

LXPM4 on ThinkSystem V3 servers

New features and enhancements

The Lenovo logo is positioned in the top right corner of the slide. It consists of the word "Lenovo" in a white, sans-serif font, oriented vertically. The text is set against a rectangular background that features a vertical color gradient, transitioning from a light green at the top to a light blue at the bottom.

Tool overview

LXPM4 has the following new features and enhancements:

- LXPM4 graphic interface improvements
 - F1 System Setup
 - System summary – Update VPD
 - UEFI setup – menu path
- General new features or feature enhancements
 - QR codes for user access
 - QR code for an event
 - Support for more RAID controllers and enhanced RAID Setup
 - Effortless Reset
 - SMB Protocol
- LXPM4 OS deployment scope for ThinkSystem V3 servers

Note: LXPM4 is only available on the ThinkSystem V3 platform.

F1 System Setup

Click the steps to see a comparison of LXPM3 and LXPM4

Step

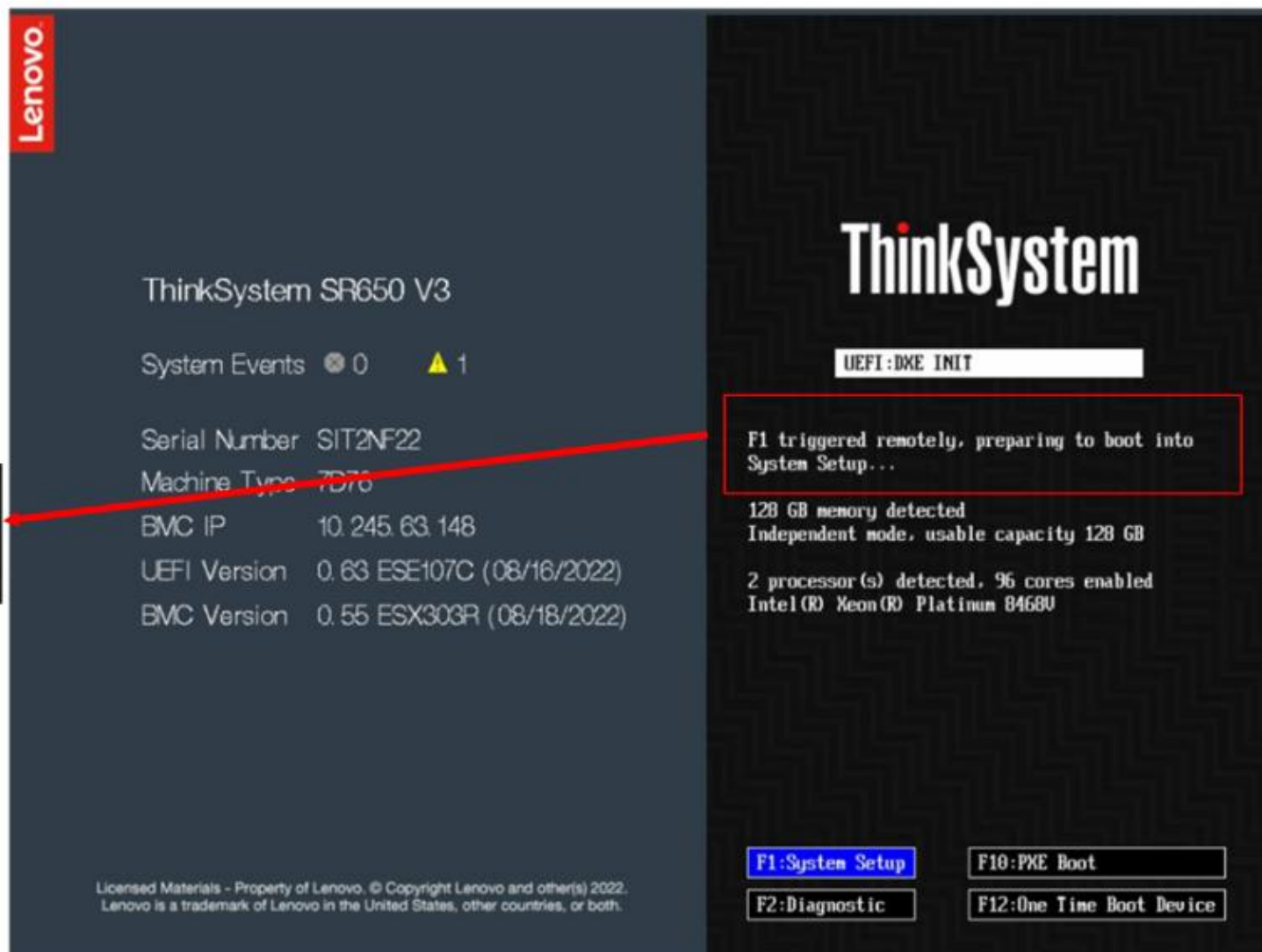


F1 System Setup

Press F1 while the system is booting to the post screen. A new description bar will be displayed on the post screen.

F1 triggered remotely, preparing to boot into System Setup...

