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Introduction

This article presents ideas on how to troubleshoot various port related issues ASR 5000 and 5500 platforms including issues related to the Network Processing Unit (NPU), and touches a bit on Link Aggregation (LAG) issues as well. These techniques are not rocket science and in fact are mostly known by engineers, but often one or more may be skipped over in the troubleshooting process simply due to oversight in the rush through the steps towards potential resolution. The article first starts off with the port related health checks. Then it lays out all the approaches in some kind of methodical order. Finally it offers a series of real examples that go beyond basic port troubleshooting for those who want to dig deep.

Troubleshooting commands

show snmp trap history

Look for patterns of **PortLinkUp** and **PortLinkDown**. Consider:

- how often it is happening and over what time period
- multiple ports or just one port or some other pattern
- maintenance work that technicians may or may not be aware of

show port table all

- indicates whether the links are up or down
- Link Aggregation (LAG) - confirm ports are in the correct state, either + (distributing/active) or ~ (agreed/standby). Other states * or - need further investigation.

show port info

- various information such as link state, port mode, port settings, Link Aggregation (LAG) settings,

SFP module, etc.

show card diag

- basic diagnostic info, usually not that helpful

show rct stats [verbose]

- tracks all PSC/DPC/SMC/MIO activity (switchovers, migrations, shutdowns, etc.) since bootup

show port utilization table

- is the throughput what is expected for the time of day
- Equal Cost Multi Path (ECMP) and LAG ports should be transmitting fairly evenly
- Rx bandwidth is under control of the other end

show logical-port utilization table

- breaks down the port utilization by VLAN ID
- if the numbers are small compared to the port utilization table, it implies packets not making it to the NPU from the port

show port datalink counters <slot/port>

- reports packet counts on the physical ports themselves
- check the various failure counters to see if any are incrementing and at what rate
- Important: this is one of those few commands that is collected TWICE in an SSD which can be very valuable for troubleshooting packet count increases in a relatively short period of time

show port npu counters <slot/port> [vlan <vlan>]

- all ports are connected to the rest of the system through the Network Processor Unit (NPU), either located on the connected Packet Services Card (PSC, ASR 5000) (whether the PSC is directly connected or mapped via the Redundancy Crossbar Cards (RCC)) or on the Management Input Output (MIO) (ASR 5500) on which the port is also located.
- check the various failure counters to see if any are incrementing and at what rate
- for LAG implementation, counters are reported for the master port capturing the totals across all the ports in the LAG group, and so there is no way to know which port is causing the failures. In that case, for ASR 5000, "show port npu stats debug all_pacs" reports failure counts at the PSC # level which hopefully helps point to the culprit card.
- Issues have been seen where increase in failure counters from this command are caused by a failure on the Line Card, where "show port datalink counters" doesn't show the issue.
- not all NPU issues are caught with this command. There are other tech support only NPU commands (i.e. show npu stats debug all_pacs, show npu stats sf all_pacs, etc.) that capture packet dropping issues which are not covered here.

- Important: this is one of those few commands that is collected TWICE in an SSD which can be very valuable for troubleshooting packet count increases in a relatively short period of time

show logs

- look for any entries related to the ports including facilities npu, npuctrl, etc.

show port transceiver (ASR 5500 only)

- look for light levels consistent across all ports

Remediation actions

Between each of the following steps, check the output of the above commands, as applicable, to detect any improvement and/or change in behavior. If the issue is sporadic, an appropriate waiting period may be necessary before declaring success/failure.

This is not intended to be a hard and fast list that has to be executed in the order or even completely. There are too many variables that play a role in troubleshooting such issues and so this is intended to be a guide so that in the least, the troubleshooter has access to all the potential options. Those with many years experience are likely familiar with some of these approaches as they apply to other platforms, but a reminder checklist is always a good idea, and those without knowledge of the platform may not be familiar with some of the platform-specific approaches and/or commands available.

Remember: each scenario is different and troubleshooting steps will reveal new information that will dictate future steps that will differ amongst scenarios. This is just a guide.

The steps considered and order taken will vary depending on the severity of the issue, potential subscriber impact, and customer sentiment.

