

Lenovo ThinkServer Diagnostics Embedded Edition User Guide



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About this document

This document provides information about how to use the embedded edition of the Lenovo[®] ThinkServer[®] Diagnostics program (hereinafter referred to as LTDE). LTDE can assist you or Lenovo service technicians to diagnose system problems.

1 Introduction

1.1 LTDE overview

LTDE is a diagnostic tool that runs before your server enters an operating system. LTDE enables you to run diagnostics tests on the server and collect service data including system information and logs.

LTDE resides in the following Lenovo ThinkServer systems:

- ThinkServer RD350
- ThinkServer RD450
- ThinkServer RD550
- ThinkServer RD650
- ThinkServer TD350

To obtain the latest information about LTDE, go to: http://support.lenovo.com/us/en/downloads/ds102932

1.2 Related documentation

The Lenovo Limited Warranty (LLW) contains warranty terms that apply to the product you purchased from Lenovo. You can read the LLW on the documentation DVD that comes with your server or get a printable version of the latest LLW in more than 30 languages at http://www.lenovo.com/warranty/llw_02. If you cannot obtain the LLW through the documentation DVD or Lenovo Web site, contact your local Lenovo office or reseller to obtain a printed version of the LLW for free.

For warranty service, refer to the worldwide Lenovo Support telephone list. Telephone numbers are subject to change without notice. The most up-to-date telephone list for Lenovo Support is always available on the Web site at http://www.lenovo.com/support/phone. If the telephone number for your country or region is not listed, contact your Lenovo reseller or Lenovo marketing representative.

Lenovo maintains pages on the World Wide Web where you can get the latest technical information and download documentation or device drivers and updates. To access the Lenovo Support Web site, go to:

http://www.lenovo.com/support

2 Launching LTDE

You can launch LTDE through one of the following methods:

• Turn on the server. Press F2 as soon as you see the ThinkServer logo screen.



Figure 2-1 ThinkServer logo screen

• Turn on the server. Press F1 as soon as you see the ThinkServer logo screen. On the Basic Input Output System (BIOS) setup menu, select **Boot Manager -> Launch Diagnostics**.

Aptio Setup Util Boot Manager Save	l ity – Copyright & Exit	(C) 2014 Ameria	can Megatrends, Inc.
Quiet Boot Boot Mode Legacy Support	[Enabled] [Auto] [Enabled]		Launch Diagnostics
Infinite Boot Health status messages on quiet boot	[Disabled] [Enabled]		
Launch TDM Launch Diagnostics Adapters and UEFI Dr Miscellaneous Boot S Boot Sequence Exclude Boot Device	rivers Bettings		 ↔: Select Screen ↓/Click: Select Item Enter/Dbl Click: Select +/-: Change Opt. F1: General Help F2: Previous Values F9: Optimized Defaults F10: Save and Reset ESC/Right Click: Exit
Version 2.17.12	245. Copyright (C) 2014 America	n Megatrends, Inc. AB

Figure 2-2 BIOS setup menu

3 Main functions

This chapter describes the main functions of LTDE.

3.1 Viewing system information

The System Info function enables you to view the following system information:

- System overview
- Central processing unit (CPU) information
- Dual in-line memory module (DIMM) information
- General information about the peripheral component interconnect (PCI) card adapters
- Detailed information about the PCI card adapters
- Hard disk drive (HDD) information
- Power supply unit (PSU) information

Click the **System Info** tab and view the displayed system information by using the scroll bar on the right pane.

Note: Service engineers can click **Modify FRU** on the System Info interface to change Field Replaceable Unit (FRU) information after system board replacement. For detailed information, refer to chapter 3.8 Changing the FRU information.

Lenovo ThinkServer	Diagnostics	\odot	٢	?	۷
🔋 System Info					_
Collect Info	System Overview Modify FRU				
🕲 Health Check	BIOS Version: PB2TS151 Machine Type and Model: FFFFFFFFF Serial Number: 123456709 UUID: 78563412-1290-5634-7890123456789012				
P CPU Test	TSM version: 01.50.78801 TDM version: 1.02.0010 Linux Driver Package: 1.02.0006 Windows Driver Package: 1.02.0007				
Memory Test	DIAG Package: 1.02.0005				
HDD Test	CPU Count: 2 CPU#1 CPU#1				
문 Run All	CPU Family: Intel Neham Family CPU Model: Haswell Server Model CPU Max Frequency: 2800 MHz CPU CoreCount: 14 CPU#2				
Designed by Lenovo.	CPU Name: Genuine Intel(R) CPU @ 2.20GHz CPU Family: Intel Nehalem Family CPU Model: Haswell Server Model CPU Max Frequency: 2800 MHz				
2015/09/17	Log Location:				

Figure 3-1 System Info interface

3.2 Collecting system-related information

The Collect Info function enables you to collect the following system-related information:

- System configuration
- PCI device and PCI-Express card information
- Logs related to Redundant Array of Independent Disks (RAID)
- Intelligent Platform Management Interface (IPMI) event logs
- Operating system logs (if selected)

To collect system-related information, do the following:

1. Click the **Collect Info** tab, and click **Run** on the right pane.

If you select **Option: When selected, collects below user OS info if applicable**, the following files are collected, depending on the operating system:

- For the Microsoft[®] Windows[®] operating system: system event log files and files in the Minidump folder
- For the Linux[®] operating system: startup configuration file

Lenovo ThinkServer	Diagnostics 🕟 😟 ? 😃
🛱 System Info	
Collect Info	Collect Info Click the 'Run' button. LTDE(Lenovo ThinkServer Diagnostics Embedded) collects information about the following aspects of a system, if applicable:
😋 Health Check	- System configuration - PCI - LSI RAID - TPMI
En CPU Test	 User OS logs (Windows, Linux) Option: When selected, collects below user OS info if applicable:
Memory Test	Windows Event logs
ය. HDD Test	
器 Run All	
Designed by Lenovo.	
Powered by American Megatrends Inc. 2015/09/17	Log Location: Run

Figure 3-2 Collect Info interface

Lenovo ThinkServer I	Diagnostics) 📀	?	(1)
📮 System Info				_
Collect Info	Collect Info Collect System logsDone Please wait; collecting BIOS Setup log			
🍳 Health Check				
CPU Test	Collecting Logo			
Memory Test	Collecting togs			
📓 HDD Test				
品 Run All				
Designed by Lenovo. Powered by American Megatrends Inc. 2015/06/18	Log Location:		Run	

The log collection process takes several minutes, depending on the system configuration. A progress bar is displayed to indicate the log collection progress.

