VANTAGEO 2230-RE

Rack Server

Troubleshooting

Version: R1.0

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LEGAL INFORMATION

Statement on the Use of Third-Party Embedded Software:

If third-party embedded software such as Oracle, Sybase/SAP, Veritas, Microsoft, VMware, and Redhat is delivered together with this product of VANTAGEO, the embedded software must be used as only a component of this product. If this product is discarded, the licenses for the embedded software must be void either and must not be transferred. VANTAGEO will provide technical support for the embedded software of this product.

Revision History

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Contents

About This Manual

Purpose

This manual describes how to troubleshoot the 2230-RE rack server (hereinafter referred to as the 2230-RE) to provide guidance on server maintenance.

Intended Audience

This manual is intended for:

- Debugging engineers
- Maintenance engineers

What Is in This Manual

This manual contains the following chapters.

Chapter	Summary
Chapter 1, Troubleshooting Overview	Describes faults, requirements for maintenance engineers, troubleshooting precautions, troubleshooting methods, and the troubleshooting flow.
Chapter 2, Troubleshooting for Common Faults	Describes common troubleshooting methods.
Chapter 3, Troubleshooting Record Form	Provides a template for recording fault symptoms and troubleshooting methods after the troubleshooting.

Conventions

This manual uses the following conventions.

Symbol	Description
	Notice: indicates equipment or environment safety information. Failure to comply can result in equipment damage, data loss, equipment performance degradation, environmental contamination, or other unpredictable results.
	Failure to comply will not result in any personal injury.
	Note: provides additional information about a topic.

Chapter 1 Troubleshooting Overview

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1.1 Fault Description

Fault Type

A fault is a symptom where a device or system software fails to provide a required function or endangers security due to a particular cause during its operation. Based on the affected services and the influence scope, faults are classified into emergency faults and minor faults.

- Emergency faults
  Emergency faults are the faults that seriously affect service operation, including a drastic decline of key performance indicator (KPI) of the system, an interruption of all or most of the services, and a charging exception.
- Minor faults
  Minor faults refer to faults other than emergency faults. These faults have little impact on service operation.

Fault Sources

Fault sources include the following:

- Alarms on the Web portal of the BMC system
  When a device or software has a fault, an alarm is reported to the Web portal of the BMC system.

- Routine maintenance checks

  Maintenance engineers may find device or system faults during routine maintenance.

1.2 Requirements for Maintenance Engineers

Mastering the required skills is an important prerequisite for maintenance engineers to successfully conduct troubleshooting.

For the skills that maintenance engineers must have, refer to Table 1-1.

Table 1-1 Required Skills for Maintenance Engineers

Skill	Description
Proficiency in the basic telecommunications knowledge	● Be familiar with DAS, NAS, SAN, and other storage technologies. ● Be familiar with Ethernet technology. ● Be familiar with basic knowledge of TCP/IP.
Familiarity with the network architecture and service functions of the rack server	● Be familiar with the actual network architecture. ● Be familiar with the hardware architecture and performance indicators of the rack server. ● Be familiar with the functions and slot IDs of the subcards on the rack server. ● Be familiar with the implementation principle of each service function of the rack server. ● Be familiar with the service configurations of the rack server. ● Be familiar with the connection relations between the rack server and other devices in the network. ● Be familiar with the protocols used between the rack server and other devices in the network.
Familiarity with common troubleshooting operations on the rack server	Before performing operations on devices, be clear about the following: ● Operations that may interrupt partial or all services. ● Operations that may cause user complaints. ● Emergency and backup measures. ● Operations that may damage devices.
Proficiency in using corresponding test instruments and meters	For example, multimeters, link testers, optical power meters, and optical attenuators.
Proficiency in the methods for determining, locating, and resolving emergency faults	Be familiar with the methods for handling emergency faults through drills.
Proficiency in the methods for collecting and storing on-site data	On-site data collection and storage include the periodic data collection and storage of the data generated during prop-

Skill	Description
	er device operation and that generated when device faults occur. Before troubleshooting, maintenance engineers are required to collect and store the on-site data.
Know the support resources that can be used when faults occur	Available support resources include but are not limited to troubleshooting documents and information about how to contact VANTAGEO technical support.

1.3 Troubleshooting Precautions

Notes

For the troubleshooting precautions, refer to Table 1-2.