Switchover to the redundant port or LAG

- Need to consider the fact that the port being troubleshot is now handling traffic OR not handling traffic
- ASR5000: full-sized linecards now are connected to a different PSC (NPU), while half-sized line-card will continue to be connected to same PSC
- switching over doesn't change any cabling, and so more likely doing so will not make a difference in a port bouncing scenario, but in the least, if the issue was on the active port, impact will be minimized since it is now be a standby port

Swap cable connections with redundant port

- depending on which cable is pulled first, the final active port could be either port, so the port may need to be switched back to get back to the starting layout
- if the problem remains with the troubled port, then look more closely at that port on the ASR
- if the problem switches to the other port, then look more closely at that port's connection on the

far end

Clean fibers

- if the port being cleaned is active, then it needs to be switched back to after the cleaning
- cleaning fibers has definitely been an activity that frequently resolves issues

Replace elements in the path, including ethernet cable/fiber/patch panel/interconnects/taps

- if the port being cleaned is active, then it will need to be switched back to after the cleaning
- it might be surprising to find out how frequently this step resolves issues

Small form-factor pluggable (SFP) replacement on either / both sides of the connection

- the SFPs can be ordered separately
- Check for unused SFPs for testing purposes

ASR 5000 only:

Linecard Reboot

Linecard Reseat

- Reseating will accomplish a superset of reboot and it is more intrusive and worth trying

PSC migration

- The PSC connected to the Line Card hosting the problem port (show card mappings / show card table all))

PSC Reboot

PSC Reseat

- A PSC migration will result in the PSC being reset but it is not the equivalent of a reboot
- Similarly a PSC reset is more intrusive than a PSC reboot
- A PSC reseat will accomplish a superset of PSC reboot in one step
- In all of the above, if the issue is resolved, a migration to make the PSC active again would be necessary to confirm whether the issue is fully resolved (assuming the PSC activity has resolved the port bouncing). Note that depending on the card layout and the starting card configuration (i.e. is the Line Card having the issue physically behind the connected PSC?, etc.), switching the PSC back to active may or may not result in the same PSC <-> Line Card mapping as was the case before the activity.

System Management Card (SMC) switchover

SMC Reboot

SMC Reseat

ASR 5500 only:

MIO switchover

- this is different than just a port or LAG switchover. Any active ports on the MIO being switched over will become standby. If the problem port is already active on the Standby MIO, then the MIO switchover doesn't change the port status but is still a valid step

Chassis reload

- though unlikely, it is always possible that there is some kind of anomaly that can only be resolved with a reload

Hardware replacement on adjacent switch

Hardware replacement on ASR 5x00 (PSC, LC, MIO, SMC or RCC)

Remediation steps command reference:

card migrate from <x> to <y> – PSC/DPC migration

- While lifting the lever is another way, don't do that AND then pull the card or a card shutdown results

card switch from <x> to <y> – SMC/MIO/LC/RCC switchover

port switch to <x> – non-LAG port switchover

link-aggregation port switch to <x> – LAG switchover

- X must be the master LAG port or the master's pair depending on direction

card reboot X

- card reset is another option but reboot is recommended

Example troubleshooting scenarios

Standby PGW Inter Chassis Session Recovery (ICSR) node is receiving high volume of traffic from Juniper MX-960

This example shows the active LAG ports receiving significant traffic even though the chassis is Service Redundancy Protocol (SRP) Standby in which case the throughput should be almost nil. The value of the following two commands used in conjunction is that the ports are showing significant traffic being received but the NPU is showing no traffic. This implies the traffic is being dropped before reaching the NPU, possibly right at the ports themselves. The "show port datalink counters" and "show port npu counters" corroborate this since the NPU counters are hardly increasing while the datalink counters are increasing quickly.

Missing packets between datalink and npu counters

This example for ASR 5000 shows output comparing datalink and npu counters. In this case, the multicast and broadcast packets match between commands, but the Rx count for npu is less than for datalink. The command "show npu stats debug" can possibly account for the difference, but not in all cases, as is the case here where none of the counters from that command can account for the differences.

```
[local]DO-HSGW> clear port npu counters all  
Thursday August 06 02:05:51 UTC 2015
```

```
[local]DO-HSGW> clear port datalink counters all
```

Thursday August 06 02:05:52 UTC 2015

[local]DO-HSGW> show npu stats debug all-pacs clear
Thursday August 06 02:05:52 UTC 2015

[local]DO-HSGW> show card table
Thursday August 06 02:18:59 UTC 2015

Slot	Card Type	Oper State	SPOF	Attach
5: PSC	Packet Services Card 3	Active	No	21 37

