對多個資料處理卡因過多的npumgr崩潰而關閉進行故障排除

目錄

簡介

本文說明如何解決由於npumgr崩潰而在極短時間內關閉多個資料處理卡(DPC)時出現的問題。

必要條件

需求

思科建議您瞭解以下主題：

- ASR5000/5500的硬體知識
- StarOS
- 路由基礎知識

採用元件

本文件所述內容不限於特定軟體和硬體版本。

本文中的資訊是根據特定實驗室環境內的裝置所建立。文中使用到的所有裝置皆從已清除（預設）的組態來啟動。如果您的網路運作中，請確保您瞭解任何指令可能造成的影響

縮寫

SPGW	服務和封包資料網路閘道器
DPC	資料處理卡
VLAN	虛擬區域網
NPU	網路處理單元

問題

作為計畫活動的一部分，新介面在VLAN中繫結到已完成的埠。本練習的第二部分是通過這些介面建立靜態路由。為流量開啟VLAN後，npumgr立即崩潰並隨後使所有DPC卡多次關閉。

疑難排解

本節提供的資訊用於解決由於npumgr崩潰而在極短時間內關閉多個DPC卡的問題。

此處顯示收集的Show Support Details(SSD)、活動日誌和覆蓋問題日誌的系統日誌。首先，檢查rct統計資訊以確定這些關閉的原因。在此可以看到，它們由於過多的npumgr崩潰而關閉。

```
******** show rct stats verbose *******
Thursday September 19 03:57:04 IST 2019
RCT stats details (Last 18 Actions)
 #   Action         Type      From  To   Start Time                 Duration      Status
--- ------------- --------- ---- ---- ------------------------ ----------- -------
 7   Shutdown       N/A          2   10  2019-Sep-19+00:09:51.587   2.322 sec    Success
 8   Shutdown       N/A          1    0  2019-Sep-19+00:10:14.541   0.005 sec    Success
 9   Shutdown       N/A          3    0  2019-Sep-19+00:10:44.625   0.005 sec    Success
10   Shutdown       N/A          4    0  2019-Sep-19+00:11:03.428   0.005 sec    Success
11   Shutdown       N/A          7    0  2019-Sep-19+00:11:34.771   0.478 sec    Success
12   Shutdown       N/A          8    0  2019-Sep-19+00:11:54.328   0.005 sec    Success
13   Shutdown       N/A          9    0  2019-Sep-19+00:12:19.656   0.005 sec    Success
14   Shutdown       N/A         10    0  2019-Sep-19+00:12:39.706   0.004 sec    Success
15   Shutdown       N/A          1    9  2019-Sep-19+00:32:30.567   0.005 sec    Success
16   Shutdown       N/A          2    0  2019-Sep-19+00:32:36.282   0.031 sec    Success
17   Shutdown       N/A          3    0  2019-Sep-19+00:32:56.456   0.005 sec    Success
18   Shutdown       N/A          4    0  2019-Sep-19+00:33:30.426   0.005 sec    Success


RCT stats summary
-----------------
Migrations       =   2,  Average time = 10.890 sec
  Management Card =   2,  Average time = 10.890 sec
  Packet Card    =   0
Switchovers      =   2,  Average time = 18.526 sec


RCT stats verbose
-----------------
Stats  7:
  Action         : Shutdown
  Type           : N/A
  From           : 2
  To             : 10
  Start Time     : 2019-Sep-19+00:09:51.587
  Failure Reason : NPUMGR_TOO_MANY_CRASHES
  Failure Device : CARD
  Is Card Usable : Yes
  Recovery Status : Success
  Facility       : N/A
  Instance       : N/A
  Duration       : 2.322 sec
  Graceful       : Enabled

Stats  8:
  Action         : Shutdown
  Type           : N/A
  From           : 1
  To             : 0
  Start Time     : 2019-Sep-19+00:10:14.541
```

```
  Failure Reason   : NPUMGR_TOO_MANY_CRASHES
  Failure Device   : CARD
  Is Card Usable   : Yes
  Recovery Status  : Success
  Facility         : N/A
  Instance         : N/A
  Duration         : 0.005 sec
  Graceful         : Enabled

Stats  9:
  Action           : Shutdown
  Type             : N/A
  From             : 3
  To               : 0
  Start Time       : 2019-Sep-19+00:10:44.625
  Failure Reason   : NPUMGR_TOO_MANY_CRASHES
  Failure Device   : CARD
  Is Card Usable   : Yes
  Recovery Status  : Success
  Facility         : N/A
  Instance         : N/A
  Duration         : 0.005 sec
  Graceful         : Enabled

Stats 10:
  Action           : Shutdown
  Type             : N/A
  From             : 4
  To               : 0
  Start Time       : 2019-Sep-19+00:11:03.428
  Failure Reason   : NPUMGR_TOO_MANY_CRASHES