Figure 3-3 Progress bar (log collecting)

Note: The mouse pointer does not work until the log collection process is completed.

When a log collection item is completed, a completion result "Done" is displayed on the interface.

2. After the whole log collection process is completed, click **Save** to save the collected logs.

The logs are saved in a system_info.txt file in the log storage path.

Lenovo ThinkServ	er Diagnostics 🚯 😟 ?	٧
🛱 System Info		
Collect Info	Collect Info Collect System logsDone Collect PCI Devices logsDone Collect RAID related logsDone	
	Collect IPMI related logsDone	
CPU Test		
Memory Test	Saving log file	
ු HDD Test		
Designed by Lenovo. Powered by American Megatrends Inc. 2015/06/18	Log Location: SanDisk Extreme 0001:ThinkServer_RD650_123456789_20150623172310_LTDE1_0_0	

Figure 3-4 Log saving window

3.3 Running the health check

The Health Check function enables you to do the following:

• RAID and HDD status check

This item collects LSI RAID event records and HDD Self-Monitoring Analysis and Reporting Technology (S.M.A.R.T.) check result. If a critical, fatal, or warning event is detected, a notice is displayed in the check result.

• ThinkServer System Manager (TSM) self-test

This item checks the working status of TSM. If the status is abnormal, a notice is displayed to provide detailed information.

• Light emitting diode (LED) status check

This item checks the status of the system ID LED, the TSM heartbeat LED, the system health LED, PSU fault LEDs, and system fan fault LEDs.

- If the system ID LED is on, you can quickly locate the server.
- If the TSM heartbeat LED is not blinking, TSM works properly.
- If the system health LED is on, the server does not work properly.
- If a PSU fault LED is on, the model and registers of the faulty PSU are checked to identify the fault.
- If a system fan fault LED is on, the speed and status of the faulty fan are checked.
- Sensor status check

This item checks the status of TSM sensors. The check result includes sensor number, sensor name, sensor status, and sensor reading information (only for threshold sensors). If the status of the sensor is abnormal, a notice is displayed to provide detailed information.

• Collection of five latest System Event Log (SEL) records

A maximum of five latest SEL records are displayed in the check result. You can view all SEL logs in the log storage path after saving the health check logs.

To run the health check, do the following:

1. Click the **Health Check** tab, and click **Run** on the right pane.

Lenovo ThinkServer I	Diagnostics 💿 😳 😲 😃
鼻 System Info	
Collect Info	Health Data List the following health data for support personal, and highlight known issues, if any: -RAID and Hard Drive status
🔍 Health Check	-TSM self-test result -LEDs status -Sensors data -Latest five SEL records
CPU Test	
Memory Test	
HDD Test	
88 Run All	
Designed by Lenovo.	
2015/09/17	Log Location: Run

Figure 3-5 Health Check interface

Lenovo ThinkServer [Diagnostics	6	٢	?	٢
🛱 System Info					
E Collect Info	Health Data Health Data includes the following items: RAID and HardDrive statusChecking				
Q Health Check	TSM self-test resultWaiting LEDs statusWaiting Sensors statusWaiting Latest five SEL recordsWaiting				
CPU Test					
Memory Test					
HDD Test					
Designed by Lenovo. Powered by American Megatrends Inc. 2015/09/17	Log Location:			×	

The health check process takes several minutes, depending on the system configuration.

Figure 3-6 Heath Check interface (check running)

Note: The mouse pointer does not work until the health check process is completed.

When a test item is completed, a completion result "Done" is displayed on the interface.

If a problem is detected during the test, a notice is displayed in the test results.

2. After the health check process is completed, click **View Log** to view LSI-related information or click **Save** to save the logs.



The logs are saved in a health_check.txt file in the log storage path.

Figure 3-7 Health Check interface (check completed)

3.4 Running the CPU test

The CPU Test function enables you to perform the following operations:

- Getting the number of CPU cores
- Getting the CPU cache size
- Frequency test
- Floating point test
- Multimedia extensions (MMX) test
- Temperature test
- Machine check (MC) status register check

Note: In the CPU test, every core of the tested CPU is checked.

To run the CPU test, do the following:

1. Click the **CPU Test** tab, and click **Run** on the right pane.

Lenovo ThinkServer D	iagnostics	6	٢	?	0
🛱 System Info					_
Collect Info	CPU Test				
🔍 Health Check	CPU Test includes the following items: Get number of CPU cores				
CPUI Test	Get CPU cache size				
	Floating Point test				
Memory Test	MMX test Temperature test				
HDD Test	MC Status Registers Check				
E Run All					
Designed by Lenovo. Powered by American Megatrends Inc. 2015/06/18	Log Location:			Run	

Figure 3-8 CPU Test interface

A progress bar is displayed to indicate the test progress.

Lenovo ThinkServei	r Diagnostics) 🧿	?	0
System Info				
Collect Info	CPU Test Total Enabled Threads Count = 56 Cache information:			
ଙ୍କ୍ Health Check	L1 Data Cache Size per Core: 1 x 32 KB L1 Inst Cache Size per Core: 1 x 32 KB L2 Cache Size per Core: 256 KB L3 Cache Size: 35840 KB			
CPU Test	CPU Floating Point testing			
Kan Memory Test	Press ESC to exit			
📓 HDD Test				
品 Run All				
- 1				
Designed by Lenovo. Powered by American Megatrends Inc. 2015/06/18	Log Location: SanDisk Extreme 0001:\ThinkServer_RD650_123456789_20150623172310_LTDE1_0_C		Run	

Figure 3-9 Progress bar (CPU test running)

Notes:

- The mouse pointer does not work until the test process is completed.
- You can press Esc to quit the test.

