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RG-S6220-H Series Data Center Switches Routing Maintenance and Troubleshooting



Contents

- Routine Maintenance Suggestions
- Handling of Common Faults
- Troubleshooting
- Obtaining Help

Routine Maintenance Suggestions

■ Importance of routine maintenance:

- Routine maintenance is a preventative action performed during normal operations of a device. This action helps to find and resolve defects or potential issues of the device in a timely manner and maintain health of the device, so that the device can securely, stably, and reliably operate in a long term.

■ Major tasks of routine maintenance:

- Hardware running status maintenance
- Software running status maintenance
- Automatic maintenance using a network management system (NMS)
- Checking whether a software upgrade is needed every half year or every year

Routine Maintenance Suggestions–Hardware

Running Status Maintenance

- Checking the environment
 - Cleanliness:
 - The chassis and floor should be clean and free of dust. Clean or replace the cabinet air filters regularly; otherwise, ventilation and heat dissipation through the cabinet door and fan trays will be affected.
 - Heat dissipation:
 - When the switch runs normally, fans should run properly. If any fan is faulty, the system temperature will increase, which may cause damage to the switch. Do not place sundries at the air intake or exhaust vents of the switch. Periodically clean the dust away from the fans to prevent too much dust from accumulating on the fans.
 - Run the **Ruijie#show temperature** command to check whether the operating temperature of the switch is normal.

```
Ruijie#show temp
Slot  Card_type                Temperature name    Current(C) Status
-----
0     RG-S6220-48XS6QXS-H        air_outlet         47     OK     Air exhaust vent check item
                                air_inlet          36     OK     Air intake vent check item
                                board              46     OK     Mainboard check item
                                cpu                58     OK     CPU chip temperature check item
                                switch             45     OK     Switching chip temperature check item
```

- It is recommended that a routine inspection be performed on a monthly basis.

Routine Maintenance Suggestions–Hardware

Running Status Maintenance

- Checking hardware status
 - Status and interface indicators (LED)

```
TOR2#show fan
Fan id Type          Status      Hardware Ver
-----
1      M6220-FAN-F        ok          1.00
2      M6220-FAN-F        ok          1.00
3      M6220-FAN-F        ok          1.00
TOR2#show fan speed
Fan id Type          Status      Speed(R/m)
-----
1      M6220-FAN-F        ok          7537
2      M6220-FAN-F        ok          7545
3      M6220-FAN-F        ok          7637

TOR2#show power
Name                slot  status      Attribute
-----
N/A                 1     no-present  N/A
RG-M6220-AC460E-F  2     ok          -F
Name                slot  Rated      Input      I
Name                slot  Power(w)   voltage(v) Cur
N/A                 1     N/A        N/A        N/A
RG-M6220-AC460E-F  2     460        204        340
```

It is recommended that a routine in

Indicator	Panel Identification	Status	Meaning
Switch status indicator (Front panel/Back panel)	Status	Off	The system is not powered up.
		Solid red	1) One of the modules of the system fails. 2) There are less than N fans (N+1 redundant fan). 3) The internal temperature exceeds the warning working temperature, and the switching service resets.
		Blinking green.	The system is initializing.
		Solid green	The system is operational.
		Solid yellow	1) The temperature gets to the warning threshold. 2) Only N fans are in the position (N+1 redundant fan). 3) One of the dual powers is not connected with the AC power cord.
		Off	The port is not connected.
49F-54F (1 x 40G mode)		Solid green	The port is connected at 40Gbps.
		Blinking green.	The port is transmitting or receiving data.

Routine Maintenance Suggestions–Software

Running Status Maintenance

Recommended check items:

Health status items:

- CPU usage: Check whether the CPU usages of line cards and supervisor engines are normal.
- CPU protection (CPP) count: Check the numbers of received and dropped packets sent to the CPU to determine whether the network environment is normal.
- Memory usage: Check whether the memory usage is normal.
- Interface status: Check whether any interface encounters CRC errors.
- Logs: Check whether any abnormal log information exists.

