



Lenovo ThinkServer Diagnostics Standalone Edition

User's Guide

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The Lenovo ThinkServer Diagnostics user guide for your Lenovo® ThinkServer® product contains information about how to run the diagnostic program to assist you or Lenovo Service and Support personnel in the diagnosis of system issues.

The Lenovo Limited Warranty (LLW) contains the warranty terms that apply to the product you purchased from Lenovo. Read the LLW on the documentation DVD that comes with your server. A printable generic version of the latest LLW also is available 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, free of charge.

For warranty service, consult 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.

To obtain the most up-to-date information about the server, go to:

<http://www.lenovo.com/thinkserver>

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>

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 1280x1024 (Please note that the boot logo may be distorted on some widescreen monitors, but no functions will be impacted).

Chapter 2 Diag Bootable USB key creation

Warning: The USB key will be formatted and the data in USB key will be lost. Meanwhile, in general the USB Key is physically vulnerable, please be aware the risk that formatting it might have change to damage the USB key permanently.

1. Please use a Window system to prepare the bootable USB Key.
2. Download the latest software from the Lenovo Service web site:
<http://support.lenovo.com>
3. Plug in the USB disk, then Open rufus-*.exe, uncheck "create extended label and icon files"
4. Change "Create a bootable disk using" option from "FreeDOS" to "ISO Image".
5. Select Lenovo ThinkServer Diagnostics Standalone Edition's image file, then Click "Start" button.

