

# 排除ASR 5X00系列硬體故障

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## 簡介

本文描述對思科聚合服務路由器(ASR)5000系列和5500系列線卡問題進行故障排除的過程。此過程重點介紹從ASR 5000或ASR 5500機箱上生成的SSD (顯示支援詳細資訊) 檔案中獲得的一些命令和關鍵字。每個命令的輸出都提供卡故障的症狀並幫助查明問題。此處的目的不是解決特定線卡上的特定問題，因為存在許多不同的硬體問題。此外，個別情況可能恰好變化到一定程度，使得任何通用的故障排除指南都有問題。

## 程式

1. 輸入**show alarm outstanding**命令。此命令的輸出顯示了發生故障的卡。該資訊可在SSD中找到。

```
***** show alarm outstanding *****  
Sev Object Event
```

```
-----  
-----  
CR Card 7 Card Failure Detected on card 7 Device CPU_0 failure reason  
CARD_BOOT_TIMEOUT_EXPIRED
```

2. 輸入**show snmp trap history verbose**命令。根據問題不同，陷阱是在發生的硬體故障上生成的。此資訊是SSD的一部分。

```
***** show snmp trap history verbose *****  
Timestamp Trap Information
```

```
-----  
Tue Jan 28 08:24:18 2014 Internal trap notification 9 (CardBootFailed) card 7 type Packet  
Services Card
```

3. 輸入**show logs level error**命令。根據問題不同，會根據發生的硬體故障生成日誌。該資訊可在SSD中找到。

```
***** show logs level error *****  
2014-Jan-28+08:39:35.669 [hat 3018 critical] [8/0/4429 <hatsystem:0> atsystem_fail.c:1192]  
[hardware internal system syslog] Card Failure Detected on card 7 Device CPU_0  
failure reason CARD_BOOT_TIMEOUT_EXPIRED
```

4. 輸入**show card hardware**命令。命令的輸出包含卡上的版本資訊。此資訊包含在SSD中。

```
***** show card hardware *****  
Card 7:  
Card Type : Packet Services Card (R01)  
Description : PSC  
Starent Part Number : 530-02-0030 09  
Starent Serial Num : PLB43074818  
Switch Fabric Modes : control plane, switch fabric  
(Version Information Unavailable) <--- Missing information due to card not accessible
```

5. 輸入**show card diag**命令。該命令的輸出包括卡的當前和最後一個故障以及卡是否可用。此資訊包含在SSD中。

```
***** show card diag *****  
Card 7:  
Counters:
```

```

Successful Warm Boots : 2
(last at Friday March 02 15:02:37 EST 2012)
Successful Cold Boots : 21
(last at Monday December 16 14:09:24 EST 2013)
Total Boot Attempts : 0
In Service Date : Fri Jan 20 15:26:25 2012 (Estimated)
Status:
IDEEPROM Magic Number : Good
Boot Mode : Normal
Card Diagnostics : Pass
Current Failure : Failure: Device=CPU_0, Reason=CARD_BOOT_TIMEOUT_EXPIRED,
(0x03001000)
(last at Tuesday January 28 08:39:35 EST 2014)
Last Failure : Failure: Device=CPU_0, Reason=CARD_BOOT_TIMEOUT_EXPIRED,
(0x03001000)
(last at Tuesday January 28 08:39:35 EST 2014)
Card Usable : No (Current Failure)
Current Environment:
Temperature: Card : 23 C (limit 101 C)
Temperature: CPU0 : 23 C (limit 101 C)
Temperature: CPU1 : 25 C (limit 101 C)
Temperature: LM93 : 25 C (limit 101 C)
Voltage: 3.3V STANDBY : 3.285 V (min 3.130 V, max 3.458 V)

```

6. 輸入 **show task resources** 命令。命令的輸出未顯示故障卡上的任何資訊。該資訊可在 SSD 中找到。

```

***** show task resources *****
task cputime memory files sessions
cpu facility inst used allc used alloc used allc used allc S status
-----
6/1 rmmgr 61 3.6% 10% 4.5M 23.0M 15 500 -- -- - good
6/1 npumgr 6 1.5% 100% 81.4M 278.0M 26 1000 -- -- - good
6/1 sitreap 6100841 0.0% 5.0% 0.1M 15.0M 4 100 -- -- - good
6/1 msgd 6100839 0.8% 7.0% 0.8M 15.0M 6 500 -- -- - good
6/1 nscontrol 6123706 0.2% 5.0% 1.4M 15.0M 9 500 -- -- - good
<<<<<<<<7/1 missing due to card 7 not running >>>>>>>>
8/0 sitmain 80 0.0% 15% 10.9M 16.0M 14 1000 -- -- - good
8/0 sitparent 80 0.1% 20% 10.5M 14.0M 11 500 -- -- - good
8/0 evlogd 0 0.1% 95% 12.4M 70.0M 16 4000 -- -- - good
8/0 drvctrl 0 2.7% 15% 14.7M 20.0M 19 500 -- -- - good
8/0 hatsystem 0 0.4% 10% 10.2M 15.0M 13 500 -- -- - good
8/0 hatcpu 80 0.1% 10% 10.1M 15.0M 12 500 -- -- - good