Device configurations (optional):

- Run the **show ip route** command to check whether the route table size is the same or close to the normal size.
- Run the **show arp counter** command to check whether the number of users is the same or close to the usual size.
- Run the **show run** command to check whether any configuration has changed.

It is recommended that a routine inspection be performed on a monthly basis.

Routine Maintenance Suggestions–Software

Running Status Maintenance

- CPU usage:
 - Run the **show cpu** command to check the CPU running status.

```
Ruijie#show cpu
```

```
=====
```

```
CPU Using Rate Information
```

```
CPU utilization in five seconds: 20.00%
```

```
CPU utilization in one minute: 20.00%
```

```
CPU utilization in five minutes: 23.40%
```

The CPU usage may increase sharply in a short time if a batch configuration is performed or a show command is executed. This is a normal symptom.

- In the healthy state, "CPU utilization in five minutes" should be lower than 40%. The CPU usage increases with the load of running services, which is a normal symptom. However, if the CPU usage exceeds 60%, call technical support for consultation or check the technical support documents on the official website of Ruijie Networks.

It is recommended that a routine inspection be performed on a monthly basis.

Routine Maintenance Suggestions–Software

Running Status Maintenance

- CPU protection (CPP) status:

The system performs queuing and rate limiting on packets sent to the CPU based on priorities of packets, thus protecting its own CPU.

- Run the **show cpu-protect** command to check information about protocol packets received by the CPU.
 - In the healthy state, the rate of protocol packets does not exceed the preset threshold. If the rate of a certain type of protocol packets continuously exceeds the threshold, and the number of dropped packets keeps increasing, you need to identify the source of these packets on the network and handle the problem accordingly. (You can run the **show cpu-protect** command for two or three consecutive times to verify that the problem occurs.)

It is recommended that a routine inspection be performed on a monthly basis.

Routine Maintenance Suggestions–Software

Running Status Maintenance

- Memory usage:
 - Run the **show memory** command to display the memory running status.

```
Ruijie#show memory
```

```
System Memory: 2097152KB total, 819584KB used, 1277568KB free, 39.0% used rate
```

```
Used detail: 342784KB active, 87868KB inactive, 78264KB mapped, 344904KB slab,  
64916KB core, 0KB others
```

- In the healthy state, the total memory usage should be lower than 75%. The memory usage increases with the load of running services, which is a normal symptom. However, if the memory usage exceeds 80%, call technical support for consultation or check the technical support documents on the official website of Ruijie Networks.

It is recommended that a routine inspection be performed on a monthly basis.

Routine Maintenance Suggestions—Software Running Status Maintenance

- Interface status

- Run the show

- Whether the interface bandwidth is occupied by network
 - Whether the interface are large and connected to that of the

- Run the show

- Perform the
 - eliminate p

```
TOR2#show int counters
Interface : TenGigabitEthernet 0/1
 10 seconds input rate :0 bits/sec, 0 packets/sec
 10 seconds output rate :0 bits/sec, 0 packets/sec
Rxload : 0%
InOctets : 0
InPkts : 0 (Unicast: 0%, Multicast: 0%, Broadcast: 0%)
InUcastPkts : 0
InMulticastPkts : 0
InBroadcastPkts : 0
Txload : 0%
OutOctets : 0
OutPkts : 0 (Unicast: 0%, Multicast: 0%, Broadcast: 0%)
OutUcastPkts : 0
OutMulticastPkts : 0
OutBroadcastPkts : 0
Undersize packets : 0
Oversize packets : 0
collisions : 0
Fragments : 0
Jabbers : 0
CRC alignment errors : 0
AlignmentErrors : 0
FCSErrors : 0
dropped packet events (due to lack of resources): 0
packets received of length (in octets):
 64 : 0
 65-127 : 0
 128-255 : 0
 256-511 : 0
 512-1023 : 0
 1024-1518 : 0
Interface : TenGigabitEthernet 0/1
Packet increment in last sampling interval(5 seconds):
InOctets : 0
InPkts : 0 (Unicast: 0%, Multicast: 0%, Broadcast: 0%)
InUcastPkts : 0
InMulticastPkts : 0
InBroadcastPkts : 0
OutOctets : 0
OutPkts : 0 (Unicast: 0%, Multicast: 0%, Broadcast: 0%)
OutUcastPkts : 0
OutMulticastPkts : 0
OutBroadcastPkts : 0
```