Table 1-2 Troubleshooting Precautions

Category	Precautions
During routine maintenance	To raise the efficiency of troubleshooting, make the following preparations during routine maintenance: ● Draw a diagram of the physical connection relationships between on-site devices. ● Make a table of information about communication, interconnection, and permissions of components and devices, including VLANs, IP addresses, interconnection port numbers, firewall settings, usernames, and passwords. ● Archive the information about on-site components and devices, including the hardware and software configurations and versions, and all the changes. ● Regularly maintain standby devices to ensure that the hardware configurations, software versions, and parameter configurations of the standby devices are the same as those of the active devices operating in the network, so that the standby devices can be used to immediately replace faulty devices in case of emergency. ● Regularly check remote access devices and fault diagnosis tools, such as test meters and packet analyzers. ● Update troubleshooting documents in a timely manner, and store them in convenient places. ● Maintain the latest contact information of the local VANTAGEO office.
After a fault is discovered	● Assess whether the fault is an emergency fault. If it is, recover services as soon as possible. ● Record detailed raw information about the fault if it is encountered during maintenance, including the fault symptoms, the operations performed before the occurrence of the fault, the version, and data changes. ● Handle the fault immediately. If the fault cannot be resolved, contact VANTAGEO technical support in a timely manner.

Category	Precautions
During troubleshooting	● Strictly comply with the operational and industrial safety code to ensure personal safety and device security. ● When replacing or maintaining components, take antistatic measures, for example, wearing an antistatic wrist strap. ● Strictly control the enabling of network services, such as DHCP and RTP. ● Do not connect or disconnect network cables if you are not clear about their possible uses. ● Keep detailed troubleshooting tracing logs and record the troubleshooting steps in detail to facilitate analysis and handling. Keep the shift records for a long troubleshooting procedure for accountability. ● Record all major operations (such as restarting a process, deleting a file, or modifying a parameter). Before performing such an operation, carefully assess the feasibility of the operation. You can perform such operations only when the corresponding information is backed up and the emergency and security measures are in place.

Dangerous Operations

The following operations are dangerous, and may cause more critical faults. You are recommended to perform these operations after confirmation.

For dangerous operations that frequently occur during troubleshooting, refer to Table 1-3.

Table 1-3 Dangerous Operations

Type	Operation
Dangerous operations on a database	● Modifying a database configuration file. ● Modifying a database attribute. ● Deleting a system or database log file. ● Performing a destructive operation on the database, such as update, delete, alter, or drop.
Dangerous operations on a service application	● Stopping a system module. ● Stopping a system application process and a database. ● Running the **kill** command. ● Modifying a service configuration parameter.
Dangerous operations on the network	● Modifying a network device configuration. ● Changing the network architecture.

Situations for Contacting VANTAGEO Technical Support

Contact VANTAGEO maintenance engineers or the local office in a timely manner in one of the following situations:

- A critical fault occurs, for example, some or all of the services are interrupted.

- You cannot solve a problem by using the troubleshooting methods described in this manual.
- You cannot solve a problem by using any troubleshooting methods you have mastered.
- You cannot solve a problem by using the troubleshooting methods for similar faults.

Provide the following information for VANTAGEO technical support engineers when you contact them:

- Information about the fault occurrence site: the application scenario, network architecture, operation time, and on-site contact information.
- Detailed information about the fault: the fault occurrence time, symptoms, operation procedure, and fault occurrence regularity.
- Collected information: logs and alarms.

1.4 Troubleshooting Methods

1.4.1 Troubleshooting Tools

Overview

Table 1-4 shows common tools used for troubleshooting.

Table 1-4 Troubleshooting Tool Descriptions

Tool	Description	Remarks
Web portal of the BMC system	As the configuration and backend maintenance system for the 2230-RE server, the BMC Web portal can display the operation of corresponding devices to ensure that the network operation is reliable, secure, and efficient.	Provided by VANTAGEO
Log collection tools	Collect logs with the corresponding tool to analyze fault causes and resolve faults.	● Collect logs through the BMC Web portal. ● Collect logs through the command line (SSH). The SSH tool is prepared by users themselves. ● Collect logs through the command line (serial port). The serial port tool is prepared by users themselves. ● Collect logs with the LogCollect tool which is provided by VANTAGEO.
SSH Software	By using the SSH software (such as the PuTTY), you can remotely log in	Prepared by users themselves.

