

# Problem determination and troubleshooting

System event logs in BIOS, POST beeps, and LXPM diagnostics

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 with a vertical color gradient that transitions from green at the top to blue at the bottom.

Lenovo

## **Problem determination and troubleshooting overview**

The following procedures can be used to isolate and resolve issues, and also gather information while servicing the ThinkSystem ST50 V2:

- Checking the system event logs in the Setup Utility
- Listening to POST beeps while starting the server
- Using the Lenovo XClarity Provisioning Manager (LXPM) Lite diagnostic program to test server components and collect RAID logs

## Event logs overview

System event logs are available in the Setup Utility. Start the server and press F1 to access the Setup Utility. Then, go to **Security -> System Event Log -> View System Event Log** to access the list of events.

# List of POST event logs

Logs of system events are available in the Setup Utility. The table on the right is the list of events that may appear in the system event log.

**Note:** For a detailed list and description of error messages, refer to the maintenance manual.

List of POST error messages
Setup data integrity check failure
Memory size decreased
Fan failure
Power supply overload
BIOS password changed
BIOS Setup data changed
Chassis intrusion
Password retry count exceeded
SATA device configuration changed
BIOS updated
Option ROM over Shadow RAM size
Hard disk password changed
PCI Mem Conflict
System event log cleared

## Checking ThinkSystem ST50 V2 event logs

Click each number in turn to see the procedure.

Step



# Checking ThinkSystem ST50 V2 event logs

Start the server and press F1 to access the Setup Utility.

```
Version 2.21.1278. Copyright (C) 2021 AMI
BIOS Date: 12/09/2021 08:14:38 Ver: T0E101E
Press <CTRL + P> to Enter MEBX setup menu

Main Processor: Intel(R) Xeon(R) E-2378G CPU @ 2.80GHz
Installed Memory: 8192MB

M.2 Drive 1:
SATA 1: Hard Disk ST1000DM014-2UB10D
SATA 2: Hard Disk
SATA 3: Hard Disk
SATA 4: Hard Disk

Error 0135: Aux Fan failure

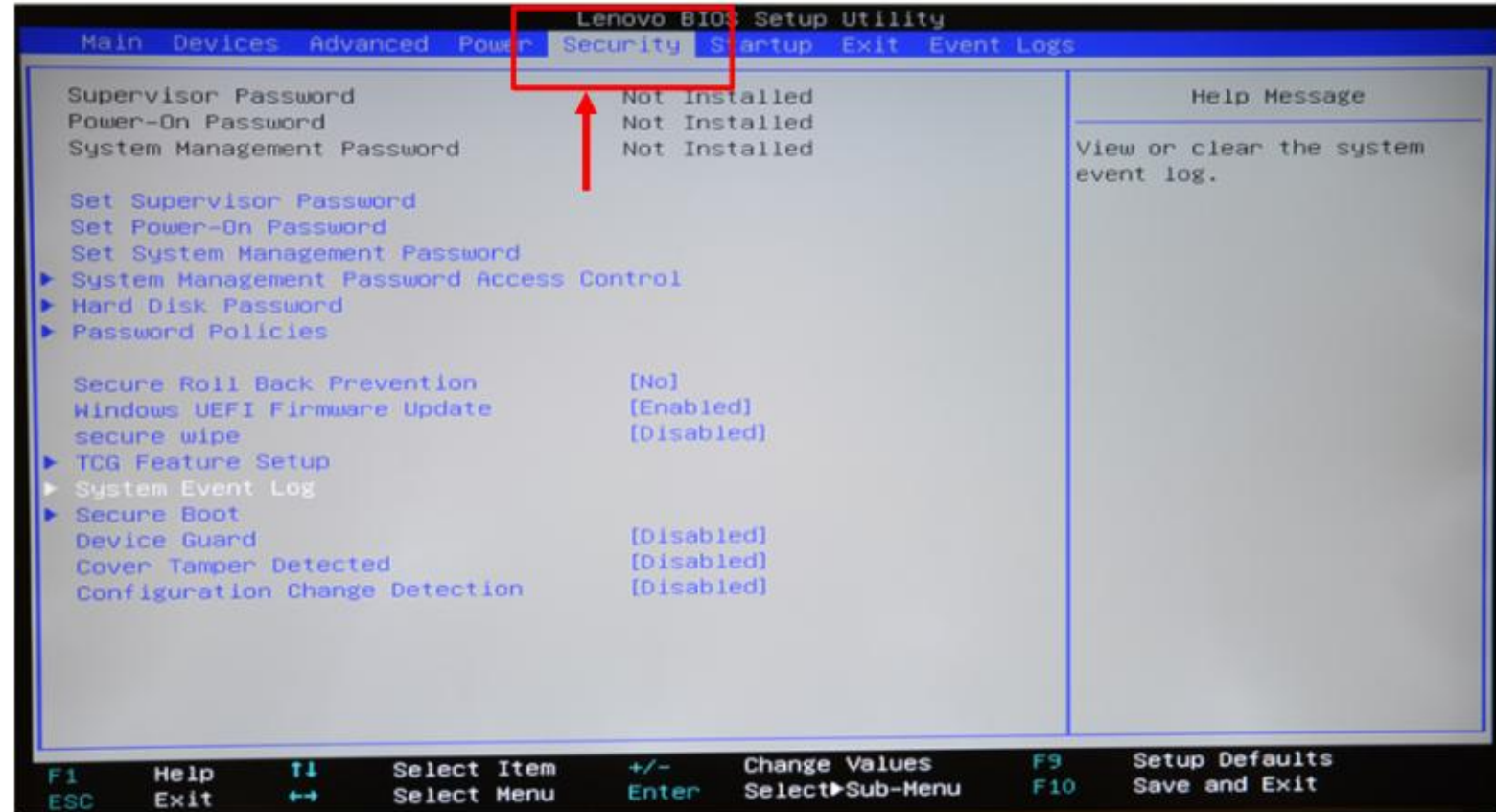
Press F1 to enter Setup, F2 to resume
```