The packet rate could be used to assess the situation of the network.

and check:
reaches the
elements. Or,
bandwidth
width
n interface
be securely
not match

optical
ated.
s, and

Routine Maintenance Suggestions–Software Running Status Maintenance

- Logs:
 - Run the **show log** command to check whether any abnormal logs exist.
 - Run the **show log** command to check whether abnormal information exists in the logs,

```
Ruijie#show log
```

```
Syslog logging: enabled
```

```
Console logging: level debugging, 112 messages logged
```

```
Monitor logging: level debugging, 0 messages logged
```

```
Buffer logging: level debugging, 112 messages logged
```

```
Standard format:false
```

```
Timestamp debug messages: datetime
```

```
Timestamp log messages: datetime
```

```
Sequence-number log messages: disable
```

```
Sysname log messages: disable
```

```
Count log messages: disable
```

```
Trap logging: level informational, 112 message lines logged,0 fail
```

```
Log Buffer (Total 262144 Bytes): have written 13080,
```

```
*Apr 1 10:46:50: %LOCAL_DP-5-LC_PROB: Board information in this chassis has been collected.
```

```
*Apr 1 10:46:50: %SWITCH-6-INSTALL: Install chassis RG-S6220-48XS6QXS-H on switch 1
```

```
*Apr 1 10:46:50: %DP-6-MASTER: Module in slot 0 has translated to master.
```

- for example, frequent up/down state transitions of interfaces or OSPF neighbors. Check for alarms with severity of 2 or above or find the related logs based on the actual symptoms of faults.
- For unclear log information, call the technical support for help.

It is recommended that a routine inspection be performed on a monthly basis.

Routine Maintenance Suggestions–Automatic Maintenance Using the NMS

- Ruijie Networks NMS products, such as SNC and RIIL, can be used to monitor the real-time CPU usage, memory usage, interface traffic, MAC table, ARP table, and routing table of a device. In addition, the NMS can receive logs and traps from the device periodically, based on which automatic routine maintenance can be implemented.
- If the third-party NMS software needs to obtain certain MIB objects from the switch, call technical support to obtain the MIB reference for the specific product version and search for the specific OIDs in the document.

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Handling of Common Faults

- **Symptom:**

After the switch is powered on, the Console port does not have any output, or outputs garbled characters.

- **Possible Causes:**

- ① The switch is not properly powered on.
- ② The baud rate or other communication parameter settings on the Console port are not consistent with those on the PC. Or, the COM port selected on the HyperTerminal is incorrect.
- ③ The console cable is damaged, or its wire sequence is not standard.

- **Solution:**

- ① Check whether power cables of the switch are correctly connected, whether the switch receives power input from the power source normally, and whether the status LED on the front panel of the switch is solid green.
- ② Change the baud rate of the PC to 9600, and confirm that other COM port parameters (select **Restore Defaults** on the HyperTerminal) and the COM port ID are correct.
- ③ Replace the console cable with the one delivered with the switch, and configure data again.

Handling of Common Faults

- **Symptom:**

After an Ethernet interface is connected with an Ethernet cable or optical fiber, its link LED does not turn on, and the interface cannot change to the up state.

- **Possible Causes:**

- ① The Ethernet cable or optical fiber does not function normally.
- ② The optical transceiver does not match the interface.
- ③ The duplex modes and rates of the Ethernet interfaces at two ends of the link do not match.
- ④ The Tx and Rx ends of the optical fiber are connected incorrectly.

- **Solution:**

- ① Run the **show interface tran dia** command to diagnose the optical signals, and replace the Ethernet cable or optical fiber with a new one for the test.
- ② Replace the optical transceiver with a new one of the same specifications (single-mode/multimode and transmission distance) for the test.
- ③ Set the same duplex mode and rate on **two ends of the link**.
- ④ Swap the Tx and Rx ends of the optical fiber.