Tool	Description	Remarks
	to the Unix or Linux server from a PC where the Windows operating system is installed, and perform operations and maintenance upon the server as needed.	
Packet analyzer	A packet analyzer (for example, Wireshark) is used to store required network interface data and convert it into legible format for reading and analysis.	Prepared by users themselves.
Common tools and instruments used in the equipment room	Common tools and instruments (such as a 2×75 mm flat head screwdriver, PH2 crosshead screwdriver, test pencil, signaling analyzer, multimeter, and network cable pliers) are used for the maintenance of hardware devices in the equipment room.	Prepared by users themselves.

Web Portal of the BMC System

The BMC Web portal provides the query, configuration, maintenance and remote control functions. These functions are greatly helpful in fault analysis and location.

- Through the query function, you can query the overview, sensor information and alarm information of the 2230-RE server in real time to accurately locate a fault.
- Through the configuration function, you can update the configuration of related parameters to help locate a fault.

Note

For a description of the operations on the Web portal of the BMC, refer to the *2230-RE Rack Server Configuration Guide*.

Log Collection Tools

Log collection tools include:

- Web portal of the BMC system: You can export logs in one click or by category on the BMC Web portal.
  For detailed operations, refer to sections “4.15.1 Exporting BMC Logs in One Click” and “4.15.2 Exporting BMC Logs by Category” in the *VANTAGEO Server BMC User Guide*.
- Command line (SSH): You can connect to the BMC by using an SSH tool and export logs in one click through the command line.

For detailed operations, refer to section “4.15.3 Exporting Logs Through the Command Line (SSH)” in the *VANTAGEO Server BMC User Guide*.

- Command line (serial port): You can connect to the BMC by using a serial port tool and export logs in one click through the command line.
  For detailed operations, refer to section “4.15.4 Exporting Logs Through the Command Line (Serial Port)” in the *VANTAGEO Server BMC User Guide*.
- The LogCollect tool is used to collect the following information:
  → CPU information
  → Memory information
  → BIOS information
  → BMC information
  → FC information
  → NIC information
  → System information
  → RAID card information
  → Disk information
  For detailed operations, refer to section “5.2 Using the LogCollect Tool” in the *VANTAGEO Server BMC User Guide*.

SSH Software

The SSH software integrates the secure login and data transmission performance of the SSH tool with the reliability, availability, and configurability of Windows terminal emulator. The SSH is a software tool used to log in to Unix or Linux servers from Windows terminals.

Packet Analyzer

A packet analyzer is used to store required network interface data and convert the format of the data so that users can read and analyze them.

Tools and Instruments

Common tools and instruments (such as a flat head screwdriver, crosshead screwdriver, test pencil, signaling analyzer, multimeter, and network cable pliers) should be available.

1.4.2 Raw Information Analysis

Function

Raw information refers to the faults reported by subscribers or other offices, errors that are discovered during maintenance, and other relevant information that maintenance en-

gineers collect from various channels by using different methods during the initial phase of faults. Raw information is important for fault diagnosis and analysis.

Raw information is mainly used to determine the fault scope and fault type, and provides a basis for narrowing down the fault diagnosis scope and locating the fault preliminarily in the initial phase of troubleshooting. If the maintenance information is sufficient, you can even directly locate the root cause of the fault.

Major raw information includes the occurrence time, nature, symptoms, and detailed handling process of a fault. If a fault is unsolved, the carrier can report the fault by sending an Equipment Maintenance Notification.

Application Scenarios

Raw information analysis can be used in the handling of not only faults reported by subscribers, but also other faults, especially trunk-related faults. Due to the need for interconnection with the transmission system and signaling coordination, the collection of raw information plays an essential role. For example, raw information is used to analyze whether the transmission system is operating properly, whether data is modified in the opposite end office, and how some signaling parameters are defined.

1.4.3 Alarm Indicator Analysis

You can quickly determine the status of a server by observing the indicators on the front panel of the server.

- For a description of the ports and indicators on the front panel of the chassis, refer to Figure 1-1.

Figure 1-1 Front Panel - Twelve Disks

Note

The 2230-RE server has multiple models, supporting the configuration of 8, 12, 16, 24 and 25 hard disks. For each model, the ports and indicators on the front panel are similar. This procedure uses the server with 12 disks as an example.

