

Lenovo ThinkServer Diagnostics Standalone Edition

User's Guide

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Chapter 1

Introduction

Lenovo[®] ThinkServer[®] Diagnostics Standalone Edition is a diagnostic tool that will run before your server boots into an operating system. The user can boot the diagnostics from a USB key inserted in their system. The Diagnostics tool can detect ThinkServer hardware components and display running status and firmware information. The screen resolution's default value is 1024x768 (Please note that the boot logo may be distorted on some widescreen monitors, but no functions will be impacted).

Chapter 2

Creating a Bootable USB key

- 1. Before you start, ensure that you prepare the bootable USB key on a Windows operating system.
- 2. Download the latest Diagnostics software package from the Lenovo Support web site: http://support.lenovo.com
- 3. Plug in the USB key, and run rufus-*.exe.
- 4. For the Create a bootable disk using option, select ISO Image.
- 5. Click the **Browse** button to select the image file of Lenovo ThinkServer Diagnostics Standalone Edition.

A Rufus 1.4.10.514 ×
Device 👏
LTDS (E:) [32GB] ~
Partition scheme and target system type
MBR partition scheme for BIOS or UEFI computers $\qquad \lor$
File system
FAT32 (Default) ~
Cluster size
16 kilobytes (Default) $$
New volume label
LTDS
Format Options 🔽
Check device for bad blocks 2 Passes V
Quick format
Create a bootable disk using ISO Image V
About Log Start Close
1 device found

6. Select **ISO Image** in the filter drop-down list, and open the *****.img** file.



Lenovo ThinkServer Diagnostics Standalone Edition

7. Click **Start**, and a prompt window is displayed. Click **OK** to continue.



	🖋 Rufus 1.4.10.514	×
	Device	8
	LTDS (E:) [32GB]	\sim
	Partition scheme and target system type	
	MBR partition scheme for BIOS or UEFI computers	\sim
_	File system	
Copyin	g ISO files	
E: \Live	eOS\squashfs.img (668.6 MB)	
	Cancel	
	Check device for bad blocks 2 Passes \checkmark Quick format	
	🗹 Create a bootable disk using 🛛 ISO Image 🗸 🥝	
	Create extended label and icon files	
	About Log Start Cancel	
	Copying ISO files 00:00):14

8. When the status bar at the bottom of the window displays **DONE**, click **Close**.

Rufus 1.4.10.514 ×
Device 👏
LTDS (E:) [32GB] ~
Partition scheme and target system type
MBR partition scheme for BIOS or UEFI computers $\qquad \lor$
File system
FAT32 (Default) V
Cluster size
16 kilobytes (Default) \checkmark
New volume label
LTDS
Format Options 🔽
Check device for bad blocks 2 Passes V
Quick format
Create a bootable disk using 150 Image V
About Log Start Close
DONE 00:01:02

Chapter 3

Configuring BIOS Settings and Booting up

Lenovo ThinkServer Diagnostics Standalone Edition supports both UEFI and Legacy boot modes.

Note: Ensure that secure boot is disabled (default) in the BIOS setup.

Boot up in UEFI Mode

- 1. Turn on the server, and press F1 as soon as you see the logo screen to enter the BIOS setup menu.
- 2. Go to the **Boot Manager** page.
- 3. For **Boot Mode**, select **Auto** (default).
- 4. Go to the Miscellaneous Boot Setting page.
- 5. For Storage OpRom Policy, select UEFI only (default).
- 6. For Video OpRom Policy, select Legacy only (default).
- 7. For Other PCIE device, select UEFI only (default).
- 8. Press F10 to save the configuration and exit the BIOS setup menu.
- 9. Press F12 as soon as you see the logo screen to enter the boot menu.
- 10. Select UEFI USB Disk Device to boot from the USB key.