Step



# Checking ThinkSystem ST50 V2 event logs

Select **Security**.

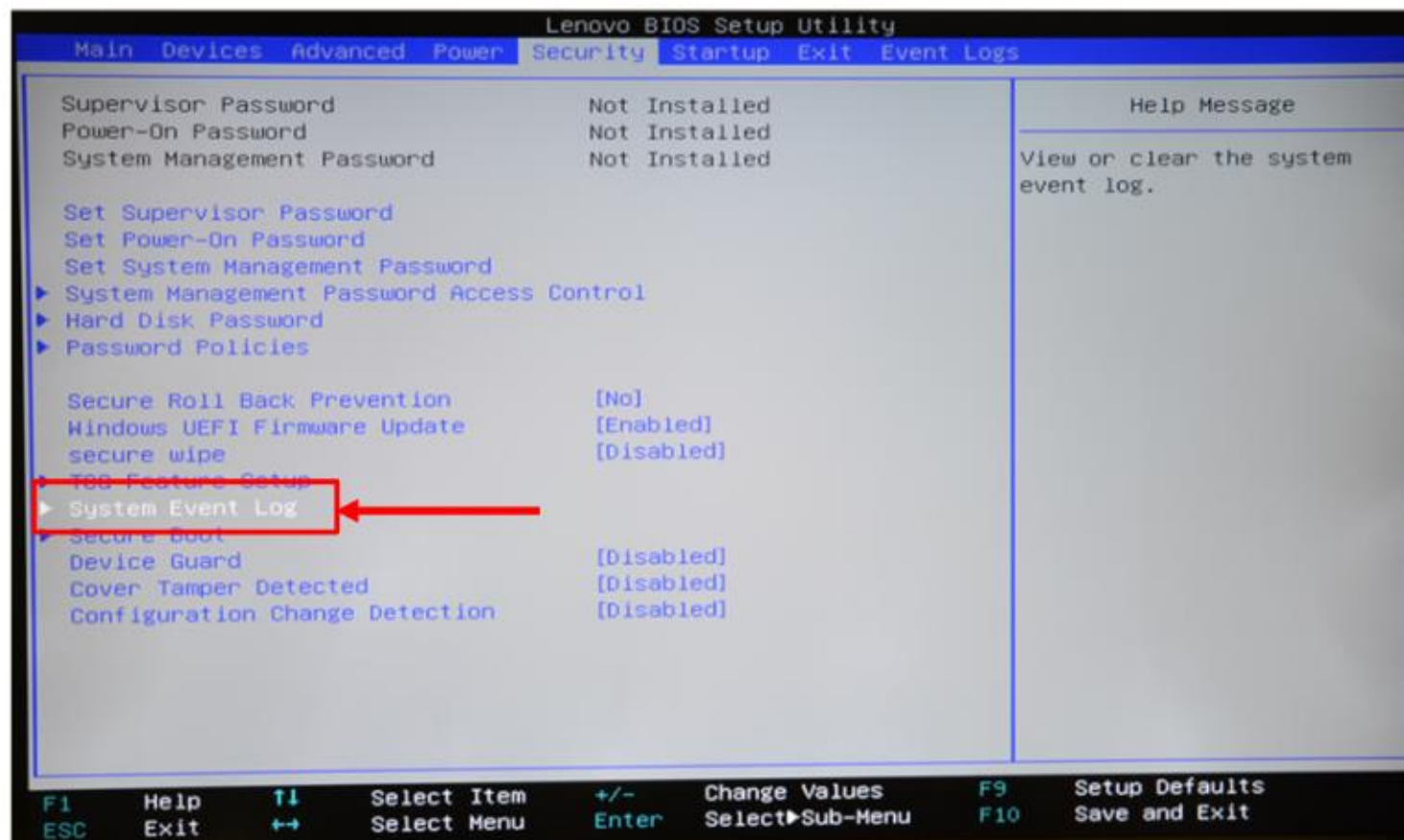


Step **1** — **2** — **3** — **4** — **5**



# Checking ThinkSystem ST50 V2 event logs

Select **System Event Log**.