```

7. 輸入 **show cpu table** 命令。命令的輸出未顯示故障卡上的任何資訊。此資訊是 SSD 的一部分。

```

***** show cpu table *****
-----Load----- CPU-Usage-----Memory-----
cpu state now 5min 15min now 5min 15min now 5min 15min total
-----
1/0 Active 0.02 0.02 0.05 0.6% 0.5% 0.5% 842M 842M 842M 16.0G
1/1 Active 2.39 2.48 2.59 11.7% 7.9% 7.9% 138M 137M 137M 512M
2/0 Active 0.02 0.07 0.11 0.5% 0.5% 0.5% 887M 885M 885M 16.0G
2/1 Active 2.83 2.78 2.66 10.4% 7.9% 8.0% 138M 137M 137M 512M
3/0 Active 0.02 0.06 0.11 0.4% 0.4% 0.4% 824M 823M 823M 16.0G
3/1 Active 3.71 2.96 2.80 13.4% 8.0% 7.8% 139M 137M 137M 512M
4/0 Active 0.03 0.10 0.13 0.5% 0.5% 0.5% 845M 845M 845M 16.0G
4/1 Active 2.34 2.55 2.61 11.8% 7.7% 7.7% 138M 137M 137M 512M
5/0 Active 0.14 0.11 0.13 0.6% 0.5% 0.5% 887M 886M 885M 16.0G
5/1 Active 2.49 2.84 2.75 12.7% 8.4% 7.9% 138M 137M 137M 512M
6/0 Active 0.18 0.16 0.14 0.5% 0.4% 0.4% 824M 823M 822M 16.0G
6/1 Active 2.85 2.78 2.74 12.5% 8.0% 8.0% 138M 137M 137M 512M
<<<<<<<< 7/1 missing due to card 7 not running >>>>>>>>
8/0 Active 0.20 0.09 0.12 18.9% 6.4% 5.2% 1045M 1011M 1009M 4096M
9/0 Sndby 0.02 0.03 0.08 2.0% 0.7% 0.7% 605M 604M 604M 4096M

```

8. 輸入 **show card table all** 命令。命令的輸出指示卡處於離線狀態。此資訊是 SSD 的一部分。

```

***** show card table all *****
Slot Card Type Oper State SPOF Attach
-----
1: PSC Packet Services Card Active Yes 17 -
2: PSC Packet Services Card A Active Yes 18 -
3: PSC Packet Services Card A Active Yes 19 -
4: PSC Packet Services Card A Active Yes 20 -
5: PSC Packet Services Card A Active Yes 21 -
6: PSC Packet Services Card A Active Yes 22 -
7: PSC Packet Services Card Offline - - -
8: SMC System Management Card Active No 24 25
9: SMC System Management Card Standby Yes - -
10: PSC None - - - -
11: PSC None - - - -
12: PSC None - - - -
13: PSC None - - - -
14: PSC None - - - -
15: PSC None - - - -
16: PSC None - - - -
17: LC 10 Gig Ethernet Line Card Active Yes 1
18: LC 10 Gig Ethernet Line Card Active Yes 2
19: LC 10 Gig Ethernet Line Card Active Yes 3
20: LC 10 Gig Ethernet Line Card Active Yes 4
21: LC 1000 Ethernet Line Card Standby - 5
22: LC 1000 Ethernet Line Card Standby - 6
23: LC None - - -
24: SPIO Switch Processor I/O Card Active No 8
25: SPIO Switch Processor I/O Card Standby - 8
26: LC None - - -
27: LC None - - -
28: LC None - - -
29: LC None - - -
30: LC None - - -
31: LC None - - -
32: LC None - - -
33: LC None - - -
34: LC None - - -
35: LC None - - -
36: LC None - - -
37: LC None - - -
38: LC None - - -
39: LC None - - -
40: RCC Redundancy Crossbar Card Standby -
41: RCC Redundancy Crossbar Card Standby -
42: LC None - - -
43: LC None - - -
44: LC None - - -
45: LC None - - -
46: LC None - - -
47: LC None - - -
48: LC None

```

9. 輸入 **show hardware version** 命令。當卡處於離線狀態時，命令的輸出顯示「無可用資料」。此資訊是 SSD 的一部分。

```

***** show hardware version *****
Slot Type SSCB PSR PSR2 BIOS A BIOS B DT DT2
-----
1: PSC 1.6 2 - 9.2.13 7.8.14 3.16 --
2: PSCA 1.6 - 0 1.1.10 1.0.14 -- 3.20
3: PSCA 1.6 - 0 1.1.10 1.0.14 -- 3.20
4: PSCA 1.6 - 0 1.1.10 1.0.20 -- 3.20
5: PSCA 1.6 - 0 1.1.10 1.0.14 -- 3.20
6: PSCA 1.6 - 0 1.1.10 1.0.14 -- 3.20
7: PSC (no data available)

```

```
10: None -- - - - - - -
11: None -- - - - - - -
12: None -- - - - - - -
13: None -- - - - - - -
14: None -- - - - - - -
15: None -- - - - - - -
16: None -- - - - - - -
```

10. 輸入**show npuctrl events**命令。命令的輸出將故障卡的狀態顯示為離線、啟動（如果處於循環狀態）等。此資訊是SSD的一部分。

```
***** show npuctrl events *****
[41]@01-28-2014 08:26:15.892 e/i=0/0 evt=exporter-done transition=await-exporter->normal
spc=no
inst| npumgr-sta| card-state| card-inser inst|npumgr-sta| card-state| card-inser
1| normal| standby| yes 2| normal| standby| yes
3| normal| standby| yes 4| normal| standby| yes
5| export-db| standby| yes 6| import-db| initializi| yes
7| absent| booting| no 8| normal| active| no
9| normal| standby| yes 10| absent| empty| no
11| absent| empty| no 12| absent| empty| no
13| absent| empty| no 14| absent| empty| no
15| absent| empty| no 16| absent| empty| no

[42]@01-28-2014 08:54:08.041 e/i=6/1 evt=start-recovery transition=normal->await-importer-
ack spc=no
inst| npumgr-sta| card-state| card-inser inst|npumgr-sta| card-state| card-inser
1| power-up| initializi| no 2| normal| active| yes
3| normal| active| yes 4| normal| active| yes
5| normal| active| yes 6| normal| active| yes
7| absent| offline| no 8| normal| active| no
9| normal| standby| yes 10| absent| empty| no
11| absent| empty| no 12| absent| empty| no
13| absent| empty| no 14| absent| empty| no
15| absent| empty| no 16| absent| empty| no
```

