Lenovo ThinkAgile VX Series
Hardware Replacement Guide – 2U Models

Machine Types: 7Y14, 7Y94
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Chapter 1. Introduction

This document describes the procedures to diagnose and replace hardware in Lenovo ThinkAgile VX 2U models.

Chapter 2 identifies the location of model parts. Chapter 3 details diagnosis and part replacement procedures. Chapter 4 describes software tools to help configure the models. Chapter 5 details configuration procedures that may be required for some part replacements.

Use the following general steps to maintain and replace hardware:
- Identify and diagnose a problem
- Request and receive a replacement part (customer replaceable unit – CRU) from Lenovo
- Node shut down, unless it is a hot-swap part
- Part replacement
- Node power on, unless it is a hot-swap part
- Verify the problem is resolved by part replacement.
- Return failed part(s) to Lenovo

Customer replaceable units (CRUs) are parts that can be replaced in the Lenovo ThinkAgile VX Series models. Note: parts cannot be removed or added.

Replacement of CRUs is user responsibility. Lenovo charges for CRU installation at user request. The most important CRU replacements are:
- Replace a front HDD/SSD, page 7
- Replace a power supply, page 8
- Replace a chassis fan, page 9
- Replace a network interface card, page 10
- Replace a host bus adapter (HBA), page 11
- Replace a memory DIMM, page 13
- Replace the M.2 adapter, page 14

You may request Lenovo install a Field replaceable unit (FRU) at no additional charge, while under warranty. Some of the most important FRU parts include Microprocessors and System Motherboards.

Below are the ThinkAgile VX 2U Models and their corresponding CTO numbers.

<table>
<thead>
<tr>
<th>Machine Type</th>
<th>CTO Model #</th>
<th>Form Factor</th>
<th>CTO Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>7Y14</td>
<td>7Y14CTO1WW</td>
<td>2U</td>
<td>ThinkAgile VX5520</td>
</tr>
<tr>
<td>7Y14</td>
<td>7Y14CTO2WW</td>
<td>2U</td>
<td>ThinkAgile VX7520</td>
</tr>
<tr>
<td>7Y14</td>
<td>7Y14CTO3WW</td>
<td>2U</td>
<td>ThinkAgile VX3520-G</td>
</tr>
<tr>
<td>7Y14</td>
<td>7Y14CTO4WW</td>
<td>2U</td>
<td>ThinkAgile VX7520-N</td>
</tr>
<tr>
<td>7Y94</td>
<td>7Y94CTO1WW</td>
<td>2U</td>
<td>ThinkAgile VX5520 Appliance</td>
</tr>
<tr>
<td>7Y94</td>
<td>7Y94CTO2WW</td>
<td>2U</td>
<td>ThinkAgile VX7520 Appliance</td>
</tr>
<tr>
<td>7Y94</td>
<td>7Y94CTO3WW</td>
<td>2U</td>
<td>ThinkAgile VX3520G Appliance</td>
</tr>
<tr>
<td>7Y94</td>
<td>7Y94CTO5WW</td>
<td>2U</td>
<td>ThinkAgile VX 2U Node</td>
</tr>
</tbody>
</table>
Chapter 2. Identify parts

This chapter helps identify parts location for Lenovo ThinkAgile VX Series models.

Front view

![Lenovo ThinkAgile VX3520-G/VX 2U Node front view](image)

Table 1. Components on the front of the VX3520-G/VX 2U Node

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>VGA Connector</td>
</tr>
<tr>
<td>2</td>
<td>1x USB 2.0 port with XCC access</td>
</tr>
<tr>
<td>3</td>
<td>1x USB 3.0 port</td>
</tr>
<tr>
<td>4</td>
<td>Power button</td>
</tr>
<tr>
<td>5</td>
<td>Status LEDs</td>
</tr>
<tr>
<td>6</td>
<td>Up to 16x 2.5-inch hot-swap drive bays</td>
</tr>
</tbody>
</table>

![Lenovo ThinkAgile VX5520/VX 2U Node front view](image)

