is different from the ESXi Management network.

```
"xccNetwork": {
  "gateway": "22.222.222.222",
  "netmask": "255.255.0.0"
},
```

It includes the following name-value pairs:

- **gateway**. The gateway IP address is optional for the XCC management network.
- **netmask**. The netmask.
- **lxciSettings**. Optionally, specify the details for the Lenovo XClarity Integrator instance, which will be used as the hardware support manager for vSphere Lifecycle Manager (vLCM).

```
"lxciSettings": {
  "lxciFQDN": "lxci.thinkagile.local",
  "lxciUser": "admin",
  "xccAccessIpAddress": "55.55.55.55",
  "xccAccessVlanId": 1
}
```

It includes the following name-value pairs:

- **lxciFQDN**. The fully qualified domain name for LXCI.
- **lxciUser**. The administrator account.
- **xccAccessIpAddress**. The IP address for LXCI.
- **xccAccessVlanId**. The VLAN ID for LXCI.

hosts

Specify one or more hosts to be used to create a new cluster or to be added to an existing cluster. For each host, specify an object (named as the serial number) that includes the details for that host. In the following example, A111ABCD is the serial number for a host:

```
"hosts": {
  "A111ABCD": {
    "esxiHostname": "esxi01.thinkagile.local",
    "xccIpAddress": "11.111.111.1",
    "vsanIpAddress": "222.222.222.22",
    "vmotionIpAddress": "33.33.33.33"
  },
```

It includes the following name-value pairs:

- **esxiHostname**. The name of the ESXi host.
- **xcclpAddress**. The IP address of the XCC on the host.

Note: The **xcclpAddress** is not used if the XCC Management network and the ESXi Management network are the same network.

- **vsanIpAddress**. The vSAN IP address.
- **vmotionIpAddress**. The vMotion IP address.

Deploying a vSAN cluster manually

Use this section to deploy a ThinkAgile VX series vSAN cluster manually.

Preparing for the deployment

Prepare for the manual vSAN deployment by filling in the deployment worksheet, installing the ThinkAgile VX appliances in a rack, cabling the appliances to the network, and adding entries to the DNS server.

Deployment configuration worksheet

Use this worksheet to record values for the settings that you will need to deploy the vSAN cluster.

Record values for the following sections:

- [“XClarity controller \(BMC\) and ESXi” on page 55](#)
- [“Global Network Services Settings” on page 55](#)
- [“vSAN implementation” on page 56](#)

XClarity Controller (BMC) and ESXi

The following settings are required for the XClarity Controller(BMC) and ESXi hosts.

Properties	Appliance 1	Appliance 2	Appliance 3	Appliance 4
Serial number				
XClarity Controller (BMC)				
IP address				
Net mask				
Gateway				
VLAN (native)				
Default credentials				
Desired credentials				
ESXi				
Host name				
IP address				
Net mask				
Gateway				

Notes:

- The information on service labels are helpful for support technicians to identify your products and provide faster services. After receiving the product, peel the labels away and store them in a safe place.
 - The machine type and serial number are on the ID label of each product.
 - The BMC network access label is attached on the top side of the pull-out information tab.
- The new credentials should be the same for all hosts.

Global Network

Deployer Page Number	Name of the Deployer page	Type	Values
4	Network Services	Primary and secondary (optional) DNS servers IP addresses	

		Primary and secondary (optional) NTP servers IP addresses	
5	New or Existing vCenter	vCenter hostname (if installing a new vCenter) during deployment	Valid FQDN name
5	New or Existing vCenter	vCenter hostname (if installing a new vSAN cluster in an existing vCenter)	Valid FQDN name
7	Cluster Hierarchy	Valid Region and Site Name Strings	<< Could be any user specified string >>

vSAN cluster implementation

Virtual Appliances (VMs)				
	IPv4 IP address	Host name	User ID	Password
XClarity Integrator (optional)				
Infrastructure				
Domain				
DNS/NTP				
Default Gateway				

Installing hardware into rack

Install the ThinkAgile VX appliances in a rack. See the following table for instructions on installing the appliances.

Note: See [Solution overview](#) to determine the ThinkSystem server model on which your ThinkAgile VX appliances are based.