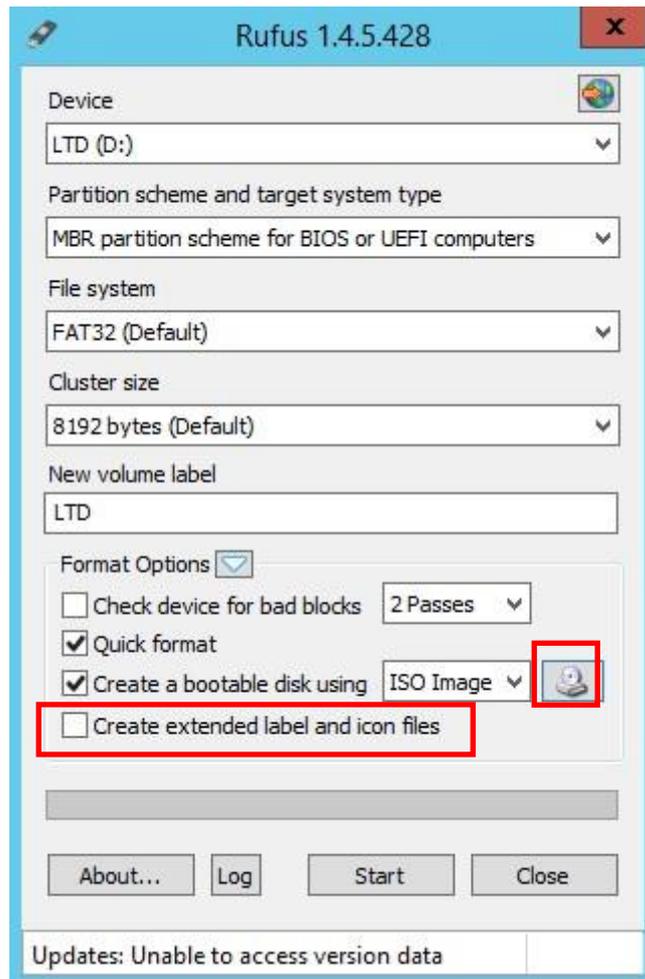


Figure 1 Click select file button

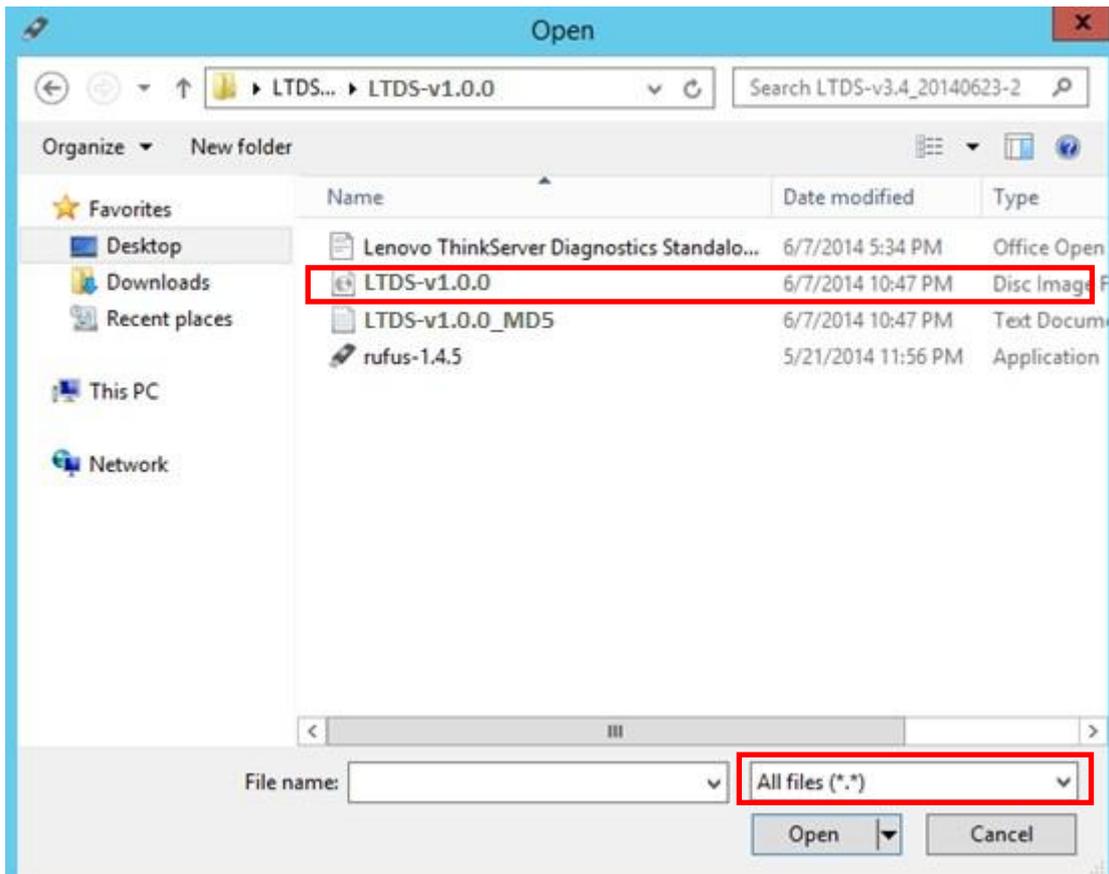


Figure 2 Select "All files (*.*)" in filter window, and select LTDS-v1.0.0.img

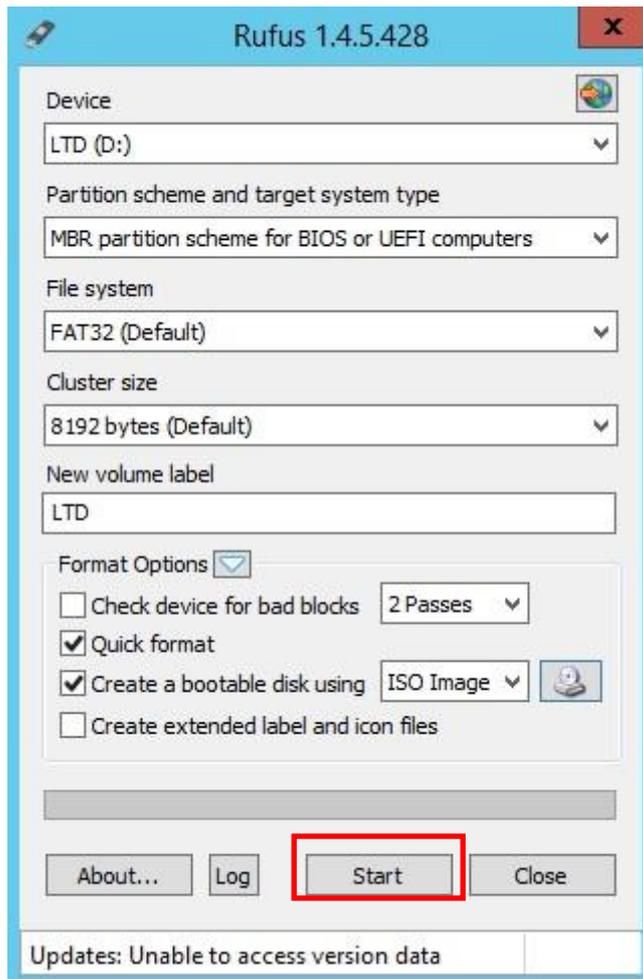


Figure 3 Click Start

Warning: The USB key will be formatted and the data in USB key will be lost. Meanwhile, in general the USB Key is physically vulnerable, please be aware the risk that formatting it might have chance to damage the USB key permanently.