Boot up in Legacy Mode

- 1. Turn on the server, and press F1 as soon as you see the logo screen to enter the BIOS setup menu.
- 2. Go to the **Boot Manager** page.
- 3. For Boot Option, select Auto.
- 4. Go to the **Miscellaneous Boot Settings** page.
- 5. For Storage OpRom Policy, select Legacy only.
- 6. For Video OpRom Policy, select Legacy only (default).
- 7. For Other PCIE device, select Legacy only.
- 8. Go back to **Boot Manager**, and change **Boot Sequence** so that the legacy USB device is set as the first one.
- 9. Press F10 to save the configuration and exit the BIOS setup menu.
- 10. Press F12 as soon as you see the logo screen to enter the boot menu.
- 11. Select Legacy USB Disk Device to boot front the USB key.

Chapter 4

Main User Interface

Lenovo ThinkServer Diagnostics Standalone Edition provides a selectable menu for users to run test items.

Lenovo ThinkServer Diagnostics
<pre>++ 1. Full Function Test and collect information 2. Collect information only 3. Quick Memory Test 4. Extended Memory Test 5. Harddrive Test </pre>
I I I I/i Display Hardware Information I I R/r R/r Reboot I P/p Poweroff I
I Tue Dec 19 19:50:59 UTC 2017 I

Test Items Description

1. Full Function Test and collect information

Enter **1** to choose **Full Function Test and collect information**, which includes collect information, Extended Memory Test, and Harddrive Test. A compressed log file will be generated in the configured path.

2. Collect information only

Enter **2** to collect system information (no functional testing is performed). After the system information is collected, a log file will be generated in the previously configured path as a ZIP file.





3. Quick Memory Test

Enter **3** to run **Quick Memory Test**. After the test, a compressed log file will be generated in the configured path.

-		
	Lenovo ThinkServer Diagnostics Standalone Edition Ver:1.11.3	
	 Full Function Test and collect information Collect information only Quick Memory Test Extended Memory Test Harddrive Test I/i . Display Hardware Information R/r . Reboot 	
 +- 	P/p . Poweroff Tue Dec 19 20:04:53 UTC 2017	 +-
+- P: Yo P:	lease Input your choice:3 ou select: 3 lease wait	-+
Lenov	vo ThinkServer Diagnostics Memory Test VO.1.7	

Please Input your choice:3 You select: 3 Please wait Lenovo ThinkServer Diagnostics Memory Test V0.1.7 I CoresNumber = 8 CPU VID:DID = 8086:2F00 = 4 KB PageSize System Type = 64 Bit Total mem = 15607 MB = 14294 MB Free mem Got MemSize = 13782 MB Trying mlock ...locked Address=0x7feb01542000 Press ESC to EXIT Cycle = 1/1 Start Time : 2017/12/19 20:05:00 WR Test [pass] End Time : 2017/12/19 20:06:00 Test Over. Quick Memory Test completed Please ensure USB stick is in the system Press Enter key to continue!

4. Extended Memory Test

Enter **4** to run **Enhanced Memory Test**. After the test, a compressed log file will be generated in the configured path.

Lenovo ThinkServer Diagnostics Standalone Edition Ver:1.11.3	
I I 1. Full Function Test and collect information I 2. Collect information only I 3. Quick Memory Test I 4. Extended Memory Test I 5. Harddrive Test I	
1/1 . Display Hardware Information R/r . Reboot P/p . Poweroff	
I Tue Dec 19 20:09:17 UTC 2017	
Please Input your choice:4 You select: 4 Please wait	
Lenovo ThinkServer Diagnostics Memory Test V0.1.7	
oresNumber = 8 PU VID:DID = 8086:2F00 ageSize = 4 KB ystem Type = 64 Bit	

_____ Lenovo ThinkServer Diagnostics Memory Test I I V0.1.7 CoresNumber = 8 CPU VID:DID = 8086:2F00 PageSize = 4 KB System Type = 64 Bit Total mem = 15607 MB Free mem = 14294 MBGot MemSize = 13782 MB Trying mlock ...locked Address=0x7f7d8eaf5000 Press ESC to EXIT Cycle = 1/1Start Time : 2017/12/19 20:09:22 WR Test [pass] Address Test [pass] [pass] Random Test [pass] March Test BF Test [pass] End Time : 2017/12/19 20:23:07 Test Over. Extended memory Test completed Please ensure USB stick is in the system Press Enter key to save

5. Harddrive Test

Enter **5** to run a hard drive and RAID status diagnostic test. This test will check the storage device health in the system. After the test, a compressed log file will be generated in the previously configured path.

