Troubleshoot an Intermittent or Non-Responsive N7K Control Plane/Hardware Failure

Contents

Introduction

This document describes how to troubleshoot a hardware module in a Nexus 7k when it is non-responsive or intermittent.

Troubleshoot an Intermittent or Non-Responsive N7K Control Plane

1. Does the intermittent issue occur on a certain cycle?

Step 1. Perform a snmpwalk on the various SNMP V3 userids and/or SNMP V2 community strings (that is, walk the hostname mib).

Do this in a continuous loop.

- If the snmpwalks respond consistently without issues, this is most likely not your issue.
- If the snmpwalks respond say consistently for 30 seconds and then all of sudden stop and become intermittent for say another 30 seconds and then repeat the cycle - this is a serious indication

Step 2. ssh to the VDC in question that has intermittent non-responding snmpwalks for the hostname from Step 1.

- During the same exact time as the snmpwalks do not respond with the hostname, issue a show running-configuration within the ssh window.
- If you show running-configuration is paused - this is a serious indication

With both Step 1. and Step 2. impacted at the same time on the say 60-second cycle, this appears to be a hardware failure inside of the N7K control plane as the N7K runs a hardware diagnostic health check consistently. When you see 30 seconds of responsiveness and then 30 seconds of non-responsiveness and then the cycle repeats, this is a clear indication of the hardware diagnostic health check scanning all hardware. The 30 seconds of responsiveness is the scanning of the good hardware and then the 30 seconds of non-responsiveness is the failed hardware.

Step 3. If Step 2. clearly depicts a hardware failure, do the next steps:

- show module in all active VDCs to view any failed diagnostic tests
- Most importantly and only in the admin VDC-1 (that is VDC-1), show logging logfile and look for EOBC errors (that is, EOBC errors are logged only in the admin VDC-1)

> **Note**: EOBC is the internal control plane process the N7K uses to communicate between the SUP/Fabric Modules/Line Cards. If this EOBC process is impacted in any way, the associated module depicted in the admin VDC-1 logfile is most likely be the culprit of the intermittent responsiveness witnessed in the previous tests as the SUP has lost 100% consistent communications with the associated module depicted in the admin VDC-1 logfile and is trying to recover/communicate with it causing the intermittent responsiveness with other control plane processes.

Example:

```
lab-sw01-admin-vdc-1# show logging logfile | inc EOBC
2022 Feb 22 19:46:15 lab-sw01-admin-vdc-1 %MODULE-4-MOD_WARNING: Module 8 (Serial number: JAA00000000) i
2022 Feb 22 19:46:15 lab-sw01-admin-vdc-1 %MODULE-4-MOD_WARNING: Module 8 (Serial number: JAA00000000) i
2022 Feb 22 19:46:16 lab-sw01-admin-vdc-1 %MODULE-4-MOD_WARNING: Module 8 (Serial number: JAA00000000) i
2022 Feb 22 19:46:16 lab-sw01-admin-vdc-1 %MODULE-4-MOD_WARNING: Module 8 (Serial number: JAA00000000) i
2022 Feb 22 19:46:21 lab-sw01-admin-vdc-1 %MODULE-4-MOD_WARNING: Module 8 (Serial number: JAA00000000) i
2022 Feb 22 19:46:21 lab-sw01-admin-vdc-1 %MODULE-4-MOD_WARNING: Module 8 (Serial number: JAA00000000) i
2022 Feb 22 19:46:22 lab-sw01-admin-vdc-1 %MODULE-4-MOD_WARNING: Module 8 (Serial number: JAA00000000) i
2022 Feb 22 19:46:23 lab-sw01-admin-vdc-1 %MODULE-4-MOD_WARNING: Module 8 (Serial number: JAA00000000) i
2022 Feb 22 19:46:23 lab-sw01-admin-vdc-1 %MODULE-4-MOD_WARNING: Module 8 (Serial number: JAA00000000) i
2022 Feb 22 19:46:24 lab-sw01-admin-vdc-1 %MODULE-4-MOD_WARNING: Module 8 (Serial number: JAA00000000) i
2022 Feb 22 19:46:24 lab-sw01-admin-vdc-1 %MODULE-4-MOD_WARNING: Module 8 (Serial number: JAA00000000) i
2022 Feb 22 19:46:26 lab-sw01-admin-vdc-1 %MODULE-4-MOD_WARNING: Module 8 (Serial number: JAA00000000) i
2022 Feb 22 19:46:26 lab-sw01-admin-vdc-1 %MODULE-4-MOD_WARNING: Module 8 (Serial number: JAA00000000) i
```

This log output clearly shows Module 8 has EOBC heartbeat failure with the standby SUP and is in an unhealthy state and requires immediate action.