Table 2. Components on the front of the ThinkAgile VX5520/VX 2U Node

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>VGA connector</td>
</tr>
<tr>
<td>2</td>
<td>1x USB 3.0 port</td>
</tr>
<tr>
<td>3</td>
<td>1x USB 2.0 port with XCC access</td>
</tr>
<tr>
<td>4</td>
<td>Power button</td>
</tr>
<tr>
<td>5</td>
<td>Status LEDs</td>
</tr>
<tr>
<td>6</td>
<td>12x 3.5-inch hot-swap drive bays</td>
</tr>
</tbody>
</table>
Figure 3. Lenovo ThinkAgile VX7520/VX 2U Node front view

Table 3. Components on the front of the VX7520/VX 2U Node

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>VGA Connector</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>1x USB 2.0 port with XCC access</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>Status LEDs</td>
<td>6</td>
</tr>
</tbody>
</table>

Model components

Figure 4. Inside view of system and location of parts

Table 4. Model components

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>PCIe riser card</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>Hot-swap fans</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>Memory DIMM</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td>Hot-swap PSU, 1+1 redundant</td>
<td>8</td>
</tr>
<tr>
<td>9</td>
<td>LOM card</td>
<td></td>
</tr>
</tbody>
</table>
Rear view

Figure 5. Rear view of the model

Table 5. Components on the rear of the model

<table>
<thead>
<tr>
<th></th>
<th>10/100/1000 Mb Ethernet port for XCC</th>
<th>2 Up to 6x PCIe slots</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>2x hot-swap power supplies</td>
<td>4 2x USB 3.0 ports</td>
</tr>
<tr>
<td>5</td>
<td>1x VGA port</td>
<td>6 LOM card</td>
</tr>
</tbody>
</table>
Chapter 3. Hardware replacement procedures

This chapter details procedures to replace hardware in Lenovo ThinkAgile VX Series models. When instructed to return a part, follow all packaging instructions, and use all supplied shipping/packaging materials.

Replaceable parts are:

- Structural parts: The user is responsible to purchase and replace structural parts such as chassis assembly, top cover, and bezel. Lenovo charges to acquire or installs a structural component at user request.
- Customer replaceable unit (CRU): Replacement of CRUs is the user’s responsibility. If Lenovo installs a CRU upon user request, there is a charge.
- Field replaceable unit (FRU): You may install a FRU yourself or request Lenovo to install it, at no additional charge, under the type of warranty service that is designated for your server.

For information about warranty terms, go to: https://datacentersupport.lenovo.com/warranty

For more information about getting service and assistance, see Getting help and technical assistance.

The remainder of this chapter is divided into sections of instructions and procedures to remove and replace major parts in LenovoThinkAgile VX Series models.

Replacing a front HDD/SSD

Each Lenovo ThinkAgile VX Series model contains solid state drives (SSDs) and hard disk drives (HDDs). User data is striped across these drives, so they are referred to as “data drives.” A node might be able to self-correct for a data drive failure, but does lead to system degradation. Replace failed data drives quickly. A failed data drive is indicated by:

- The vSphere web console displays a disk error
- The amber LED on the front of a drive carrier is illuminated

To replace an SSD or HDD in the front of the model:

1. To identify a failed data drive, use the procedure Identify Failed Disk in the VMware Storage and Availability Technical Documents Repository.
2. To prepare to replace a failed cache drive, use the Removing a Failed Cache Disk procedure in the VMware Storage and Availability Technical Documents Repository.
3. To prepare to replace a failed capacity drive, use the Removing a Failed Capacity Disk procedure in the VMware Storage and Availability Technical Documents Repository.
4. Replace the hot swap drive as described in the Hot-swap drive replacement procedure in the ThinkSystem Information Center.
5. Bring the cache drive online by using the Creating a Disk Group procedure in VMware Storage and Availability Technical Documents Repository.
6. Bring the data drive online by using the Adding a Capacity Tier Device to a Disk Group in the VMware Storage and Availability Technical Documents Repository.
Replacing a power supply unit (PSU)

Lenovo ThinkAgile VX Series models use two power supply units. Those power supplies are redundant when using 208 - 230V input power, allowing one power supply to meet the needs of the node. Losing one power supply may not impact node operation; however, replace a failed power supply as soon as possible to restore redundancy.