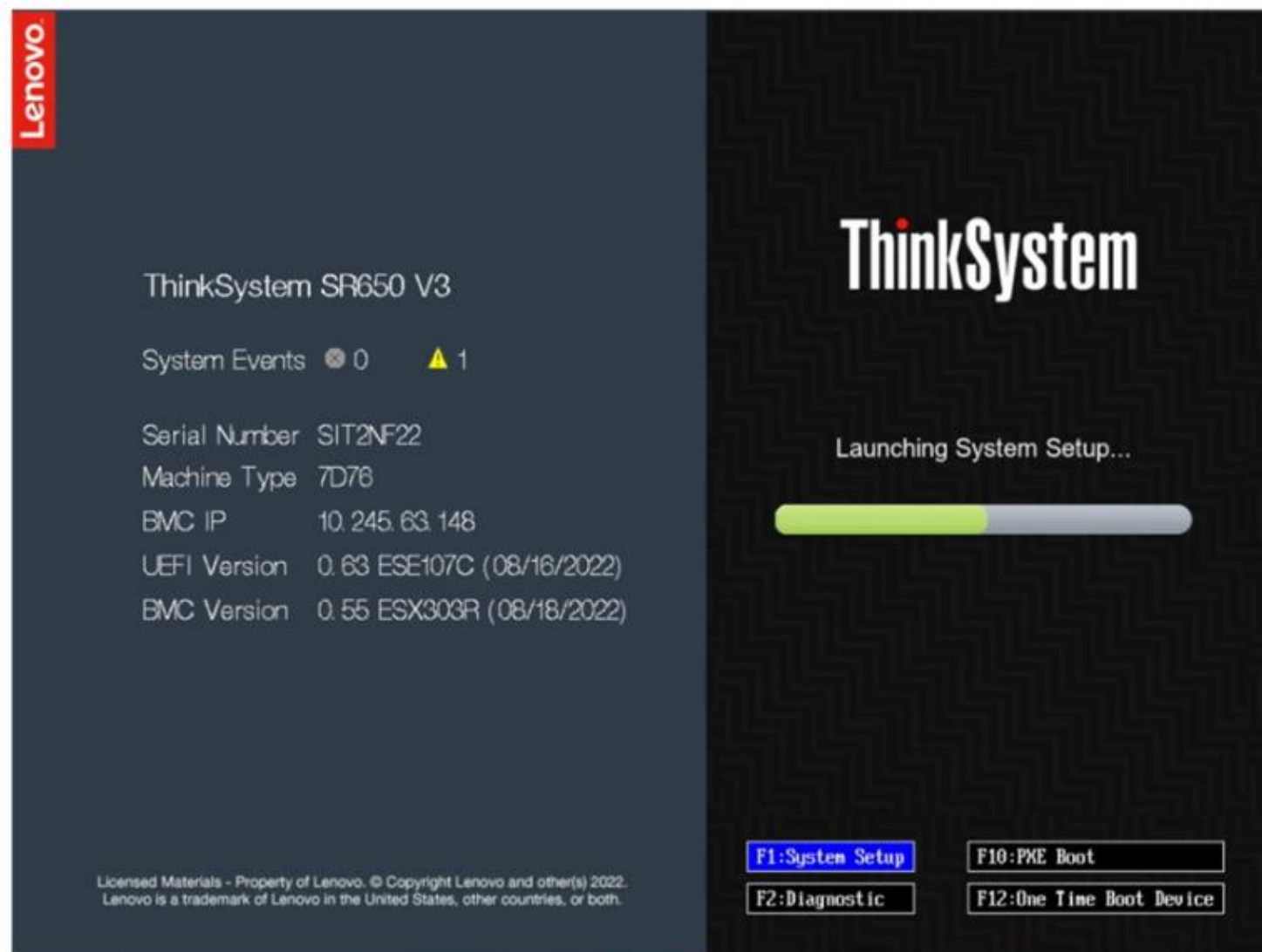
Step



F1 System Setup

The **Launching System Setup** screen will be displayed.

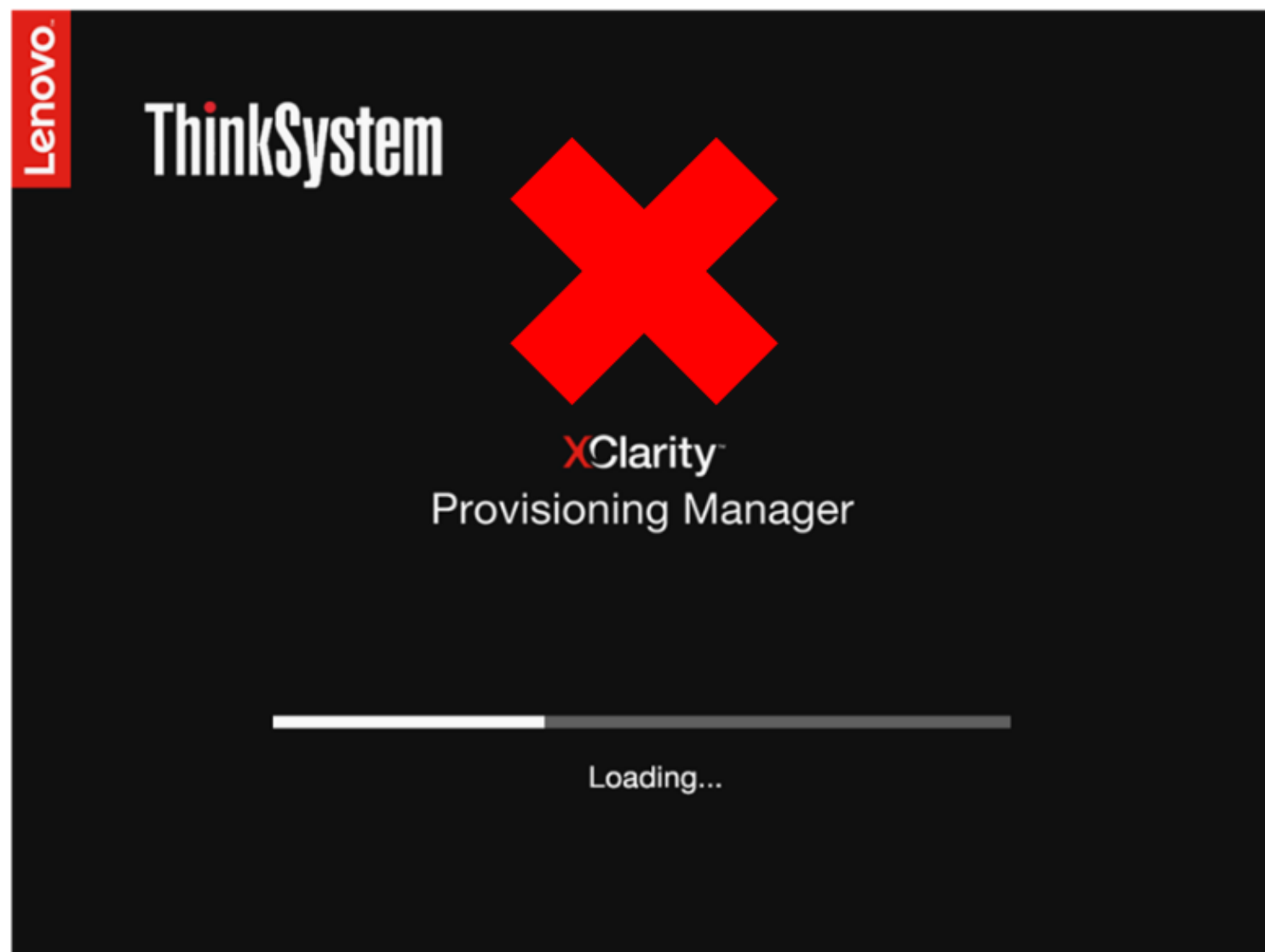
Step



F1 System Setup

The XClarity Provisioning Manager loading screen will no longer be available with LXPM4.