Handling of Common Faults

- **Symptom:**

The status LED is solid red.

- **Possible Causes:**

- ① Fan alarm
- ② Temperature alarm
- ③ Power alarm

- **Solution:**

- ① Check whether the fans are blocked or damaged. Run the **show fan** command to verify the fan running status.
- ② Run the **show temper** command to verify the temperature. If the switch has stopped normal service switching, check the operating environment of the switch, clean the dust on the switch, and improve the cooling effect.
- ③ Check whether the two power modules are working properly. Run the **show power** command to verify the status of the power modules.

Handling of Common Faults

- **Symptom:**

Traffic is distributed on APs unbalancedly.

- **Possible Causes:**

- ① The configured load balancing mode is not suitable for packet flows.
- ② Preferential local forwarding is enabled by default on the VSU. Therefore, traffic cannot be balancedly distributed to APs.

- **Solution:**

- ① Run the **show aggregateport load-balance** command to check whether the load balancing algorithm for APs **matches the variable fields** in packets. If not, run the **aggregateport load-balance** command to configure an appropriate load balancing algorithm, so that same packets are forwarded through the same member interface.
- ② By default, the preferential local forwarding policy is used for APs connected to a VSU to conserve bandwidth on VSL interfaces. Run the **no switch virtual aggregateport-lff enable** command to configure the global load balancing policy. (In ECMP load balancing mode, use the **no switch virtual ecmp-lff enable** command.)

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Troubleshooting

■ Fault classification:

- Faults that occur on a device are generally classified into hardware faults, software faults (further divided into the common function or protocol failures, and bottom-layer software failures), and environment problems (non-device faults).
- Hardware faults: The symptom of a hardware fault is generally easy to identify. For example, the switch cannot start or a fan alarm is generated. A hardware fault can be rectified by means of hardware replacement.
- Common function or protocol failures: For example, addresses cannot be obtained through DHCP, or an SNMP error is reported. The troubleshooting methods for these faults are the same as those of the RGOS 10.X products, such as the S86 and S12000.
- Bottom-layer software failures: The information collection methods are relatively complex and must be provided by Ruijie Networks engineers.

- **New features for troubleshooting the RGOS 11.X products: one-click information collection**, which helps to collect complete fault information, simplifies user/engineer operations, and improves the fault location efficiency.

Troubleshooting

■ One-click information collection:

This function allows users to collect basic information about all functional modules and the switch at a time, avoiding repeated information collection.

- Run the **Ruijie#debug support** command to enter the one-click information collection mode. (You are advised to use the tech-support console function for information collection.)

Suggestion: For common protocol problems, you are advised to locate the fault using basic troubleshooting methods.

Use the one-click information collection function only when the troubleshooting time is tight or no explicit troubleshooting method is available.

Troubleshooting

- Common troubleshooting method: If a fault cannot be located in time, you are advised to collect the following basic information and then call the technical support for help:
- Ruijie#show version detail //Display the software and hardware version information.
- Ruijie#show version slot //Display extension module presence information.
- Ruijie#show run //Display the current system configurations.
- Ruijie#show cpu //Display the CPU usage.
- Ruijie#show cpu-protect //Display detailed statistics about packets received by the CPU. The command should be executed for two consecutive times.
- Ruijie#show memory //Display the memory usage.
- Ruijie#show interface ((If the problem is related to traffic or packet loss, run the show command for three to five consecutive times.)
- Ruijie#show interface counters //Display statistics about packets received and sent on the problematic interface.
- Ruijie#show ip int brief //Display the interface status information.
- Ruijie#show ip route //Display the routing table.
- Ruijie#show ip ospf database //Display the OSPF routing database.
- Ruijie#show arp //Display detailed ARP information.
- Ruijie#show arp counter //Display ARP statistics.
- Ruijie#show mac-address-table //Display detailed information about MAC addresses.
- Ruijie#show clock //Display the system time.
- Ruijie#show log //Display logs.
- Ruijie#ping x.x.x.x //Conduct a ping test on the device.
- Ruijie#traceroute x.x.x.x //Conduct a traceroute test on the device.