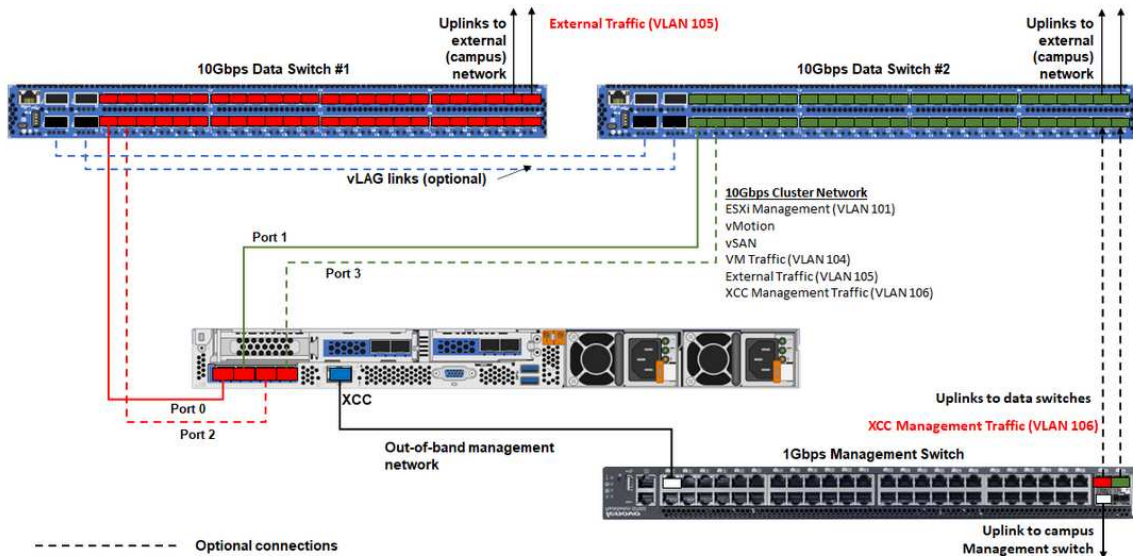
Phase	Task	Description
1	Unpack the server and install any separately shipped components/peripherals into the server.	<ul style="list-style-type: none"> • SR250-based models https://pubs.lenovo.com/sr250/install_server_hardware_options.html • SR630-based models https://pubs.lenovo.com/sr630/install_server_hardware_options.html • SR630 V2-based models https://pubs.lenovo.com/sr630-v2/install_server_hardware_options.html • SR630 V3-based models https://pubs.lenovo.com/sr630-v3/hardware_replacement_procedures.html • SR635 V3-based models https://pubs.lenovo.com/sr635-v3/hardware_replacement_procedures.html • SR645-based models https://pubs.lenovo.com/sr645/install_server_hardware_options.html • SR645 V3-based models https://pubs.lenovo.com/sr645-v3/hardware_replacement_procedures.html • SR650-based models https://pubs.lenovo.com/sr650/install_server_hardware_options.html • SR650 V2-based models https://pubs.lenovo.com/sr650-v2/install_server_hardware_options.html • SR650 V3-based models https://pubs.lenovo.com/sr650-v3/hardware_replacement_procedures.html • SR655 V3-based models https://pubs.lenovo.com/sr655-v3/hardware_replacement_procedures.html • SR665-based models https://pubs.lenovo.com/sr665/install_server_hardware_options.html • SR665 V3-based models https://pubs.lenovo.com/sr665-v3/hardware_replacement_procedures.html • SR850 V3-based models https://pubs.lenovo.com/sr850-v3/hardware_replacement_procedures.html • SR950-based models https://pubs.lenovo.com/sr950/install_server_hardware_options.html • SD530-based models https://pubs.lenovo.com/sd530/install_server_hardware_options.html