11. 輸入**show temperature**命令。命令的輸出僅顯示故障卡的少數元件的溫度。此資訊是SSD的一部分。

```
***** show temperature *****
Note:
Cards 6 and 7 are identical PSC cards but more components of good card are
shown than that of failed card.

Card 6: 29/101 C (LM94 )
58/115 C (NPU )
43/101 C (NPU PCB )
44/101 C (DT )
30/101 C (Midplane)
41/101 C (CPU-N1 )
43/110 C (IOH )
30/100 C (DDR-N1C0)
31/100 C (DDR-N1C1)
Card 7: 23/101 C (CPU0 )
25/101 C (CPU1 )
25/101 C (LM93 )
```

12. 輸入**show crash list**命令。命令的輸出顯示發生故障的卡上的崩潰。在崩潰詳細資訊中查詢關鍵字「Hardware Error」。此資訊是SSD的一部分。

```
***** show crash list *****
== ==== =====
# Time Process Card/CPU/ SW HW_SER_NUM
PID VERSION SMC / Crash Card
== ==== =====

1 2014-Feb-20+03:26:14 kernel 02/0/NA 14.0(NA) SAD1726000V/SAD17010035
2 2014-Feb-20+09:24:38 kernel 02/0/NA 14.0(NA) SAD1726000V/SAD17010035
```

```
***** CRASH #01 *****
2.6.38-staros-v3-hw-64 #1 SMP PREEMPT Fri May 24 16:25:55 EDT 2013 1 0
SAD17010035 50083
.0 MMIO=90800000 MSI-X=32..63
<4>[ 4.542816] > Module image device Init
<4>[ 4.546668] --> Found components:
<6>[ 4.821670] Refined TSC clocksource calibration: 2000.071 MHz.
<6>[ 4.827687] Switching to clocksource tsc
<4>[ 4.833859] 0,28,29,30,31,37,38,39,40,63,67,69
<6>[ 4.838984] Starfile Build Number: 50083
----- truncated -----
<7>[ 38.972206] dt_fpga 0000:01:00.0: restoring config space at offset 0x3
(was 0x0, writing 0x8)
<7>[ 38.972214] dt_fpga 0000:01:00.0: restoring config space at offset 0x1
(was 0x100000, writing 0x100547)
<6>[ 38.972269] DT reset complete after 0 retries
<6>[ 42.565842] DT is now online
<4>[ 157.055594] svc: failed to register lockdvl RPC service (errno 97).
<6>[2128512.375560] [Hardware Error]: Machine check events logged
<6>[2193364.461636] [Hardware Error]: Machine check events logged
<0>[2196785.508632] [Hardware Error]: CPU 6: Machine Check Exception: 4
Bank 8: be000000001009f
<0>[2196785.516865] [Hardware Error]: TSC fa3eb2f263a8b ADDR 106fef5c0
MISC 1da0600000046343
<0>[2196785.524998] [Hardware Error]: PROCESSOR 0:206c2 TIME 1392846844
SOCKET 1 APIC 20
<0>[2196785.532533] [Hardware Error]: CPU 19: Machine Check Exception: 4
Bank 8: be000000001009f
<0>[2196785.540840] [Hardware Error]: TSC fa3eb2f2640b7 ADDR 106fef5c0
MISC 1da0600000046343
<0>[2196785.548976] [Hardware Error]: PROCESSOR 0:206c2 TIME 1392846844
SOCKET 1 APIC 23
----- truncated -----
<0>[2196785.756359] [Hardware Error]: TSC fa3eb2f271a7d ADDR 106fef5c0
MISC 1da0600000046343
<0>[2196785.764488] [Hardware Error]: PROCESSOR 0:206c2 TIME 1392846844
SOCKET 1 APIC 32
<0>[2196785.772020] [Hardware Error]: CPU 18: Machine Check Exception: 4
Bank 8: be000000001009f
<0>[2196785.780335] [Hardware Error]: TSC fa3eb2f263a95 ADDR 106fef5c0
MISC 1da0600000046343
<0>[2196785.788464] [Hardware Error]: PROCESSOR 0:206c2 TIME 1392846844
SOCKET 1 APIC 21
<0>[2196785.795991] [Hardware Error]: Machine check: Processor context
corrupt
<0>[2196785.802660] Kernel panic - not syncing: Fatal machine check on
current CPU
<4>[2196785.809681] Pid: 0, comm: kworker/0:1 Tainted: P M
2.6.38-staros-v3-hw-64 #1
<4>[2196785.817648] Call Trace:
<4>[2196785.820265] <#MC> [<ffffffff8104d444>] ? panic+0xd4/0x210
<4>[2196785.826025] [<ffffffff8104e6ac>] ? printk+0x6c/0x70
<4>[2196785.831148] [<ffffffff810726c4>] ? __atomic_notifier_call_chain+0x54/0x70
<4>[2196785.838162] [<ffffffff810726f6>] ? atomic_notifier_call_chain+0x16/0x20
<4>[2196785.845008] [<ffffffff81016da8>] ? mce_panic+0x208/0x210
<4>[2196785.850564] [<ffffffff810176d4>] ? do_machine_check+0x604/0x890
<4>[2196785.856723] [<ffffffff815a8dbb>] ? machine_check+0x1b/0x20
<4>[2196785.862449] [<ffffffff8129fbaf>] ? intel_idle+0x9f/0x130
<4>[2196785.867993] <<EOE>> [<ffffffff81072e83>] ? pm_qos_request+0x43/0x80
<4>[2196785.874605] [<ffffffff8145e64f>] ? cpuidle_idle_call+0xbf/0x2f0
<4>[2196785.880763] [<ffffffff81001506>] ? cpu_idle+0x56/0xa0
<4>[2196785.886059] [<ffffffff818edcd4>] ? start_secondary+0x1b4/0x230
```

<4>[2196785.892442] Logging crash to boot flash...