  Failure Device   : CARD
  Is Card Usable   : Yes
  Recovery Status  : Success
  Facility         : N/A
  Instance         : N/A
  Duration         : 0.005 sec
  Graceful         : Enabled

Stats 11:
  Action           : Shutdown
  Type             : N/A
  From             : 7
  To               : 0
  Start Time       : 2019-Sep-19+00:11:34.771
  Failure Reason   : NPUMGR_TOO_MANY_CRASHES
  Failure Device   : CARD
  Is Card Usable   : Yes
  Recovery Status  : Success
  Facility         : N/A
  Instance         : N/A
  Duration         : 0.478 sec
  Graceful         : Enabled

Stats 12:
  Action           : Shutdown
  Type             : N/A
  From             : 8
  To               : 0
  Start Time       : 2019-Sep-19+00:11:54.328
  Failure Reason   : NPUMGR_TOO_MANY_CRASHES
  Failure Device   : CARD
  Is Card Usable   : Yes
  Recovery Status  : Success
```

```
    Facility          : N/A
    Instance          : N/A
    Duration          : 0.005 sec
    Graceful          : Enabled

  Stats 13:
    Action            : Shutdown
    Type              : N/A
    From              : 9
    To                : 0
    Start Time        : 2019-Sep-19+00:12:19.656
    Failure Reason    : NPUMGR_TOO_MANY_CRASHES
    Failure Device    : CARD
    Is Card Usable    : Yes
    Recovery Status   : Success
    Facility          : N/A
    Instance          : N/A
    Duration          : 0.005 sec
    Graceful          : Enabled

  Stats 14:
    Action            : Shutdown
    Type              : N/A
    From              : 10
    To                : 0
    Start Time        : 2019-Sep-19+00:12:39.706
    Failure Reason    : NPUMGR_TOO_MANY_CRASHES
    Failure Device    : CARD
    Is Card Usable    : Yes
    Recovery Status   : Success
    Facility          : N/A
    Instance          : N/A
    Duration          : 0.004 sec
    Graceful          : Enabled

  Stats 15:
    Action            : Shutdown
    Type              : N/A
    From              : 1
    To                : 9
    Start Time        : 2019-Sep-19+00:32:30.567
    Failure Reason    : NPUMGR_TOO_MANY_CRASHES
    Failure Device    : CARD
    Is Card Usable    : Yes
    Recovery Status   : Success
    Facility          : N/A
    Instance          : N/A
    Duration          : 0.005 sec
    Graceful          : Enabled

  Stats 16:
    Action            : Shutdown
    Type              : N/A
    From              : 2
    To                : 0
    Start Time        : 2019-Sep-19+00:32:36.282
    Failure Reason    : NPUMGR_TOO_MANY_CRASHES
    Failure Device    : CARD
    Is Card Usable    : Yes
    Recovery Status   : Success
    Facility          : N/A
    Instance          : N/A
    Duration          : 0.031 sec
    Graceful          : Enabled
```

```
Stats 17:
  Action           : Shutdown
  Type             : N/A
  From             : 3
  To               : 0
  Start Time       : 2019-Sep-19+00:32:56.456
  Failure Reason   : NPUMGR_TOO_MANY_CRASHES
  Failure Device   : CARD
  Is Card Usable   : Yes
  Recovery Status  : Success
  Facility         : N/A
  Instance         : N/A
  Duration         : 0.005 sec
  Graceful         : Enabled

Stats 18:
  Action           : Shutdown
  Type             : N/A
  From             : 4
  To               : 0
  Start Time       : 2019-Sep-19+00:33:30.426
  Failure Reason   : NPUMGR_TOO_MANY_CRASHES
  Failure Device   : CARD
  Is Card Usable   : Yes
  Recovery Status  : Success
  Facility         : N/A
  Instance         : N/A
  Duration         : 0.005 sec
  Graceful         : Enabled
```