2. How to resolve this issue?

Step 1. Perform a show module and capture the data for reference:

```
lab-sw01-admin-vdc-1# show module
Mod Ports Module-Type Model Status
--- ----- ----------------------------------- ------------------ ----------
1 12 100 Gbps Ethernet Module N77-F312CK-26 ok
2 12 100 Gbps Ethernet Module N77-F312CK-26 ok
3 48 1/10 Gbps Ethernet Module N77-F348XP-23 ok
4 48 1/10 Gbps Ethernet Module N77-F348XP-23 ok
5 0 Supervisor Module-2 N77-SUP2E active *
6 0 Supervisor Module-2 N77-SUP2E ha-standby
7 24 10/40 Gbps Ethernet Module N77-F324FQ-25 ok
8 24 10/40 Gbps Ethernet Module N77-F324FQ-25 ok

Mod Sw Hw
--- --------------- ------
1 8.4(4) 1.5
2 8.4(4) 1.5
3 8.4(4) 1.9
4 8.4(4) 1.9
5 8.4(4) 1.3
6 8.4(4) 1.3
7 8.4(4) 1.2
8 8.4(4) 1.2
```

> **Note**: All Modules are online (ie ok) and Module 5 is the Active (ie active *) SUP with Module 6 as the High Availability Standby (ie ha-standby) SUP. Even though there are EOBC WARNINGS about Module 8 in the admin VDC Logfile, this output depicts Module 8 as OK.

Step 2. Perform either a reload of the switch or perform a supervisor switchover (that is, both within the admin VDC) :

```
lab-sw01-admin-vdc-1# reload

- system (ie supervisor) switchover -

NOTE: preferred method as this is a non-impacting procedure to the box with regards to active data f

lab-sw01-admin-vdc-1# system switchover
```

> **Note**: In either case, prior to performing a reload or system switchover, ensure you are on both supervisor consoles so that you can witness firsthand all of the supervisor output.

Step 3. In the case where Module 8 is the suspected culprit, you are likely to see on the console Module 8 error out upon the system (that is supervisor) switchover:

```
lab-sw01-admin-vdc-1(standby) login: 2022 Feb 23 02:09:45 lab-sw01-admin-vdc-1 %$ VDC-1 %$ %KERN-2-S
2022 Feb 23 02:09:45 lab-sw01-admin-vdc-1 %$ VDC-1 %$ %SYSMGR-2-HASWITCHOVER_PRE_START: This supervi
2022 Feb 23 02:09:45 lab-sw01-admin-vdc-1 %$ VDC-1 %$ %SYSMGR-2-HASWITCHOVER_START: Supervisor 6 is
2022 Feb 23 02:09:46 lab-sw01-vdc-2 %$ VDC-2 %$ %ELTM-2-ELTM_INTF_TO_LTL: Failed to get LTL for inte
2022 Feb 23 02:09:46 lab-sw01-admin-vdc-1 %$ VDC-1 %$ %SYSMGR-2-SWITCHOVER_OVER: Switchover complete
2022 Feb 23 02:09:47 lab-sw01-admin-vdc-1 %$ VDC-1 %$ %PLATFORM-1-PFM_ALERT: Disabling ejector based
2022 Feb 23 02:09:46 lab-sw01-vdc-2 %$ VDC-2 %$ %ELTM-2-ELTM_INTF_TO_LTL: Failed to get LTL for inte
2022 Feb 23 02:09:46 lab-sw01-vdc-2 %$ VDC-2 %$ %ELTM-2-ELTM_INTF_TO_LTL: Failed to get LTL for inte
2022 Feb 23 02:09:46 lab-sw01-vdc-2 %$ VDC-2 %$ %ELTM-2-ELTM_INTF_TO_LTL: Failed to get LTL for inte
2022 Feb 23 02:09:46 lab-sw01-vdc-2 %$ VDC-2 %$ %ELTM-2-ELTM_INTF_TO_LTL: Failed to get LTL for inte
2022 Feb 23 02:09:46 lab-sw01-vdc-2 %$ VDC-2 %$ %ELTM-2-ELTM_INTF_TO_LTL: Failed to get LTL for inte
2022 Feb 23 02:09:46 lab-sw01-vdc-2 %$ VDC-2 %$ %ELTM-2-ELTM_INTF_TO_LTL: Failed to get LTL for inte
2022 Feb 23 02:09:46 lab-sw01-vdc-2 %$ VDC-2 %$ %ELTM-2-ELTM_INTF_TO_LTL: Failed to get LTL for inte
2022 Feb 23 02:09:46 lab-sw01-vdc-2 %$ VDC-2 %$ %ELTM-2-ELTM_INTF_TO_LTL: Failed to get LTL for inte
2022 Feb 23 02:09:46 lab-sw01-vdc-2 %$ VDC-2 %$ %ELTM-2-ELTM_INTF_TO_LTL: Failed to get LTL for inte
2022 Feb 23 02:09:46 lab-sw01-vdc-2 %$ VDC-2 %$ %ELTM-2-ELTM_INTF_TO_LTL: Failed to get LTL for inte
2022 Feb 23 02:09:46 lab-sw01-vdc-2 %$ VDC-2 %$ %ELTM-2-ELTM_INTF_TO_LTL: Failed to get LTL for inte
```