6. Click "OK" to confirm process.



Figure 4 Warning information

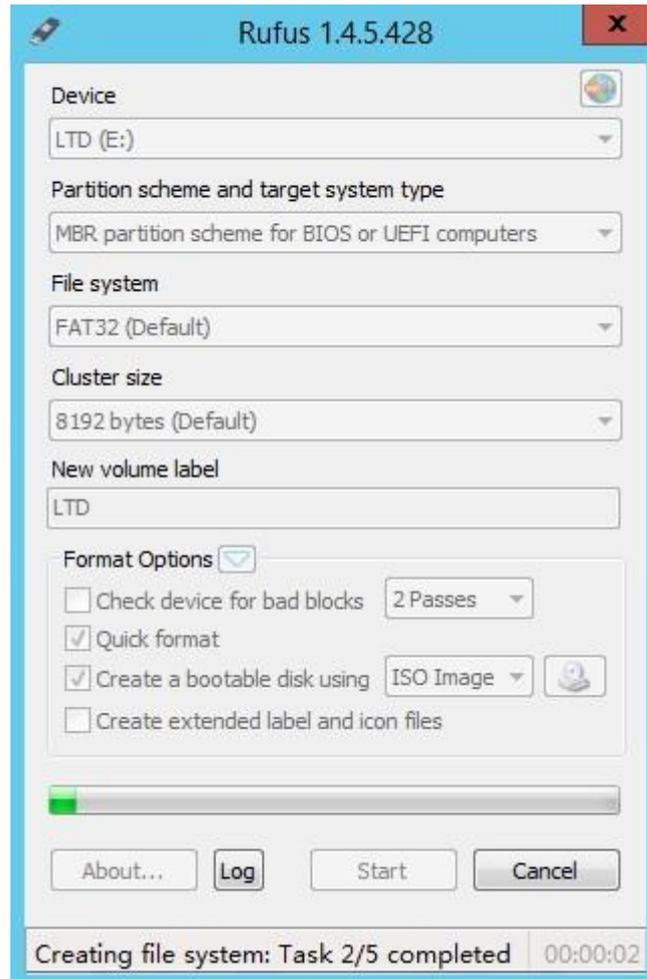


Figure 5 Process

7. When the status bar displays "DONE", Click "Close" to continue.

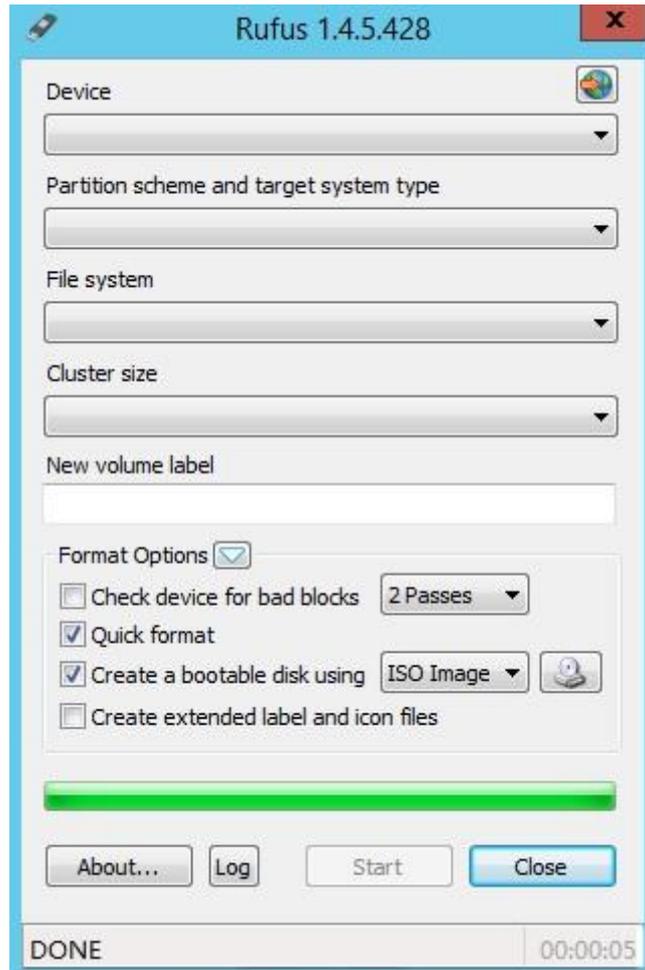


Figure 6 Done

Chapter 3 Configure BIOS Setting and boot

Lenovo ThinkServer Diagnostics Standalone Edition supports both UEFI and Legacy boot mode. User needs to know the current system boot mode so that the USB key can boot up successfully.

Note: Secure boot needs to be disabled(Default) in the BIOS Setup.

Boot up in UEFI Mode

- Press “F1” enter BIOS setup menu
- Change to “Boot Manager” Page
- Change “Boot Mode” option to “Auto” (default)

- Enter “Miscellaneous Boot Setting” page
- Change “Storage OpRom Policy” option to “UEFI only” (default)
- Change “Video OpRom Policy” option to “Legacy only” (default)
- Change “Other PCIE device” option to “UEFI only” (default)
- Press “F10” to save configuration
- When system boots up, Press “F12” to select boot menu.
- Select the “UEFI USB Disk Device” to boot up

Boot up in Legacy Mode

- Press “F1” to enter BIOS setup menu
- Change to “Boot Manager” Page
- Change “Boot Option” option to “Auto”
- Enter “Miscellaneous Boot Settings” page
- Change “Storage OpRom Policy” option to “Legacy only”
- Change “Video OpRom Policy” option to “Legacy only” (default)
- Change “Other PCIE device” option to “Legacy only”
- Back to “Boot Manager”, change “Boot Sequence” and ensure the legacy USB device is set as the first one.
- Press “F10” to save configuration
- When system boots up, Press “F12” to select boot menu.
- Select the “Legacy USB Disk Device” to boot up

Chapter 4 Main UI

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

```
Lenovo ThinkServer Diagnostics
Standalone Edition

V1.1.1

1. Full Function Test and collect information
2. Collect Information only
3. CPU Test
4. Memory Test
5. Motherboard Test
6. Network Test
7. Emulex Test
8. Intel Test
9. Harddrive Test
10. Extended Memory Test

I/i . Display Hardware Information
S/s . Upload the latest report to Lenovo Service FTP
R/r . Reboot
P/p . Poweroff

Wed Sep 24 18:52:09 CST 2014
Log path: /root/Nov_block/mkISO/rootfs/LTD
Powered by @Ultra-X, Inc.

Please Input your choice: █
```

Figure 7 Main UI

Test Items Description

1. Full Function Test and collect information

Select “1” to run the “Full Function Test and collect information”, including CPU, Memory, Network, Motherboard, Intel, Emulex, Harddrive, and the Extended Memory Test. Display Hardware Information and the compressed log file will be generated in the configured path.