[local]DO-HSGW> show port npu count 21/1
Thursday August 06 02:13:52 UTC 2015

Counters for port 21/1

sCounter	Rx Frames	Rx Bytes	Tx Frames	Tx Bytes
Unicast	2502	289800	1726	308932
Multicast 1091	92000	0	0	
Broadcast	1231	79781	0	0
IPv4 unicast	2400	283272	1624	304240
IPv4 non-unicast	534	34176	0	0
IPv6 unicast	0	0	0	0
IPv6 non-unicast	539	52982	0	0
Fragments received	0	0	n/a	n/a
Packets reassembled	0	0	n/a	n/a
Fragments to kernel	0	0	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	50	7850	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	1834	117376	102	4692
Size 65 .. 127	1385	113948	36	2520
Size 128 .. 255	1589	225633	1191	170710
Size 256 .. 511	16	4624	397	131010
Size 512 .. 1023	0	0	0	0
Size 1024 .. 2047	0	0	0	0
Size 2048 .. 4095	0	0	0	0

```
Size 4096 .. 4500          0          0          0          0
Size > 4500                0          0          0          0
```

```
[local]DO-HSGW> show port data counters 21/1
```

```
Thursday August 06 02:13:52 UTC 2015
```

```
how npu Counters for port 21/1:
```

```
Line Card Gigabit Ethernet Port
```

Rx Counter	Data	Tx Counter	Data
RX Unicast frames	5555	TX Unicast frames	1726
RX Multicast frames	1091	TX Multicast frames	0
RX Broadcast frames	1233	TX Broadcast frames	0
RX Size 64 frames	0	TX Size 64 frames	102
RX Size 65 .. 127 fr	4219	TX Size 65 .. 127 fr	36
RX Size 128 .. 255 fr	1681	TX Size 128 .. 255 fr	1191
RX Size 256 .. 511 fr	49	TX Size 256 .. 511 fr	397
RX Size 512 .. 1023 fr	1828	TX Size 512 .. 1023 fr	0
RX Size 1024 .. 1518 fr	18	TX Size 1024 .. 1518 fr	0
RX Size > 1518 frames	84	TX Size > 1518 frames	0
RX Bytes OK	1934599	TX Bytes OK	317264
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 FIFO CORR ECC ERR	0	TX FIFO CORR ECC ERR	0
RX FIFO UNREC ECC ERR	0	TX FIFO UNREC ECC ERR	0
RX Disc frames	0	TX Disc frames	0
RX Disc bytes	0	TX Disc bytes	0
RX ERR frames	0	TX ERR frames	0

```
[local]DO-HSGW> show npu stats debug slot 5
```

```
Thursday August 06 02:13:53 UTC 2015
```

```
NPU debug stats for slot 5
```

```
Total number of NPU debug stat counters: 267
```

```
WARN: -----
          lc-rx-drop (id: 234)          50
```

```
INFO: -----
          csix-idle-cnt (id: 29)        36268853
          npu-resent-fc-msg (id: 45)    951
          npu-tx-fc-cframe (id: 46)    44701
          npu-rx-sf-xon (id: 60)       13316
          cp2npu-unk-mac-drop-cnt (id: 153) 177255
          ipv6-unk-nexthdr (id: 155)    262
          rx-cp-sft-pkt (id: 164)      33439
          rx-sf0-sft-pkt (id: 165)     33439
          rx-sf1-sft-pkt (id: 166)     33439
          lc-rx-arp-slowpath (id: 316)  70
          flow-notfound-done-slowpath (id: 325) 1233
          flow-lkup-done-slowpath (id: 326) 3473
```

Datalink TX Pause and RX OVF on ASR 5000

TX Pause indicates that this port has reached some peak load at some point of time and sent a

PAUSE frame to the peer switch, so that peer switch can gracefully reduce the traffic towards this port. However, it seems that the peer switch is not enabled with flow control and hence there are some counters at the line card which indicates some overflow drops at the port.

Even if the average port utilization is not reaching the peak value (like 6 GBPS), the port may receive a sudden spike of traffic that can lead to TX PAUSE. Hence, it is advisable to have the flow control enabled at the peer switch always just in case.