Table 1-5 describes the ports and indicators on the 2230-RE front panel.

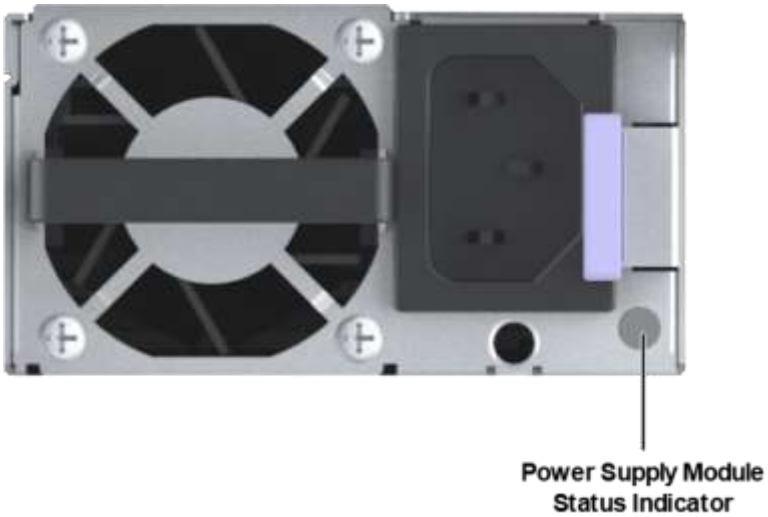
Table 1-5 Descriptions of Ports and Indicators on the Front Panel

No.	Name	Description
1	VGA port	Connects a display.
2	USB 2.0 port	Connects a USB mouse, a USB keyboard, and an external storage device (for example, a USB flash drive for booting the system).
3	chassis installation screw cover	Covers the screws used to install the chassis.
4	Hard disk operation indicator (Status)	The indicator status can be: → Unlit: The hard disk is operating properly or the hard disk in the RAID array is not present. → Flashing red at 4 Hz: The hard disk is being located. → Flashing red at 1 Hz: The RAID array the hard disk is in is being rebuilt. → Steady red: The hard disk cannot be detected, the hard disk is faulty, or the RAID array the hard disk is in is in abnormal status.
5	Hard disk location or presence indicator (Activity)	The indicator status can be: → Unlit: The hard disk is not present or is faulty. → Flashing green: Data is being read from or written to the hard disk, or synchronized between hard disks. → Steady green: The hard disk is present and inactive.
6	Health status indicator	The indicator status can be: → Steady green: The server is operating properly. → Flashing red at 1 Hz: A minor alarm is generated. → Flashing red at 5 Hz: A critical alarm is generated. → Unlit: The server is not operating properly.
7	UID button/indicator	The button is also used as the indicator. The indicator status can be: → Flashing at 1 Hz: The server is being maintained remotely or the firmware is being upgraded through a PC. → Flashing at 4 Hz: The server is in commissioning mode. → Lit/unlit: You can turn on or off the UID indicator manually through the BMC Web portal. The UDI button supports the following modes: → Press and hold for less than 4 seconds: locate the server or cancel the current function (location or BMC commissioning serial port status).

No.	Name	Description
		→ Press and hold for 4 to 10 seconds: The serial port on the panel is switched to the BMC commissioning serial port. → Press and hold for more than 10 seconds: reset the BMC. → Press and hold for 4 to 10 seconds and then press and hold for 10 seconds: The serial port on the panel stays in BMC commissioning serial port status after the BMC is reset.
8	Power button/indicator	The power button is also used as the power indicator. The indicator status can be: → Steady yellow: The server is powered on in standby mode (the host is not powered on). → Steady green: The server is powered on in payload mode (the host is powered on). → Unlit: The server is not powered on or the power supply module is not operating properly. Press the power button to power on the server. The power button supports the following modes: → Press: Power on/off the server. → Press and hold: Force the server to shut off.

- Figure 1-2 describes the power supply module status indicator on the 2230-RE rear panel.

Figure 1-2 Power Supply Module Status Indicator



The power supply module status indicator can be:

→ Green: The power supply module is operating properly.

→ Red: The power supply module is not operating properly.

→ Unlit: There is no power supply or the power supply module is not operating properly.