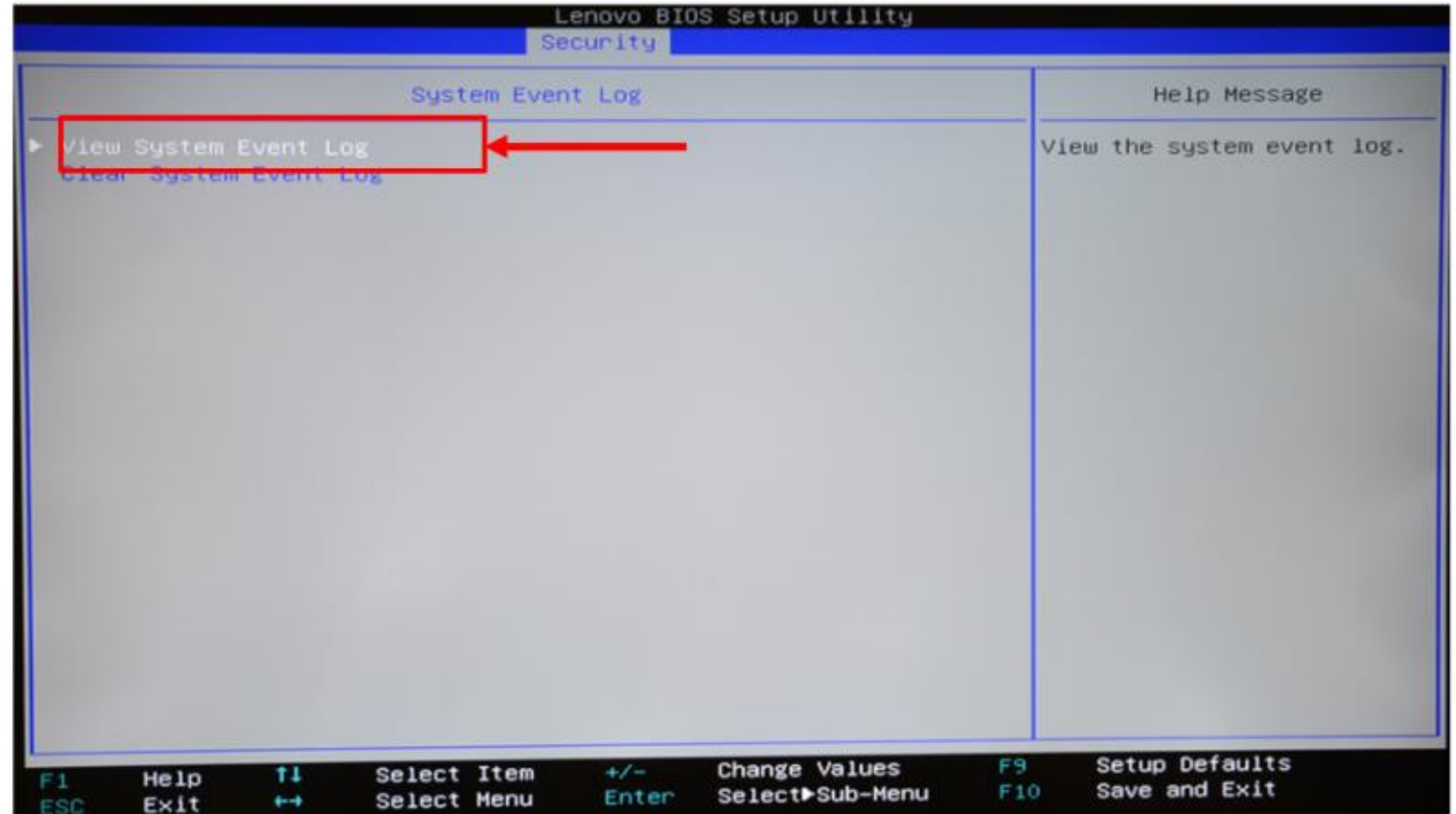
Step





# Checking ThinkSystem ST50 V2 event logs

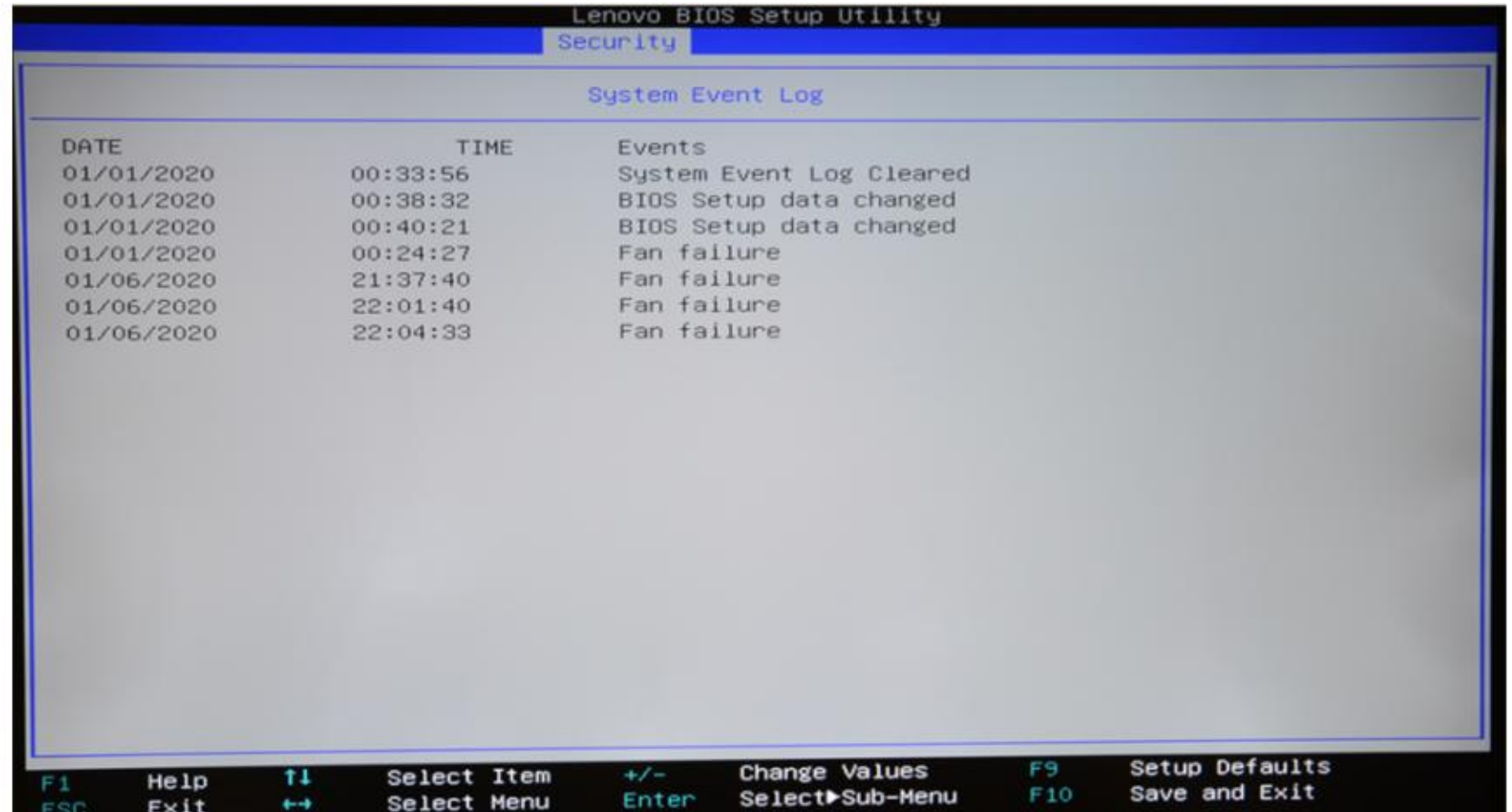
Select **View System Event Log**.



Step **1** — **2** — **3** — **4** — **5**

# Checking ThinkSystem ST50 V2 event logs

Check the event logs.



Step **1** — **2** — **3** — **4** — **5**

## POST beeps

The ThinkSystem ST50 V2 also supports POST beeps for problem determination. Users can listen to the POST beeps while starting the server.

Beep pattern	Error description
Three short beeps followed by one long one	No memory is detected by the system
Two long beeps followed by three short ones	No video cards (including the integrated video card) are detected by the system.

**Note:** A short beep lasts about 0.4 seconds, and a long beep lasts about 0.9 seconds.

## Lenovo XClarity Provisioning Manager Lite

LXPM Lite can also be used to manage the ThinkSystem ST50 V2. Users have to download the software to a USB disk and then boot the server from the USB disk. LXPM Lite has the following features:

- Configuration network settings
- System summary
- RAID setup
- OS installation
- Firmware upgrade
- Cloning
- Diagnostics on system memory and HDD
- RAID log collection


**Note:** For more information on LXPM Lite and for a software download, refer to Lenovo Data Center Support at <https://datacentersupport.lenovo.com/us/en/solutions/ht507133-lenovo-xclarity-provisioning-manager-lite-lxpm-lite>

## UEFI BIOS firmware upgrade procedure

Work through the following procedure to perform a UEFI BIOS firmware upgrade on the ST50 V2. Users can choose to upgrade the UEFI BIOS from Linux, Red Hat, Windows, or a USB drive.