Note:

- a) If there is no BMC hardware in the server system, LTDS will prompt “No IPMI Tool is installed!” whether or not the ipmitool is installed in the operating system, and in the html pages, the BMC related information will be blank.
- b) CPU info will be shown on the screen while LTDS CPU related test running, include total logical core(named as thread in other platforms, such as LTDE) amount, in LTDS, it shows as “CoresNumber”.

2. Collect Information only

Select “2” to collect system information (no functional testing is performed). After the system information is collected, the hardware information will be displayed and the log file will be generated in the previously configured path in zip format.

3. CPU Test

Select “3” to run the “CPU Test”, after running the test, the compressed log file will be generated in the configured path.

4. Memory Test

Select “4” to run the “Memory Test”, after running the test, the compressed log file will be generated in the configured path.

5. Motherboard Test

Select “5” to run the “Motherboard Test”, after running the test, the compressed log file will be generated in the configured path.

6. Network Test

Select “6” to run the “Network Test”, after running the test, the compressed log file will be generated in the configured path.

Note: The network test will test the local Ethernet devices by pinging the loopback address.

7. Emulex Test

Select “7” to run a PCI reset diagnostic test on any Emulex adapters installed and recognized in the system. After running the test, a compressed log file will be generated in the previously configured path.

8. Intel Test

Select “8” to run a PCI reset diagnostic test on any Intel adapters installed and recognized in the system. After running the test, a compressed log file will be generated in the previously configured path.

9. Harddrive Test

Select “9” to run a hard drive and RAID status diagnostic test. This will check the storage device health in the system. After running the test, a compressed log file will be generated in the previously configured path.

10. Extended Memory Test

Select “10” to run the Enhanced Memory Test”, after running the test, the compressed log file will be generated in the configured path.

I/i . Display Hardware Information

Press “I” or “i” to display summarized CPU, Memory, RAID Card, BIOS, PCI, NIC card’s hardware & Firmware information.

S/s. Upload the latest report to Lenovo Service FTP

Press “S” or “s” to update latest compressed log file to Lenovo service ftp site. If the tested Server is connected to the Internet, the latest Report zip file will be uploaded.

Note:

Question - Does Lenovo ThinkServer Diagnostics change my system configuration?

LTDS itself need no installation and will not change user’s system configuration.

Question - Which kind of files will be uploaded to Lenovo?

LTDS Report zip file (with password) uploaded to Lenovo contains hardware inventory information, some hardware logs (LSI RAID etc.), OS logs, ipmi logs, which are useful for troubleshooting in Lenovo Support.

R/r. Reboot

Users can reboot the machine by entering “R” or “r”.

P/p. Poweroff

Shut down the machine by entering “P” or “p”.

Chapter 5 System Report

After completing the above operations, please remove the USB drive from the Lenovo Thinkserver and insert the USB drive into another system. The compressed log files will be located in the USB’s root path.

Extract the log files to local directory, when prompted a dialog window for password, input “len0v0”.



RAW directory

The raw directory stores in plain text format system relation information

-  arc_support
-  ipmi
-  cmdline.log
-  cpuinfo.log
-  dmesg.log
-  dmidecode.log
-  hdd.log
-  interrupts.log
-  lsmode.log
-  lspci.log
-  lspci_vvxxxx.log
-  mem.log
-  messages.log
-  slibc0.txt
-  slibc0v0.txt
-  slibctrlcount.txt
-  slibfwtermlog.txt
-  slibRAIDLog.txt
-  smart0.log
-  uname.log

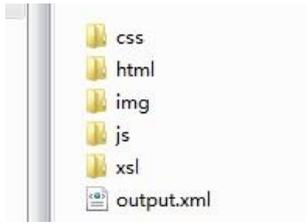
IPMI directory

The IPMI directory stores ipmi related log files.