1.4.4 Log Query and Analysis

Function

After some configurations are modified, faults may occur due to lack of consideration. To quickly locate this type of fault, you need to query logs to learn about data configuration operations that are already performed on clients.

Application Scenarios

This method is used to locate the faults that occur after the modification of configurations.

1.4.5 Comparison and Exchange

Function

- Comparison is to compare the faulty component or phenomenon with a normal component or phenomenon to find out the differences and locate the problem accordingly. This method is applicable to a fault occurring on a single component.
- Exchange is applied when the component where a fault occurs cannot be determined after the spare component is used. In this case, a component (such as a board or optical fiber) in normal status is exchanged with the component that may have a fault to compare the operational status before the exchange with that after the exchange to determine the location of the fault.

Notice

The exchange operation is risky. For example, if a short-circuited board is inserted into a normal chassis for an exchange, the normal chassis may be damaged. Therefore, the exchange method should be implemented with caution to ensure that no new fault will occur.

The replacement or exchange of boards can only be implemented in low traffic hours.

Application Scenarios

Boards or circuits are not operating properly.

1.4.6 Contacting VANTAGEO Technical Support

For technical problems, you can contact VANTAGEO technical support nearby or in the following ways:

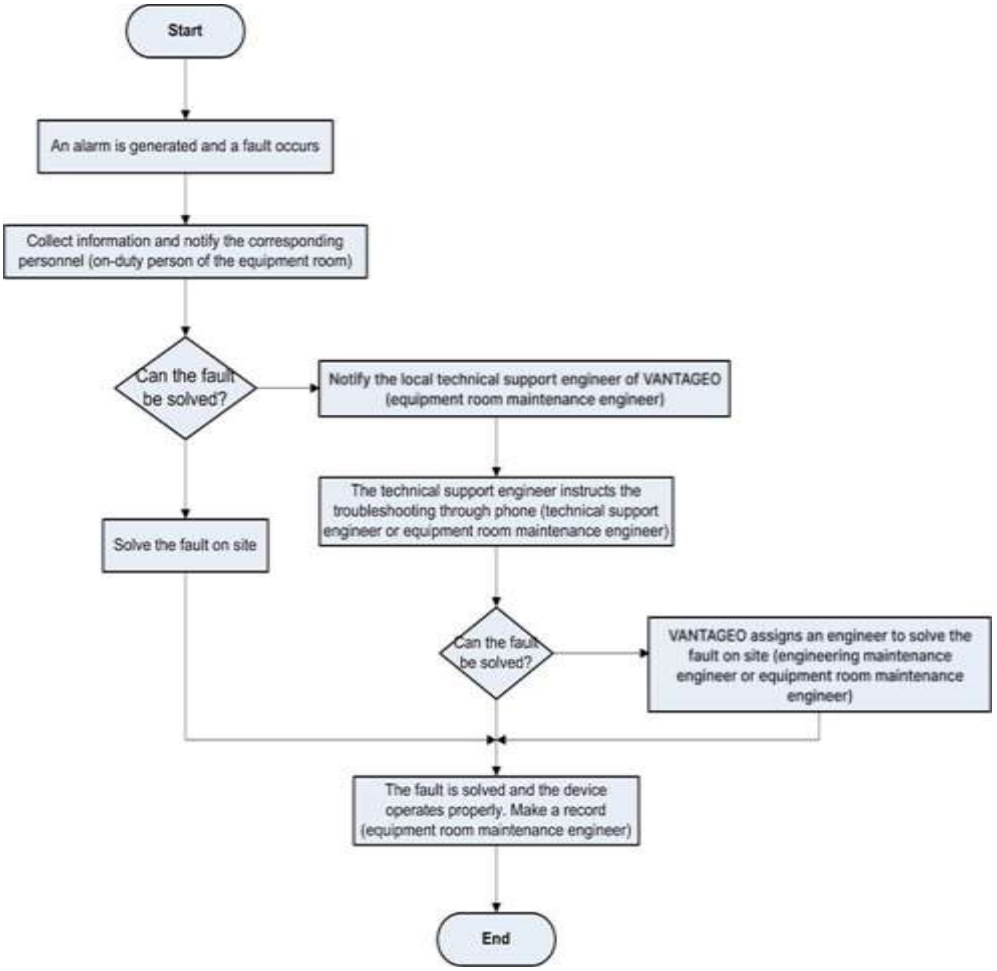
- Support helpdesk: +91 18002669898
- Support email: support@vantageo.com

1.5 Troubleshooting Procedure

Troubleshooting Procedure

Figure 1-3 shows the troubleshooting procedure.