2. After the test process is completed, click **Save** to save the logs.

The logs are stored in a test_cpu.txt file in the log storage path.

Lenovo ThinkServe	er Diagnostics 🕟 📀	? 🙂
📄 System Info		
Collect Info	CPU Test Total Enabled Threads Count = 56 Cache information:	
କ୍ତ୍ Health Check	L1 Data Cache Size per Core: 1 x 32 KB L1 Inst Cache Size per Core: 1 x 32 KB L2 Cache Size per Core: 256 KB L3 Cache Size: 35840 KB	
CPU Test	Frequency test [PASS] Floating Point test [PASS] MMX test [PASS] Temperature test [PASS]	
Memory Test	MC Status Registers Check[PASS]	
ြ္တ HDD Test		
Designed by Lenovo. Powered by American Megatrends Inc. 2015/06/18	Log Location: SanDisk Extreme 0001:\ThinkServer_RD650_123456789_20150623172310_LTDE1_0_0	Save

Figure 3-10 CPU Test interface (test completed)

3.5 Running the memory test

The Memory Test function enables you to test the system memory.

To run the memory test, do the following:

1. Click the **Memory Test** tab, and configure the test mode and test items according to your needs. Then, click **Run**.

In the Memory Test Patterns section, WriteRead Test is selected by default.

Lenovo ThinkServer	Diagnostics	0	۲	?	٧
📑 System Info					
Collect Info	Stop test on first error				
ଷ୍ଟ୍ର୍ୟୁ Health Check	Test by cycles 1 Cycles (1-10) Test by time 8 Minutes (1-1440)				
E CPU Test	Memory Test Types Qucik Test				0
🛗 Memory Test	O Full Test				
HDD Test					
88 Run All					
Designed by Lenovo. Powered by American Megatrends Inc. 2016/01/15	Log Location:			Run	

Figure 3-11 Memory Test interface

During the memory test, the status of each selected test item is displayed on the interface.

Lenovo ThinkServer	Diagnostic	5			0	۲	?	٧
🛱 System Info								_
Collect Info	Memory Test Block1 = 0x100000 Block2 = 0x100820	-OxEFFFFFF						
ଷ୍ଟ୍ର୍ୟୁ Health Check	Block3 = 0x686500 Block4 = 0x100000 Testable Memory =	000-0x6CD6FFFF 0000-0x207FFFFFF 129903 MB						
E CPU Test	Running Status	(Cycle = 1/1, B	lock = 1)					
Memory Test	Types Quick Test	Status [Running]	Progress 4%	Duration				
ධූ HDD Test	Press ESC key to	abort testing						
E Run All								
Designed by Lenovo. Powered by American Megatrends Inc.						i		
2016/01/15	Log Location:						Save	

Figure 3-12 Memory Test interface (test running)

Notes:

- The mouse pointer does not work until the test process is completed.
- You can press Esc to quit the test.
- 2. After the test process is completed, click **Save** to save the logs.

The logs are saved in a test_mem.txt file in the log storage path and include more details than the test results displayed on the interface.

3.6 Running the HDD test

The HDD Test function enables you to check the HDD status.

To run the HDD test, do the following:

1. Click the HDD Test tab, select the HDDs and test items, and then click Run.

By default, all HDDs displayed on the interface and Short Self Test are selected.

Lenovo ThinkServer [Diagnostics		0	٢	?	0
System Info						_
Collect Info	Hard Drive Information					
🕲 Health Check		2CSS200:06G0LEGK:				
CPU Test	Short Self Test	: [Not Run]				
Isa Memory Test	Long Self Test	: [Not Run]				
HDD Test	Notice:The HDD test will ta	ake a few minutes.Press ESC t	o exit.			
문 Run All						
Designed by Lenovo. Powered by American Megatrends Inc. 2015/09/17	Log Location:			-	Run	

Figure 3-13 HDD Test interface

A progress bar is displayed to indicate the test progress.

Lenovo ThinkServer I	Diagnostics			\odot	۲	?	٢
🛱 System Info							_
Collect Info	Hard Drive Information						
😋 Health Check	₹26,00HGST:HUC10181 Hard Drive Test Setting	2CSS200:06G0LEGK:					
Fe CPU Test	🗹 Short Self Test	: [Running]					
Memory Test	Long Self Test	: [Not Run]					
HDD Test	Notice:The HDD test will ta	ike a few minutes.	Press ESC to exi	t.			
器 Run All							
Designed by Lenovo.							
Powered by American Megatrends Inc. 2015/09/17	Log Location:					Save	

Figure 3-14 HDD Test interface (test running)

Notes:

- The mouse pointer does not work until the test process is completed.
- You can press Esc to quit the test.

2. After the test process is completed, click **Save** to save logs.

The logs are stored in a test_hdd.txt file in the log storage path.

Lenovo ThinkServer I	Diagnostics			6	۲	?	U
System Info							_
Collect Info	Hard Drive Information						
	₹26,00HGST:HUC10181	2CSS200:06G0LEGK:					
CPU Test	Short Self Test	: [Done]		[Pass]			
Memory Test	Long Self Test	: [Not Run]					
HDD Test	Notice:The HDD test will ta	ake a few minutes	Press ESC to e.	exit.			
器 Run All							
Designed by Lenovo. Powered by American Megatrends Inc. 2015/09/17	Log Location:					Save	

Figure 3-15 HDD Test interface (test completed)

Note: HDD Test only supports system with LSI raid card configuration. Not Support onboard raid and non-raid configuration.

3.7 Running all tests

The Run All function enables you to run one or all of the following test items:

- Collect Info
- Health Check
- CPU Test
- Memory Test
- HDD Test

To collect system-related information and run all tests at one time, do the following:

1. Click the **Run All** tab, select the test items according to your needs, and then click **Run** to run all the selected items.