### 13. 輸入debug console card指令。此部分SSD顯示故障卡上硬體錯誤的詳細資訊。該資訊可在SSD中找到。

```
***** debug console card 2 cpu 0 tail 4000 only *****
```

```
1392847108.339 card 2-cpu0: <4>[ 162.266071] svc: failed to register lockdvl RPC
service (errno 97).
1392847187.138 card 2-cpu0: <4>[ 241.063929] mce_notify_irq: 1 callbacks suppressed
1392847187.138 card 2-cpu0: <6>[ 241.068719] [Hardware Error]: Machine check events
logged
1392852796.521 card 2-cpu0: <6>[ 5850.625815] [Hardware Error]: Machine check events
logged
1392860403.004 card 2-cpu0: <6>[13457.344535] [Hardware Error]: Machine check events
logged
1392867612.569 card 2-cpu0: <0>[20667.120164] [Hardware Error]: CPU 9: Machine Check
Exception: 4 Bank 8: be000000001009f
1392867612.569 card 2-cpu0: <0>[20667.128234] [Hardware Error]: TSC 25c13cfe4d7c ADDR
1045a9d5c0 MISC 1da0600000041281
1392867612.569 card 2-cpu0: <0>[20667.136123] [Hardware Error]: PROCESSOR 0:206c2
TIME 1392867612 SOCKET 1 APIC 30
1392867612.669 card 2-cpu0: <0>[20667.143504] [Hardware Error]: CPU 18: Machine Check
Exception: 4 Bank 8: be000000001009f
---- truncated ----
1392867612.770 card 2-cpu0: <0>[20667.315270] [Hardware Error]: TSC 25c13d0097e4 ADDR
1045a9d5c0 MISC 1da0600000041281
1392867612.770 card 2-cpu0: <0>[20667.323160] [Hardware Error]: PROCESSOR 0:206c2
TIME 1392867612 SOCKET 1 APIC 24
1392867612.770 card 2-cpu0: <0>[20667.330533] [Hardware Error]: CPU 11: Machine
Check Exception: 4 Bank 8: be000000001009f
1392867612.870 card 2-cpu0: <0>[20667.338688] [Hardware Error]: TSC 25c13d0099f6 ADDR
1045a9d5c0 MISC 1da0600000041281
1392867612.870 card 2-cpu0: <0>[20667.346574] [Hardware Error]: PROCESSOR 0:206c2 TIME
1392867612 SOCKET 1 APIC 34
1392867612.870 card 2-cpu0: <0>[20667.353947] [Hardware Error]: CPU 23: Machine Check
Exception: 4 Bank 8: be000000001009f
1392867612.870 card 2-cpu0: <0>[20667.362100] [Hardware Error]: TSC 25c13d0099ec ADDR
1045a9d5c0 MISC 1da0600000041281
1392867612.870 card 2-cpu0: <0>[20667.369992] [Hardware Error]: PROCESSOR 0:206c2 TIME
1392867612 SOCKET 1 APIC 35
1392867612.870 card 2-cpu0: <0>[20667.377359] [Hardware Error]: CPU 21: Machine Check
Exception: 4 Bank 8: be000000001009f
1392867612.870 card 2-cpu0: <0>[20667.385506] [Hardware Error]: TSC 25c13cfe4d68 ADDR
1045a9d5c0 MISC 1da0600000041281
1392867612.870 card 2-cpu0: <0>[20667.393395] [Hardware Error]: PROCESSOR 0:206c2 TIME
1392867612 SOCKET 1 APIC 31
1392867612.870 card 2-cpu0: <0>[20667.400765] [Hardware Error]: Machine check:
Processor context corrupt
1392867612.870 card 2-cpu0: <0>[20667.407275] Kernel panic - not syncing: Fatal
machine check on current CPU
1392867612.870 card 2-cpu0: <4>[20667.414136] Pid: 0, comm: kworker/0:1 Tainted:
P M 2.6.38-staros-v3-hw-64 #1
1392867612.870 card 2-cpu0: <4>[20667.421945] Call Trace:
1392867612.870 card 2-cpu0: <4>[20667.424399] <#MC> [<ffffffff8104d444>]
? panic+0xd4/0x210
1392867612.870 card 2-cpu0: <4>[20667.430005] [<ffffffff8104e6ac>]
? printk+0x6c/0x70
1392867612.870 card 2-cpu0: <4>[20667.434966] [<ffffffff810726c4>]
? __atomic_notifier_call_chain+0x54/0x70
*1392867660.394 card 2-cpu0:
1392867660.394 card 2-cpu0:
1392867660.394 card 2-cpu0: CFE version 2.2.9 (34401) for BOXER_FROM_FLASH
(32bit,SP,LE,X86)
1392867660.394 card 2-cpu0: Build Date: Wed Jun 30 10:38:21 EDT 2010
```