A failed power supply unit is indicated by:

- Amber warning LED on node front panel is on
- XCC shows a power supply alert
- Lenovo XClarity Administrator web console shows a power supply alert
- Lenovo XClarity Integrator console shows a power supply alert
- The vSphere client Hardware Status tab shows a power supply alert

Table 6. Power supply options

<table>
<thead>
<tr>
<th>Feature</th>
<th>Display Description</th>
<th>VX3520-G</th>
<th>VX5520</th>
<th>VX7520</th>
<th>VX 2U Node</th>
</tr>
</thead>
<tbody>
<tr>
<td>AVWC</td>
<td>ThinkSystem 550W(230V/115V) Platinum Hot-Swap Power Supply</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AVWD</td>
<td>ThinkSystem 750W(230/115V) Platinum Hot-Swap Power Supply</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AVWE</td>
<td>ThinkSystem 750W (230V) Titanium Hot-Swap Power Supply</td>
<td>*</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AVWF</td>
<td>ThinkSystem 1100W (230V/115V) Platinum Hot-Swap Power Supply</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>AVWG</td>
<td>ThinkSystem 1600W (230V) Platinum Hot-Swap Power Supply</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
</tbody>
</table>

Figure 6. Hot-swap power supply

To replace a power supply:

1. Lenovo ThinkAgile VX Series models contain two power supplies. Identify the failed power supply by checking in XCC, Lenovo XClarity Administrator web console, Lenovo XClarity Integrator console or by the indicator lights on the power supply units.
2. Disconnect the power supply power cable carefully. Do not dislodge the other power cable.
3. Remove the power supply as described in the Remove a hot-swap power supply procedure in the ThinkSystem Information Center.
4. Replace the power supply as described in the Install a hot-swap power supply procedure in the ThinkSystem Information Center.
5. Reconnect the power cable.
6. Verify the power supply is successfully replaced:
   - Amber warning light on the server front panel is off
   - Green indicator light on each power supply is on
   - No error shown in XCC
   - No error shown in Lenovo XClarity Administrator web console
   - No error shown in Lenovo XClarity Integrator console

---

**Replacing a chassis fan**

Failed or failing chassis fans can cause the system to overheat and shutdown. Replace a failed chassis fan as soon as possible. A failed chassis fan is indicated by:

- An error in XCC
- An error in the Lenovo XClarity Administrator web console
- An error in the Lenovo XClarity Integrator console

---

![Figure 7. Chassis fan](image)

**Note:** It is possible to replace the chassis fan while the system is powered on, if the cable management arm is in place.

To replace a chassis fan:

1. Pull the node chassis from the rack.
2. Remove the top cover as described in the Removing the top cover procedure in the ThinkSystem Information Center.
3. Replace the chassis fan with the error LED on as described in the Replacing a hot-swap fan procedure in the ThinkSystem Information Center.

4. Replace the top cover as described in the Replacing the top cover procedure in the ThinkSystem Information Center.

5. Push node chassis back into the rack.

6. Verify that the chassis fan is successfully replaced:
   - Error LED for the replaced fan is off
   - Amber warning light on the node front panel is off
   - No error shown in XCC
   - No error shown in Lenovo XClarity Administrator web console
   - No error shown in Lenovo XClarity Integrator console

---

**Replacing a network interface card (NIC)**

Lenovo ThinkAgile VX Series models can support up to eight network ports; two or four 10 GbE ports (up to two NICs), and two or four 10 GbE ports on the LOM adapter, connected to the motherboard. A node requires network connectivity to function as part of a cluster. If one network interface is available, the failure of the other network interfaces does not cause service interruption.

A failed NIC is indicated by:
   - No LED is illuminated for the network interface.
   - Guest VM performance degrades.
   - Guest VMs, the vSphere web console, and esxcli are unavailable.
   - VM migration fails with an error message such as:

```
The migration was cancelled because the amount of changing memory for the VM was greater than the available network bandwidth
```

---

*Figure 8. Intel X550-T2 dual port 10G Base-T adapter*
To replace an NIC:

1. Lenovo ThinkAgile VX Series models can contain zero or one LOM NIC, with two or four ports, as well as up to two PCIe NICs. For nodes with multiple NICs, verify which has failed. Identify the failed NIC by either checking in the XCC or checking the indicator lights on the network ports.