Figure 1-3 Troubleshooting Procedure



Troubleshooting Operations

1. Determine the symptoms of the fault: When a fault occurs, perform simple service tests to make clear the symptoms of the fault.
2. Collect raw information: When a fault occurs, record the detailed fault symptoms, related alarms or operation information in fault management, and the operations before and after the fault occurs. Collect the fault information by using maintenance tools (such as signaling tracing, service observation, and performance statistics) provided by the system and store it.

3. Identify the fault category: Preliminarily identify and categorize the fault cause based on the fault symptoms and collected fault information.
4. Determine the fault cause: Analyze the flow and NEs in accordance with the fault symptoms, and determine the specific fault cause.
5. Resolve the fault: Resolve the fault based on the fault cause.
6. Keep a record: Record the fault symptoms and troubleshooting operations for further reference.

Note

For the format of the troubleshooting record, refer to chapter "3 Troubleshooting Record Form". You can also design a different troubleshooting record form.

Chapter 2 Troubleshooting for Common Faults

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2.1 Abnormal Power Indicator Status

Symptom

The power indicator is unlit.

Probable Cause

- The device is not powered on.
- The power supply is faulty.

Action

Table 2-1 lists the power indicator status descriptions and corresponding measures.

Table 2-1 Power Indicator Status Descriptions and Corresponding Measures

Indicator Status	Description	Action
Steady green	The server is powered on in payload mode (the host is powered on).	No action is required.

Indicator Status	Description	Action
Steady yellow	The server is powered on in standby mode (the host is not powered on).	The BMC is being powered on or the BMC is waiting for a power-on command from the power button.
Unlit	The device is not powered on.	1. Log in to the BMC Web portal and check the alarm. 2. Check whether the power supply is abnormal. ● Yes → Contact VANTAGEO technical support. ● No → Troubleshoot the power supply.

2.2 Abnormal Health Indicator Status

Symptom

The health indicator is flashing red or unlit.

Probable Cause

- An alarm is generated.
- The system is not operating properly.

Action

Table 2-2 lists the health indicator status descriptions and corresponding measures.

Table 2-2 Health Indicator Status Descriptions and Corresponding Measures

Indicator Status	Description	Action
Steady green	The device is operating properly.	No action is required.
Flashing red at 1 Hz	A minor alarm is generated.	Log in to the BMC Web portal and check whether there is a minor alarm. If there is any minor alarm, handle it by referring to the *2230-RE Rack Server Alarm Handling*.
Flashing red at 4 Hz	A critical alarm is generated.	Log in to the BMC Web portal; and check whether there is a critical alarm. If there is any critical alarm, handle it by referring to the *2230-RE Rack Server Alarm Handling*.

Indicator Status	Description	Action
Unlit	The device is not operating properly.	Check the power supply. If the device is powered on successfully, log in to the BMC Web portal and check whether there is an alarm. If there is any alarm, handle it by referring to the *2230-RE Rack Server Alarm Handling*.

2.3 Abnormal Hard Disk Indicator Status

Symptom

The hard disk indicator is flashing red or steady red.

Probable Cause

- The RAID is being built.
- The hard disk is damaged or data cannot be read from or written to the hard disk.

Action

Table 2-3 lists the hard disk indicator status descriptions and corresponding measures.

Table 2-3 Hard Disk Indicator Status Descriptions and Corresponding Measures

Indicator Status	Description	Action
Steady green	The hard disk is present and inactive.	No action is required.
Flashing green	Data is being read from or written to the hard disk, or synchronized between hard disks.	No action is required.
Green indicator off	The hard disk is not present or is damaged.	Check whether the hard disk is present. ● Yes → Contact VANTAGEO technical support. ● No → No action is required.
Steady red	The hard disk is not detected or is damaged, or the RAID array the hard disk is in is abnormal.	Contact VANTAGEO technical support.
Flashing red at 1 Hz	The RAID array is being rebuilt.	Check whether there is any front-end or back-end operation.
Flashing red at 4 Hz	The hard disk is being located.	No action is required.
Red indicator unlit	The hard disk is operating properly or not present in the RAID array.	No action is required.