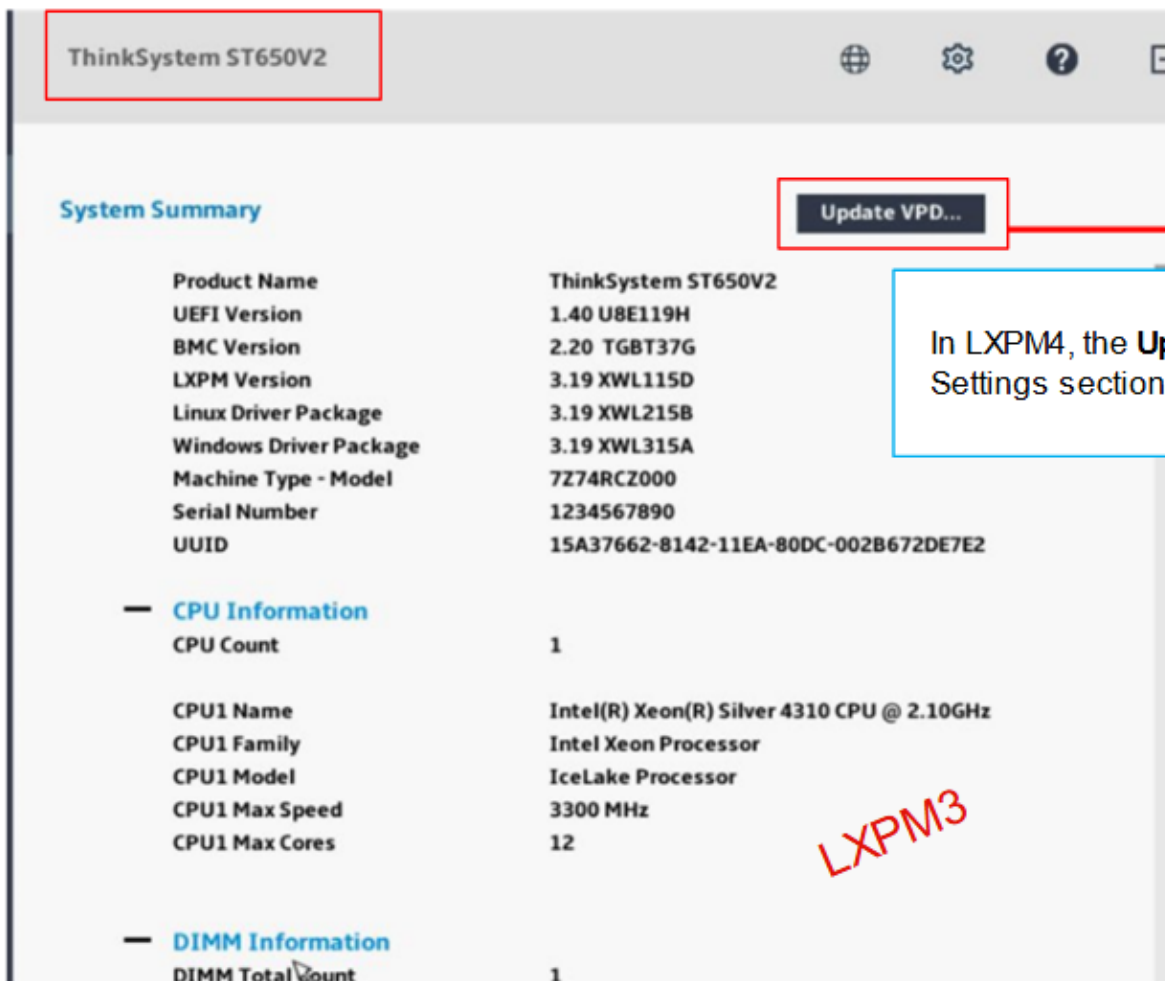
Step **1** — **2** — **3** 



System summary – Update VPD

In LXPM3, only the model name is given.

In LXPM4, the model name, machine type, and serial number are given.



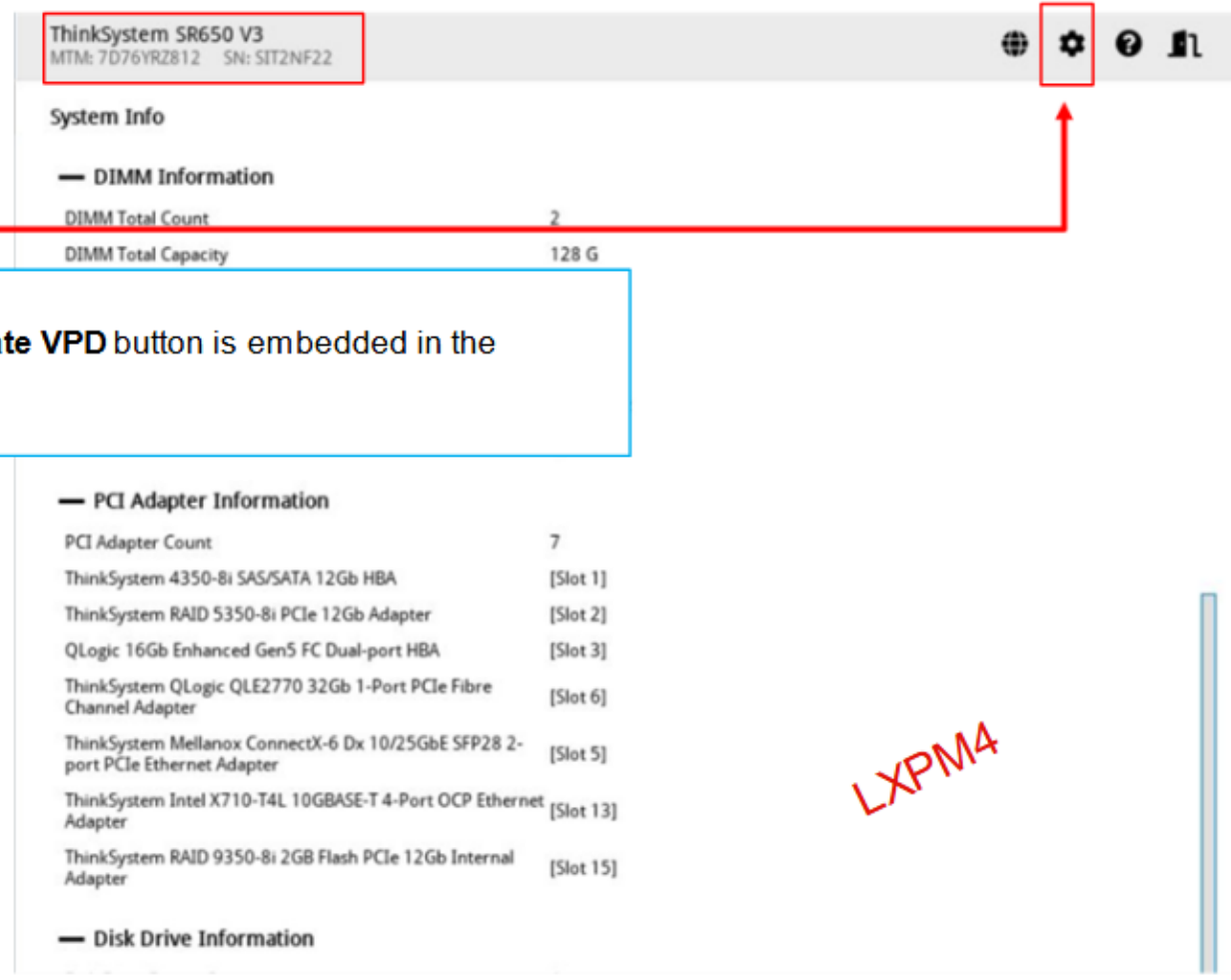
The screenshot shows the LXPM3 'System Summary' page. At the top, a header bar displays 'ThinkSystem ST650V2' in a red box. Below this, a 'System Summary' section lists various system details. A red box highlights the 'Update VPD...' button. A red arrow points from this button to the settings icon in the LXPM4 screenshot. The system information table is as follows:

Product Name	ThinkSystem ST650V2
UEFI Version	1.40 U8E119H
BMC Version	2.20 TGBT37G
LXPM Version	3.19 XWL115D
Linux Driver Package	3.19 XWL215B
Windows Driver Package	3.19 XWL315A
Machine Type - Model	7Z74RCZ000
Serial Number	1234567890
UUID	15A37662-8142-11EA-80DC-002B672DE7E2

Below the system information, there are sections for 'CPU Information' and 'DIMM Information'. The 'CPU Information' section shows 1 CPU with an Intel(R) Xeon(R) Silver 4310 CPU @ 2.10GHz. The 'DIMM Information' section shows 1 DIMM.

LXPM3

In LXPM4, the **Update VPD** button is embedded in the Settings section.



The screenshot shows the LXPM4 'System Info' page. At the top, a header bar displays 'ThinkSystem SR650 V3' in a red box, with 'MTM: 7D76YRZ812' and 'SN: SIT2NF22' below it. A red box highlights the settings icon (gear) in the top right corner, with a red arrow pointing from the 'Update VPD...' button in the LXPM3 screenshot. The page is divided into sections: 'System Info', 'DIMM Information', 'PCI Adapter Information', and 'Disk Drive Information'. The 'DIMM Information' section shows 2 DIMMs with a total capacity of 128 G. The 'PCI Adapter Information' section shows 7 adapters, including SAS/SATA HBA, RAID, QLogic FC, QLogic Fibre Channel, Mellanox ConnectX-6, Intel X710-T4L, and RAID flash. The 'Disk Drive Information' section is partially visible.

LXPM4

UEFI Setup – menu path

The screenshot shows the LXPM4 UEFI Setup interface for a ThinkSystem SR650 V3 server. The top header displays the server model and MTM/SN numbers. The left sidebar contains a list of menu items: System Summary, RAID Setup, OS Installation, Firmware Update, UEFI Setup (highlighted), Cloning, Diagnostics, and Effortless Reset. The main content area is titled 'UEFI Setup' and lists sub-menus: System Information, System Settings (highlighted), Date and Time, Start Options, Boot Manager, BMC Settings, and User Security. The 'System Settings' sub-menu is expanded, showing options: Create Array, Create maxCache Array, and Manage Arrays. A breadcrumb trail at the top right reads: < System Settings / Storage / 5350-8i / Array Configuration. A red arrow points from the 'Create Array' option to this breadcrumb trail. A blue box highlights the breadcrumb trail, and a larger white box with a red arrow points to it from the text: 'In LXPM4, the full UEFI Setup menu path will be displayed.'