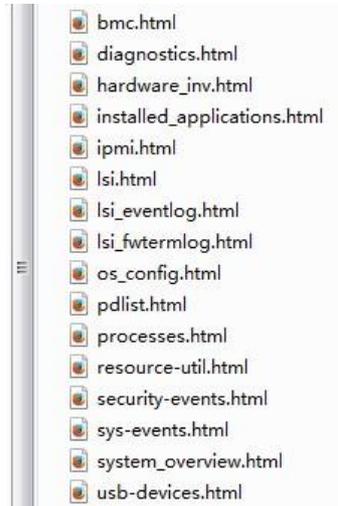
-  health.txt
-  ipmi_fru.txt
-  ipmi_lanprnt.txt
-  ipmi_mcinfo.txt
-  ipmi_psu.txt
-  ipmi_selftest.txt
-  ipmi_sellist.txt
-  ipmi_sensor.txt
-  ipmi_ver.txt
-  l10sel.txt
-  ledinfo.txt
-  lenovoem_psu.txt
-  lenovoemver.txt

REPORTS directory

The reports directory stores the html format of report. User can open the html folder to check system information.



Inside the html directory, there are html format logs. User can open any page to see the html log.



Lenovo ThinkServer Diagnostics

ThinkServer RD550

123456

2123314141

SOFTWARE

System Overview

Installed Applications

Processes

OS Configuration

Resource Utilization

HARDWARE

Hardware Inventory

RAID Controller

RAID PD List

BMC Info

USB Devices

LOGS

System Events

Security Events

IPMI SEL

FW Term Log

System Overview

System Manufacturer	LENOVO
Machine Type & Model	123456
Product Name	ThinkServer RD550
Serial	2123314141
System UUID	040F0B1C-7400-0011-8BA0-008CFAF12A70
BMC Version	01.54.82699
BIOS Version	PB1TS290

Operating System

Computer Name	ip10-245-39-201.labs.lenovo.com
User Name	NULL
OS Name	
OS Architecture	x86_64
Kernel Name	Linux
Kernel Release	2.6.32-431.el6.x86_64
Hardware Platform	x86_64
Uptime	18:15:29 up 33 min, 1 user, load average: 0.44, 0.60, 0.74
Time of Last Boot	system boot 2016-01-14 17:42
Initialization File Name	/etc/inittab

HTML Log

Software Category

System Overview

The System Overview page provides a brief summary of the Computer System and Operating System.

Installed Applications

In the Installed Applications Menu, a list of previously installed software packages will appear. Program names and version information are listed.

Resource Utilization

This page will display brief utilization information with emphasis on memory.

Hardware Category

Hardware Inventory

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

RAID Controller

The RAID controller shows specific details on the RAID controller and the current RAID configuration. In this menu, the BIOS version, serial, firmware, MFG date, rework date, revision, battery, vendor ID, Device ID, Sub Vendor ID, Sub Device ID, number of front and back ports, SAS address, BBU, Alarm, NVRAM, Serial Debug, Memory, Flash, Memory Size, TPM, Onboard Expander, and Upgrade Key items are displayed. Disk Group(s) information and Physical Disk(s) information are also displayed.

RAID PD List

The RAID PD List shows specific details of the physical drives. This includes drive temp, SN, WWN, RAW Size, Link speed, etc. This information will be seen when a RAID card is plugged in the system. because LTDS is customize OS, some HDD's information can't got fully.

BMC Info

The BMC Info 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.

Note: Some BMC IPMI OEM commands(supported in RD350/RD450/RD550/RD650/TD350) are used in collecting this category information, so it is normal that some items' value(such as version information) in this category are empty while LTDS running in other server systems.

USB Devices

The USB Devices shows specific details captured from USB devices.

Logs Category

System Events

Display the Operating System Events.

Security Events

Display the Security Events.

IPMI SEL

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

FW Term Log

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

RAID Event Log

The RAID Events menu, displays the most recent 1024 events (fatal, critical warning and informational combined) and displays the Sequence#, Seconds since last reboot, class, code, locale, description and target ID for each event record.

Diagnostics Category

Test Results

The Diagnostic category consists of the diagnostic test log if diagnostic was performed prior to information collection.

Know Issues

Don't support Intel X550-T2 card. When doing operations like collecting inventory information, network test and other operations related with this card, it can't get this card information.