Lenovo ThinkServer I	Diagnostics		C) 😟	?	U
🔋 System Info	-					
Collect Info	Run All Click the run button,Prog patient.	ram will run the selected	tests.This might take sev	eral minutes.	Please be	
🕲 Health Check	Select Test Items ☑ Select All					
CPU Test	☑ Collect Info ☑ Health Check		View Log View Log			
Memory Test	☑ CPU Test ☑ Memory Test		View Log View Log			
ු HDD Test	✓ HDD Test		View Log			
8 Run All						
Designed by Lenovo. Powered by American Megatrends Inc. 2015/06/18	Log Location:				Run	

Figure 3-16 Run All interface

2. After all the selected test items are completed, click **View Log** to view the test logs or click **Save** to save the logs.

Lenovo Thin	Lenovo ThinkServer Diagnostics		
System Info	Test Log	×	
📋 Collect Info	Version = V0.3.8 Processor Numbers = 56 CPU VID:DID = 8086:2F00	1	
🍳 Health Check	Block1 = 0x100000-0xEFFFFF Block2 = 0x10082000-0x1E049FFF Block3 = 0x2210F000-0x22300FFF Block4 = 0x25610000-0x60000FFF Block4 = 0x56610000000 0x87FFFFF		
CPU Test	alocs = 05/10/00/00/00/37FFFFF Total Memory = 32697 MB Got Memory = 31466 MB RunMinutes = 8		
Memory Test	(Cycle = 1, Block = 1) WriteRead Test: [Pass] 100% 19 Seconds <12MB/s>		
📓 HDD Test	(Cycle = 1, Block = 2) WriteRead Test: [Pass] 100% 19 Seconds <11MB/s>		
🔡 Run All	(Cycle = 1, Block = 3) WriteRead Test: [Pass] 100% 19 Seconds <14MB/s>		
	(Lycie = 1, block = 4) WriteRead Test: [Pass] 100% 98 Seconds <313MB/s> (Cycle = 1, Block = 5)		
Designed by Lenovo. Powered by American Megatr 2015/06/18	WriteRead Test: [Pass] 100% 97 Seconds <316MB/s> (Cycle = 2, Block = 1)		

Figure 3-17 Log viewing window

Lenovo ThinkServe	r Diagnostics		6	۲ و ک
🛱 System Info	. <u></u>			
Collect Info	Run All Click the run button,Prog patient.	ram will run the selected tes	ts.This might take several	minutes.Please be
ପ୍ର୍ Health Check	Select Test Items			
CPU Test	✓ Collect Info✓ Health Check	Pass Notice	View Log View Log	
Kan Memory Test	CPU Test	Pass Pass	View Log View Log	
ြူ HDD Test	IND Test	warning	View Log	
Run All				
Designed by Lenovo. Powered by American Megatrends Inc. 2015/06/18	Log Location:			Save

Figure 3-18 Run All interface (test completed)

3.8 Changing the FRU information

The FRU information change function enables you to update the following FRU information for a system board in the server:

- Product manufacturer
- Product name
- Product serial number
- Product asset tag
- Universally Unique Identifier (UUID)

Attention: Only Lenovo service technicians can change the FRU information. Incorrect FRU information change might affect the product warranty.

To change FRU information, do the following:

1. Click the System Info tab, and click Modify FRU on the right pane.

Lenovo ThinkServ	er Diagnostics	<u></u>	9 ?	٢
System Info				
Collect Info	System Overview Modify FRU Product Name: Lanour ThinkSenser PD650			
ଷ୍ଟ୍ Health Check	BIOS Version: PERTS332 Machine Type and Model: As 2T 5 Serial Number: 123456709			
CPU Test	TSM version: 03:50.86 TDM version: 03:50.86 TDM version: 1.02.0010 Linux Driver Package: 1.02.0006 Windows Driver Package: 1.02.0007			

Figure 3-19 System Info interface

2. In the displayed Modify FRU window, change the values of **Product Mfg**, **Product Name**, **Product Serial**, **Product Version** and **Product Asset Tag**. Click **Auto** to generate a new UUID value. Then, click **Update** to validate the changes.

Lenovo Thinl	kServer Diagr	ostics	$\mathbf{\mathfrak{S}}$	۲	(1)
System Info	Modify FRU			×	_
Collect Info	WARNIG: Please cor information!	tact Lenovo service team to update FRU			
ତ୍ତ୍ୱ୍ Health Check	Product Mig	RD650			
EPU Test	Product Version	As 2T 5			
開始 Memory Test	Product Asset Tag	6768			
HDD Test	UUID	170e05150b7311008aa@005d3a1709d3 Auto			
Designed by Lenovo. Powered by American Megatr 2016/01/15					

Figure 3-20 Modify FRU window

3.9 Performing network settings

The network setting function enables you to set a Windows share folder to save logs in a network.

To perform network settings, do the following:

1. Click the network settings icon in the upper-right corner of the LTDE main interface.

2. In the displayed Network Settings window, set the IP addresses for storing logs on a network location.

Lenovo Thin	kServer Diagnostics 🕟 🔅 ? 🔱
System Info	Network Settings
Collect Info	Obtain an IP address automatically
😋 Health Check	Use the following IP address IP Address
CPU Test	Subnet Mask
Memory Test	Network Location for Log Save
📓 HDD Test	Please configure network settings for Windows Share protocol. The connection settings wi be saved for future actions such as retrieving and saving response files from shared folders.
문문 Run All	IP Address:
	User Name: Format: Domain/Username or User name
	Password:
Designed by Lenovo. Powered by American Megatr 2015/06/18	Save and Connect Save without Connect Cancel

Figure 3-21 Network Settings window

3. Click Save and Connect.

3.10 Setting a log storage path

If it is the first time you click **Save** on the LTDE main interface, you will be prompted to set the log storage path. After the setting, all saved logs are stored in this path.

To set the log storage path, do the following:

1. After collecting system-related information or running any check, click **Save** on the LTDE main interface.

2. In the displayed Save to window, select a log storage path, such as a Windows Share folder set in the Network Settings window or a Universal Serial Bus (USB) key attached to the server. Then, click **OK**.