2. Place the node in maintenance mode by following the [Enter Maintenance Mode](#) procedure described in the VMware Storage and Availability Technical Documents Repository.

3. Power off the node and if the cable management arm is not in place, disconnect all the cables. Pull the node chassis out of the rack.

4. Remove the top cover as described in the [Removing the top cover](#) procedure in the [ThinkSystem Information Center](#).

5. Replace the defective LOM NIC as described in the [LOM Adapter replacement](#) procedure or replace one of the PCIe NICs as described in the [Riser card replacement](#) and [PCIe adapter replacement](#) procedures in the ThinkSystem Information Center.

6. Replace the top cover as described in the [Replacing the top cover](#) procedure in the ThinkSystem Information Center.

7. Push the node chassis back into the rack and reconnect the cables as necessary. Power on the node.

8. Exit maintenance mode.

9. Verify that the NIC has been successfully replaced:
   - Amber warning light on the node front panel is off
   - All network ports are fully functional

---

**Replacing a host bus adapter (HBA)**

A node may be able to self-correct for other adapter card errors, however, a failed HBA can lead to system degradation and should be quickly addressed.

A failed HBA card is indicated by:

- vCenter Alarms or Hardware Status shows an alert
- Slow disk performance or slow system performance
- The hypervisor cannot detect SSDs and HDDs, or the red LEDs on the drives are illuminated
- The hypervisor or BIOS does not detect the HBA card
To replace an HBA card:

*Note: The VX3520-G and VX5520 each contain only one HBA adapter.

### Table 7. HBA Options

<table>
<thead>
<tr>
<th>Node Type</th>
<th>HBA Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>VX5520, VX3520-G, VX 2U Node</td>
<td>ThinkSystem 430-16i SAS/SATA 12Gb HBA (x1)</td>
</tr>
<tr>
<td>VX7520, VX 2U Node</td>
<td>ThinkSystem 430-8i SAS/SATA 12Gb HBA (x3)</td>
</tr>
</tbody>
</table>

1. Place the node in maintenance mode by following the [Enter Maintenance Mode](#) procedure described in the VMware Storage and Availability Technical Documents Repository.
2. Power off the node and if the cable management arm is not in place, disconnect all the cables. Pull the node chassis out of the rack.
3. Remove the top cover as described in the [Removing the top cover](#) procedure in the ThinkSystem Information Center.
4. Replace the failed HBA adapter using procedures from the ThinkSystem Information Center:
   - For all models, the HBA adapter is installed on the system motherboard. It is replaced using the [RAID adapter replacement](#) procedure.
5. Replace the top cover as described in the [Replacing the top cover](#) procedure in the ThinkSystem Information Center.
6. Push the node chassis back into the rack and reconnect the cables as necessary. Power on the node.
7. Verify that the HBA is successfully replaced:
   - Amber warning light on the server is off
   - All of the drives are shown as online. Verify the LSI HBA card is detected using the `lspci` command:

```
root@host:~# lspci | grep -i SAS3408
00:05.0 Serial Attached SCSI controller: LSI Logic / Symbios Logic SAS3408 Fusion- MPT Tri-Mode I/O Controller Chip (IOC) (rev 01)
```

   - If the LSI HBA card is not present, ensure the card is properly connected. If the card is still not detected, contact Lenovo support.
• If the system fails to boot from the boot drive after replacing the HBA, verify the option ROM is turned off for the HBA adapter.

8. Exit maintenance mode.

---

**Replacing a memory DIMM**

A node might be able to self-correct for certain memory errors, however, failed memory can lead to system degradation and should be quickly replaced. Indications of a failed DIMM are:

- A post error on boot
- An error in XCC
- Not all memory is detected. For example, the model should have 256 GB per node and the host only shows 240 GB

The CRUs for memory DIMMs are as follows:

<table>
<thead>
<tr>
<th>Table 8. Memory DIMM options</th>
</tr>
</thead>
<tbody>
<tr>
<td>ThinkSystem 8GB TruDDR4 2666 MHz (1Rx8 1.2V) RDIMM</td>
</tr>
<tr>
<td>ThinkSystem 16GB TruDDR4 2666 MHz (1Rx4 1.2V) RDIMM</td>
</tr>
<tr>
<td>ThinkSystem 16GB TruDDR4 2666 MHz (2Rx8 1.2V) RDIMM</td>
</tr>
<tr>
<td>ThinkSystem 32GB TruDDR4 2666 MHz (2Rx4 1.2V) RDIMM</td>
</tr>
<tr>
<td>ThinkSystem 64GB TruDDR4 2666 MHz (4Rx4 1.2V) LRDIMM</td>
</tr>
</tbody>
</table>