2	Connect required internal cables if applicable.	<ul style="list-style-type: none"> • SR250-based models https://pubs.lenovo.com/sr250/internal_cable_routing.html • SR630-based models https://pubs.lenovo.com/sr630/internal_cable_routing.html • SR630 V2-based models https://pubs.lenovo.com/sr630-v2/internal_cable_routing.html • SR630 V3-based models https://pubs.lenovo.com/sr630-v3/internal_cable_routing.html • SR635 V3-based models https://pubs.lenovo.com/sr635-v3/internal_cable_routing.html • SR645-based models https://pubs.lenovo.com/sr645/internal_cable_routing.html • SR645 V3-based models https://pubs.lenovo.com/sr645-v3/internal_cable_routing.html • SR650-based models https://pubs.lenovo.com/sr650/internal_cable_routing.html • SR650 V2-based models https://pubs.lenovo.com/sr650-v2/internal_cable_routing.html • SR650 V3-based models https://pubs.lenovo.com/sr650-v3/internal_cable_routing.html • SR655 V3-based models https://pubs.lenovo.com/sr655-v3/internal_cable_routing.html • SR665-based models https://pubs.lenovo.com/sr665/internal_cable_routing.html • SR665 V3-based models https://pubs.lenovo.com/sr665-v3/internal_cable_routing.html • SR850 V3-based models https://pubs.lenovo.com/sr850-v3/internal_cable_routing.html • SR950-based models https://pubs.lenovo.com/sr950/internal_cable_routing.html • SD530-based models https://pubs.lenovo.com/sd530/internal_cable_routing.html
3	Install the server in the rack.	<ul style="list-style-type: none"> • SR250-based models https://pubs.lenovo.com/sr250/SR250_rack_installation_guide.pdf • SR630-based models https://pubs.lenovo.com/sr630/sr630_rack_install_guide.zip • SR630 V2-based models https://pubs.lenovo.com/sr630-v2/sr630_v2_rack_install_guide.zip • SR630 V3-based models https://serveroption.lenovo.com/rail_options/rail_options_rack_servers/ • SR635 V3-based models https://serveroption.lenovo.com/rail_options/rail_options_rack_servers/ • SR645-based models https://serveroption.lenovo.com/rail_options/rail_options_rack_servers/ • SR645 V3-based models https://serveroption.lenovo.com/rail_options/rail_options_rack_servers/ • SR650-based models https://pubs.lenovo.com/sr650/sr650_rack_install_guide.zip • SR650 V2-based models https://pubs.lenovo.com/sr650/SR650V2_v2_rack_install_guide.zip • SR650 V3-based models

	<ul style="list-style-type: none"> • https://serveroption.lenovo.com/rail_options/rail_options_rack_servers/ • SR655 V3-based models https://serveroption.lenovo.com/rail_options/rail_options_rack_servers/ • SR665-based models https://pubs.lenovo.com/sr665/sr665_rack_install_guide.zip • SR665 V3-based models https://serveroption.lenovo.com/rail_options/rail_options_rack_servers/ • SR850 V3-based models https://serveroption.lenovo.com/rail_options/rail_options_rack_servers/ • SR950-based models https://pubs.lenovo.com/sr950/sr950_rack_instructions.pdf • SD530-based models https://pubs.lenovo.com/sd530/install_server_hardware_options.html
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Cabling the network

Review the following information to understand how to cable the ThinkAgile VX appliances to the network.



Network type	Required/optional	From	To
In-band management network: <ul style="list-style-type: none"> • Communication with ESXi hosts • Communication between the vCenter server appliance and ESXi hosts • vSAN storage traffic • vMotion (virtual machine migration) traffic • iSCSI storage traffic (if present) 	Required	Port 0 on NIC	10 Gbps Data Switch #1
	Required	Port 1 on NIC	10 Gbps Data Switch #2
	Optional	Port 2 on NIC	10 Gbps Data Switch #1
	Optional	Port 3 on NIC	10 Gbps Data Switch #2

Out-of-band management network: <ul style="list-style-type: none"> • Initial server discovery on the network via the SLP protocol • Server power control • LED management • Inventory • Events and alerts • BMC logs • Firmware updates • OS provisioning via remote media mount 	Required	BMC network connector	1 Gbps Management Switch
Data or user network	Required	10 Gbps Data Switch #1 and #2	External network

Notes:

- **On Out-of-band network**

- The out-of-band management network does not need to be on a dedicated physical network. It can be included as part of a larger management network.
- The ThinkAgile VX Deployer, Lenovo XClarity Integrator (LXCI) must be able to access this network to communicate with the XCC modules.
- During the initial cluster deployment and subsequent operations, the XCC interfaces should be accessible over this network to the deployer utility as well as xClarity Integrator (LXCI), xClarity Administrator (LXCA), etc., management software.

- **On network redundancy**

- Active-standby redundancy mode:

When only 2 ports (ports 0 to 1) are connected to the 2 top-of-rack switches, you can configure the redundancy mode as active-standby mode. If the primary connection fails or the primary switch fails, the connection fails over.

- Active-active redundancy mode:

When 4 ports (ports 0 to 3) are connected to the 2 top-of-rack switches, you can configure the redundancy mode as active-active mode. If one connection fails, the other connections are still active. Also, loads are balanced across the ports.