Lenovo ThinkServ	\bigcirc	۲	?	U	
🛱 System Info	Collect Tefe				
Collect Info	Collect find Collect System logsDone	•			
🛛 Health Check	Save to				
CPU Test	ADATA USB Flash Drive 1100 Ok Cancel				
Memory Test		1			
HDD Test					
Designed by Lenovo. Powered by American Megatrends Inc. 2015/06/18	Log Location:			Save	

Figure 3-22 Save to window

A folder named in the format of ThinkServer_*product name_serial number_timestamp_LTDE version number* (such as ThinkServer_RD650_123456789_20150623172310_LTDE1_0_0) is created in the path and stores all saved logs. Both the selected path and the created folder name are displayed in the **Log Location** section at the bottom of the main interface.

Lenovo ThinkServ	Diagnostics 💿 😟 💡 🤇	U
System Info		
Collect Info	Run All Click the run button,Program will run the selected tests.This might take several minutes.Please be patient.	
ତ୍ତି, Health Check	Select Test Items	
CPU Test	View Log View Log	
Memory Test	Saving log file View Log View Log	
HDD Test	View Log	
Run All		
Designed by Lenovo. Powered by American Megatrends Inc. 2015/06/18	Log Location: ADATA USB Flash Drive 1100:\ThinkServer_RD650_123456789_20150623172310_LTDE1_0_0	

Figure 3-23 Log saving window

The log files stored in the folder include:

- application.evtx: Windows application event file (a duplicate of application.evtx in \windows\system32\winevt\logs in the Windows file system)
- security.evtx: Windows security event file (a duplicate of security.evtx in \windows\system32\winevt\ogs in the Windows file system)
- system.evtx: Windows system event file (a duplicate of system.evtx in \windows\system32\winevt\logs in the Windows file system)
- Bios_settings.txt: BIOS setting information
- drivers.txt: unified extensible firmware interface (UEFI) environment driver information
- health_check.txt: health check log
- TSM_Info.txt: TSM-related information, including TSM version, PSU status, FRU information, BMC-related information, and TSM device status
- map.txt: UEFI storage mapping information
- pci.txt: PCI device information
- pci-i.txt: PCI-Express card information
- seldump.txt: IPMI SEL
- smbiosview.txt: UEFI system management (SMBIOS) log
- storcli_c0show.txt: RAID 0 controller overview
- storcli_ctrlcount.txt: RAID controller quantity

- storcli_events.txt: RAID event log
- storcli_fwtermlogs.txt: RAID firmware log
- storcli_showall.txt: detailed RAID information
- storcli_smartlog.txt: RAID S.M.A.R.T. check log
- system_info.txt: system-related information
- test_cpu.txt: CPU test log
- test_mem.txt: memory test log
- test_hdd.txt: HDD test log
- grub.conf: Linux startup configuration file (a duplicate of grub.conf in \efi\redhat in the Windows file system)
- *XX*.evtx: system even logs
- *XX*.dmp: Minidump files in the Minidump folder of the Windows operating system

4 Updating LTDE

To update LTDE, use one of the following tools:

- ThinkServer Deployment Manager (TDM): recommended
- TSM Web user interface (UI)
- Operating System-based Platform Update Tool (OSPUT)
- TSM command-line interface

4.1 Updating LTDE by TDM

Prerequisites: The LTDE bundle file with the .bdl extension (such as LTDE_v1.x.x.bdl) is copied to a USB key, and the USB key is attached to the server.

To update LTDE by TDM, do the following:

- 1. Turn on the server.
- 2. Press F10 to start TDM as soon as you see the ThinkServer logo screen.



Figure 4-1 ThinkServer logo screen

3. From the TDM main interface, click the **Platform Update** tab. Select **Application** on the right pane and then click **Next**.

ThinkServer Deploy	ment N	lanager	6	۲	?	٧
System Summary		Please select the object you want to update.				
BIOS Setup		Application Firmware				
C Platform Update						
Storage Management	*					
믑 Deployment						
E Cloning						
		[Next			
Designed by Lenovo. Powered by American Megatrends Inc. Copyright ©2015. American Megatrends Inc.						

Figure 4-2 Platform Update interface

4. Click the **Browse** button for **Diagnostic Tool**.

ThinkServer Deploy	ment Manager			\odot	٢	?	۷
System Summary							_
BIOS Setup	Application	Current Version	Available Version	Status			
C Platform Update	Deployment Manager	104.0.3				Browse	
Storage Management	Windows Driver Bundle	1.1.1				Browse	
믑, Deployment	Linux Driver Bundle	1.1.1				Browse	
E Cloning						R	
			Back		Flas	h	l
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Figure 4-3 Platform Update interface (Application)

5. In the displayed Select File window, select the required LTDE bundle file in the USB key and click **OK**.

Note: TDM also supports LTDE version rollback (for example, rollback from version 1.0.1 to version 1.0.0).

ThinkServer Deploy	ment Manager	o 🔹 🖓 U
System Summary		
BIOS Setup	Application Current Available Version Version	Status ×
C Platform Update	From: SanDek Full Path: SanDisk:Vtde_bundle	Browse
Storage Management	ttde_v1.0.0.bdl ₿ ttde_v1.0.1.bdl	Browse
믑, Deployment		Browse
E Cloning		
	File Name: Itde_v1.0.1.bdl	
	File Type: *bd *	
	Canc	el
	Bac	k Flash
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Figure 4-4 Select File window

6. Click **Flash** to start the LTDE update process.

ThinkServer Deployment M	lanager			0	۲	?	0
System Summary							-
BIOS Setup	Application	Current Version	Available Version	Status			
C Platform Update	Deployment Manager	104.0.3				Browse	
Storage Management	Flashing Diagnostic Tool				Ľ	Browse	
면 Deployment					Ľ	Browse	
E Cloning							-
							1
Designed by Lenovo.			Back		Flas	h	
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When "In Progress" is shown in the **Status** column, LTDE is being updated.