To replace a memory DIMM:

1. Identify the failed DIMM by either checking the event logs in UEFI setup or use the XCC web console to browse the post event log. The event log contains information about the location of the DIMM fault.
2. Place the node in maintenance mode by following the Enter Maintenance Mode procedure described in the VMware Storage and Availability Technical Documents Repository.
3. Power off the node and if the cable management arm is not in place, disconnect all the cables. Pull the node chassis out of the rack.
4. Remove the top cover as described in the Removing the top cover procedure in the ThinkSystem Information Center.
5. Remove the air baffle as described in Removing the air baffle procedure in the ThinkSystem Information Center.
6. Replace the memory DIMM as described in the DIMM Replacement procedure in the ThinkSystem Information Center.
7. Replace the air baffle as described in the Replacing the air baffle procedure in the ThinkSystem Information Center.
8. Replace the top cover as described in the Replacing the top cover procedure in the ThinkSystem Information Center.
9. Push the node chassis back into the rack and reconnect the cables as necessary. Power on the node.
10. Exit maintenance mode.
11. Verify the DIMM memory failure is resolved:
   - No error in the post event log
   - No error shown in XCC
   - No error shown in Lenovo XClarity Administrator and Lenovo XClarity Integrator

## Replacing the M.2 Adapter

An assembled M.2 backplane and M.2 drive is also known as M.2 module. Lenovo support may ask that the M.2 module or M.2 backplane and M.2 drive be replaced.

![Figure 10. M.2 backplane and two M.2 drives](image)

To replace the M.2 backplane and M.2 drive:

1. From vSphere web client migrate all VMs if DRS is not enabled on the cluster.
2. Place the node in maintenance mode by following the [Enter Maintenance Mode](VMware Storage and Availability Technical Documents Repository) procedure described in the [VMware Storage and Availability Technical Documents Repository](VMware Storage and Availability Technical Documents Repository).
3. Power off the node and if the cable management arm is not in place, disconnect all the cables. Pull the node chassis out of the rack.
4. Remove the top cover as described in the [Removing the top cover](ThinkSystem Information Center) procedure in the [ThinkSystem Information Center](ThinkSystem Information Center).
5. Replace the M.2 backplane and M.2 drive as described in the [M.2 backplane and M.2 drive replacement](ThinkSystem Information Center) procedure in the [ThinkSystem Information Center](ThinkSystem Information Center).
6. Replace the top cover as described in the [Replacing the top cover](ThinkSystem Information Center) procedure in the [ThinkSystem Information Center](ThinkSystem Information Center).
7. Push the node chassis back into the rack and reconnect the cables as necessary. Power on the node.
8. Verify that the M.2 adapter is successfully replaced:
   - Amber warning light on the node front panel is off
   - System boots successfully with no POST errors or other errors
Chapter 4. Software Tools

Use the following software tools for easier model configuration.

Advanced Settings Utility

The ASU tool is a scriptable command line program. Use the ASU tool on multiple operating-system platforms to:

- Modify selected basic input/output system (BIOS) CMOS settings without restarting the system to access F1 settings
- Modify selected baseboard management controller setup settings
- Modify selected Remote Supervisor Adapter and Remote Supervisor Adapter II setup settings
- Modify selected settings in the integrated management module
- Modify a limited number of VPD settings
- Remote connectivity to support setting all the listed firmware types settings. Remote connection support requires accessing the XCC external port over a LAN

For more information and to download the ASU program, go to the Advanced Settings Utility (ASU) for Lenovo x86 servers website.

VMware Support Link

Go to https://docs.vmware.com/en/VMware-vSAN/index.html for more detailed information about the software, as well as access to Knowledge Base articles. Registration is required.

Software-centric hardware replacement documentation is available at https://storagehub.vmware.com/.
Chapter 5. Configuration procedures

The chapter contains configuration procedures used in one or more hardware replacement procedures described in Chapter 3.