	Lenovo ThinkServer Diagnostics Standalone Edition Ver:1.11.3
	1. Full Function Test and collect information I 2. Collect information only I 3. Quick Memory Test I 4. Extended Memory Test I 5. Harddrive Test I
	I/iDisplay Hardware InformationIR/r. RebootIP/p. PoweroffI
+-	Tue Dec 19 20:42:28 UTC 2017
+- P1 Yo P1	lease Input your choice:5 ou select: 5 lease wait
SMARI Sup SMART Sup Temperatu smartctl Copyright === STARI Informati Temperatu smartctl Smartctl Copyright Short Bac Use smart ^CTest is ^CTest is	<pre>pport is: HUAITABLE - device has SMHAT capability. pport is: Enabled ure Warning: Enabled -s on /dev/bus/2 -d megaraid,35 6.6 2017-02-22 r4392 [x86_64-linux-3.10.0-514.e17.x86_64] (daily-20170222) t (C) 2002-17, Bruce Allen, Christian Franke, www.smartmontools.org T OF ENABLE/DISABLE COMMANDS SECTION === ional Exceptions (SMART) enabled ure warning enabled -t short /dev/bus/2 -d megaraid,35 6.6 2017-02-22 r4392 [x86_64-linux-3.10.0-514.e17.x86_64] (daily-20170222) t (C) 2002-17, Bruce Allen, Christian Franke, www.smartmontools.org ckground Self Test has begun tctl -X to abort test s running. Remain 86% s running. Remain 86%</pre>
Test is i Test comp PASS	running. Remain 72% running. Remain 64% running. Remain 56% running. Remain 48% s running. Remain 40% running. Remain 32% running. Remain 24% running. Remain 16% running. Remain 8% pleted.
I	Press Enter key to continue!

I/i . Display Hardware Information

Enter I or i to display summarized hardware and Firmware information about the CPU, memory, RAID card, BIOS, PCI, and NIC card.

l Lenovo ThinkServer Diagnostics I Standalone Edition I Ver:1.11.3	
<pre> I 1. Full Function Test and collect information I 2. Collect information only I 3. Quick Memory Test I 4. Extended Memory Test I 5. Harddrive Test I I / I . Display Hardware Information I R/r . Reboot I P/p . Poweroff</pre>	
I Tue Dec 19 20:43:53 UTC 2017	+
+ Please Input your choice:i You select: i ####################################	+
Socket Designation: CPU1 : Version: Genuine Intel(R) CPU @ 3 Socket Designation: CPU2 : Version: Not Specified	. 40GH:

######################################							
Product Name ' ThinkSenuer TD:	!#####################################	********					
BIOS Uersion : TB5TS424	120						
BMC Version : 4.19							
Socket Designation: CPU1 :	Version: Genuine Intel(R) CPL	J@ 3.40GHz					
Socket Designation: CPU2 :	Version: Not Specified						
Found 2 ethernet controllers							
Memory Size : 15607 MB							
Total Slots : 16 Used Slots : 2 							
Locator: CPU1 DIMM A1 :	Manufacturer: Hynix Semicondu	ictor : Size: 8192 MB					
Locator: CPU1 DIMM AZ :	Manufacturer: NU DIMM :	Size: No Module Installed					
Locator: CPU1 DIMM B1 :	Manufacturer: NU DIMM :	Size: No Module Installed					
Locator: CPU1 DIMM BZ :	Manufacturer: NU DIMM :	Size: No Module Installed					
Locator: CPUI DIMM CI :	Manufacturer: Hynix Semicondu	ICTOP : 51ZE: 8192 MB					
LOCALOF, CFUI DIMM D1 :	Manufacturer, NO DIMM ;	Size: No Module Installed					
Locator: CPU1 DIMM D2 :	Manufacturer: NO DIMM :	Size: No Module Installed					
Locator: CPU2 DIMM A1 :	Manufacturer: NO DIMM :	Size: No Module Installed					
Locator: CPU2 DIMM A2 :	Manufacturer: NO DIMM :	Size: No Module Installed					
Locator: CPU2 DIMM R1 :	Manufacturer: NO DIMM :	Size' No Module Installed					
Locator: CPU2 DIMM B2 :	Manufacturer: NO DIMM :	Size: No Module Installed					
Locator: CPU2 DIMM C1 :	Manufacturer: NO DIMM :	Size: No Module Installed					
Locator: CPU2 DIMM C2 :	Manufacturer: NO DIMM :	Size: No Module Installed					
Locator: CPU2 DIMM D1 :	Manufacturer: NO DIMM :	Size: No Module Installed					
Locator: CPU2 DIMM D2 :	Manufacturer: NO DIMM :	Size: No Module Installed					
Found PCI Devices : 96							
Found PCI Devices : 96							
Product Name: ThinkServer TD350 +	SN: 9999 I Mode	21: 000					
I LEPT I 113.00.5 I LTDE	I 1.09.0003						
Windows Driver Package 113.00.	4 Linux Driver Package 113.00).4					
I BIOS I TB5TS424 I Rel +	ease Date: 03/23/2017 BMC	I 4.19					
Socket Designation: CPU1 Versio Socket Designation: CPU2 Versio	n: Genuine Intel(R) CPU @ 3.40GHz n: Not Specified						
I RAID I Lenovo ThinkServer RA	ID 110i IFW: N/A IFW Package Versi	ion: NA					
Ethernet 2 +							
+	L Componention 1210 Circlit N ()						
07:00.0 Ethernet controller: Intel Corporation 1210 Gigabit Network Connection (rev 03) 08:00.0 Ethernet controller: Intel Corporation 1210 Gigabit Network Connection (rev 03) +							
Not Found Fibre Channel Card							
Not Found PCIE SSD Card							
Not Found TAPE Device							
OnBoard Hard Drive List ####################################							

R/r.Reboot

Enter **R** or **r** to restart the machine.

P/p.Poweroff

Enter **P** or **p** to shut down the machine.

Chapter 5

Test Log

After completing the test, remove the USB key from the Lenovo ThinkServer system and insert it into another system. The compressed log files are located in the root path of the USB key. Extract the log files to a local directory.

Quick mem test Log

The Quick memory test log is a TXT file.



Extended mem test Log

The Extended memory test log is a TXT file.



HDD test log

The HDD test log is a TXT file.



System information logs

There will be a folder about system information. The folder is named in the following way:Lenovo ThinkServer Diagnostics Standalone EditionPage 18

Onecli-%PID%-%date%-%time%

Raw Logs

Enter the **Onecli-%PID%-%date%-%time%** folder, and you can find system related information stored in TXT files and LOG files.



REPORTS directory

The reports directory stores the reports in HTML files. Users can open the HTML files to check system information.

۶	OneCli-2357-20171219-195542	Þ	OneCli	۲	logs	Þ	OneCli-2357-20171219-195542	Þ
---	-----------------------------	---	--------	---	------	---	-----------------------------	---