ThinkSystem SR650 V3
MTM: 7D76 SN: 45349087

UEFI Setup

- System Information
- System Settings
- Date and Time
- Start Options
- Boot Manager
- BMC Settings
- User Security

< System Settings / Storage / 5350-8i / Array Configuration

► Create Array

► Create maxCache Array

► Manage Arrays

In LXPM4, the full UEFI Setup menu path will be displayed.

LXPM4

The screenshot shows the LXPM3 Provisioning Manager interface for a ThinkSystem ST650V2 server. The top header displays the server model. The left sidebar contains a list of menu items: Exit UEFI Setup, System Information, System Settings (highlighted), Date and Time, Start Options, Boot Manager, BMC Settings, System Event Logs, and User Security. The main content area is titled 'Provisioning Manager' and lists sub-menus: <F1> Start Control (with a dropdown menu set to 'Auto'), Devices and I/O Ports, Driver Health, Foreign Devices, Legacy BIOS, Memory, Network, Operating Modes, Power, Processors, Recovery and RAS, Security, and Storage.

Provisioning Manager

ThinkSystem ST650V2

< Exit UEFI Setup

System Information

System Settings

Date and Time

Start Options

Boot Manager

BMC Settings

System Event Logs

User Security

<F1> Start Control

Auto

> Devices and I/O Ports

> Driver Health

> Foreign Devices

> Legacy BIOS

> Memory

> Network

> Operating Modes

> Power

> Processors

> Recovery and RAS

> Security

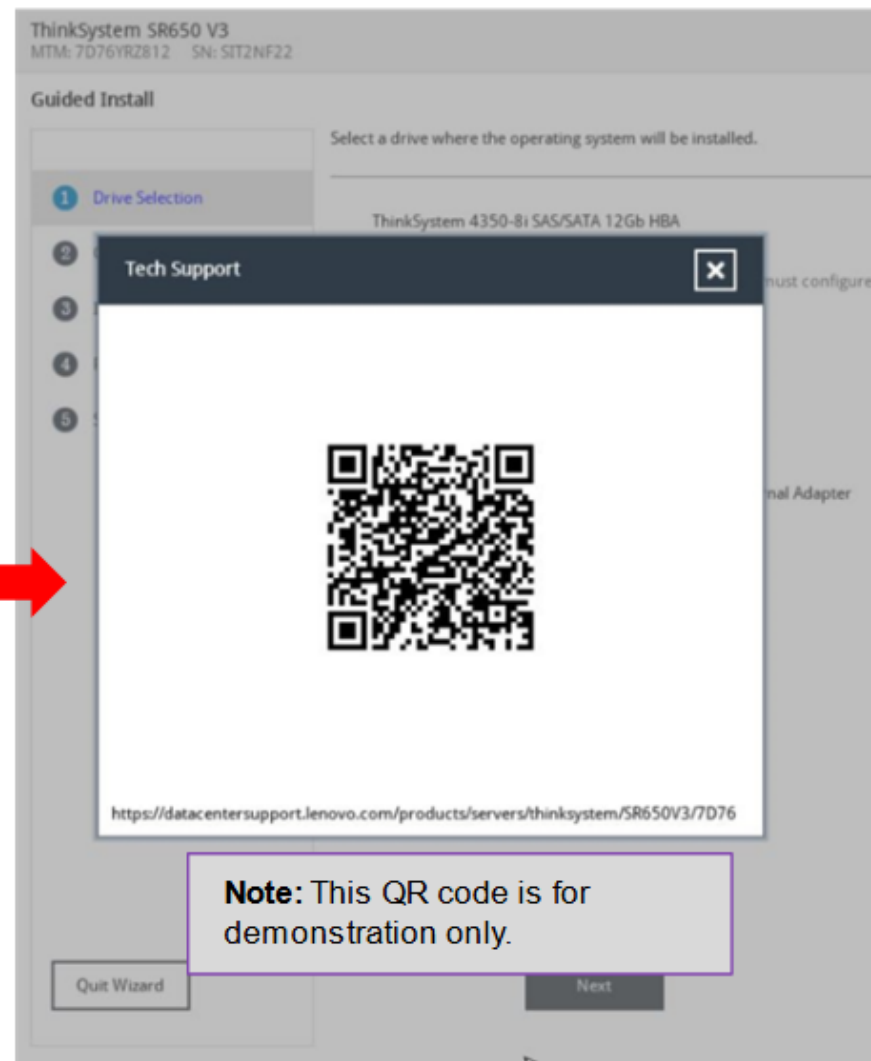
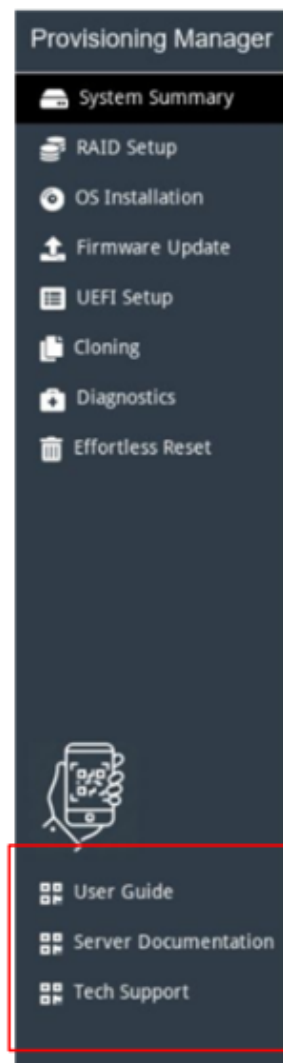
> Storage