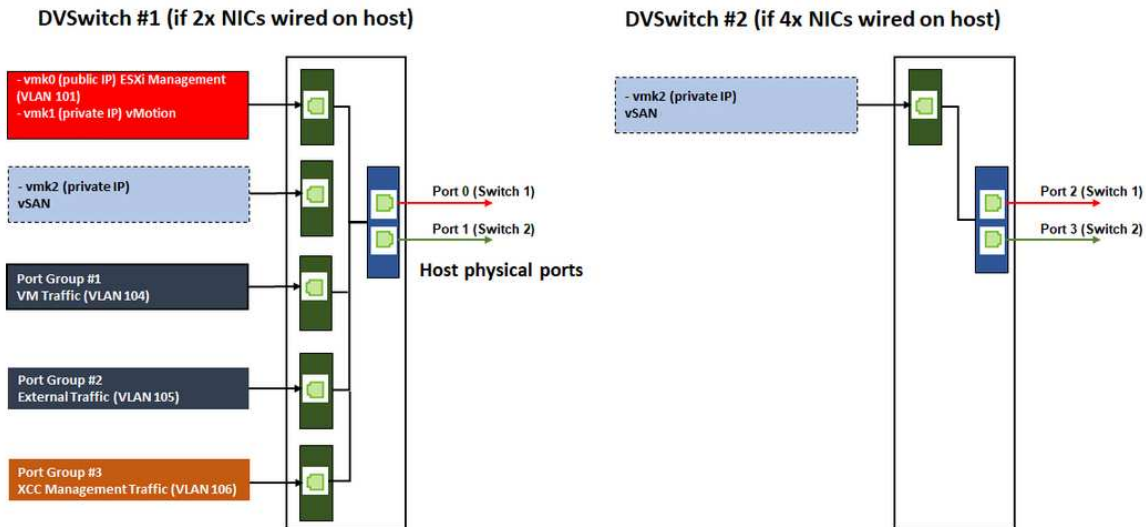
- Optionally, some switches might also support the virtual link aggregation (vLAG) protocol or equivalent, which connects the two top-of-rack switches via dedicated links and makes the switches appear as a single logical switch to the downstream hosts. In this case, the two connections going to the switches from the host can be configured as active-active links so that you can get load-balancing across the ports as well as a 20 Gb aggregate bandwidth.

- **On distributed vSwitches**

The distributed vSwitches essentially form a logical switch that spans all hosts in the cluster. The physical ports on each host become logical uplink ports on the distributed vSwitch. As opposed to a *standard* vSwitch, distributed vSwitches provide advanced configuration options, such as traffic policy, link aggregation (LACP), and traffic shaping.

The number of created distributed switches is determined by the number of physical ports on each host that are connected to top-of-rack switches:

- If only two ports on each host are connected, a single distributed vSwitch will be created to carry all types of traffic, including ESXi management, vMotion, internal VM, XCC management, vSAN storage traffic, and external network traffic.
- If four ports connected, two distributed vSwitches will be created. The vSAN storage traffic will be carried on the second distributed vSwitch.



Configuring DNS entries

Make sure that you have configured the hostnames and IP addresses for the nodes in the cluster with the DNS server.

Minimally, you will need to configure the following DNS entries:

- Each of the ESXi hosts that will be included in the vSAN cluster
- Optionally, the Lenovo XClarity Integrator (LXCI) appliance. You need to configure a DNS entry for LXCI if you are using LXCI and vSphere Lifecycle Manager (vCLM) to manage the hardware from vCenter.
- Optionally, vCSA if you are planning to install vSphere as part of the vSAN cluster.

Deploying the vSAN cluster

To deploy the vSAN cluster manually, use the VMware documentation to set up vSphere and create the vSAN cluster.

Installing and setting up vSphere

To set up vSphere, determine the supported version, download the ISO images based on the ThinkAgile VX Best Recipe, and deploy vCenter and ESXi.

Complete the following steps to install and set up vSphere:

1. Check the supported vSphere version on the server.

<https://lenovopress.com/osig>

2. Download the ISO images of the corresponding ESXi and vCenter Server version from the latest operating system guidelines in the ThinkAgile VX Best Recipe.

<https://datacentersupport.lenovo.com/solutions/ht505302-thinkagile-vx-best-recipes>

3. Follow the instructions in the corresponding guides to deploy vCenter Server and ESXi.

vSphere version	Installation and Setup Guide
vSphere 8.0	<ul style="list-style-type: none"> • ESXi 8.0 Installation and Setup • vCenter Server 8.0 Installation and Setup
vSphere 7.0	<ul style="list-style-type: none"> • ESXi 7.0 Installation and Setup • vCenter Server 7.0 Installation and Setup

Creating and configuring a vSAN cluster

Follow the VMware procedure to create and configure a vSAN cluster.