2.4 No Information Displayed After Power-On

Symptom

After the device is connected to an external power supply, no information is displayed on the screen.

Note

In a normal case, after an external power cable is connected, 5A is displayed in the lower right corner of the screen no matter whether the host is powered on.

Probable Cause

- The display is not connected properly.
- The power supply or cable is faulty.
- The EPLD fails to be programmed.
- The board is damaged.

Action

1. Perform the following operations in accordance with the status of the power indicator.

If...	Then...
The power indicator is yellow or green	Go to Step 2.
The power indicator is unlit	Go to Step 4.

2. Check whether the cable of the display is connected properly.
   - Yes → Step 5.
   - No → Step 3.
3. Reconnect the cable of the display. Check whether the fault persists.
   - Yes → Step 5.
   - No → End.
4. Check the external power supply and cable. Check whether the fault persists.
   - Yes → Step 5.
   - No → End.
5. Log in to the BMC Web portal, and check the current server status and alarms.
6. Check the EPLD version.

2.5 BIOS Initialization Failure

Symptom

After being started through the power button on the enclosure or the power-on command of the BMC, the 2230-RE rack server cannot display the VANTAGEO logo. Only code of port 80 is displayed in the lower right corner of the screen.

Probable Cause

- The BMC does not respond.
- The BIOS of the mainboard is damaged.
- The PCIe subboard or another subboard is abnormal.
- The mainboard memory is abnormal.
- The mainboard hardware is damaged.

Action

1. Perform the following operations in accordance with the status of the power indicator.

If...	Then...
The power indicator is yellow	Go to Step 2.
The power indicator is green	Go to Step 4.

2. Connect the BMC and the computer with a serial port cable. Check whether the BMC is operating properly.
   - Yes → Step 5.
   - No → Step 3.
3. Disconnect the external power cable, restart the rack server, and check whether the fault persists.
   - Yes → Contact VANTAGEO technical support.
   - No → End.
4. Check whether the code of port 80 is 5A.
   - Yes → Step 5.
   - No → Step 6.
5. Log in to the BMC Web portal. Select **Maintenance > Firmware Update > Switch**. Start the rack server by using the standby BIOS. Check whether the fault persists.
   - Yes → Step 8.
   - No → End.
6. Log in to the BMC Web portal. Check whether the status of the rack server especially the memory is normal.
   - Yes → Step 8.

- No → Step 7.

7. Replace the faulty memory. Check whether the fault persists.
   - Yes → Contact VANTAGEO technical support.
   - No → End.
8. Disconnect the cables of the PCIe peripherals and SAS cables. Try any button on the front panel or rear panel. Check whether the fault persists.
   - Yes → Contact VANTAGEO technical support.
   - No → End.

2.6 Server Reset or Down for Unknown Reasons

Symptom

The server is down or reset for unknown reasons during operation.

Probable Cause

- The memory is faulty.
- Fans are not started or the fan speed is too low, therefore the frequency is decreased due to a high temperature.
- Software is faulty.

Action

1. Perform the following operations in accordance with the memory error.

If...	Then...
The memory error resides in the memory module	Replace the memory module.
The memory error resides in the memory slot	Replace the motherboard.
There is no memory error	Go to Step 2.

2. Check whether fans are operating properly.
   - Yes → Step 4.
   - No → Step 3.
3. Replace the faulty fans. Check whether the fault persists.
   - Yes → Step 4.
   - No → End.
4. Collect fault logs, and contact VANTAGEO technical support for troubleshooting.

2.7 Server Slow or Shut Down for Unknown Reasons

Symptom

The server is slow or shut down for unknown reasons during operation.

Probable Cause

Fans are not started or the fan speed is too low, which results in a high temperature or shutdown.

Action

1. Check whether each fan is operating at a normal speed.
   - Yes → Contact VANTAGEO technical support.
   - No → Step 2.
2. Replace fans. Check whether the fault persists.
   - Yes → Contact VANTAGEO technical support.
   - No → End.

2.8 Failure to Log in to the BMC Web Portal

Symptom

- Symptom 1: The IP address of the BMC is cannot be pinged successfully from the debugging computer.
- Symptom 2: The IP address of the BMC can be pinged successfully from the debugging computer, but you cannot log in to the Web page after entering the username and password.