|      |                          |    |          |      |      |         |   |      |
|------|--------------------------|----|----------|------|------|---------|---|------|
|      | Tagged VLAN              | 11 | Enabled  | Up   | -    | Active  | - |      |
|      | Tagged VLAN              | 12 | Enabled  | Up   | -    | Active  | - |      |
|      | Tagged VLAN              | 13 | Enabled  | Up   | -    | Active  | - |      |
|      | Tagged VLAN              | 15 | Enabled  | Up   | -    | Active  | - |      |
|      | Tagged VLAN              | 16 | Enabled  | Up   | -    | Active  | - |      |
|      | Tagged VLAN              | 14 | Enabled  | Up   | -    | Active  | - |      |
|      | Tagged VLAN              | 17 | Enabled  | Up   | -    | Active  | - |      |
| 22/2 | 10/100 Ethernet          |    | Disabled | Down | Up   | Standby |   | 38/2 |
| 22/3 | 10/100 Ethernet          |    | Disabled | Down | Down | Standby |   | 38/3 |
| 22/4 | 10/100 Ethernet          |    | Disabled | Down | Down | Standby |   | 38/4 |
| 22/5 | 10/100 Ethernet          |    | Disabled | Down | Down | Standby |   | 38/5 |
| 22/6 | 10/100 Ethernet          |    | Disabled | Down | Down | Standby |   | 38/6 |
| 22/7 | 10/100 Ethernet          |    | Disabled | Down | Down | Standby |   | 38/7 |
| 22/8 | 10/100 Ethernet          |    | Enabled  | Down | Down | Active  |   | 38/8 |
| 24/1 | 1000 Ethernet Dual Media |    | Enabled  | Up   | Up   | Active  |   | 25/1 |
| 24/2 | 1000 Ethernet Dual Media |    | Disabled | Down | Down | Active  |   | 25/2 |
| 24/3 | RS232 Serial Console     |    | Enabled  | Up   | Up   | Active  |   | 25/3 |
| 24/4 | BITS T1/E1 Timing        |    | Disabled | Down | Down | Active  |   | 25/4 |
| 25/1 | 1000 Ethernet Dual Media |    | Enabled  | Down | Up   | Standby |   | 24/1 |
| 25/2 | 1000 Ethernet Dual Media |    | Disabled | Down | Down | Standby |   | 24/2 |
| 25/3 | RS232 Serial Console     |    | Enabled  | Down | Up   | Standby |   | 24/3 |
| 25/4 | BITS T1/E1 Timing        |    | Disabled | Down | Down | Standby |   | 24/4 |
| 34/1 | 1000 Ethernet            |    | Enabled  | Down | Down | Active  |   | None |
| 34/2 | 1000 Ethernet            |    | Disabled | Down | Down | Active  |   | None |
| 34/3 | 1000 Ethernet            |    | Disabled | Down | Down | Active  |   | None |
| 34/4 | 1000 Ethernet            |    | Disabled | Down | Down | Active  |   | None |
| 38/1 | 10/100 Ethernet          |    | Enabled  | -    | Down | -       |   | 22/1 |
|      | Untagged                 |    | Enabled  | Down | -    | Standby | - |      |
|      | Tagged VLAN              | 11 | Enabled  | Down | -    | Standby | - |      |
|      | Tagged VLAN              | 12 | Enabled  | Down | -    | Standby | - |      |
|      | Tagged VLAN              | 13 | Enabled  | Down | -    | Standby | - |      |
|      | Tagged VLAN              | 15 | Enabled  | Down | -    | Standby | - |      |
|      | Tagged VLAN              | 16 | Enabled  | Down | -    | Standby | - |      |
|      | Tagged VLAN              | 14 | Enabled  | Down | -    | Standby | - |      |
|      | Tagged VLAN              | 17 | Enabled  | Down | -    | Standby | - |      |
| 38/2 | 10/100 Ethernet          |    | Disabled | Down | Down | Active  |   | 22/2 |
| 38/3 | 10/100 Ethernet          |    | Disabled | Down | Down | Active  |   | 22/3 |
| 38/4 | 10/100 Ethernet          |    | Disabled | Down | Down | Active  |   | 22/4 |
| 38/5 | 10/100 Ethernet          |    | Disabled | Down | Down | Active  |   | 22/5 |
| 38/6 | 10/100 Ethernet          |    | Disabled | Down | Down | Active  |   | 22/6 |
| 38/7 | 10/100 Ethernet          |    | Disabled | Down | Down | Active  |   | 22/7 |
| 38/8 | 10/100 Ethernet          |    | Enabled  | Down | Down | Standby |   | 22/8 |