Name	Date modified	Туре	Size
OneCli-inventory-Unknown-Unknown-U	12/19/2017 9:45 AM	File folder	
usb	12/19/2017 9:45 AM	File folder	
c0_fwtermlog.txt	12/19/2017 8:00 PM	Text Document	1 KB
c0_pdlist.txt	12/19/2017 8:00 PM	Text Document	1 KB
c0_raidevents.txt	12/19/2017 8:00 PM	Text Document	1 KB
c0_showall.txt	12/19/2017 8:00 PM	Text Document	1 KB
📋 cmdline.log	12/19/2017 8:00 PM	Text Document	1 KB
📋 cpuinfo.log	12/19/2017 8:00 PM	Text Document	9 KB
📋 ctrlcount.txt	12/19/2017 8:00 PM	Text Document	1 KB
📋 dmesg.log	12/19/2017 8:00 PM	Text Document	77 KB
📄 dmidecode.log	12/19/2017 8:00 PM	Text Document	24 KB
eventslog_convert.txt	12/19/2017 8:00 PM	Text Document	1 KB
📄 fruinfo.txt	12/19/2017 8:00 PM	Text Document	3 KB
📄 fwtermlog.txt	12/19/2017 8:00 PM	Text Document	1 KB
interrupts.log	12/19/2017 8:00 PM	Text Document	5 KB
📔 laninfo.txt	12/19/2017 8:00 PM	Text Document	1 KB
📋 ledinfo.txt	12/19/2017 8:00 PM	Text Document	1 KB
📋 mcinfo.txt	12/19/2017 8:00 PM	Text Document	1 KB
📋 OneCli-2357-20171219-195542.log	12/19/2017 8:01 PM	Text Document	51 KB
OneCli-inventory-Unknown-Unknown-U	12/19/2017 8:01 PM	XML Document	4,130 KB
🚹 OneCli-inventory-Unknown-Unknown-U	12/19/2017 8:01 PM	Compressed (zipp	180 KB
📄 pdlist.txt	12/19/2017 8:00 PM	Text Document	1 KB
📄 psuinfo.txt	12/19/2017 8:00 PM	Text Document	1 KB
📋 raidevents.txt	12/19/2017 8:00 PM	Text Document	1 KB
📄 sdrinfo.txt	12/19/2017 8:00 PM	Text Document	3 KB
SEL_Hex.txt	12/19/2017 8:01 PM	Text Document	61 KB
📋 selfinfo.txt	12/19/2017 8:00 PM	Text Document	1 KB
selinfo.txt	12/19/2017 8:00 PM	Text Document	107 KB
sensor_with_id_string.txt	12/19/2017 8:01 PM	Text Document	5 KB
sensorinfo.txt	12/19/2017 8:00 PM	Text Document	6 KB
verinfo.txt	12/19/2017 8:00 PM	Text Document	1 KB

Inside the **Onecli-%PID%-%date%-%time%** folder, there are HTML log files. Users can open each one of them or simply open the index.html file to see the logs.

📕 💽 🚺 = I	OneCli-inventory-U	nknown-Unknown-Unknown-	20171219-	195542	_ 🗆 X
File Home Si	hare View				v ?
€ ⊚ - ↑ 🎩 <	« One • OneCli-inventory-	Unknown-Unknown-Unknown	× ¢	Search OneCli-	inventory-Unk 🔎
☆ Favorites	Name	Date mod	ified	Туре	Size
Desktop	📕 data	12/19/201	7 9:45 AM	File folder	
Downloads	BMC Info.html	12/19/201	7 8:01 PM	HTML Document	21 KB
🖳 Recent places	ExecutionLog.html	12/19/201	7 8:01 PM	HTML Document	4 KB
	hardware inventor	v.html 12/19/201	7 8:01 PM	HTML Document	17 KB
🜉 This PC	header.html	12/19/201	7 8:01 PM	HTML Document	1 KB
🖵 C on SAITH1-R3	034l 🧧 index.html	12/19/201	7 8:01 PM	HTML Document	1 KB
D on SAITH1-R3	034l 🖉 kernel_modules.htr	nl 12/19/201	7 8:01 PM	HTML Document	531 KB
膧 Desktop	El LSI Event Log 1.htm	nl 12/19/201	7 8:01 PM	HTML Document	2 KB
Documents	EVENT Log 2.htm	nl 12/19/201	7 8:01 PM	HTML Document	1 KB
\rm Downloads	LSI Event Log 3.htm	nl 12/19/201	7 8:01 PM	HTML Document	1 KB
🜗 Music	EVENT Log 4.htm	nl 12/19/201	7 8:01 PM	HTML Document	1 KB
📔 Pictures	Event Log 5.htm	nl 12/19/201	7 8:01 PM	HTML Document	1 KB
🖵 V on SAITH1-R3	034L 🧧 LSI FW Term Log.ht	tml 12/19/201	7 8:01 PM	HTML Document	1 KB
📔 Videos	LSI Info.html	12/19/201	7 8:01 PM	HTML Document	3 KB
🕎 W on SAITH1-R	3034 🧧 LSI PD List.html	12/19/201	7 8:01 PM	HTML Document	1 KB
🖵 X on SAITH1-R3	034L 🧧 navigator.html	12/19/201	7 8:01 PM	HTML Document	2 KB
🃥 Windows (C:)	os_configuration.ht	tml 12/19/201	7 8:01 PM	HTML Document	3 KB
👝 Recovery (D:)	pci_information.htr	ml 12/19/201	7 8:01 PM	HTML Document	22 KB
👝 LTDS (E:)	PMC Info.html	12/19/201	7 8:01 PM	HTML Document	1 KB
	Processes.html	12/19/201	7 8:01 PM	HTML Document	26 KB
📬 Network	SEL Info.html	12/19/201	7 8:01 PM	HTML Document	146 KB
	system_overview.ht	tml 12/19/201	7 8:01 PM	HTML Document	2 KB
رجه کی ایک در Users Administra Lenovo XClarity Ess	stor/Desktop/Jog/On ター さ <i>@</i> Lenovo entials [ThinkServer TD3:	XClarity Essentials [× 50]-[]-[9999]			– □ ×
Software					
System Overview	System Overview				
Kernel Modules	Computer System				
Processes OS Configuration	Manufacturer	LENOVO			
Hardware	Product Name	ThinkServer TD350			
Hardware Inventory	Model	0000			
PCI Information	System III IID	1e121d0e-750a-0011-4dfa-70e2840700e	h		
Analysis	Version	000	-		
OneCli Error Log	TimeZono				
LSI Info	Innezone	42/40/2047 40/50-04			
LSI PD List	Current Time Zone	UTC			
LSI FW Term Log					
LSI Event log 1	Data Source	Larger Volutite Exception On OUL			
LSI Event log 3	Name	Lenovo Acianty Essentiais OneCLI Ixce. onecli@1m			
LSI Event log 4	Version	2.2.0			
PMC INFO					
BMC INFO					
SEL Info					
				Activate W	indows