LXPM3

QR codes for user access

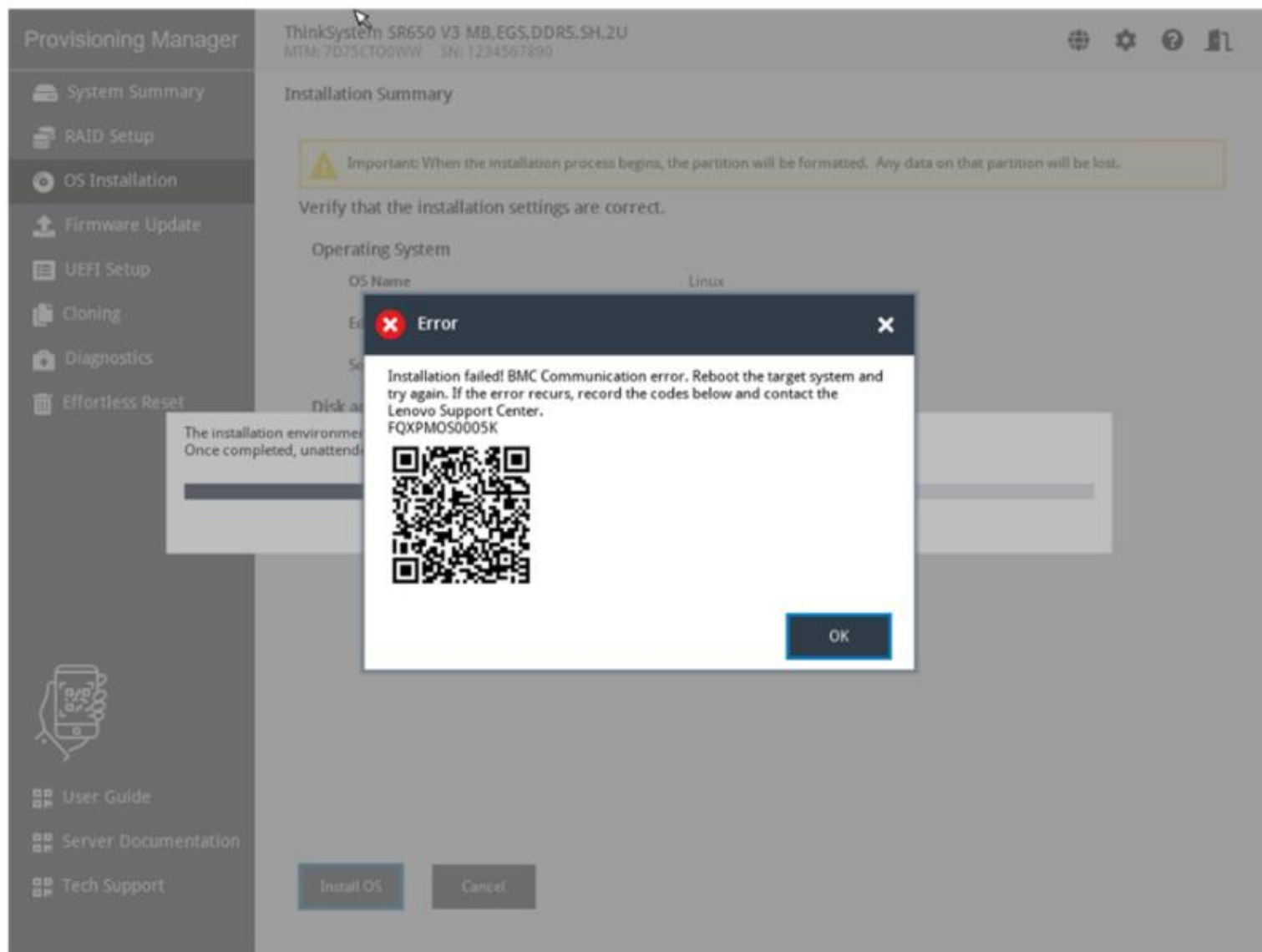
LXPM4 provides three QR codes for quick user access:

- User Guide
 - LXPM4 online user guide
- Server Documentation
 - Documents for the user's server model will be opened
- Tech Support
 - Technical support page for the user's server model



QR code for an event

If a user encounters an issue on the LXPM function page, they will be given a QR code for the event.



Support for more RAID controllers

LXPM4 supports the following RAID controllers:

- Intel VROC SATA/sSATA/tSATA RAID
- Intel VROC NVMe RAID
- ThinkSystem M.2 NVMe RAID Kit
- ThinkSystem RAID 540/940 series adapters (Broadcom RAID)
- ThinkSystem RAID 5350/9350 series adapters (Microchip RAID)

Note: To identify the RAID controller chip of each RAID controller, refer to the following web page: [Lenovo ThinkSystem RAID Adapter and HBA Reference](#).

Attribute	Intel RSTe/VROC SATA RAID	Intel VROC NVMe RAID	430-8i	430-8i Dense	430-16i	430-16i Dense
Part number	AVV0	B96G	7Y37A01088	4C57A16217	7Y37A01089	4Y37A01089
Feature code	AVV0	B96G	AUNL	B0SS	AUNM	BM
Announcement date		2020-10-13	2017-07-12	2018-10-23	2017-07-12	2020-10-13
Withdrawal date						
Availability	Available	Available	Available	Available	Available	Available
Form factor	Onboard	Onboard	PCIe low profile	Custom	PCIe low profile	PCI
Controller chip	Intel PCH (RSTe)	Intel CPU (VROC)	LSI SAS3408	LSI SAS3408	LSI SAS3416	Broadcom SAS3416
Vendor equivalent	Not applicable	Not applicable	HBA 9400-8i	HBA 9400-8i	HBA 9400-16i	HBA 9400-16i

LXPM4 RAID setup with different RAID chips

The LXPM4 RAID setup wizard guides users through the proper operation of Microchip RAID and Broadcom RAID chips. The different controller chips have different physical disk status transitions and drive limit controls. Refer to the following table to see the differences.

RAID setup features	5350/9350 series adapters	540/940 series adapters
Mode	Mix mode (default), HBA mode, RAID mode	JBOD mode, RAID mode
Drive status	HBA, UGOOD, Dedicated, Invalid, Online, Offline	JBOD, UGOOD, UBAD, UGOODF, UBADF, GHS, DHS, Online, Offline
Capability parameter default values	- Controller Cache = Off - IO Bypass = Disabled	- ReadPolicy = Read Ahead - WritePolicy = Write Back - IOPolicy = Direct - PDCache = Disabled

RAID chip drive limit controls

This table shows the minimum and maximum hard drive support quantities at different RAID levels for Microchip RAID and Broadcom RAID controllers.

Scroll down for more information

RAID Level	5350/9350 series adapters	540/940 series adapters
RAID 0	<MinPhysicalDrives ID="1" /> <MaxPhysicalDrives ID="128" /> <MaxLogicalDrives ID="64" />	<MinPhysicalDrives ID="1" /> <MaxPhysicalDrives ID="32" /> <MaxLogicalDrives ID="64" />
RAID 1	<MinPhysicalDrives ID="2" /> <MaxPhysicalDrives ID="2" /> <MaxLogicalDrives ID="64" />	<MinPhysicalDrives ID="2" /> <MaxPhysicalDrives ID="32" /> <MaxLogicalDrives ID="64" />
RAID 10	<MinPhysicalDrives ID="4" /> <MaxPhysicalDrives ID="128" /> <MaxLogicalDrives ID="64" />	<MinPhysicalDrives ID="4" /> <MaxPhysicalDrives ID="16" /> <MaxLogicalDrives ID="64" />
RAID 5	<MinPhysicalDrives ID="3" /> <MaxPhysicalDrives ID="128" /> <MaxLogicalDrives ID="64" />	<MinPhysicalDrives ID="3" /> <MaxPhysicalDrives ID="32" /> <MaxLogicalDrives ID="64" />
RAID 6	<MinPhysicalDrives ID="4" /> <MaxPhysicalDrives ID="128" /> <MaxLogicalDrives ID="64" />	<MinPhysicalDrives ID="4" /> <MaxPhysicalDrives ID="32" /> <MaxLogicalDrives ID="64" />

RAID chip drive limit controls

This table shows the minimum and maximum hard drive support quantities at different RAID levels for Microchip RAID and Broadcom RAID controllers.

Scroll down for more information

RAID Level	5350/9350 series adapters	540/940 series adapters
RAID 10	<MinPhysicalDrives ID="4" /> <MaxPhysicalDrives ID="128" /> <MaxLogicalDrives ID="64" />	<MinPhysicalDrives ID="4" /> <MaxPhysicalDrives ID="16" /> <MaxLogicalDrives ID="64" />
RAID 5	<MinPhysicalDrives ID="3" /> <MaxPhysicalDrives ID="128" /> <MaxLogicalDrives ID="64" />	<MinPhysicalDrives ID="3" /> <MaxPhysicalDrives ID="32" /> <MaxLogicalDrives ID="64" />
RAID 6	<MinPhysicalDrives ID="4" /> <MaxPhysicalDrives ID="128" /> <MaxLogicalDrives ID="64" />	<MinPhysicalDrives ID="4" /> <MaxPhysicalDrives ID="32" /> <MaxLogicalDrives ID="64" />
RAID 50	<MinPhysicalDrives ID="6" /> <MaxPhysicalDrives ID="128" /> <MaxLogicalDrives ID="64" />	<MinPhysicalDrives ID="6" /> <MaxPhysicalDrives ID="240" /> <MaxLogicalDrives ID="64" />
RAID 60	<MinPhysicalDrives ID="8" /> <MaxPhysicalDrives ID="128" /> <MaxLogicalDrives ID="64" />	<MinPhysicalDrives ID="8" /> <MaxPhysicalDrives ID="240" /> <MaxLogicalDrives ID="64" />

Enhanced features on RAID 5350/9350 series adapters

With LXPM4, two additional RAID levels are supported on RAID 5350/9350 series adapters.