## ASR 5500機箱

\*\*\*\*\* show port table all \*\*\*\*\*

Port Role Type Admin Oper Link State Pair Redundant

```
-----
5/1 Mgmt 1000 Ethernet Enabled Up Up Active 6/1 L2 Link
5/2 Mgmt 1000 Ethernet Disabled Down Down Active 6/2 L2 Link
5/3 Mgmt RS232 Serial Console Enabled Down Unkn Standby 6/3 L2 Link
5/10 Srvc 10G Ethernet Enabled - Up - 6/10 LA+ 5/10
Untagged Enabled Up - Active - -
Tagged VLAN 101 Enabled Up - Active - -
Tagged VLAN 102 Enabled Up - Active - -
Tagged VLAN 104 Enabled Up - Active - -
Tagged VLAN 105 Enabled Up - Active - -
Tagged VLAN 103 Enabled Up - Active - -
5/11 Srvc 10G Ethernet Enabled Up Up Active 6/11 LA+ 5/10
5/12 Srvc 10G Ethernet Disabled Down Down Active 6/12 L2 Link
5/13 Srvc 10G Ethernet Disabled Down Down Active 6/13 L2 Link
5/14 Srvc 10G Ethernet Disabled Down Down Active 6/14 L2 Link
5/15 Srvc 10G Ethernet Enabled Up Up Active 6/15 LA+ 5/10
5/16 Srvc 10G Ethernet Enabled Up Up Active 6/16 LA+ 5/10
5/17 Srvc 10G Ethernet Disabled Down Down Active 6/17 L2 Link
```



```

5/18 Srvc 10G Ethernet Disabled Down Down Active 6/18 L2 Link
5/19 Srvc 10G Ethernet Disabled Down Down Active 6/19 L2 Link
5/20 Srvc 10G Ethernet Enabled Up Up Active 6/20 LA+ 5/10
5/21 Srvc 10G Ethernet Enabled Up Up Active 6/21 LA+ 5/10
5/22 Srvc 10G Ethernet Disabled Down Down Active 6/22 L2 Link
5/23 Srvc 10G Ethernet Disabled Down Down Active 6/23 L2 Link
5/24 Srvc 10G Ethernet Disabled Down Down Active 6/24 L2 Link
5/25 Srvc 10G Ethernet Enabled Up Up Active 6/25 LA+ 5/10
5/26 Srvc 10G Ethernet Enabled Up Up Active 6/26 LA+ 5/10
5/27 Srvc 10G Ethernet Disabled Down Down Active 6/27 L2 Link
5/28 Srvc 10G Ethernet Disabled Down Down Active 6/28 L2 Link
5/29 Srvc 10G Ethernet Disabled Down Down Active 6/29 L2 Link
6/1 Mgmt 1000 Ethernet Enabled Down Up Standby 5/1 L2 Link
6/2 Mgmt 1000 Ethernet Disabled Down Down Standby 5/2 L2 Link
6/3 Mgmt RS232 Serial Console Enabled Down Unkn Standby 5/3 L2 Link
6/10 Srvc 10G Ethernet Enabled - Up - 5/10 LA! 5/10
Untagged Enabled Up - Active - -
Tagged VLAN 101 Enabled Up - Active - -
Tagged VLAN 102 Enabled Up - Active - -
Tagged VLAN 104 Enabled Up - Active - -
Tagged VLAN 105 Enabled Up - Active - -
Tagged VLAN 103 Enabled Up - Active - -
6/11 Srvc 10G Ethernet Enabled Up Up Active 5/11 LA! 5/10
6/12 Srvc 10G Ethernet Disabled Down Down Standby 5/12 L2 Link
6/13 Srvc 10G Ethernet Disabled Down Down Standby 5/13 L2 Link
6/14 Srvc 10G Ethernet Disabled Down Down Standby 5/14 L2 Link
6/15 Srvc 10G Ethernet Enabled Up Up Active 5/15 LA! 5/10
6/16 Srvc 10G Ethernet Enabled Up Up Active 5/16 LA! 5/10
6/17 Srvc 10G Ethernet Disabled Down Down Standby 5/17 L2 Link
6/18 Srvc 10G Ethernet Disabled Down Down Standby 5/18 L2 Link
6/19 Srvc 10G Ethernet Disabled Down Down Standby 5/19 L2 Link
6/20 Srvc 10G Ethernet Enabled Up Up Active 5/20 LA! 5/10
6/21 Srvc 10G Ethernet Enabled Up Up Active 5/21 LA! 5/10
6/22 Srvc 10G Ethernet Disabled Down Down Standby 5/22 L2 Link
6/23 Srvc 10G Ethernet Disabled Down Down Standby 5/23 L2 Link
6/24 Srvc 10G Ethernet Disabled Down Down Standby 5/24 L2 Link
6/25 Srvc 10G Ethernet Enabled Up Up Active 5/25 LA! 5/10
6/26 Srvc 10G Ethernet Enabled Up Up Active 5/26 LA! 5/10
6/27 Srvc 10G Ethernet Disabled Down Down Standby 5/27 L2 Link
6/28 Srvc 10G Ethernet Disabled Down Down Standby 5/28 L2 Link
6/29 Srvc 10G Ethernet Disabled Down Down Standby 5/29 L2 Link

```

16. 輸入 `show port datalink counters [<slot#>/<port#>]` 命令。命令的輸出顯示埠的統計資訊。資訊可能因連線埠型別而異。請注意，此處顯示的統計資訊可能只提供部分資訊。在查明可疑港口之前，您需要做進一步調查。此資訊不是SSD的一部分。

```
Counters for port 5/15:
```

```
Line Card 10 Gigabit Ethernet Port
```

```
Rx Counter Data | Tx Counter Data
```

```
----- + -----
```

```
RX Bytes 929593433281710 | TX Bytes 980010533492940
```

```
RX Unicast frames 2622395473 | TX Unicast frames 1156468032
```

```
RX Multicast frames 6819022 | TX Multicast frames 6883788
```

```
RX Broadcast frames 0 | TX Broadcast frames 0
```

```
RX Size 64 frames 1072853571 | TX Size 64 frames 2180897214
```

```
RX Size 65 .. 127 fr 4229387075 | TX Size 65 .. 127 fr 3889237141
```

```
RX Size 128 .. 255 fr 2650809484 | TX Size 128 .. 255 fr 711064618
RX Size 256 .. 511 fr 1361009593 | TX Size 256 .. 511 fr 2349224327
RX Size 512 .. 1023 fr 3559787799 | TX Size 512 .. 1023 fr 1444113684
RX Size 1024 .. 1518 fr 448089039 | TX Size 1024 .. 1518 fr 474195217
RX Size 1519 .. 1522 fr 2185019476 | TX Size 1519 .. 1522 fr 2999521504
RX OverSize frames 0 | TX OverSize frames 0
RX UnderSize frames 0 | TX UnderSize frames 0
RX ExceedMaxSize frames 0
RX Fragment frames 69829 | TX Fragment frames 0
RX Jabber frames 7090511 | TX Jabber frames 0
RX Control frames 0 | TX Control frames 882
RX Pause frames 0 | TX Pause frames 882
RX FCS Error frames 828050684 | TX FCS Error frames 0
RX Length Error frames 0 | TX Length Error frames 0
RX Code Error frames 38410621
RX ExMaxSize Err frames 1362770
```