Step 4. Perform multiple show modules and watch to see if/when Module 8 comes back online:

<#root>

```
Module 5 dropped out and is powered-up:
Module 8 dropped out and is powered-up:

lab-sw01-admin-vdc-1# show module
```

```
Mod Ports Module-Type Model Status
--- ----- ---------------------------------- ------------------ ----------
1 12 100 Gbps Ethernet Module N77-F312CK-26 ok
2 12 100 Gbps Ethernet Module N77-F312CK-26 ok
3 48 1/10 Gbps Ethernet Module N77-F348XP-23 ok
4 48 1/10 Gbps Ethernet Module N77-F348XP-23 ok
5 0 Supervisor Module-2 powered-up
6 0 Supervisor Module-2 N77-SUP2E active *
7 24 10/40 Gbps Ethernet Module N77-F324FQ-25 ok
8 24 10/40 Gbps Ethernet Module powered-up

Mod Power-Status Reason
--- ------------ --------------------------
8 powered-up Unknown. Issue show system reset mod ...

Mod Sw Hw
--- --------------- ------
1 8.4(4) 1.5
2 8.4(4) 1.5
3 8.4(4) 1.9
4 8.4(4) 1.9
6 8.4(4) 1.3
7 8.4(4) 1.2

lab-sw01-admin-vdc-1# 2022 Feb 23 02:11:11 lab-sw01-vdc-2 %$ VDC-2 %$ %PLATFORM-2-MOD_DETECT: Module 8 d
2022 Feb 23 02:11:11 lab-sw01-vdc-2 %$ VDC-2 %$ %PLATFORM-2-MOD_PWRUP: Module 8 powered up (Serial numbe
2022 Feb 23 02:11:11 lab-sw01-admin-vdc-1 %$ VDC-1 %$ %PLATFORM-2-MOD_DETECT: Module 8 detected (Serial
2022 Feb 23 02:11:11 lab-sw01-admin-vdc-1 %$ VDC-1 %$ %PLATFORM-2-MOD_PWRUP: Module 8 powered up (Serial
```

Module 8 is pwr-cycled

:

```
lab-sw01-admin-vdc-1# show module
Mod Ports Module-Type Model Status
--- ----- ---------------------------------- ------------------ ----------
1 12 100 Gbps Ethernet Module N77-F312CK-26 ok
2 12 100 Gbps Ethernet Module N77-F312CK-26 ok
3 48 1/10 Gbps Ethernet Module N77-F348XP-23 ok
4 48 1/10 Gbps Ethernet Module N77-F348XP-23 ok
5 0 Supervisor Module-2 powered-up
6 0 Supervisor Module-2 N77-SUP2E active *
7 24 10/40 Gbps Ethernet Module N77-F324FQ-25 ok
8 24 10/40 Gbps Ethernet Module pwr-cycld

Mod Power-Status Reason
--- ------------ --------------------------
8 pwr-cycld Unknown. Issue show system reset mod ...

Mod Sw Hw
--- --------------- ------
1 8.4(4) 1.5
2 8.4(4) 1.5
3 8.4(4) 1.9
4 8.4(4) 1.9
6 8.4(4) 1.3
7 8.4(4) 1.2

lab-sw01-admin-vdc-1# show module
Mod Ports Module-Type Model Status
--- ----- ---------------------------------- ------------------ ----------
1 12 100 Gbps Ethernet Module N77-F312CK-26 ok
```

```
2 12 100 Gbps Ethernet Module N77-F312CK-26 ok
3 48 1/10 Gbps Ethernet Module N77-F348XP-23 ok
4 48 1/10 Gbps Ethernet Module N77-F348XP-23 ok
5 0 Supervisor Module-2 powered-up
6 0 Supervisor Module-2 N77-SUP2E active *
7 24 10/40 Gbps Ethernet Module N77-F324FQ-25 ok
8 24 10/40 Gbps Ethernet Module N77-F324FQ-25 powered-up

Mod Sw Hw
--- --------------- ------
1 8.4(4) 1.5
2 8.4(4) 1.5
3 8.4(4) 1.9
4 8.4(4) 1.9
6 8.4(4) 1.3
7 8.4(4) 1.2
8 8.4(4) 1.2
```