然後,檢查npumgr崩潰的詳細資訊。在此,您會看到npumgr在函式nexthop_get處崩潰。因此,當您嘗試獲取下一跳時,您會看到一些問題的指示。

```
********************** CRASH #09 ***********************
SW Version         : 21.9.7
Similar Crash Count : 16
Time of First Crash : 2019-Sep-19+00:08:16

Assertion failure at npu/npumgr/ares_npumgr_forwarding_handler.c:1829
  Function: ares_npumgr_nexthop_get()
  Expression: (nh_id) >= 0 && (nh_id) < ares_npumgr_db_get_count(SN_NPUSHM_TABREC_NH,
(ares_inst)->profile)
  Proclet: npumgr (f=103000,i=30)
  Process: card=3 cpu=0 arch=X pid=7066 cpu=~0% argv0=npumgr
  Crash time: 2019-Sep-18+19:01:11 UTC
  Recent errno: 11 Resource temporarily unavailable
  Build_number: 71001
  Stack (18024@0x0xffff0000):
    [ffffe430/X] __kernel_vsyscall() sp=0xffff0428
    [0c7df834/X] sn_assert() sp=0xffff0468
    [002fcedb/X] ares_npumgr_nexthop_get() sp=0xffff04b8
    [002feb23/X] ares_npumgr_fwd_ddf2_tcam_entry_update() sp=0xffff0948
    [00301896/X] ares_npumgr_lpm_add() sp=0xffff0e98
    [003c4345/X] ares_npumgr_fwd_add() sp=0xffff1768
    [003e38fa/X] ares_npumgr_fwd_func() sp=0xffff1bf8
    [003e444a/X] ares_sn_npumgr_forwarding_add_del_mod_handler() sp=0xffff2048
    [0c892918/X] sn_msg_arriving_handle() sp=0xffff4138
    [0c8713a6/X] sn_loop_run() sp=0xffff45e8
    [0c55a3b5/X] main() sp=0xffff4658
*******************************************************

********************** CRASH #10 ***********************
```

```
SW Version          : 21.9.7
Similar Crash Count : 1
Time of First Crash : 2019-Sep-19+00:31:22


Assertion failure at npu/npumgr/ares_npumgr_port_handler.c:8409
  Note: failed to find index of created lport 5/11#11-65: status=SN_STATUS_FAILURE[1]
  Function: ares_sn_npumgr_port_lp_create_func()
  Expression: 0
  Code: CRASH
  Proclet: npumgr (f=103000,i=11)
  Process: card=1 cpu=1 arch=X pid=7181 argv0=npumgr
  Crash time: 2019-Sep-18+19:01:22 UTC
  Recent errno: 11 Resource temporarily unavailable
  Build_number: 71001
  Stack (14728@0x0xffcb8000):
    [ffffe430/X] __kernel_vsyscall() sp=0xffcb8a48
    [0c7df834/X] sn_assert() sp=0xffcb8a88
    [003bd590/X] ares_sn_npumgr_port_lp_create_func() sp=0xffcb8f18
    [003c10d4/X] ares_sn_npumgr_port_lp_create_handler() sp=0xffcb9368
    [0c892918/X] sn_msg_arriving_handle() sp=0xffcbb458
    [0c8713a6/X] sn_loop_run() sp=0xffcbb908
    [0c55a3b5/X] main() sp=0xffcbb978
*********************************************************

******************** CRASH #11 **********************
SW Version          : 21.9.7
Similar Crash Count : 107
Time of First Crash : 2019-Sep-19+00:09:03


Assertion failure at npu/npumgr/ares_npumgr_forwarding_handler.c:1829
  Function: ares_npumgr_nexthop_get()
  Expression: (nh_id) >= 0 && (nh_id) < ares_npumgr_db_get_count(SN_NPUSHM_TABREC_NH,
(ares_inst)->profile)
  Proclet: npumgr (f=103000,i=80)
  Process: card=8 cpu=0 arch=X pid=9130 cpu=~98% argv0=npumgr
  Crash time: 2019-Sep-18+19:03:35 UTC
  Recent errno: 115 Operation now in progress
  Build_number: 71001
  Stack (10360@0x0xffe58000):
    [ffffe430/X] __kernel_vsyscall() sp=0xffe58618
    [0c7df834/X] sn_assert() sp=0xffe58658
    [002fcedb/X] ares_npumgr_nexthop_get() sp=0xffe586a8
    [002feb23/X] ares_npumgr_fwd_ddf2_tcam_entry_update() sp=0xffe58b38
    [00301896/X] ares_npumgr_lpm_add() sp=0xffe59088
    [003c4345/X] ares_npumgr_fwd_add() sp=0xffe59958
    [003e1191/X] fwddb_import_add_entry() sp=0xffe59dd8
    [003e2452/X] ares_npumgr_fwddb_import() sp=0xffe5a2c8
    [0025e4ea/X] npumgr_rx_db_evt() sp=0xffe5a2f8
    [0c8660d4/X] sn_epoll_run_events() sp=0xffe5a348
    [0c872bca/X] sn_loop_run() sp=0xffe5a7f8
    [0c55a3b5/X] main() sp=0xffe5a868
*********************************************************
```