----- + -----

```
[local]ASR5K-1# show port datalink counters 17/1
```

```
Counters for port 17/1:
```

```
Line Card 10 Gigabit Ethernet Port
```

```
Rx Counter Data | Tx Counter Data
```

----- + -----

```
RX Unicast frames 19873 | TX Unicast frames 0
RX Multicast frames 19873 | TX Multicast frames 0
RX Broadcast frames 0 | TX Broadcast frames 0
RX Size 64 frames 0 | TX Size 64 frames 0
RX Size 65 .. 127 fr 0 | TX Size 65 .. 127 fr 0
RX Size 128 .. 255 fr 0 | TX Size 128 .. 255 fr 0
RX Size 256 .. 511 fr 19873 | TX Size 256 .. 511 fr 0
RX Size 512 .. 1023 fr 0 | TX Size 512 .. 1023 fr 0
```

RX Size 1024 .. 1518 fr 0 | TX Size 1024 .. 1518 fr 0

RX Size > 1518 frames 0 | TX Size > 1518 frames 0

RX Bytes OK 8326787 | TX Bytes OK 0

RX Bytes BAD 0 | TX Bytes BAD 0

RX SHORT OK 0 | TX PAUSE 0

RX SHORT CRC 0 | TX ERR 0

RX OVF 0 |

RX NORM CRC 0 |

RX LONG OK 0 |

RX LONG CRC 0 |

RX PAUSE 0 |

RX FALS CRS 0 |

RX SYM ERR 0 |

RX SPI FRAME COUNT 19873 | TX SPI FRAME COUNT 0

RX SPI LEN ERR 0 | TX SPI LEN ERR 0

RX SPI DIP 2 ERR 0 | TX SPI DIP 4 ERR 0

RX SPI STATUS OOF ERR 0 | TX SPI DATA OOF ERR 0

RX FIFO OVERFLOW 0 | TX FIFO FULL DROP 0

RX PAUSE COUNT 0 | TX DIP 4 PACKET DROP 0

SPI EOP/ABORT 0 |

RX FRAGMENTS COUNT 0 |

RX MAC ERR 0 |

RX JABBER COUNT 0 |

----- + -----

[local]st40-1# **show port datalink counters 22/2**

Counters for port 22/2:

Line Card Fast Ethernet Port

Rx Counter Data | Tx Counter Data

----- + -----

RX Unicast frames 13773 | TX Unicast frames 0

```
RX Multicast frames 126510 | TX Multicast frames 0
RX Broadcast frames 54954 | TX Broadcast frames 0
RX Size 64 frames 109874 | TX Size 64 frames 0
RX Size 65 .. 127 fr 81230 | TX Size 65 .. 127 fr 0
RX Size 128 .. 255 fr 2384 | TX Size 128 .. 255 fr 0
RX Size 256 .. 511 fr 1670 | TX Size 256 .. 511 fr 0
RX Size 512 .. 1023 fr 79 | TX Size 512 .. 1023 fr 0
RX Size 1024 .. 1518 fr 0 | TX Size 1024 .. 1518 fr 0
RX Size > 1518 frames 0 | TX Size > 1518 frames 0
RX Bytes OK 13824764 | TX Bytes OK 0
RX Bytes BAD 0 | TX Bytes BAD 0
RX OVF 0 | TX DEFER 0
RX SHORT OK 0 | TX COL 0
RX SHORT CRC 0 | TX SCOL 0
RX NO SFD 0 | TX MCOL 0
RX NORM CRC 0 | TX XCOL 0
RX NORM ALI 0 | TX LCOL 0
RX LONG OK 0 | TX PAUSE 0
RX LONG CRC 0 | TX ERR 0
RX PAUSE 0 |
RX FALS CRS 0 |
RX SYM ERR 0 |
```

----- + -----

```
[local]st40-1# show port datalink counters 24/1
```

```
Counters for port 24/1:
```

```
SPIO 10/100/1000 Ethernet port
```

```
Rx Counter Data | Tx Counter Data
```

----- + -----

```
RX Bytes 148501169 | TX Bytes 138116037
```

```
RX BAD frames 0 | TX BAD frames 0
```

```
RX Runt frames 0 | TX Runt frames 0
RX Oversize frames 0 | TX Oversize frames 0
RX Good frames 1590640 | TX Good frames 1258465
RX Multicast frames 4393 | TX Collisions 0
RX Broadcast frames 365063 | TX Excessive collis 0
RX Code ERROR 0 | TX Late Collisions 0
RX CRC ERROR 0 | TX CRC ERROR 0
RX length ERROR 0 | TX ABORT 0
RX Align ERROR 0 |
```

```
----- + -----
```

```
# show port datalink counters 5/15
```

```
Counters for port 5/15:
```

```
Line Card 10 Gigabit Ethernet Port
```

```
Rx Counter Data | Tx Counter Data
```

```
----- + -----
```

```
RX OverSize frames 0 |
RX Bytes OK 1558209913 | TX Bytes OK 840628
RX Bytes BAD 0 | TX Bytes BAD 0
RX SHORT OK 0 | TX PAUSE 0
RX SHORT CRC 0 | TX ERR 0
RX OVF 0 |
RX NORM CRC 0 |
RX LONG OK 0 |
RX LONG CRC 82233 |
RX PAUSE 0 |
RX FALS CRS 0 |
RX SYM ERR 0 |
```

```
----- + -----
```