Instructions for creating and configuring a vSAN cluster are available at the following site:

[Creating a vSAN Cluster](#)

Adding a node to an existing cluster

To add a node to an existing vSAN cluster manually, use the VMware documentation.

Note: The node which is going to be added must be the same machine type and configuration as the nodes in the existing cluster.

Follow the VMware documentation to add a node to the cluster: [Add a Host to the vSAN Cluster](#)

After adding the node to the cluster, update the firmware on all nodes in the cluster to match the latest ThinkAgile VX Best Recipe, which can be found here: <https://datacentersupport.lenovo.com/us/en/solutions/ht505302>

Chapter 5. Updating a vSAN cluster

From time to time, you might need to update the firmware and drivers for the ThinkAgile VX appliances in your vSAN cluster, or you might need to update ESXi, based on the ThinkAgile VX Best Recipe. The preferred method for updating the ThinkAgile VX appliances is to use LXCI and vSphere Lifecycle Manager (vLCM)

Updating LXCI

To update LXCI, complete the following procedures:

[Upgrading LXCI for VMware vCenter](#)

Updating firmware, drivers, and ESXi

The latest supported firmware and drivers are available at the following site:

[ThinkAgile VX Best Recipe](#)

Note: Before updating a host, make sure that you place the host in Maintenance Mode. After the update, remove the host from maintenance mode. For more information about Maintenance Mode, see the following topic:

[Place a Host in Maintenance Mode](#)

Follow the procedures in the Cluster remediation nodes using vLCM document, which is available in the ThinkAgile VX Best Recipe page:

[ThinkAgile VX Best Recipe](#)

Note: On the Best Recipe page, click the appropriate Best Recipe release. Then, click **Solution Stack Guidelines**. From that page, click the Cluster remediation nodes using vLCM document for instructions about updating firmware, device drivers, and ESXi.

Chapter 6. Hardware replacement

This chapter provides installation and removal procedures for all serviceable system components and methods for ordering a serviceable part. Each component replacement procedure references any tasks that need to be performed to gain access to the component being replaced.

Identify parts failures

Use this topic to identify hardware parts failures.

Identify hardware failures through either of the following:

- Front panel LED of a physical node
- BMC (XCC) alerts
- Lenovo XClarity Administrator alerts
- Lenovo XClarity Integrator alerts
- vSphere client/vCenter Server/ESXi hardware alerts

Ordering a serviceable part

Use this topic to order a serviceable hardware part.

Parts definition

There are four types of serviceable hardware parts in each product:

- Tier 1 customer replaceable unit (CRU): Replacement of Tier 1 CRUs is your responsibility. If Lenovo installs a Tier 1 CRU at your request with no service agreement, you will be charged for the installation.
- Tier 2 customer replaceable unit (CRU): You may install a Tier 2 CRU yourself or request Lenovo to install it, at no additional charge, under the type of warranty service that is designated for your server.
- Field replaceable unit (FRU): FRUs must be installed only by trained service technicians.
- Consumable and Structural parts: Purchase and replacement of consumable and structural parts (components, such as a cover or bezel) is your responsibility. If Lenovo acquires or installs a structural component at your request, you will be charged for the service.

Identifying your system

Refer to “[VX series models](#)” on [page 9](#) to identify the base system for your ThinkAgile VX system.

Identifying your parts

Go to the following pages to identify each of the components that are available for your server. Depending on the model, your server might look slightly different from the illustration.

- https://pubs.lenovo.com/sr250/parts_list.html
- https://pubs.lenovo.com/sr630/parts_list.html
- https://pubs.lenovo.com/sr630-v2/parts_list.html
- https://pubs.lenovo.com/sr630-v3/parts_list.html
- https://pubs.lenovo.com/sr635-v3/parts_list.html
- https://pubs.lenovo.com/sr645/parts_list.html
- https://pubs.lenovo.com/sr645-v3/parts_list.html