- RAID 1 Triple
- RAID 10 Triple

The screenshot shows the 'Provisioning Manager' interface for a ThinkSystem SR650 V3 server. The 'RAID Setup' section is active, and the '3. RAID level & drives' step is selected. A dropdown menu for 'RAID level' is open, showing options: RAID 0, RAID 1, RAID 10, RAID 5, RAID 6, RAID 60, RAID 1 Triple, and RAID 10 Triple. The last two options are highlighted with a red box. Below the dropdown is a table of available drives.

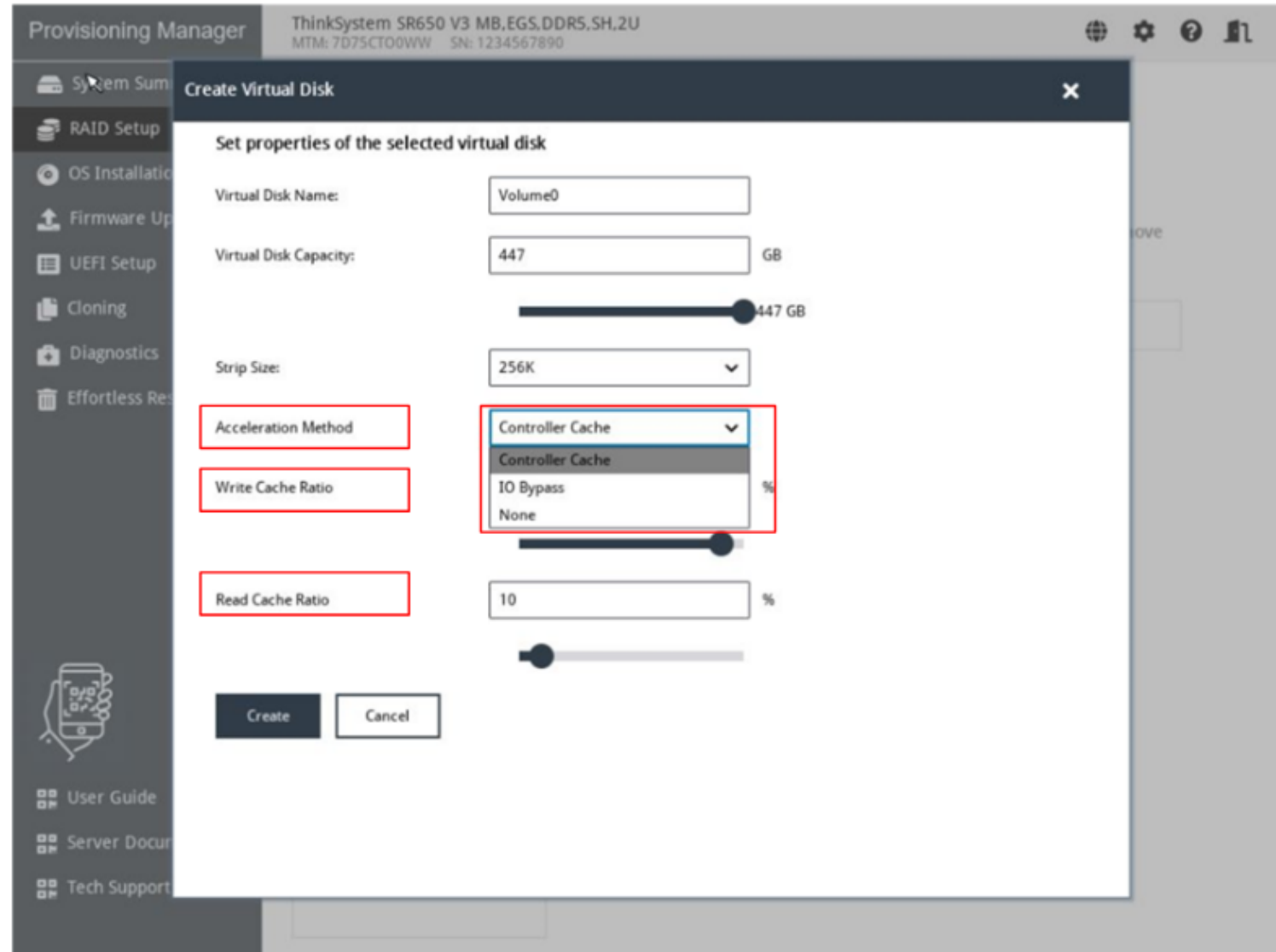
Drive	Type	State	Capacity	Role
0:4	SATA/SSD	Good	447 GB	Member
0:5	SATA/SSD	Good	447 GB	Member
0:6	SATA/SSD	Good	447 GB	Member
0:7	SATA/SSD	UGood	447 GB	Member
1:0	SATA/SSD	UGood	447 GB	Member

Navigation buttons at the bottom include 'Quit Wizard', 'Previous', and 'Next'.

Acceleration method for RAID 5350/9350 series adapters

A new acceleration method feature is now available when users create virtual disks on RAID 5350/9350 series adapters. There are two acceleration method options:

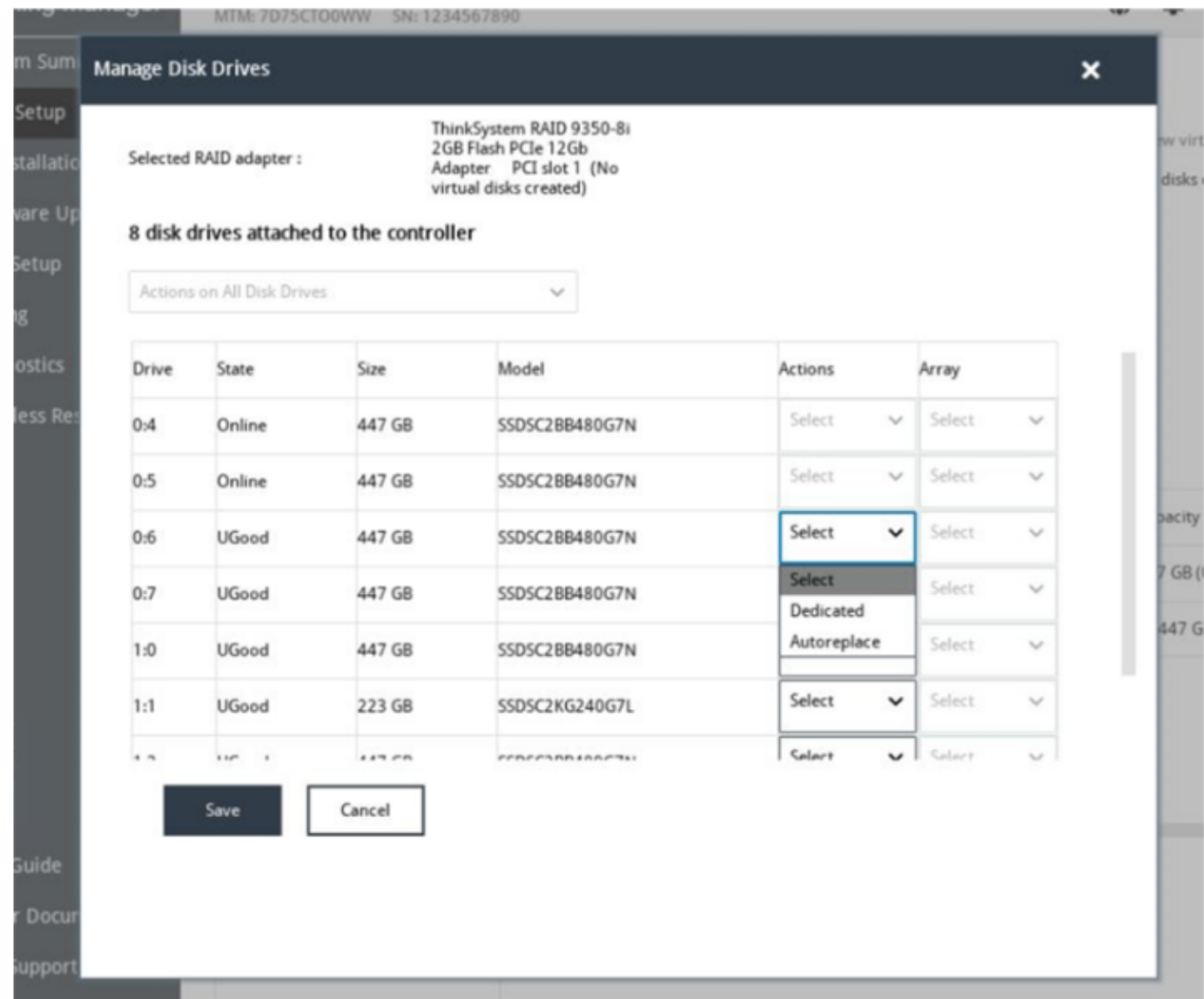
- IO Bypass: Available when SSD drives are selected for the virtual disk
- Controller Cache: Available for 9350 series adapters with fully charged batteries
 - If Controller Cache is selected, Write Cache Ratio and Read Cache percentage can be configured