This chapter also describes procedures to configure firmware for the Lenovo ThinkAgile VX Series models.

UEFI boot mode

Use the ASU system tool, or other means, to enable UEFI boot mode, if not already enabled.

>asu64 set BootModes.SystemBootMode “UEFI Mode”

Figure 11 shows where to change the setting from the UEFI setup page, accessed via F1 during boot.

![UEFI Boot Mode]

Figure 11. UEFI Boot Mode

Select UEFI Boot Mode to ensure that “HARD DISK 0” in the boot order uses the two 128GB M.2 SSD, in a RAID1 configuration for the hypervisor boot drive.
Use the ASU system tool, or other means, to select UEFI Boot Mode:

>asu64 set BootModes.SystemBootMode "UEFI Mode"

 Alternatively, use UEFI setup page to select UEFI Boot mode: Boot Manager > Boot Modes > System Boot Mode > [UEFI Mode]

Alternatively, use the XCC console to select UEFI Boot mode:

![Figure 12. XCC Console selection of UEFI Boot mode](image)

**Bios Optimization**

Lenovo recommends the following BIOS optimization settings for Lenovo ThinkAgile VX Series models.

**Enable Direct Cache Access (DCA)**

Enable DCA mode for the processors to allow the network adapters to place data directly into the CPU cache which reduces cache misses and can improve performance.

Use the ASU system tool, or other means, to enable the DCA processor option:

>asu64 set Processors.DCA Enable
Figure 13 illustrates where to change the setting using UEFI setup.

**Figure 13. Direct Cache Access (DCA)**

**Operating mode**

Operating mode must be configured to ensure correct operation. To configure:

1. Turn on the server.
   
   Note: If necessary, connect a keyboard, monitor, and mouse to the console breakout cable and connect the console breakout cable to the compute node.

2. When the prompt ‘Press <F1> Setup’ is displayed, press F1 and enter UEFI setup. Follow the instructions on the screen.
3. Select System Settings --> Operating Modes and set it to ‘Custom Mode’ as shown in ‘Custom Mode’ figure, then set UEFI settings as follows:

Choose Operating Mode <Custom>
Memory Speed <Max Performance>
Memory Power Management <Disabled>
CPU P-state Control <Autonomous>
C1 Enhanced Mode <Disable>
UPI Link Frequency <Max Performance>
UPI Link Disable <Enable All Links>
Turbo Mode <Enable>
Energy Efficient Turbo <Enable>
C-States <Disable>
Power/Performance Bias <Platform Controlled>
Platform Controlled Type <Maximum Performance>
Page policy <Closed>

Figure 14 illustrates where to change the setting using UEFI setup.

4. Press Escape key 3 times, and Save Settings.
   Exit Setup and restart the server so that UEFI changes take effect.
Power performance bias

This option allows the OS (hypervisor) to control the node power. Many customers prefer this setting as it saves on OPEX.

Use the ASU system tool, or other means, to set the power performance bias to “OS Controlled”:

> asu64 set Power.PowerPerformanceBias “OS Controlled”

Figure 15 illustrates where to change the setting using UEFI setup.

![Figure 15. OS Controlled](image-url)
Configure Boot Order

Use the ASU system tool, or other means, to configure the boot order as follows:

1. CD/DVD Rom
2. Hard Disk 0
3. PXE Network

>asu64 set BootOrder.BootOrder="UEFI Only=CD/DVD Rom=Hard Disk 0=PXE Network"

Figure 16 illustrates the final boot order in the UEFI setup screen.
Configure M.2 Mirroring

The M.2 adapter must be configured with a RAID 1 mirrored virtual drive to allow the Hypervisor to be installed for booting. Follow these steps from the UEFI setup screen:

System Settings > Storage > M.2 + Mirroring Kit Configuration Utility > [Configuration Management] > [Create RAID Configuration] > [RAID Level] > Select RAID 1 > CREATE

Figure 17 shows the RAID level selection

![Figure 17. Create RAID 1 Configuration for M.2 Mirroring](image)
Figure 18 illustrates creation of the virtual disk

![Virtual Disk Creation](image)

Figure 18. Create Virtual Disk confirmation
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