- https://pubs.lenovo.com/sr650/parts_list.html
- https://pubs.lenovo.com/sr650-v2/parts_list.html
- https://pubs.lenovo.com/sr650-v3/parts_list.html
- https://pubs.lenovo.com/sr655-v3/parts_list.html
- https://pubs.lenovo.com/sr665/parts_list.html
- https://pubs.lenovo.com/sr665-v3/parts_list.html
- https://pubs.lenovo.com/sr850-v3/parts_list.html
- https://pubs.lenovo.com/sr950/parts_list.html
- https://pubs.lenovo.com/sd530/parts_list.html

Ordering a serviceable part

1. Go to <http://datacentersupport.lenovo.com> and select your product.
2. On the specific product page, choose the **Parts** from the left pane. The “Parts” tab page is displayed.
3. Search the part name and record the FRU part number of the part.
4. Directly call Lenovo Support or go to <https://support.lenovo.com/servicerequest> and submit a service ticket.

Replacing parts

Use this topic to replace a hardware part.

Before you begin

- For the following parts, place the host in Maintenance Mode.

Placing the host in Maintenance Mode

- Memory
 - CPU
 - GPU
 - Mother board
 - HBA
 - Network
- For cache disks or capacity disks:
 1. Identify the failed drive to be replaced by referring to [Identify a failed data drive](#).
 2. Place the host in Maintenance Mode.

Placing the host in Maintenance Mode
 3. Prepare for replacing the failed drive by referring to either of the following:
 - For a failed **cache** drive: [Remove the failed cache disk from the disk group](#)
 - For a failed **capacity** drive: [Remove the failed capacity disk from the disk group](#)
 4. Make sure you save the data on your drive, especially if it is part of a RAID array, before you remove it from the server.
 - Before you make changes to disk drives, disk drive controllers, disk drive backplanes, or disk drive cables, back up all important data that is stored on hard disks.
 - Before you remove any component of a RAID array, back up all RAID configuration information.

5. If one or more NVMe solid-state drives are to be removed, make sure that the drive is shut down via the operating system (see the documentation for your operating system for information and instructions). The drive activity (green) LED is on solid for an NVMe drive that is shut down. See the labels above the drive bays to determine the type of the drive to remove. If the drive bay numbers come with the term “NVMe”, it indicates the installed drives are NVMe solid-state drives.

Procedure

Replace each part by referring to the following topics based on your ThinkAgile VX system:

- https://pubs.lenovo.com/sr250/maintenance_manual_hardware_replacement_procedures.html
- https://pubs.lenovo.com/sr630/maintenance_manual_hardware_replacement_procedures.html
- https://pubs.lenovo.com/sr630-v2/maintenance_manual_hardware_replacement_procedures.html
- https://pubs.lenovo.com/sr630-v3/hardware_replacement_procedures.html
- https://pubs.lenovo.com/sr635-v3/hardware_replacement_procedures.html
- https://pubs.lenovo.com/sr645/cru_replacement_procedures.html
- https://pubs.lenovo.com/sr645-v3/hardware_replacement_procedures.html
- https://pubs.lenovo.com/sr650/maintenance_manual_hardware_replacement_procedures.html
- https://pubs.lenovo.com/sr650-v2/maintenance_manual_hardware_replacement_procedures.html
- https://pubs.lenovo.com/sr650-v3/hardware_replacement_procedures.html
- https://pubs.lenovo.com/sr655-v3/hardware_replacement_procedures.html
- https://pubs.lenovo.com/sr665/cru_replacement_procedures.html
- https://pubs.lenovo.com/sr665-v3/hardware_replacement_procedures.html
- https://pubs.lenovo.com/sr850-v3/hardware_replacement_procedures.html
- https://pubs.lenovo.com/sr950/maintenance_manual_hardware_replacement_procedures.html
- https://pubs.lenovo.com/sd530/maintenance_manual_hardware_replacement_procedures.html

After you finish

1. Complete the hardware replacement:

- For memory, GPU, CPU, network, or HBA parts, update the firmware and drivers by referring to the following page:

[ThinkAgile VX Best Recipe](#)

- For the system board:
 - a. Update the firmware and drivers.

[ThinkAgile VX Best Recipe](#)

- b. Update the VPD for your specific machine type.

To determine the correct VPD update procedure, see the following topic:

[“Identifying your system” on page 65](#)

Follow these instructions to update the VPD using XClarity Essentials OneCLI:

[Updating VPD using OneCLI](#)

- c. Configure the security settings and apply the latest best practice BIOS setting patterns.