**Note:** Directly after replacing a system board, the field engineer must upgrade the UEFI BIOS of the new system board. For more information, refer to the Technical tips section of the [ST50 V2 GLOSSE page](#).

Click each number in turn to see the procedure.



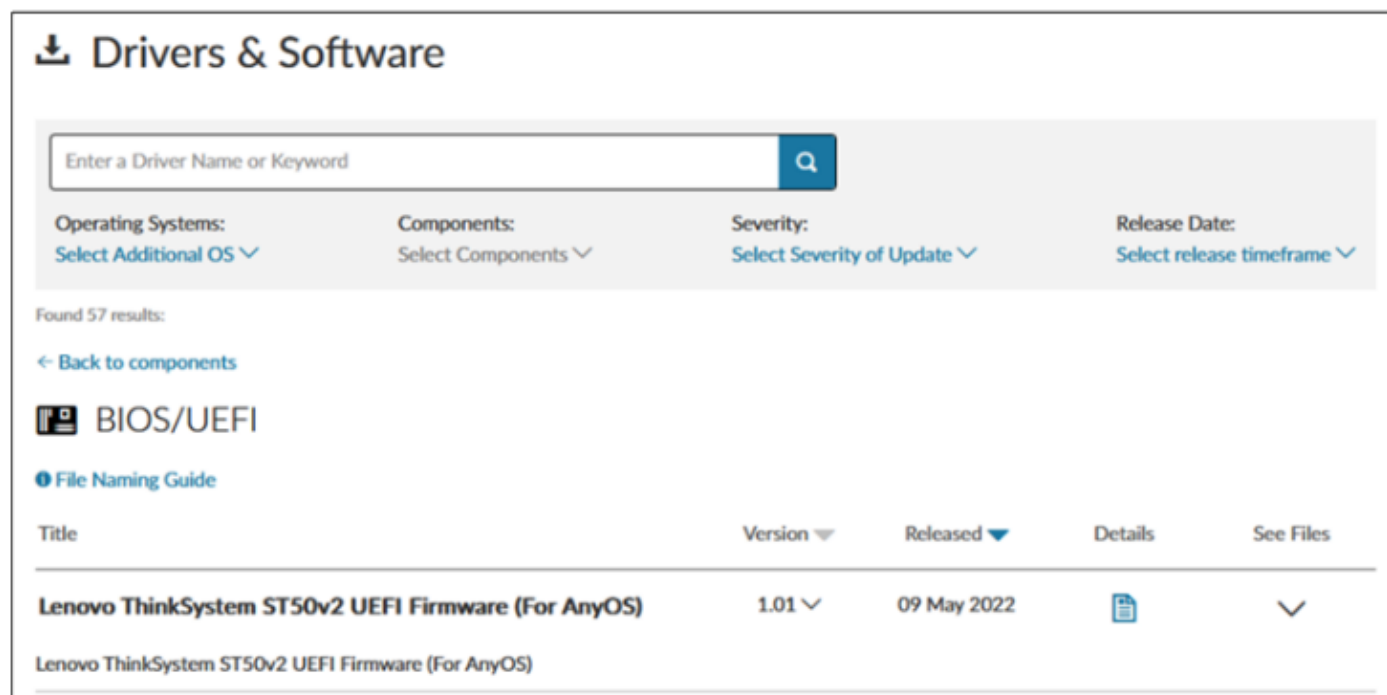
Step





# UEFI BIOS firmware upgrade procedure

Step 1: Go to

<https://datacentersupport.lenovo.com/tw/en/products/servers/thinksystem/st50v2/downloads/driver-list/component?name=BIOS%2FUEFI> and download the firmware package.



The screenshot shows the 'Drivers & Software' section of the Lenovo support website. It features a search bar with the placeholder text 'Enter a Driver Name or Keyword' and a magnifying glass icon. Below the search bar are four filter options: 'Operating Systems: Select Additional OS', 'Components: Select Components', 'Severity: Select Severity of Update', and 'Release Date: Select release timeframe'. The results section indicates 'Found 57 results:' and includes a link to '< Back to components'. The 'BIOS/UEFI' category is selected, and a 'File Naming Guide' link is provided. A table lists the available firmware, with the first entry being 'Lenovo ThinkSystem ST50v2 UEFI Firmware (For AnyOS)' at version 1.01, released on 09 May 2022. The table has columns for Title, Version, Released, Details, and See Files.






Title	Version	Released	Details	See Files
Lenovo ThinkSystem ST50v2 UEFI Firmware (For AnyOS)	1.01	09 May 2022		

Step 1 2 3 4



## UEFI BIOS firmware upgrade procedure

Step 2: Unzip the utility. If you are using a USB drive to upgrade the firmware, copy all the files to the root directory of the USB drive. If you are working within an OS environment, open the corresponding directory.