Following is an introduction of the information you can check on the page in the index.html file. You can check the information in each of the five categories. In the **Software** category, you can check the following:

System Overview

The System Overview page provides a brief summary of the computer system and operating system.

Kernel Modules

Kernel Modules displays a list of the kernel modules, including Name, Description, Module state, Manufacture, Version and Path.

Processes

This page will display information about all running EXE processes.

OS Configuration

In **OS Configuration**, operation system configurations are provided: User Environment Variables.

In the Hardware category, you can check the following:

Hardware Inventory

In **Hardware Inventory**, complete hardware info is provided for: Processor(s), Memory, Storage, PCI Device, Removable Disk(s), Optical Disk(s), Network Adapter(s), and other devices.

PCI Information

The page will list detailed PCI devices information.

In the Analysis category, you can check the following:

Onecli Error Log

This page displays the Onecli error and warning logs while executing ToolsCenter Suite CLI.

ThinkServer Service

LSI Info

The **LSI Info** page shows specific details on the RAID controller and the current RAID configuration. In this page, the Product Name, Serial Number, SAS Address, Mfg. Date, System Time, Controller Time, FW Package Build, BIOS Version, FW Version, Driver Name, Driver Version, Bus Number, Device Number, Function Number items are displayed. Disk Group(s) information and Physical Disk(s) information are also displayed.

LSI PD List

The **RAID PD List** page shows specific details of the physical drives. This includes drive temp, SN, WWN, RAW Size, Link speed, etc. This information will be displayed when a RAID card is plugged in the system.

LSI FW Term Log

In LSI FW Term Log, Firmware log information is displayed for each adapter.

LSI Event log 1~5

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The LSI Events page displays all events (fatal, critical warning and informational combined) and displays the Sequence#, Time, Class, Code, Locale, Event Description and Event Data. LSI Event log 1~4 displays 3000 events, and LSI Event log 5 displays the remaining events.

PMC INFO

The **PMC INFO** page shows specific details on the PMC RAID controller and the current PMC RAID configuration. In this page, the PMC Controller Basic Info, Version Info and PMC other info link are displayed.

BMC INFO

The **BMC INFO** page shows specific details of the BMC information. This includes FW information, self-test result, and PSU information acquired by BMC, BMC LAN information, Sensor data and BMC FRU information.

SEL Info

In the SEL Info page, the Caption, Description, Element name, Log name, Message Timestamp, Record Data, Record ID and Record Format for each event record will be shown.