ThinkServer Deploy	ment Manager			\odot	۲	?	U
System Summary							_
BIOS Setup	Application	Current Version	Available Version	Status			
C Platform Update	Deployment Manager	104.0.3				Browse	
Storage Management	Uindows Driver Bundle	ndle 1.1.1				Browse	
문 Deployment	Diagnostic Tool	1.0.0	1.0.1	In Progress		Browse	
Cloning							_
					*		
			Bacl		Flas	h	ſ
Designed by Lenovo. Powered by American Megatrends Inc. Cayvright 02015. American Megatrends Inc. All rights reserved.			Bac		1103		

Figure 4-6 Platform Update interface (LTDE updating)

ThinkServer Deploym	ent Manager			0	0 2	٧
System Summary						_
BIOS Setup	Application	Current Version	Available Version	Status		
C Platform Update	Deployment Manager	104.0.3			Browse	
Storage Management	Windows Driver Bundle	1.1.1			Browse	
문, Deployment	Diagnostic Tool	1.1.1		Success	Browse	
E Cloning					Browse	
			Back		Flash	
Designed by Lenovo. Powered by American Megatrends Inc. Copyright ©2015. American Megatrends Inc. Al rights reserved.					*	

When "Success" is shown in the Status column, LTDE is updated successfully.

Figure 4-7 Platform Update interface (LTDE update completed)

- 7. Restart the server by doing one of following:
 - Click on the upper-right corner and select **Reboot**.
 - Press Ctrl+Alt+Delete.
 - Press and hold the power button on the front panel of the server till the server is turned off. Then, press the power button again to restart the server.

4.2 Updating LTDE on the TSM Web UI

Prerequisites: The LTDE bundle file with the .bdl extension (such as LTDE_v1.x.x.bdl) is copied to a local computer.

To update LTDE on the TSM Web UI, do the following:

1. On the local computer, open a Web browser, and then input the TSM IP address of the server to go to the TSM login page. Input the user name and password to sign in.

Note: The default user name and password are lenovo and len0vO.

Lenovo ThinkServer System Manager	
	3
llseman	ne' lisamama.
Passwo	rd: Password
	Sign in

Figure 4-8 TSM login page

2. After you have logged in, switch to the second page.

			Cessius 41	atts 1000 - Watts 1000 -	
SY	STEM SUMMARY	BIOS Version: PB27S123 TSM Version: 1.24.71129 Model Name: RD650 Model Number: PPNumber Senal Number: 1234567690123	Ambient Temp PSUT	1440 1440 Power PSU2 Power LAUNCH CONSOLE	
LA	2015-01-12 08:49:38 Sensor 0 2015-01-12 08:49:38 Sensor 0	5 Tirriestamp Clock Synch Timestamp Clock Synch	ON Power Management	Launch	
	2015-01-12 08:49:09 Host Powe 2015-01-10 13:25:59 Sensor 0 2015-01-10 13:25:59 Sensor 25	r Power Off / Power Down Timestamp Clock Synch 5 Timestamp Clock Synch View All	NIC	Active NIC: Dedicated MAC Address: 00.50 3A.17.09.D3 IPv4 Address: 10.99.96.84 IPv6 Address:	

Figure 4-9 TSM Web UI main interface

3. Double-click the **Firmware Update** icon .

Hostna Userna	me: 005D3A1709D3 me: lenovo		Le	novoThinkServ	ver System M	anager		Search	P
		4	*						
	FRU	Power	Users	Networking	Virtual	Logging	SMTP	NTP	
\langle	1	×			0	(((🌲)))			
	SSL Cert. Settings	Services Management	Sensor Monitoring	Firewall	Reset	PEF Management	Firmware Update	Backup and Restore	
	-	Ţ	-			-			
	Serial Over	Crash							
	LAN	Screen							
^					• •				-

Figure 4-10 Firmware Update icon

4. In the displayed Firmware Update Mode Select window, click **Upload a firmware bundle**.

Please, select one of the methods below to start the Firm nat can be updated and their installed version right below	mware Update wizard. You can also view the list of the devices	
Device Type	Installed Version	
BIOS	1.31.0	
Deployment Manager	1.2.1	
Diagnostic	1.0.56	
Linux Driver Bundle	0.0.0	
PSU - Slot Number: 2	0.95.0	
System Manager	1.30.72593	
Windows Driver Bundle	0.0.0	
Vindows Driver Bundle	Soloct a potwork location for	ļ

Figure 4-11 Firmware Update Mode Select window

5. In the displayed Firmware Update window, click **Browse** to select the required LTDE bundle file and then click **Upload**.

Firmware Upo	late			
Please, select a t	irmware update bundle file to upload and click Firmware Bundle	k 'Upload'.	Browse	?
	Upload	Cancel		

Figure 4-12 Firmware Update window

6. In the displayed Available Updates window, select **Diagnostic** and then click **Apply** to start the LTDE update process.

	Availa	ble Updates								
The following firmware updates are available on the bundle file. Click Apply to update them.										?
	✓ ▲	Device Type	\$	Installed Version	\$	Available Version	\$	Required ≎ Reset	Status	\$
		Diagnostic		1.0.56		1.0.57		None	Ready to update	
				Apply				Cancel		

Figure 4-13 Available Updates window

In the displayed Update Progress window, "Pending" and then "In progress" are displayed in the **Status** column, indicating the status of the LTDE update process.



Figure 4-14 Update Progress window (pending)

Update Progress			୍
			01
Janager. Removal of the po	over cord or network cable during firmw	vare update may cause your ThinkServer Sys	system stem Manager
o get an incorrect update sta	atus and the firmware update to be uns	successful.	
			_
Device Type	 Version 	≎ Status	\$
Device Type Diagnostic	 Version 1.0.0 	≎ Status In progress (14%) ■ ■	¢
Device Type Diagnostic	Version	Status	\$

Figure 4-15 Update Progress window (in progress)

When the Success window is displayed, LTDE is updated successfully.

Update Progress				3	
	Success		&		
Device Type	\bigcirc	Firmware update is complete.		\$	
Diagnostic		Ok	-		

Figure 4-16 Success window (LTDE update completed)

7. Click **OK** and then restart the server.

4.3 Updating LTDE by OSPUT

Prerequisites: OSPUT is installed in the server. The LTDE bundle file with the .bdl extension (such as LTDE_v1.x.x.bdl) is copied to a USB key, and the USB key is attached to the server.