RAID hot spares with RAID 5350/9350 series adapters

There are two settings for RAID hot spare creation with RAID 5350/9350 series adapters. The RAID 5350/9350 series and RAID 540/940 series hot spare setting definitions are not the same.

- **Dedicated** - A dedicated hot spare is assigned to one or more arrays and will protect any redundant logical drives on those arrays. It is shareable between arrays.
- **Autoreplace** - An auto-replace hot spare is assigned to a specific array. After using an auto-replace spare to rebuild a failed logical drive, it becomes a permanent part of the array. It is not sharable between arrays.



RAID hot spares with RAID 540/940 series adapters

There are two settings for RAID hot spare creation with RAID 540/940 series adapters. The RAID 540/940 series and RAID 5350/9350 series hot spare setting definitions are not the same.

- **Dedicated** - A dedicated hot spare automatically replaces a failed physical disk only in the selected disk group. A dedicated hot spare will be used before a global hot spare.
- **Global** - A global hot spare is used to replace a failed physical disk in any redundant array as long as the capacity of the global hot spare is equal to or larger than the coerced capacity of the failed physical disk.

Effortless Reset enhancement

A new **Clear all PCI Adapters** category has been added to the **Effortless Reset** configuration.

Clarity

Provisioning Manager

System Summary

RAID Setup

OS Installation

Firmware Update

UEFI Setup

Cloning

Diagnostics

Effortless Reset

ThinkSystem SR860 V2

Effortless Reset

Permanently erase all data on storage devices, clear all system logs, reset all system firmware to factory default including credentials and network settings.

☒ Permanently erase all data on storage devices

All RAID volumes

ID	Volume	Raid Controller
1	Volume0	Intel VROC (VMD NVMe RAID)

All disk drives including HDD, SSD and SED

All Intel Optane P94em AppDirect regions

☒ Clear all system logs

System Event Log (SEL)
- RAID Log

☒ Reset all system firmware to factory default including credentials and network settings

- UEFI, BMC, TPM, CMOS

All data will be permanently destroyed by this action!

Type "YES" to confirm the reset action

YES

☐ Automatically power off the system after completion

Start

LXPM3

Provisioning Manager

ThinkSystem SR865 V3
MTM: 7D9ACT00WW SN: 1234567890

System Summary

RAID Setup

OS Installation

Firmware Update

UEFI Setup

Cloning

Diagnostics

Effortless Reset

Effortless Reset

All data will be permanently destroyed by this action!

☐ Permanently erase all data on storage devices

+ All RAID volumes

+ All disk drives including HDD, SSD and SED

☐ Clear all PCI Adapters

Slot	Device Name	Status
[Slot 2]	ThinkSystem RAID 940-16i 8GB Flash PCIe Gen4 12Gb Adapter	Support
[Slot 13]	ThinkSystem Broadcom 5719 1GbE RJ45 4-port OCP Ethernet Adapter	Unable to reset

☐ Clear all system logs

- System Event Log (SEL)
- RAID Log

☐ Reset all system firmware to factory default including credentials and network settings

- UEFI, BMC, TPM, CMOS

Type "YES" and "GO" to confirm the reset action

☐ Automatically power off the system after completion

Start

LXPM4

Effortless Reset layout change

There is a new screen layout after clicking **Start** to execute the Effortless Reset.

Click each step in turn to see more information

Step



Effortless Reset layout change

In LXPM3, the Effortless Reset process will be shown in the information box. The ID entries refer to the separate stages of the process, and a green check mark will be shown if the corresponding stage is complete.

XClarity Provisioning Manager

- System Summary
- RAID Setup
- OS Installation
- Firmware Update
- UEFI Setup
- Cloning
- Diagnostics
- Effortless Reset**

Effortless Reset

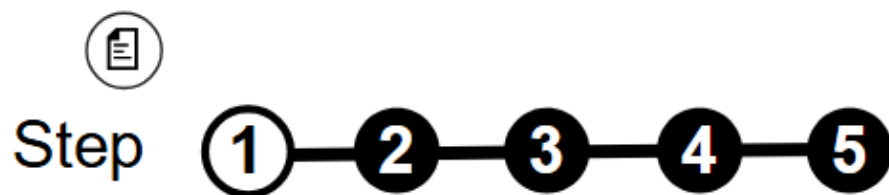
This will take about 0 hours and 0 minutes.
Total completed: 100%
Current module: Logs

LXPM3

Information box

ID	Type	Information
1	✓	Storage:SecureEraseforStorage Success.
2	✓	Logs:clearLogforStorageAdapter Success.
3	✓	Logs:Clear SEL Success.
4	i	Settings:"Reset all system firmware to factory default including credentials and network settings" ""is not in the progress."

Note: Action cannot be stopped, Do not power off the system during reset.



Effortless Reset layout change

In LXPM4, the Effortless Reset process will be split with a separate layout for each stage.

Provisioning Manager

ThinkSystem SR650 V3 MB,EGS,DDR5,SH,2U
MTM: 7D75CT00WW SN: 1234567890

Note: Action cannot be stopped. Do not power off the system during reset. There will be time deviation when erasing the high-capacity hard disk. Please wait for the erasure process to complete.

This will take about 0 hours and 5 minutes.
Total completed: 28%
Current Stage: Storage

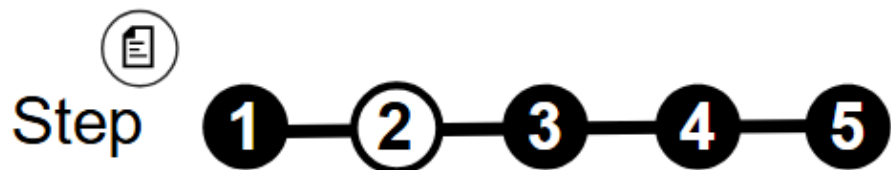
→ [Disk Icon] → [Document Icon] → [Gear Icon]

Stage	Result
Storage	Remove RAID volumes... [1] Volume1 ... Successful Erase disk drivers...
PCI Adapter Reset	
Logs	
Settings	

User Guide
Server Documentation
Tech Support

Log Location:
Save Previous

LXPM4



Effortless Reset layout change

In LXPM4, the Effortless Reset process will be split with a separate layout for each stage.