Module 8 is checked by epld auto-upgrade and is good to go:

```
lab-sw01-admin-vdc-1# 2022 Feb 23 02:13:06 lab-sw01-admin-vdc-1 %$ VDC-1 %$ %USER-2-SYSTEM_MSG: <<%EPLD_

lab-sw01-admin-vdc-1# show module
Mod Ports Module-Type Model Status
--- ----- ---------------------------------- ------------------ ----------
1 12 100 Gbps Ethernet Module N77-F312CK-26 ok
2 12 100 Gbps Ethernet Module N77-F312CK-26 ok
3 48 1/10 Gbps Ethernet Module N77-F348XP-23 ok
4 48 1/10 Gbps Ethernet Module N77-F348XP-23 ok
5 0 Supervisor Module-2 powered-up
6 0 Supervisor Module-2 N77-SUP2E active *
7 24 10/40 Gbps Ethernet Module N77-F324FQ-25 ok
8 24 10/40 Gbps Ethernet Module N77-F324FQ-25 powered-up

Mod Sw Hw
--- --------------- ------
1 8.4(4) 1.5
2 8.4(4) 1.5
3 8.4(4) 1.9
4 8.4(4) 1.9
6 8.4(4) 1.3
7 8.4(4) 1.2
8 8.4(4) 1.2
```

Module 8 moves to testing by the hardware diagnostics:

```
lab-sw01-admin-vdc-1# show module
Mod Ports Module-Type Model Status
--- ----- ---------------------------------- ------------------ ----------
1 12 100 Gbps Ethernet Module N77-F312CK-26 ok
2 12 100 Gbps Ethernet Module N77-F312CK-26 ok
3 48 1/10 Gbps Ethernet Module N77-F348XP-23 ok
4 48 1/10 Gbps Ethernet Module N77-F348XP-23 ok
5 0 Supervisor Module-2 powered-up
6 0 Supervisor Module-2 N77-SUP2E active *
7 24 10/40 Gbps Ethernet Module N77-F324FQ-25 ok
8 24 10/40 Gbps Ethernet Module N77-F324FQ-25 testing
```

```
Mod Sw Hw
--- --------------- ------
1 8.4(4) 1.5
2 8.4(4) 1.5
3 8.4(4) 1.9
4 8.4(4) 1.9
6 8.4(4) 1.3
7 8.4(4) 1.2
8 8.4(4) 1.2
```

Module 8 moves to initializing after passing hardware diagnostics:

```
lab-sw01-admin-vdc-1# show module
Mod Ports Module-Type Model Status
--- ----- ---------------------------------- ------------------ ----------
1 12 100 Gbps Ethernet Module N77-F312CK-26 ok
2 12 100 Gbps Ethernet Module N77-F312CK-26 ok
3 48 1/10 Gbps Ethernet Module N77-F348XP-23 ok
4 48 1/10 Gbps Ethernet Module N77-F348XP-23 ok
5 0 Supervisor Module-2 powered-up
6 0 Supervisor Module-2 N77-SUP2E active *
7 24 10/40 Gbps Ethernet Module N77-F324FQ-25 ok
8 24 10/40 Gbps Ethernet Module N77-F324FQ-25 initializing

Mod Sw Hw
--- --------------- ------
1 8.4(4) 1.5
2 8.4(4) 1.5
3 8.4(4) 1.9
4 8.4(4) 1.9
6 8.4(4) 1.3
7 8.4(4) 1.2
8 8.4(4) 1.2
```