To download OSPUT and its user guide, go to: http://support.lenovo.com/us/en/downloads/ds101716

4.3.1 Updating LTDE by OSPUT (Windows)

To update LTDE by OSPUT on the Windows operating system (for example, Windows Server[®] 2012), do the following:

1. Turn on the server.

2. Double-click the **OSPUT Command Line** icon to open OSPUT.

Start				
Server Manager	Windows PowerShell	OSPUT Command Line		
Computer	Task Manager			
Control Panel	Internet Explorer			
Administrative Tools	File Explorer			
Desktop				

Figure 4-17 OSPUT Command Line icon

3. Copy the required LTDE bundle file in the USB key and paste it into C:\Program Files\Lenovo\OSPUT.

📓 l ⊋ 🛐 = l			OSPUT			- • ×
File Home Shar	e View					~ ()
⊕ ⊕ - ↑ 퉫 • 0	Computer 🕨 Local Disk (C:) 🕨 Program F	iles 🕨 Lenovo 🕨 OSPUT 🕨			✓ ♂ Search OSPUT	Q
	Name	Date modified	Туре	Size		
Desktop	📕 da DK	3/2/2015 2:45 PM	File folder			
Downloads	de DE	3/2/2015 2:45 PM	File folder			
🔄 Recent places	en_US	3/2/2015 2:45 PM	File folder			
	🔒 es_ES	3/2/2015 2:45 PM	File folder			
🥽 Libraries	\mu fr_FR	3/2/2015 2:45 PM	File folder			
Documents	🕌 it_IT	3/2/2015 2:45 PM	File folder			
J Music	퉬 ja_JP	3/2/2015 2:45 PM	File folder			
Pictures	📕 ko_KR	3/2/2015 2:45 PM	File folder			
🚼 Videos	licenses	3/2/2015 2:45 PM	File folder			
	\mu nl_NL	3/2/2015 2:45 PM	File folder			
🖳 Computer	pt_BR	3/2/2015 2:45 PM	File folder			
	🐌 ru_RU	3/2/2015 2:45 PM	File folder			
📬 Network	퉬 th_TH	3/2/2015 2:45 PM	File folder			
	Image:	3/2/2015 2:45 PM	File folder			
	퉬 zh_HK	3/2/2015 2:45 PM	File folder			
	퉬 zh_TW	3/2/2015 2:45 PM	File folder			
	LTDE_v1.0.33.bdl	3/2/2015 10:49 PM	BDL File	11,942 KB		
	💷 osput	9/4/2014 11:21 AM	Application	2,170 KB		
	OSPUT_User_Guide.pdf	9/3/2014 12:07 PM	PDF File	257 KB		
	README	9/3/2014 5:10 PM	Text Document	2 KB		
20 items						SII 🖬



4. On the OSPUT command-line user interface, run the following command to upload the LTDE bundle file to OSPUT:

```
OSPUT -c update -f LTDE_v1.x.x.bdl - -noRebootAfterUpdate
- -force
```

Note: If you have input- -noRebootAfterUpdate in the command line, the server will not restart automatically after LTDE is updated successfully.



Figure 4-19 OSPUT command-line user interface (LTDE bundle file uploading)

When Done is displayed under Uploading the bundle file..., the LTDE bundle file is uploaded successfully. Then, the LTDE update process starts automatically.



Figure 4-20 OSPUT command-line user interface (LTDE updating)

When Device update complete is displayed, LTDE is updated successfully.



Figure 4-21 OSPUT command-line user interface (LTDE update completed)

5. Restart the server.

4.3.2 Updating LTDE by OSPUT (Linux)

To update LTDE by OSPUT on the Linux operating system (for example, Red Hat[®] Enterprise Linux 6.5), do the following:

- 1. Turn on the server.
- 2. Copy the required LTDE bundle file in the USB key and paste it into /opt/Lenovo/OSPUT.

1		osj	out		_ = ×
File Edit View Pla	ices Help				
da_DK	de_DE	en_US	es_ES	fr_FR	it_IT
ja_P	ko_KR	licenses	nl_NL	pt_BR	ru_RU
th_TH	zh_CN	zh_HK	zh_TW	LTDE_v1.0.33.bdl	osput
OSPUT_User_Guide.	README.txt				
🗂 osput 🗸 20 items,	Free space: 724.2 GB				

Figure 4-22 OSPUT folder

3. Open the Linux client and go to /opt/Lenovo/OSPUT, enter the following command to upload the LTDE bundle file to OSPUT:

```
./OSPUT -c update -f LTDE_v1.x.x.bdl - -noRebootAfterUpdate
- -force
```

Note: If you have input- -noRebootAfterUpdate in the command line, the server will not restart automatically after LTDE is updated successfully.

When Done is displayed under Uploading the bundle file..., the LTDE bundle file is uploaded successfully. Then, the LTDE update process starts automatically.

When Device update complete is displayed, LTDE is updated successfully.

```
root@localhost:/opt/lenovo/osput
                                                                            _ 🗆 🗙
File Edit View Search Terminal Help
[root@localhost osput]# ./osput -c update -f LTDE v1.0.33.bdl --noRebootAfterUpd
ate --force
Lenovo ThinkServer Operating System-based Platform Update Tool version 1.0.3.
Uploading the bundle file...
Done.
Waiting for the update to begin...
Updating device 1 of 1...
Device type: DIAG
Device id: LG DIAG
Slot number: 0
Current version: 1.0.33
New version: 1.0.33
Reboot requirement: No reboot required
Device update complete.
[root@localhost osput]#
```

Figure 4-23 OSPUT command-line user interface (LTDE update completed)

4. Restart the server.

4.4 Updating LTDE on the TSM command-line interface

Prerequisites: The TSM command-line interface launcher is installed on a local computer. The LTDE bundle file with the .bdl extension (such as LTDE_v1.*x*.*x*.bdl) is copied to C drive.

To download the TSM command-line interface launcher and its user guide, go to: http://support.lenovo.com/us/en/downloads/ds101157

To update LTDE on the TSM command-line interface, do the following:

1. On the local computer, double-click **TSMCLI** to open the TSM command-line interface.

The TSM command-line interface is displayed.