您可以檢查活動日誌，以下是所發生事件的時間順序。作為練習的一部分，介面建立後是靜態路由
。


```
show ipv6 interface summary

Thursday September 19 00:09:16 IST 2019
Interface Name                 Address/Mask         Port                 Status
============================== ==================== ==================== ======
SGi_LAG100_vlan50              2401:4900:c:f::201/126 5/10 vlan 50          UP          [sec]
SGi_LAG100_vlan64_VO4G_SBC     2401:4900:c:10::1/126  5/10 vlan 64          UP
```

```
SGi_LAG200_vlan51              2401:4900:c:f::205/126 5/11 vlan 51        UP              [sec]
SGi_LAG200_vlan65_VO4G_SBC     2401:4900:c:10::5/126  5/11 vlan 65        UP

Total interface count: 4

(config-ctx)# ipv6 route a:b:c:d:1/128 next-hop x:y:z:w::2 interface A
Thursday September 19 00:07:13 IST 2019
(config-ctx)#
(config-ctx)# ipv6 route a:b:c:d:1/128 next-hop x:y:z:w::2 interface B
Thursday September 19 00:07:21 IST 2019
Failure: Invalid Nexthop address!
(config-ctx)#
(config-ctx)# ipv6 route a:b:c:d:1/128 next-hop x:y:z:w::6 interface C
Thursday September 19 00:07:36 IST 2019
(config-ctx)# exit
Thursday September 19 00:07:50 IST 2019
[SGi]MOH-C25-SPG-04(config)#
```
然後，在埠內部配置VLAN，並在9月19日00:08:16前後為流量開啟。

```
(config)# port ethernet 5/10
Thursday September 19 00:08:01 IST 2019
(config-port-5/10)# vla
(config-port-5/10)# vlan 64
Thursday September 19 00:08:05 IST 2019
(config-port-5/10-vlan-64)# bind interface C SGi
Thursday September 19 00:08:14 IST 2019
(config-port-5/10-vlan-64)# no shu
(config-port-5/10-vlan-64)# no shutdown
Thursday September 19 00:08:17 IST 2019
(config-port-5/10-vlan-64)# exit
Thursday September 19 00:08:19 IST 2019
(config-port-5/10)# exit
Thursday September 19 00:08:21 IST 2019
```
在這裡，用於建立介面和靜態路由的計畫活動的步驟和配置以及隨後的VLAN內部繫結看起來不錯。但在此之後不久，可以看到npumgr開始崩潰，然後由於npumgr崩潰過多而導致DPC卡關閉。

```
show snmp trap history verbose | grep -i mgr
Thursday September 19 00:20:22 IST 2019
Thu Sep 19 00:08:18 2019 Internal trap notification 73 (ManagerFailure) facility npumgr instance
30 card 3 cpu 0
Thu Sep 19 00:08:18 2019 Internal trap notification 150 (TaskFailed) facility npumgr instance 30
on card 3 cpu 0
Thu Sep 19 00:08:18 2019 Internal trap notification 73 (ManagerFailure) facility npumgr instance
40 card 4 cpu 0
Thu Sep 19 00:08:18 2019 Internal trap notification 150 (TaskFailed) facility npumgr instance 40
on card 4 cpu 0
```
作為即時解決辦法，VLAN會從連線埠中移除。很快，刪除VLAN後，npumgr崩潰將停止。

```
configure
Thursday September 19 00:29:31 IST 2019
(config)# port eth
(config)# port ethernet 5/10
Thursday September 19 00:33:13 IST 2019
(config-port-5/10)# no vlan 64
Thursday September 19 00:33:23 IST 2019
(config-port-5/10)# exit
Thursday September 19 00:33:38 IST 2019
(config)# port ethernet 5/11
```

```
Thursday September 19 00:33:42 IST 2019
(config-port-5/11)# no vlan 65
Thursday September 19 00:33:50 IST 2019
(config-port-5/11)# end
Thursday September 19 00:33:52 IST 2019


******** show crash list *******
Thursday September 19 03:54:39 IST 2019
=== ==================== ======== ========== =============== =====================
# Time Process Card/CPU/ SW HW_SER_NUM
PID VERSION MIO / Crash Card
=== ==================== ======== ========== =============== =====================
 9 2019-Sep-19+00:31:11 npumgr 03/0/07066 21.9.7 FLM221503A5/FLM221404FF
10 2019-Sep-19+00:31:22 npumgr 01/1/07181 21.9.7 FLM221503A5/FLM221404FH
11 2019-Sep-19+00:33:35 npumgr 08/0/09130 21.9.7 FLM221503A5/FLM221404FU
```

