

RGOS 11.X High-end Data Center Switches (N18000-X) Routine Maintenance and Troubleshooting

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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
- Smart and automatic health check and periodical maintenance using the Ruijie Networks health check tool (recommended)
- Manual check of software running status
- Periodical maintenance using the 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
 - Cleanness:
 - 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 tempr** command to check whether the operating temperature of the switch is normal.

```
N18K#show temperature
Chassis-type: RG-N18007
slot      card_type                warning(C)  shutdown(C)  current(C)
-----
1         M18000-24GT20SFP4XS-ED   56          100 |100      26|29|31|29|38|39
2         N/A                      N/A         N/A          N/A
3         N/A                      N/A         N/A          N/A
4         N/A                      N/A         N/A          N/A
5         N/A                      N/A         N/A          N/A
M1        M18007-CM II             56          100 |100      31|31|35|34|41
M2        M18007-CM II             56          100 |100      28|31|35|33|39
```

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

Routing Maintenance

Check



Warning

Information



LED	LED			
				Blinking green Initialization is in progress. Continuous blinking indicates errors.
				Solid green The fan is operational.
	Fan status LED	FAN		Solid yellow The fan is NOT in the position.
				Solid red The fan is faulty.
	Power status LED	PWR		Off The power supply module is NOT in the position.
	Primary/supervisor LED			Solid green The power supply module is operational.
				Solid red The power supply module is faulty.
	DCMI port status LED	None		Off The DCMI port is NOT connected.
				Green The DCMI port is connected at 1000Mbps.
				Yellow The DCMI port is connected at 10/100Mbps.
	Fault alarm LED			Blinking The DCMI port is transmitting or receiving data.
	MGMT port status LED	None		Off The MGMT port is NOT connected.
				Green The MGMT port is connected at 1000Mbps.
	SD card status LED			Yellow The MGMT port is connected at 10/100Mbps.
				Blinking The MGMT port is transmitting or

Information to
The system has
been identified.



Routine Maintenance Suggestions—Hardware Running Status Maintenance

- Checking hardware status
 - Fans:

```

Ruijie#show power
Chassis-type: RG-N18010
Power-redun: no
Energy-saving: off

power-id power-type supply(W) status vol-in/out(V) cur-out(mA)
-----
1 PA1600I 1600 ok 233 /12 25750
2 PA1600I 1600 fail 0 /0 0
3 N/A N/A N/A N/A N/A N/A
4 N/A N/A N/A N/A N/A N/A
5 N/A N/A N/A N/A N/A N/A
6 N/A N/A N/A N/A N/A N/A
7 N/A N/A N/A N/A N/A N/A
8 N/A N/A N/A N/A N/A N/A
POE1 N/A N/A N/A N/A N/A N/A
POE2 N/A N/A N/A N/A N/A N/A

slot card_type status require(W) allocate
-----
1 M18000-24GT20SFP4XS-ED power-on 100 100
2 M18000-44SFP4XS-ED power-on 135 135
3 N/A N/A N/A N/A N/A
4 N/A N/A N/A N/A N/A
5 N/A N/A N/A N/A N/A
6 N/A N/A N/A N/A N/A
7 N/A N/A N/A N/A N/A
8 N/A N/A N/A N/A N/A
FE1
FE2

total-power(W) redundancy(W) available(W) card-used(W) fan-used(W) free-power(W)
-----
1600 0 1600 529 732 339

Ruijie#show fan
Chassis-type: RG-N18010
Fan-id: 1
Fan-type: M10_FAN_R
Serial Number: 9974HL20G0078
Status: ok
Mode: normal

sub-fan-id status speed(rpm)
-----
1 ok 2400
2 ok 2400
3 ok 2550
4 ok 2100

Fan-id: 2
Fan-type: M10_FAN_R
Serial Number: 9974HL20G0047
Status: ok
Mode: normal

sub-fan-id status speed(rpm)
-----

```

on the fans. You can run

in the

Routine Maintenance Suggestions—Manual Check of Software Running Status

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—Manual Check of Software Running Status

```
Ruijie#show cpu
=====
[Slot 1: M18000-24GT20SFP4XS-ED, Cpu 0]
CPU Using Rate Information
CPU utilization in five seconds:7.8% line card CPU usage
CPU utilization in one minute:7.9% Ruijie#show processes cpu history
CPU utilization in five minutes:7.9%
                                     system cpu percent usage (%) [last 300 second]

[Slot 2: M18000-44SFP4XS-ED, Cpu 0] 100|
CPU Using Rate Information          95|
CPU utilization in five seconds:8.6| 90|
CPU utilization in one minute:8.5%  85|
CPU utilization in five minutes:8.5| 80|
                                     75|
[Slot FE2: M18010-FE-D I, Cpu 0]   70|
CPU Using Rate Information          65|
CPU utilization in five seconds:1.9| 60|
CPU utilization in one minute:1.8%  55|
CPU utilization in five minutes:1.8| 50|
                                     45|
[Slot FE3: M18010-FE-D I, Cpu 0]   40|
CPU Using Rate Information          35|
CPU utilization in five seconds:2.0| 30|
CPU utilization in one minute:1.8%  25|
CPU utilization in five minutes:1.8| 20|
                                     15|
[Slot M1: M18010-CM]                10|
CPU Using Rate Information          5|
CPU utilization in five seconds: 5.  #*****
CPU utilization in one minute: 5.30% #-----#*-->
CPU utilization in five minutes: 5.30%#-----#*-->
                                     0|
                                     #-----#*-->
                                     0 50 100 150 200 250 300 second
                                     system cpu percent usage (%) per 5second (last 300 second)
```