Name	Type
 Linux64	File folder
 Redhat8	File folder
 SHELL	File folder
 Windows64	File folder
 TOE102T_ST50v2_16MB.ROM	ROM File

Step



## UEFI BIOS firmware upgrade procedure

Step 3: The upgrade command is written in a file in each directory. Execute the file.

- Linux: `./FBIOS.SH`
- Red Hat 8: `./RH8_FBIOS.SH`
- Windows: `FlashWINx64.exe`

The AMI Firmware Update (AFU) utility can also be used to perform the upgrade.

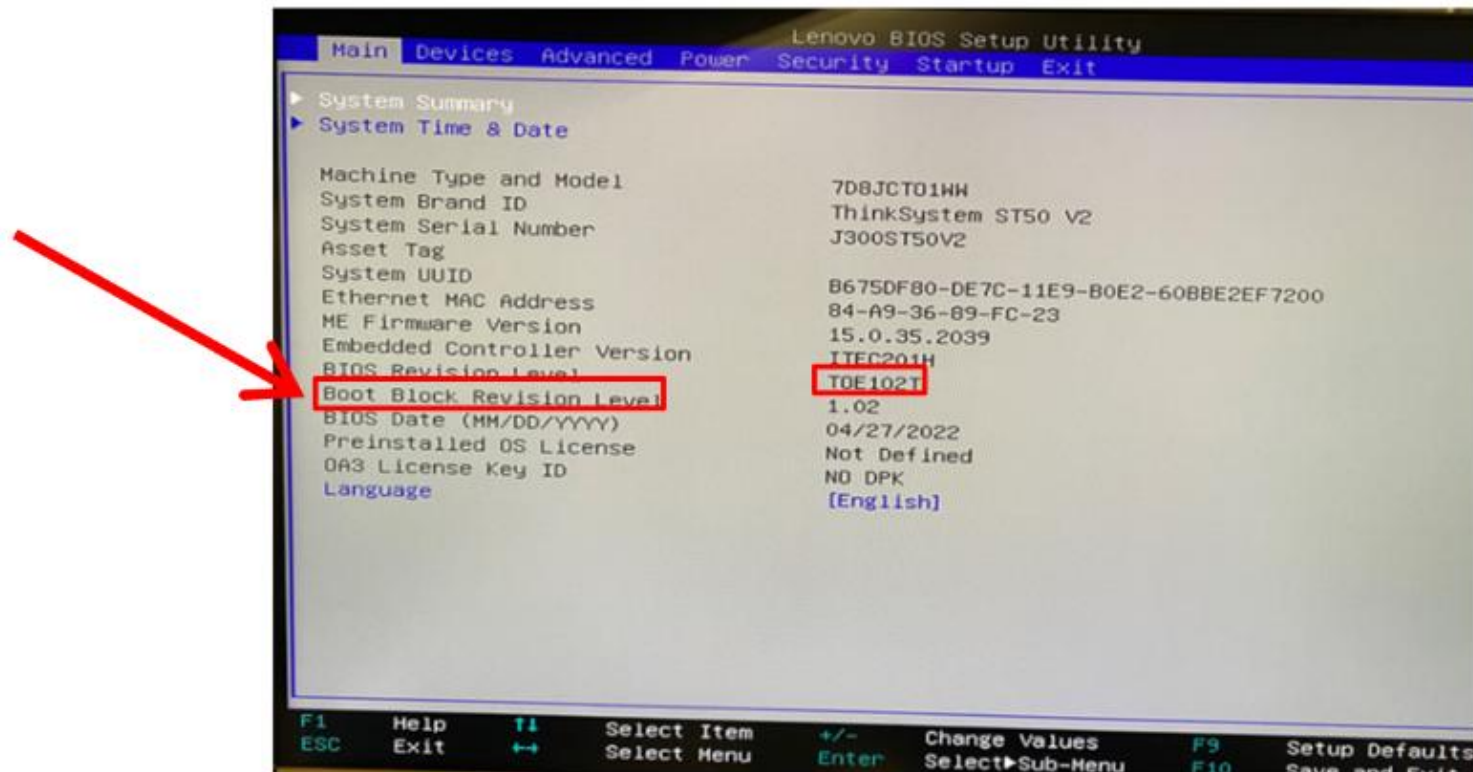
- Linux: `./afulnx_64 ../TOE102T_ST50v2_16MB.ROM /P /B /K /CAPSULE`
- Red Hat 8: `./afulnx_RH8 ../TOE102T_ST50v2_16MB.ROM /P /B /K /CAPSULE`
- Windows: `AFUWINx64.exe ../TOE102T_ST50v2_16MB.ROM /P /B /K /CAPSULE`

**Note:** After the upgrade, restart the system to allow the new version of the UEFI BIOS to take effect.

Step **1**—**2**—**3**—**4**

# UEFI BIOS firmware upgrade procedure

Step 4: After restarting the server, users can check the BIOS revision level in the BIOS SETUP menu.