[ThinkAgile VX Best Recipe](#)

- For cache disks or capacity disks:

- a. Recreate a disk group.
 - [Recreating a Disk Group](#)
 - b. Update the firmware and drivers by referring to the [ThinkAgile VX Best Recipe](#).
- Exit Maintenance Mode.
 - [Exiting Maintenance Mode](#)
- For memory/GPU/CPU/network/HBA:
 1. Update the firmware and drivers by referring to the [ThinkAgile VX Best Recipe](#).
 2. Exit Maintenance Mode.
 - [Exiting Maintenance Mode](#)
- For the system board:
 1. Update the firmware and drivers.
 - [ThinkAgile VX Best Recipe](#)
 2. Update the VPD.

See the following topic to find the VPD (SysInfoProdIdentifier) for your specific machine type:

https://pubs.lenovo.com/thinkagile-vx/vx_models.html

Follow these instructions to update the VPD using XClarity Essentials OneCLI:

 - [Updating VPD using OneCLI](#)
 3. Configure the security settings and apply the latest best practice BIOS setting patterns.
 - [ThinkAgile VX Best Recipe](#)
 4. Exit Maintenance Mode.
 - [Exiting Maintenance Mode](#)
- For cache disks or capacity disks:
 1. Recreate a disk group.
 - [Recreating a Disk Group](#)
 2. Update the firmware and drivers by referring to the [ThinkAgile VX Best Recipe](#).
 3. Exit Maintenance Mode.
 - [Exiting Maintenance Mode](#)

Verifying the physical parts replacement

Use this topic to verify the hardware replacement.

- No errors/alerts upon system boot.
- No errors/alerts via LED, BMC (XCC), Lenovo XClarity Administrator, Lenovo XClarity Integrator, vCenter Server or vSphere client.

Chapter 7. Troubleshooting

This chapter describes the diagnostic tools and troubleshooting information that are available to help you solve problems that might occur in the cluster hardware and software.

The data collected in a host support bundle includes the name of the affected ESXi host, logs, virtual descriptions, and information about the states of the affected machine. Host support bundles help diagnose and resolve problems specific to your deployment. When handling a support case, Lenovo Technical Support might request that you collect a host support bundle.

Troubleshooting VMware software

vSphere version	Links
VMware vSphere 8.0	<ul style="list-style-type: none">• Troubleshooting vCenter Server• Troubleshooting vCenter Server and ESXi Host Certificates• Troubleshooting hosts• Troubleshooting licensing
VMware vSphere 7.0	<ul style="list-style-type: none">• Troubleshooting vCenter Server• Troubleshooting vCenter Server and ESXi Host Certificates• Troubleshooting hosts• Troubleshooting licensing
VMware vSphere 6.7	<ul style="list-style-type: none">• Troubleshooting vCenter Server• Troubleshooting vSphere Web Client• Troubleshooting vCenter Server and ESXi Host Certificates• Troubleshooting hosts• Troubleshooting licensing

vSphere version	Links
VMware vSphere 6.5	<ul style="list-style-type: none"> • Troubleshooting vCenter Server and vSphere Web Client • Troubleshooting hosts • Troubleshooting virtual machines • Troubleshooting resource management • Troubleshooting availability • Troubleshooting storage • Troubleshooting networking • Troubleshooting licensing
VMware vSphere 6.0	<ul style="list-style-type: none"> • Troubleshooting vCenter Server • Troubleshooting vSphere Web Client • Troubleshooting vCenter Server and ESXi Host Certificates • Troubleshooting vCenter Server Plug-Ins • Troubleshooting resource management • Troubleshooting availability • Troubleshooting storage • Troubleshooting networking • Troubleshooting licensing

Troubleshooting Lenovo software

Software	Links
Lenovo XClarity Integrator for VMware vCenter	<ul style="list-style-type: none"> • Viewing hardware events • Troubleshooting
Lenovo XClarity Controller	Viewing Event Logs
Lenovo XClarity Provisioning Manager	<ul style="list-style-type: none"> • SD530/SR250/SR630/SR650/SR950 based models: Troubleshooting • SR630 V2/SR630 V3/SR635 V3/SR645/SR645 V3/SR650 V2/SR650 V3/SR655 V3/SR665/SR665 V3/SR850 V3 based models: Troubleshooting

Troubleshooting hardware

This chapter describes the diagnostic tools and troubleshooting information that are available to help you solve problems that might occur in the cluster hardware and software.