Provisioning Manager

ThinkSystem SR650 V3 MB,EGS,DDR5,SH,2U
MTM: 7D75CT00WW SN: 1234567890

Note: Action cannot be stopped. Do not power off the system during reset. There will be time deviation when erasing the high-capacity hard disk. Please wait for the erasure process to complete.

This will take about 0 hours and 1 minutes.
Total completed: 85%
Current Stage: Settings

→ [Disk Icon] → [List Icon] → [Gear Icon]

Erasing SSDSC2BB480G7N 480 GB(SN: PHDV6331005U480BGN)...successful
Erasing SSDSC2BB480G7N 480 GB(SN: PHDV6244008K480HGN)...successful

✓ PCI Adapter Reset	Start to reset Pegasus Card Adapter 1 Done Reset PCI Adapter Success.
✓ Logs	Clear Log for Storage Adapter Success. Clear SEL Success.
i Settings	

User Guide
Server Documentation
Tech Support

Log Location:
Save Previous

LXPM4

Step



Effortless Reset layout change

In LXPM4, the Effortless Reset process will be split with a separate layout for each stage.

Step

1 — 2 — 3 — 4 — 5

Provisioning Manager

- System Summary
- RAID Setup
- OS Installation
- Firmware Update
- UEFI Setup
- Cloning
- Diagnostics
- Effortless Reset**

User Guide
Server Documentation
Tech Support

ThinkSystem SR650 V3 MB,EGS,DDR5,SH,2U
MTM: 7D75CT00WW SN: 1234567890

Note: Action cannot be stopped. Do not power off the system during reset. There will be time deviation when erasing the high-capacity hard disk. Please wait for the erasure process to complete.

This will take about 0 hours and 0 minutes.
Total completed: 100%
Current Stage: Settings

→ [Disk Icon] → [Document Icon] → [Gear Icon]

Stage	Result
	Remove RAID volumes... [1] Volume1 ... Successful
✓ Storage	Erase disk drivers... Erasing SSDSC2BB480G7N 480 GB(SN: PHDV7095030Z480BGN)...successful Erasing SSDSC2BB480G7N 480 GB(SN: PHDV623500G4480BGN)...successful Erasing SSDSC2BB480G7N 480 GB(SN: PHDV6331002F480BGN)...successful Erasing SSDSC2BB480G7N 480 GB(SN: PHDV623500E6480BGN)...successful Erasing SSDSC2BB480G7N 480 GB(SN: PHDV709502ZN480BGN)...successful Erasing SSDSC2KG240G7L 240 GB(SN: BTYM73460CTP240AGN)...successful Erasing SSDSC2BB480G7N 480 GB(SN: PHDV6331005U480BGN)...successful

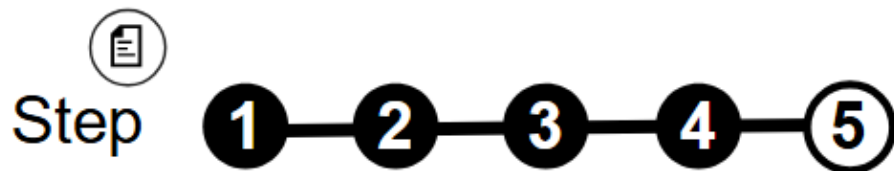
Log Location:

Save Previous

LXPM4

Effortless Reset layout change

In LXPM4, the Effortless Reset process will be split with a separate layout for each stage.



Provisioning Manager

- System Summary
- RAID Setup
- OS Installation
- Firmware Update
- UEFI Setup
- Cloning
- Diagnostics
- Effortless Reset**



- User Guide
- Server Documentation
- Tech Support

ThinkSystem SR650 V3 MB,EGS,DDR5,SH,2U
MTM: 7D75CT00WW SN: 1234567890

Note: Action cannot be stopped. Do not power off the system during reset. There will be time deviation when erasing the high-capacity hard disk. Please wait for the erasure process to complete.

This will take about 0 hours and 0 minutes.
Total completed: 100%
Current Stage: Settings

→  →  → 

4

✓ PCI Adapter Reset	Start to reset Pegasus Card Adapter 1 Done Reset PCI Adapter Success.
✓ Logs	ClearLogforStorageAdapter Success. Clear SEL Success.
✓ Settings	LoadUefiDefaults Success. LoadBmcDefaults Success. LoadTpmDefaults Success. LoadCmosDefaults Success.

Log Location:

Save Previous

LXPM4

SMB protocol support update

LXPM4 supports SMB2.0.

Provisioning Manager ThinkSystem SR630 V3
MTM: 7D72XXXXXX SN:

System Summary RAID Setup OS Installation Firmware Update UEFI Setup Cloning Diagnostics Effortless Restore

User Guide Server Documentation Tech Support

Network Settings

Host Ethernet Adapter

☒ Obtain an IP address automatically (DHCP)
☐ Use the following IP address

IP Address
Subnet Mask
Default Gateway
DHCP Timeout 10 seconds

Network Share via host Ethernet adapter

Provide the remote CIFS shared folder information to use for retrieving and saving files.

IP Address
User Name Format: Username@Domain or User name
Password
Shared Folder Name (Share name only, e.g. "DATA")

Save and Connect Save without Connect Cancel

OS deployment scope update

The LXPM4 OS deployment feature supports the following OS versions:

- Windows server 2019, 2022
- Windows Client: Win10 and Win11
- VMware ESXi 7.0 U3 and 8.0
- RHEL: 8.6, 8.7, 9.0, 9.1
- SLES 15.4

The screenshot displays the Provisioning Manager interface for a ThinkSystem SR650 V3 server. The left sidebar contains navigation options: System Summary, RAID Setup, OS Installation (highlighted), Firmware Update, UEFI Setup, Cloning, Diagnostics, and Effortless Reset. Below these are links for User Guide, Server Documentation, and Tech Support. The main area shows the 'Guided Install' wizard with five steps: Drive Selection, OS Selection (current), Installation Settings, Partition Options, and Summary. The OS Selection step is active, showing a list of available OS images. The 'OS Family' is set to 'Windows' and the 'OS Edition' is 'Windows Server 2019 Standard'. The 'OS Image' dropdown is open, showing a list of available images including Windows Server 2019 Datacenter, Windows Server 2019 Essentials, Windows Server 2022 Standard, Windows Server 2022 Datacenter, Windows Server 2022 Essentials, Hyper-V 2019, Windows 10 Enterprise, Windows 10 Enterprise N, Windows 11 Enterprise, Windows 11 Enterprise N, Windows 11 Pro for Workstations, and Windows 11 Pro N for Workstations. The 'Protocol', 'IP Address', 'User Name', 'Password', 'Path', and 'File Name' fields are empty. At the bottom, there are buttons for 'Quit Wizard', 'Previous', and 'Next'.

Provisioning Manager

ThinkSystem SR650 V3
MTM: 7D76YRZ812 SN: SIT2NF22

Guided Install

1 Drive Selection

2 OS Selection

3 Installation Settings

4 Partition Options

5 Summary

OS Family: Windows

OS Edition: Windows Server 2019 Standard

OS Image: Windows Server 2019 Standard

Protocol

IP Address

User Name

Password

Path

File Name

Quit Wizard

Previous

Next