17. 輸入 **show port npu counters** 命令。命令的輸出顯示埠的統計資訊。統計資料顯示，連線埠 31/1 傳送的資料並不比其接收的資料多。SSD 提供兩個統計值，分別以 15 分鐘的不同時間獲取。您可以使用兩個統計資訊來確定增量。

```
***** show port npu counters *****
Thursday April 30 15:07:06 UTC 2015
```

Counters for port 31/1

Counter Rx Frames Rx Bytes Tx Frames Tx Bytes

```
-----  
Unicast 1088589 494910442 86 4368 <<<<<  
Multicast 2730 246420 330 35496  
Broadcast 10393 665152 6365 292790  
IPv4 unicast 1088506 494905130 4 596  
IPv4 non-unicast 656 82768 326 35112  
IPv6 unicast 0 0 0 0  
IPv6 non-unicast 0 0 4 384  
Fragments received 258066 198717886 n/a n/a  
Packets reassembled 129021 193781884 n/a n/a  
Fragments to kernel 24 33204 n/a n/a  
HW error 0 0 n/a n/a  
Port non-operational 0 0 0 0  
SRC MAC is multicast 0 0 n/a n/a  
Unknown VLAN tag 0 0 n/a n/a  
Other protocols 2074 163652 n/a n/a  
Not IPv4 0 0 n/a n/a  
Bad IPv4 header 0 0 n/a n/a  
IPv4 MRU exceeded 0 0 n/a n/a  
TCP tiny fragment 0 0 0 0  
No ACL match 0 0 0 0  
Filtered by ACL 0 0 0 0  
TTL expired 0 0 n/a n/a  
Flow lookup twice 0 0 n/a n/a  
Unknown IPv4 class 0 0 n/a n/a  
Too short: IP 0 0 n/a n/a  
Too short: ICMP 0 0 0 0  
Too short: IGMP 0 0 0 0  
Too short: TCP 0 0 0 0  
Too short: UDP 0 0 0 0  
Too short: IPIP 0 0 n/a n/a  
Too short: GRE 0 0 n/a n/a  
Too short: GRE key 0 0 n/a n/a  
Don't frag discards n/a n/a 0 0  
Fragment packets n/a n/a 0 0  
Fragment fragments n/a n/a 0 0  
IPv4VlanMap dropped 0 0 n/a n/a  
IPSec NATT keep alive 0 0 n/a n/a  
MPLS Flow not found 0 0 n/a n/a  
MPLS unicast 0 0 0 0  
Size < 17 0 0 0 0  
Size 17 .. 64 28449 1820528 6450 296712  
Size 65 .. 127 549857 46030525 320 33820  
Size 128 .. 255 191483 32170025 10 1796  
Size 256 .. 511 38611 14091567 1 326  
Size 512 .. 1023 30308 20922553 0 0  
Size 1024 .. 2047 263006 380787195 0 0  
Size 2048 .. 4095 0 0 0 0  
Size 4096 .. 4500 0 0 0 0  
Size > 4500 0 0 0 0
```

\*\*\*\*\* show port npu counters \*\*\*\*\*

Thursday April 30 15:22:53 UTC 2015

Counters for port 31/1

Counter Rx Frames Rx Bytes Tx Frames Tx Bytes

```
-----  
Unicast 1458664 690686035 104 5196 <<<<<  
Multicast 3566 321706 429 46150  
Broadcast 14078 900992 8295 381570
```

IPv4 unicast 1458563 690679571 4 596  
IPv4 non-unicast 859 108182 425 45766  
IPv6 unicast 0 0 0 0  
IPv6 non-unicast 0 0 4 384  
Fragments received 363014 279522687 n/a n/a  
Packets reassembled 181494 272589787 n/a n/a  
Fragments to kernel 26 36128 n/a n/a  
HW error 0 0 n/a n/a  
Port non-operational 0 0 0 0  
SRC MAC is multicast 0 0 n/a n/a  
Unknown VLAN tag 0 0 n/a n/a  
Other protocols 2707 213524 n/a n/a  
Not IPv4 0 0 n/a n/a  
Bad IPv4 header 0 0 n/a n/a  
IPv4 MRU exceeded 0 0 n/a n/a  
TCP tiny fragment 0 0 0 0  
No ACL match 0 0 0 0  
Filtered by ACL 0 0 0 0  
TTL expired 0 0 n/a n/a  
Flow lookup twice 0 0 n/a n/a  
Unknown IPv4 class 0 0 n/a n/a  
Too short: IP 0 0 n/a n/a  
Too short: ICMP 0 0 0 0  
Too short: IGMP 0 0 0 0  
Too short: TCP 0 0 0 0  
Too short: UDP 0 0 0 0  
Too short: IPIP 0 0 n/a n/a  
Too short: GRE 0 0 n/a n/a  
Too short: GRE key 0 0 n/a n/a  
Don't frag discards n/a n/a 0 0  
Fragment packets n/a n/a 0 0  
Fragment fragments n/a n/a 0 0  
IPv4VlanMap dropped 0 0 n/a n/a  
IPSec NATT keep alive 0 0 n/a n/a  
MPLS Flow not found 0 0 n/a n/a  
MPLS unicast 0 0 0 0  
Size < 17 0 0 0 0  
Size 17 .. 64 36271 2321072 8398 386320  
Size 65 .. 127 726857 60769944 416 44008  
Size 128 .. 255 247902 41688950 13 2262  
Size 256 .. 511 52061 19029750 1 326  
Size 512 .. 1023 39817 27526320 0 0  
Size 1024 .. 2047 373400 540572697 0 0  
Size 2048 .. 4095 0 0 0 0  
Size 4096 .. 4500 0 0 0 0  
Size > 4500 0 0 0 0