Step 1 — 2 — 3 — 4

## Updating Vital Product Data

After a system board has been replaced, the Vital Product Data (VPD) must be updated. To do this, field engineers have to prepare a USB drive and work through the following procedure:

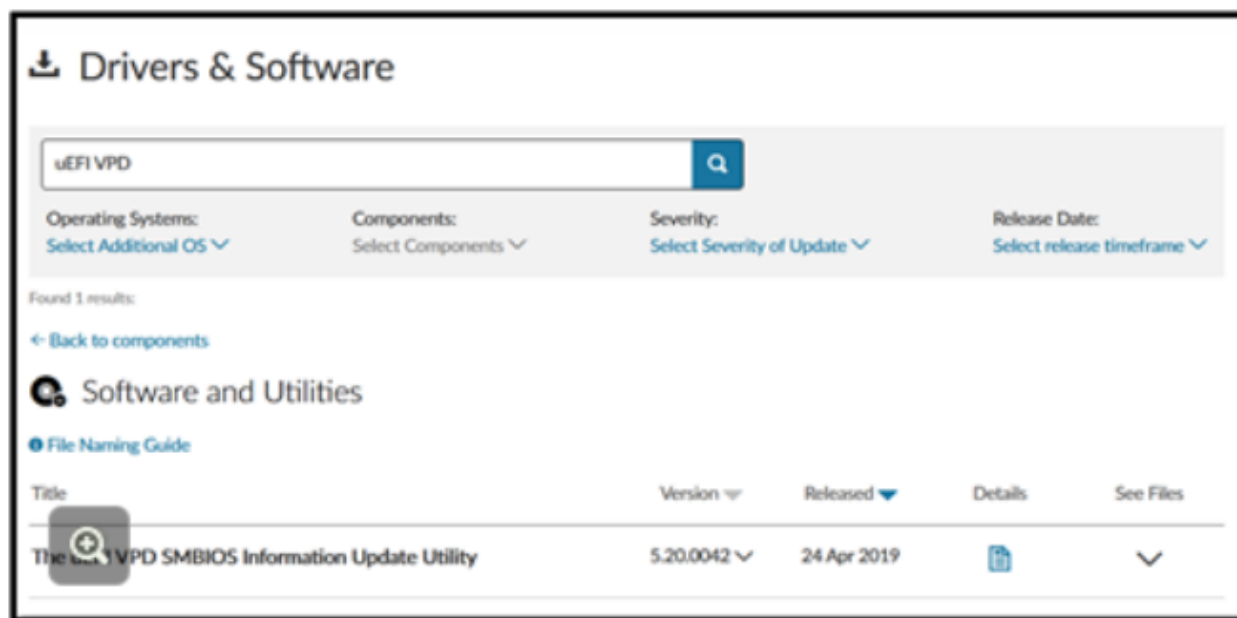
Click each number in turn to see the procedure.

Step



## Updating Vital Product Data

- Click this [link](#) and select Software and Utilities. Download The uEFI VPD SMBIOS Information Update Utility.
- Field engineers can also download the utility from the Lenovo internal OSS website (search for ticket number 124770).

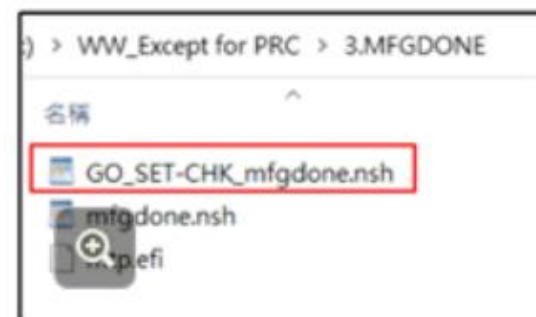
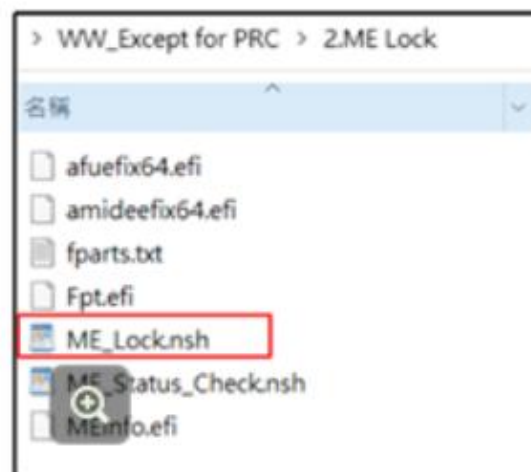


Step



## Updating Vital Product Data

- Copy all the files to the USB disk root folder.