Figure 4-24 TSM command-line interface

2. Run the following command to create a credential:

```
$cred=Invoke-TSMCLI -CommandName create-credential -CommandArgs
@{username="lenovo"; password = "len0v0"}
```



Figure 4-25 TSM command-line interface (credential creating)

Note: When a new command-line text PS C:\Users\Administrator> is displayed on the interface, the previous command is run successfully. Then, you can run the next command.

3. Run the following command to enter the firmware update mode: Invoke-TSMCLI -CommandName enter-fwupdatemode -ComputerName 10.99.96.70 -Port 80 -Authentication basic -Credential \$cred

Note: In the command line, -ComputerName 10.99.96.70 is an example of the TSM IP address of the server.

Contension Contensio Contension Contension Contension Contension Contension C	ger Command Line Interface
Copyright (C) 2014 Lenovo. Hil Fights reserved. PS C:\Users\Administrator> \$cred=Invoke-TSMCLI -CommandName cre = "len®uo") PS C:\Users\Administrator> PS C:\Users\Administrator> PS C:\Users\Administrator> Invoke-TSMCLI -CommandName enter-fwu ion basic -Credential \$cred	ate-credential -CommandArgs @{username="lenovo"; password pdatemode -ComputerName 10.99.96.70 -Port 80 -Authenticat
Result Message	UpdateID
Ø Success	1111709189
P\$ C:\Users\Administrator>	

Figure 4-26 TSM command-line interface (firmware update mode)

4. Run the following commands in sequence to check the current LTDE version:

- \$a=Invoke-TSMCLI -CommandName get-fwversions -ComputerName
 10.99.96.70 -Port 80 -Authentication basic -Credential \$cred
- \$a.FWImages

Lenovo ThinkServer System Manager Command Line Interface -
PS C:\Users\Administrator> \$a=Invoke-ISMCLI -CommandName get-fuversions -ComputerName 10.99.96.70 -Port 80 -Authenticati on basic -Credential \$cred PS C:\Users\Administrator> \$a.FWImages
DeviceType : @{Code=1; Type=System Manager} DeviceStatus : @{Code=1; Status=Device present} StatusFlag : @{Code=6; StatusTag=Matches in bundle} Rehoot : @{Code=5; Rehoot=The TSM will need to be rehooted during the update process} CurrentInageUersion : 1.31.73357 NewImageUersion : Not available
DeviceType : @ <code=2; type="BIOS)<br">DeviceStatus : @<code=1; present)<br="" status="Device">StatusFlag : @<code=3; required)<br="" statustag="Not">Reboot : @<code=2; after="" effect="" host="" is="" only="" reboot="The" rebooted)<br="" take="" the="" update="" will="">CurrentInageUersion : 1.8.0 NewImageUersion : 1.32.0</code=2;></code=3;></code=1;></code=2;>
DeviceType : @{Code=4; Type=PSU} DeviceStatus : @{Code=1; Status=Device present} StatusFlag : @{Code=0; StatusFlag=Matches in bundle} Reboot : @{Code=0; Reboot=No reboot required} CurrentInageUersion : 1.44.0 NewImageUersion : Not available
DeviceType : @CGode=201; Type=Deployment Manager> DeviceStatus : @CGode=3; Status=Device present) StatusFlag : @CGode=0; StatusFlag=Matches in bundle> Reboot : @CGode=0; Reboot required} CurrentImageUersion : 1.2.2 NewImageUersion : Not available
DeviceType : P(Code=202; Type=Windows Driver Bundle) DeviceStatus : P(Code=2; Status=Device present) StatusFlag : P(Code=0; StatusFlag=Matches in bundle) Reboot : P(Code=0; Reboot required) CurrentImageUersion : Not available NewImageUersion : Not available
DeviceType : P(Code=203; Type=Linux Driver Bundle> DeviceStatus : P(Code=203; Status=Device present) setueStatus : P(Code=2; Status=Device present) Beboot : P(Code=9; Reboot=No reboot required) CurrentInageUersion : Not available CurrentInageUersion : Not available
leviceType : B(Code=205; Type=Diagnostics) leviceStatus : B(Code=3; Status=Device present) itatusFlag : B(Code=8; StatusFlag=Matches in bundle) leboot : B(Code=8; Reboot=No reboot required) urrentImageUersion : 1.8.61 devImageUersion : Not available
PS C:\Users\Administrator>

Figure 4-27 TSM command-line interface (current LTDE version)

In the command output, the value of CurrentImageVersion is the current LTDE version.

- 5. Confirm that the current LTDE version is earlier than the version of the required LTDE bundle file.
- 6. Run the following command to upload the LTDE bundle file:

Invoke-TSMCLI -CommandName upload-fwimage -ComputerName 10.99.96.70
-Port 80 -Authentication basic -Credential \$cred -CommandArgs
@{updateId="1111709189"; fwFile="C:\LTDE_v1.0.61.bdl"}

Note: In the command line, 1111709189 is the value of UpdateID in the command output in step 3.



Figure 4-28 TSM command-line interface (LTDE bundle file uploading)

7. Run the following command to start the LTDE update process: Invoke-TSMCLI -CommandName start-fwupdate -ComputerName 10.99.96.70 -Port 80 -Authentication basic -Credential \$cred -CommandArgs

@{updateId="912590849"; rebootAfterUpdate="auto"}

Note: You can set the value of rebootAfterUpdate as required:

- auto: After LTDE is updated successfully, the server restarts automatically.
- manual: After LTDE is updated successfully, the server needs to be restarted manually.



Figure 4-29 TSM command-line interface (LTDE updating)

Note: Only when the LTDE update process is in pending status, can you run the following command to terminate the LTDE update process:

Invoke-TSMCLI -CommandName stop-pendingupdates -ComputerName
10.99.96.70 -Port 80 -Authentication basic -Credential \$cred CommandArgs @{updateId="1111709189"; force="1"}

After LTDE is updated successfully, the server restarts automatically to validate the update. However, if you have set rebootAfterUpdate to manual, the server will not restart automatically. Do the following to manually restart the server:

- 1. Run the following command to exit the firmware update mode: Invoke-TSMCLI -CommandName exit-fwupdatemode -ComputerName 10.99.96.70 -Port 80 -Authentication basic -Credential \$cred @{updateId="1111709189"}
- 2. Restart the server.