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

Routine Maintenance Suggestions—Manual Check of Software Running Status

- CPU protection (CPP) status:

```
Ruijie#show cpu-protect mboard
%cpu port bandwidth: 100000 (pps)
Traffic-class  Bandwidth(pps)  Rate (pps)  Drop (pps)
-----
0 20000 0 0
1 20000 0 0
2 20000 0 0
3 20000 0 0
4 20000 0 0
5 20000 0 0
6 20000 0 0
7 20000 0 0

Packet Type      Traffic-class  Bandwidth(pps)  Rate (pps)  Drop (pps)  Total      Total Drop
-----
bpdud 6 128 0 0 0 0
arp 1 10000 0 0 0 0
tpp 6 128 0 0 0 0
dot1x 2 1500 0 0 0 0
gvrp 5 128 0 0 0 0
rldp 5 128 0 0 0 0
lacp 5 256 0 0 0 0
rerp 5 128 0 0 0 0
reup 5 128 0 0 0 0
lldp 5 768 0 0 0 0
cdp 5 768 0 0 0 0
```

occurs.)

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

Routine Maintenance Suggestions—Manual Check of Software Running Status

■ Memory usage:

Run the **show memory** command to check the memory running status. (New features: You can run the **show memory sorted total** command to sort processes based on their memory usages, or the **show memory history** command to display the historical peak memory usage and related process information.)

```
Ruijie#show memory
System Memory: 4194304KB total, 2078688KB used, 2115616KB free, 49.5% used rate
Used detail: 647592KB active, 60700KB inactive, 60976KB mapped, 1182304KB slab, 174672KB core

PID      Vsd      Text     Rss      Data     Stack    Total    Process
23331    0         100      1976     17852    84       22704    rl-con/0
3491     0         100      2192     34184    84       40292    rl-con/1458
2591     0         220      2984     79960    84       88044    tty_secu_enable
2356     0         24       1816     8484     84       12864    sntp.elf
2348     0         108      21196    17136    84       40760    span.elf
2336     0         16       1448     428      84       3452     rg-mtdoops-cli
2305     0         552      30696    74264    84       103780   snooping.elf
2267     0         928      848      852      84       4704     sh
2265     0         24       388      164      84       2072     run_proxy-io2ne
2263     0         24       288      32       84       1940     demo_proxy-io2n
2262     0         928      772      788      84       4640     sh_app
2237     0         384      21996    62096    84       86076    ofdatapath
2236     0         280      2132     20824    84       26196    ofprotocol
```

In the healthy state, the total memory usage should be lower than 60%. 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—Manual Check of Software Running Status

- Interface status:

```
Ruijie#show interface counters
Interface : GigabitEthernet0/0/0
10 seconds input rate : 0 bits/sec, 0 packets/sec
10 seconds output rate : 0 bits/sec, 0 packets/sec
Rxload : 0/0
InOctets : 0
InPkts : 0
InUcastPkts : 0
InMulticastPkts : 0
InBroadcastPkts : 0
Txload : 0/0
OutOctets : 0
OutPkts : 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
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 interface status and check:

Routine Maintenance Suggestions—Manual Check of Software Running Status

■ Logs:

- Run the **show log** command to check whether any abnormal logs exist.

```
*Jul 21 17:24:20: %LOCAL_DP-5-LC_PROB: Probing card in slot 1 of local chassis.  
*Jul 21 17:24:20: %LOCAL_DP-5-LC_PROB: Probing card in slot 2 of local chassis.  
*Jul 21 17:24:20: %LOCAL_DP-5-LC_PROB: Probing card in slot FE2 of local chassis.  
*Jul 21 17:24:20: %LOCAL_DP-5-LC_PROB: Probing card in slot FE3 of local chassis.  
*Jul 21 17:24:25: %LOCAL_DP-5-LC_PROB: Board information in this chassis has been collected.  
*Jul 21 17:24:25: %SWITCH-6-INSTALL: Install chassis RG-N18010 on switch 1  
*Jul 21 17:24:25: %DP-6-MASTER: Module in slot M1 has translated to master.  
*Jul 21 17:24:25: %DP-5-LC_PROB: Probing card in slot 1.
```

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

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.
- ④ The console cable is not connected to the primary supervisor engine.

■ 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.
- ④ Check the primary LED to confirm that the console cable is connected to the primary supervisor engine.

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. (Currently, N18000, S86E, and S78E ED line cards do not support the half-duplex mode.)
- 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.

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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, a card 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.**

- ❑ For common troubleshooting procedures and methods, see the *Ruijie Networks Switch Troubleshooting Guide*. You can also call the technical support for help.

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 package** function to

```
slot info
.....
Tech-support package success, the package file is /tmp/vsd/0/tech_support_20140730170941.tar.gz
----- tech-support package end -----
Ruijie(support)#
Ruijie(support)#
Ruijie(support)#exit
Ruijie#dir
Directory of tmp:/
1 drwx      760  Wed Jul 30 17:09:43 2014  .
2 drwx      60   Mon Jul 21 17:23:47 2014  ..
3 -rw-     332493 Wed Jul 30 17:09:43 2014  tech_support_20140730170941.tar.gz
4 -rw-     246486 Fri Jul 25 11:03:15 2014  tech_support_20140725110313.tar.gz
```

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 customer service hotline for technical support:

Ruijie#show version detail information.	////Display the software and hardware version 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 problematic interface.	//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.