Module 8 comes online:

```
lab-sw01-admin-vdc-1# show module
Mod Ports Module-Type Model Status
--- ----- ---------------------------------- ------------------ ----------
1 12 100 Gbps Ethernet Module N77-F312CK-26 ok
2 12 100 Gbps Ethernet Module N77-F312CK-26 ok
3 48 1/10 Gbps Ethernet Module N77-F348XP-23 ok
4 48 1/10 Gbps Ethernet Module N77-F348XP-23 ok
5 0 Supervisor Module-2 powered-up
6 0 Supervisor Module-2 N77-SUP2E active *
7 24 10/40 Gbps Ethernet Module N77-F324FQ-25 ok
8 24 10/40 Gbps Ethernet Module N77-F324FQ-25 ok

Mod Sw Hw
--- --------------- ------
1 8.4(4) 1.5
2 8.4(4) 1.5
3 8.4(4) 1.9
4 8.4(4) 1.9
6 8.4(4) 1.3
7 8.4(4) 1.2
8 8.4(4) 1.2
```

Module 5 SUP going active:

```
lab-sw01-admin-vdc-1# show module
Mod Ports Module-Type Model Status
--- ----- -------------------------------- ------------------ ----------
1 12 100 Gbps Ethernet Module N77-F312CK-26 ok
2 12 100 Gbps Ethernet Module N77-F312CK-26 ok
3 48 1/10 Gbps Ethernet Module N77-F348XP-23 ok
4 48 1/10 Gbps Ethernet Module N77-F348XP-23 ok
5 0 Supervisor Module-2 N77-SUP2E inserted
6 0 Supervisor Module-2 N77-SUP2E active *
7 24 10/40 Gbps Ethernet Module N77-F324FQ-25 ok
8 24 10/40 Gbps Ethernet Module N77-F324FQ-25 ok

Mod Sw Hw
--- --------------- ------
1 8.4(4) 1.5
2 8.4(4) 1.5
3 8.4(4) 1.9
4 8.4(4) 1.9
5 8.4(4) 1.3
6 8.4(4) 1.3
7 8.4(4) 1.2
8 8.4(4) 1.2

Module 5 SUP becomes ha-standby:

2022 Feb 23 02:16:38 lab-sw01-admin-vdc-1 %$ VDC-1 %$ %PLATFORM-1-PFM_ALERT: Enabling ejector based shut
lab-sw01-admin-vdc-1# show module
Mod Ports Module-Type Model Status
--- ----- -------------------------------- ------------------ ----------
1 12 100 Gbps Ethernet Module N77-F312CK-26 ok
2 12 100 Gbps Ethernet Module N77-F312CK-26 ok
3 48 1/10 Gbps Ethernet Module N77-F348XP-23 ok
4 48 1/10 Gbps Ethernet Module N77-F348XP-23 ok
5 0 Supervisor Module-2 N77-SUP2E ha-standby
6 0 Supervisor Module-2 N77-SUP2E active *
7 24 10/40 Gbps Ethernet Module N77-F324FQ-25 ok
8 24 10/40 Gbps Ethernet Module N77-F324FQ-25 ok

Mod Sw Hw
--- --------------- ------
1 8.4(4) 1.5
2 8.4(4) 1.5
3 8.4(4) 1.9
4 8.4(4) 1.9
5 8.4(4) 1.3
6 8.4(4) 1.3
7 8.4(4) 1.2
8 8.4(4) 1.2

2022 Feb 23 02:15:44 lab-sw01-admin-vdc-1 %MODULE-5-MOD_OK: Module 8 is online (Serial number: JAA000000
2022 Feb 23 02:15:43 lab-sw01-admin-vdc-1 %SYSMGR-SLOT8-5-MODULE_ONLINE: System Manager has received not
2022 Feb 23 02:15:44 lab-sw01-admin-vdc-1 %PLATFORM-5-MOD_STATUS: Module 8 current-status is MOD_STATUS_
2022 Feb 23 02:16:38 lab-sw01-admin-vdc-1 %MODULE-5-STANDBY_SUP_OK: Supervisor 5 is standby
```

> **Note**: All Modules are online (that is OK) and Module 6 is the Active (that is active *) SUP with Module 5 as the High Availability Standby (that is ha-standby) SUP.

Step 5. Once all modules are online, repeat Step 1. and validate all connectivity is normalized.