Step





## Updating Vital Product Data

- Insert the USB disk into the server, and then boot from the USB disk by pressing F12 during the boot process.



Step



## Updating Vital Product Data

- Execute the `ME Lock/ME_Lock.nsh` command, which will cause the server to automatically reboot.

```
FS0:\BIOS_ST50V2\FRU_Service\WH-Except-for-PRC\2.ME Lock> ME_Lock.nsh
FS0:\BIOS_ST50V2\FRU_Service\WH-Except-for-PRC\2.ME Lock> echo -off
*** Important pronouncement ***
*** The ME Lock was Lenovo ME FW Security Utility ***
*** Copyright © Lenovo 2021 - All rights reserved. ***
*** Please DO NOT Deliver to Customers. Only for Internal FRU Service and PA team ***
*** Please Press Any Key to Start ME FW Lock, system will reboot automatically ***
Enter 'q' to quit, any other key to continue:

Intel (R) Flash Programming Tool Version: 15.0.22.1595
Copyright (C) 2005 - 2021, Intel Corporation. All rights reserved.

Reading HSFSTS register... Flash Descriptor: Valid

--- Flash Devices Found ---
ID:0xEF4019   Size: 32768KB (262144Kb)

Warning: Proceeding with EOM flow will result in a global reset.
Y The ME Manufacturing Mode Done bit had already been set. Update is not required.
Rel Access Permissions were already set. No update needed.
FPT Operation Successful.
```

Step **1** — **2** — **3** — **4** — **5** — **6**

## Updating Vital Product Data

- Enter the ME Lock/ME\_Status\_Check.nsh command to check the ME status.

```
FS0:\BIOS_ST50V2\FRU_Service\WH-Except-for-PRC\2.ME Lock\> ME_Status_Check.nsh
FS0:\BIOS_ST50V2\FRU_Service\WH-Except-for-PRC\2.ME Lock\> echo -off
***** Important pronouncement *****
***** The ME Status Check was Lenovo ME FW Security Utility *****
***** Copyright © Lenovo 2021 - All rights reserved. *****
***** Please DO NOT Deliver to Customers. Only for Internal FRU Service and PA team *****
***** Please Press Any Key to Start ME Status Check. System will reboot automatically *****
Enter 'q' to quit, any other key to continue:

Intel (R) ME Info Version: 15.0.22.1595
Copyright (C) 2005 - 2021, Intel Corporation. All rights reserved.
ME Write Access: Success - Value matches FW value.
***** If you are seeing ME Write Access: Success - Value matches FW Value. *****
***** Means ME Lock was Successfully. *****
***** If you are seeing a Error 69: ME Write Access actual value is - 0xFFFF. *****
***** Please try ME Lock again after system reboot. *****
```

Step





# Updating Vital Product Data

- Enter the MFGDONE/GO\_SET-CHK\_mfgdone.nsh command.

```
Directory of: FS0:\BIOS_ST50V2\3.MFGDone\
08/18/2021  11:35 <DIR>                4,096
08/18/2021  11:35 <DIR>                12,288
02/19/2021  18:26                    112,160  mtp.efi
11/25/2021  19:17                     1,063  mfgdone.nsh
08/24/2021  16:15                      177  Command.txt
08/30/2021  14:41                      737  GO_SET-CHK_mfgdone.nsh
07/17/2018  15:51                     1,093  mfgdone_old.nsh
          5 File(s)              115,230 bytes
          2 Dir(s)
FS0:\BIOS_ST50V2\3.MFGDone\> GO_SET-CHK_mfgdone.nsh_
```

```
Find UEFI Table
[op] Check security setting bit 5 by 1.
[ok] Read security setting bits.
[ok] Check security setting bits.
FS0:\BIOS_ST50V2\3.MFGDone\> if %lasterror% == 0 then
FS0:\BIOS_ST50V2\3.MFGDone\> echo MFGDONE is set.
MFGDONE is set.
FS0:\BIOS_ST50V2\3.MFGDone\> else
FS0:\BIOS_ST50V2\3.MFGDone\> endif
FS0:\BIOS_ST50V2\3.MFGDone\> goto end
FS0:\BIOS_ST50V2\3.MFGDone\> goto restart
FS0:\BIOS_ST50V2\3.MFGDone\> echo " "

FS0:\BIOS_ST50V2\3.MFGDone\> echo -off
*** you were seeing Echo MFGDONE is Set, mean uEFI FW Security was setup. ***
*** if you were seeing echo MFGDONE is not set, mean MFGDone was not complete. Please try
r system reboot. ***
```

Step **1**—**2**—**3**—**4**—**5**—**6**

# Summary

This course enabled you to:

- Describe the ThinkSystem ST50 V2 server
- Describe the server features and specifications
- Identify the server diagram
- Describe the problem determination and VPD update procedures for the ST50 V2