當您進一步檢查syslogs時，可以看到系統嘗試獲取下一跳，但是在9月19日00:08:16失敗，即在為流量開啟VLAN後不久。

```
Sep 19 00:08:16 10.107.211.36 evlogd: [local-60sec16.758] [npumgr-fwd 168001 error] [3/2/7024
Sep 19 00:08:18 10.107.211.36 evlogd: [local-60sec18.448] [sitmain 4103 warning] [1/0/7008
Sep 19 00:08:18 10.107.211.36 evlogd: [local-60sec18.852] [sitmain 4027 critical] [2/0/6993
Sep-18+18:38:16(hex time 5d827998) card 02 cpu 00 pid 07146 procname npumgr    crash_details
Assertion failure at npu/npumgr/ares_npumgr_forwarding_handler.c:1829    Function:
ares_npumgr_nexthop_get()    Expression: (nh_id) >= 0 && (nh_id) <
ares_npumgr_db_get_count(SN_NPUSHM_TABREC_NH, (ares_inst)->profile)    Proclet: npumgr
(f=103000,i=20)    Process: card=2 cpu=0 arch=X pid=7146 cpu=~0% argv0=npumgr    Crash time: 2019-
Sep-18+18:38:16 UTC    Recent errno: 11 Resource temporarily unavailable    Build_number: 71001
Stack (20600@0x0xffce5000):    [ffffe430/X] __kernel_vsyscall() sp=0xffce5e38    [0c7df834/X]
sn_assert() sp=0xffce5e78    [002fcedb/X] ares_npumgr_nexthop_get() sp=0xffce5ec8
[002feb23/X] ares_npumgr_fwd_ddf2_tcam_entry_update() sp=0xffce6358    [00301896/X]
ares_npumgr_lpm_add() sp=0xffce68a8    [003c4345
```

當您進一步從SSD檢查配置時，還可以看到在計畫活動開始之前（介面和靜態路由配置）已經存在一個靜態路由。

```
context SGi
 ipv6 route a:b:c:d:1/128 next-hop x:y:z:w::1 interface C
#exit
```

從配置中可以看到，已經存在通過介面C下一跳作為跳的x:y:z:w::1的IP a:b:c:d:1/128靜態路由。但是，在練習中，又將下一跳定義為跳的x:y:z:w::2。

因此，當為流量開啟VLAN時，系統無法按最初定義獲取下一跳x:y:z:w::1。此外，還有日誌顯示無法到達下一躍點的等價多路徑(ECMP)路由失敗。因此，它無法轉發這些VLAN流量的資料包，這最終會導致npumgr崩潰。

多卡切換是系統中過多的npumgr崩潰的副產品。

解決方案

有多個靜態路由通過同一介面到達同一目標，但不同的下一跳導致npumgr無法轉發資料包，然後是npumgr崩潰。

因此，會從配置中刪除錯誤的靜態路由。相同的配置隨後成功應用到另一個維護視窗，沒有任何問題。