Probable Cause

Causes for symptom 1:

- The cable connection is abnormal.
- The network interface of the BMC or the debugging computer is faulty.
- The BMC is not operating properly.

Causes for symptom 2:

- The browser type or version is incorrect.
- The cache of the browser is not cleared.

Action

Symptom 1:

1. Perform the following operations in accordance with the status of the BMC NIC.

If...	Then...
The NIC indicator is flashing	Go to Step 2.
The NIC indicator is unlit	Go to Step 4.

2. Check the address of the network interface of the BMC to verify the addresses of the BMC and debugging computer are in the same network segment. Check whether the fault persists.
   - Yes→ Step 3.
   - No → End.
3. Check the operating status of the BMC.
4. Verify that the network cable is connected properly. Check whether the fault persists.
   - Yes → Contact VANTAGEO technical support.
   - No → End.

Symptom 2:

1. In a specified browser (for example, Google Chrome), click (icon) in the upper right corner. From the shortcut menu, select **More Tools > Clear browsing data...**.
2. In the displayed dialog box, select **Cookie and other site data** and **Cached images and files**, and click **Clear data**.
3. Log in to the BMC Web portal again, and check whether the fault persists.
   - Yes → Contact VANTAGEO technical support.
   - No → End.

2.9 Server Memory in Abnormal Status

Symptom

- The memory information is incorrect.
- Memory modules are unstable and the BMC reports an ECC error.

Probable Cause

- Memory modules are not installed properly.
- Memory modules are faulty.

Action

1. Check the memory configuration.
   For how to configure the memory, refer to section "2.1 CPU and Memory Configuration" in the *2230-RE Rack Server Hardware Description*.
2. Log in to the BMC Web portal, and check the memory information.

3. Log in to the BMC Web portal, and check active and historical alarms related to memory.
4. Install a faulty memory module to a different slot and perform a test using a test tool. Perform the following operations in accordance with the test results.

If...	Then...
The fault resides in the memory module	Replace the memory module.
The fault resides in the slot of the memory module	Replace the mainboard.

5. Check whether the fault persists.
   - Yes → Contact VANTAGEO technical support.
   - No → End.

2.10 Disk I/O Error

Symptom

Some or all hard disks cannot be found. Or, an error occurs when data is being read from or written into the hard disks.

Probable Cause

- The hard disks are damaged.
- The disk backplane or connector is damaged.
- The SAS cable is not connected properly.
- The RAID controller card is faulty.

Action

1. Check whether the Activity indicator of the faulty disk is lit.
2. Install the unfound or faulty hard disks into other slots. Perform the following operations in accordance with the test results.

If...	Then...
The fault resides in the disk	Replace the disk.
The fault resides in the slot of the disk	Check the corresponding SAS cable or power cable.

3. Replace the corresponding RAID controller card or HBA card.

Chapter 3 Troubleshooting Record Form

For the troubleshooting record form, refer to Table 3-1.

Table 3-1 Troubleshooting Record Form

2230-RE Troubleshooting Record Form	
Date:	Maintained by:
Fault occurrence time:	Troubleshooting completion time:
Symptoms:	
Fault analysis:	
Action: Maintainers' signatures:	
Remarks:	

Glossary

BIOS

- Basic Input/Output System

BMC

- Baseboard Management Controller

CPU

- Central Processing Unit

DAS

- Direct-Attached Storage

DHCP

- Dynamic Host Configuration Protocol

ECC

- Embedded Control Channel

EPLD

- Erasable Programmable Logic Device

FC

- Fiber Channel

HBA

- Host Bus Adapter

IP

- Internet Protocol

KPI

- Key Performance Index

NAS

- Network-Attached Storage

NE

- Network Element

NIC

- Network Interface Card

PC

- Personal Computer

PCIe

- Peripheral Component Interconnect Express

RAID

- Redundant Array of Independent Disks

RTP

- Real-time Transport Protocol

SAN

- Storage Area Network

SAS

- Serial Attached SCSI

SSH

- Secure Shell

TCP

- Transmission Control Protocol

UID

- User Identifier

USB

- Universal Serial Bus

VGA

- Video Graphic Adapter

VLAN

- Virtual Local Area Network