Viewing system event logs

- Lenovo XClarity Controller:
http://sysmgt.lenovofiles.com/help/topic/com.lenovo.systems.management.xcc.doc/event_log.html
- Lenovo XClarity Administrator:
http://sysmgt.lenovofiles.com/help/topic/com.lenovo.lxca.doc/events_vieweventlog.html

Troubleshooting

1. Collect event message IDs.

2. Go to <http://thinksystem.lenovofiles.com/help/index.jsp> and search with the message IDs.
3. Locate the message for the hardware platform in the search result.
4. Refer to the user response to troubleshoot the issues.

Appendix A. Getting help

If you need help, service, or technical assistance or just want more information about Lenovo products use the Lenovo Support Plan for ThinkAgile VX.

Details for the ThinkAgile VX Support Plan are available at the following site:

- ThinkAgile VX series Appliances/Integrated Systems:
<https://datacentersupport.lenovo.com/solutions/ht505725-lenovo-support-plan-thinkagile-vx-appliances>
- ThinkAgile VX series Certified Nodes:
<https://datacentersupport.lenovo.com/solutions/ht510302-lenovo-support-plan-thinkagile-vx-certified-nodes>

Obtaining the VMware logs

For more information about collecting VMware logs:

- [Collecting vSAN support logs](#)
- [Collecting logs using the vSphere Client](#)
- [Collecting logs using the vSphere Web Client](#)

Before you call

Before you call, there are several steps that you can take to try and solve the problem yourself. If you decide that you do need to call for assistance, gather the information that will be needed by the service technician to more quickly resolve your problem.

Attempt to resolve the problem yourself

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 documentation for most systems, operating systems, and programs contains 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.

You can find the product documentation for ThinkSystem products at the following location:

<http://thinksystem.lenovofiles.com/help/index.jsp>

You can take these steps to try to solve the problem yourself:

- Check all cables to make sure that they are connected.
- Check the power switches to make sure 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.
- If you have installed new hardware or software in your environment, check <http://www.lenovo.com/serverproven/> to make sure that the hardware and software is supported by your product.
- Go to <http://datacentersupport.lenovo.com> and check for information to help you solve the problem.
 - Check the Lenovo forums at https://forums.lenovo.com/t5/Datacenter-Systems/ct-p/sv_eg to see if someone else has encountered a similar problem.

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 documentation for most systems, operating systems, and programs contains 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.

Gathering information needed to call Support

If you believe that you require warranty service for your Lenovo product, the service technicians will be able to assist you more efficiently if you prepare before you call. You can also see <http://datacentersupport.lenovo.com/warrantylookup> for more information about your product warranty.

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.

- Hardware and Software Maintenance agreement contract numbers, if applicable
- Machine type number (Lenovo 4-digit machine identifier)
- Model number
- Serial number
- Current system UEFI and firmware levels
- Other pertinent information such as error messages and logs

As an alternative to calling Lenovo Support, you can go to <https://support.lenovo.com/servicerequest> to submit an Electronic Service Request. Submitting an Electronic Service Request will start the process of determining a solution to your problem by making the pertinent information available to the service technicians. The Lenovo service technicians can start working on your solution as soon as you have completed and submitted an Electronic Service Request.

Collecting service data

To clearly identify the root cause of a server issue or at the request of Lenovo Support, you might need to collect service data that can be used for further analysis. Service data includes information such as event logs and hardware inventory. Service data can be collected through the following tools:

- **Lenovo XClarity Integrator**

You can use the Lenovo XClarity Integrator web interface to collect service data for the server. The file can be saved and sent to Lenovo Support.

For more information about using the web interface to collect service data, see [Collecting service data](#).

- **Lenovo XClarity Controller**

You can use the Lenovo XClarity Controller web interface or the CLI to collect service data for the server. The file can be saved and sent to Lenovo Support.

- For more information about using the web interface to collect service data, see http://sysmgt.lenovofiles.com/help/topic/com.lenovo.systems.management.xcc.doc/NN1ia_c_servicesandsupport.html.
- For more information about using the CLI to collect service data, see http://sysmgt.lenovofiles.com/help/topic/com.lenovo.systems.management.xcc.doc/nn1ia_r_ffdcommand.html.

Contacting Support

You can contact Support to obtain help for your issue.

You can receive hardware service through a Lenovo Authorized Service Provider. To locate a service provider authorized by Lenovo to provide warranty service, go to <https://datacentersupport.lenovo.com/serviceprovider> and use filter searching for different countries. For Lenovo support telephone numbers, see <https://datacentersupport.lenovo.com/supportphonenumberlist> for your region support details.

Appendix B. Trademarks

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