show port datalink counters

```
Counters for port 21/1: Line Card 10 Gigabit Ethernet Port Rx Counter Data | Tx Counter Data ---
----- + ----- RX Unicast frames
11562820841545 | TX Unicast frames 8643405785924 RX Multicast frames 401729121 | TX Multicast
frames 0 RX Broadcast frames 16900986 | TX Broadcast frames 0 RX Size 64 frames 2562649224215 |
TX Size 64 frames 5324800463761 RX Size 65 .. 127 fr 1827916995441 | TX Size 65 .. 127 fr
1921108746736 RX Size 128 .. 255 fr 527160156402 | TX Size 128 .. 255 fr 377388275894 RX Size
256 .. 511 fr 384674712910 | TX Size 256 .. 511 fr 285180922294 RX Size 512 .. 1023 fr
335734722295 | TX Size 512 .. 1023 fr 248088896685 RX Size 1024 .. 1518 fr 5894848662488 | TX
Size 1024 .. 1518 fr 486837840991 RX Size > 1518 frames 29836364100 | TX Size > 1518 frames 0 RX
Bytes OK 9248285853715092 | TX Bytes OK 1491301613652484 RX Bytes BAD 5358 | TX Bytes BAD 0 RX
SHORT OK 0 | TX PAUSE 639563
RX SHORT CRC 0 | TX ERR 0
RX OVF 12768 |
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 11555373252519 | TX SPI FRAME COUNT 8637801817136
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 26 |
RX JABBER COUNT 0 |
```

A very low level command (Tech Support only, can be retrieved from the SSD) is "**show data congestion slot X**". In this example note the high congestion on slot 5 (default connected to XCLC 21/1) at the NPU to Switch Fabric (SF) interface. Specifically, a high count of flow control messaging from the Switch Fabric to the NPU, along with a high number of packet drops in that same direction confirms the issue.

***** Data-path congestion information for slot 5 *****

NPU Percentage of Frames Dropped:

Subsystem	5 Sec	5 Min	15 Min	Total Frames and Drops
LC Top rx	0.00%	0.00%	0.00%	Frames: 715193480189 Drops: 0
LC Top tx	0.00%	0.00%	0.00%	Frames: 0 Drops: 0
LC Bot rx	0.00%	0.00%	0.00%	Frames: 0 Drops: 0
LC Bot tx	0.00%	0.00%	0.00%	Frames: 0 Drops: 0
LC RCC1 rx	0.00%	0.00%	0.00%	Frames: 0 Drops: 0
LC RCC1 tx	0.00%	0.00%	0.00%	Frames: 0

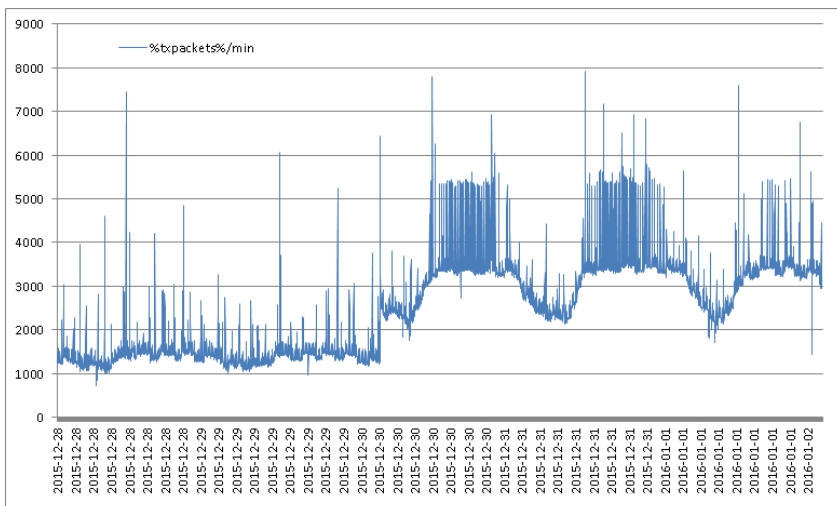
LC RCC2 rx	0.00%	0.00%	0.00%	Drops:	0
				Frames:	0
LC RCC2 tx	0.00%	0.00%	0.00%	Drops:	0
				Frames:	0
CPU rx	0.00%	0.00%	0.00%	Drops:	0
				Frames:	121566003797
CPU tx	0.00%	0.00%	0.00%	Drops:	0
				Frames:	59870967969
SF A rx	0.00%	0.00%	0.00%	Drops:	35226625
				Frames:	224008179
SF A tx	0.01%	0.00%	0.00%	Frames:	378241304254
				Drops:	274645028
SF B rx	0.00%	0.00%	0.00%	Frames:	656009419
				Drops:	0
SF B tx	0.00%	0.00%	0.00%	Frames:	392219947264
				Drops:	320394097
EDC rx	0.00%	0.00%	0.00%	Frames:	0
				Drops:	0
EDC tx	0.00%	0.00%	0.00%	Frames:	0
				Drops:	0

NPU Received Flow Control Events:

Event	5 Sec	5 Min	15 Min	Total Event Count
rx-sf-xoff	21668	843417	2358340	828378025
rx-sf-xon	21811	851786	2383440	873518866
rx-lc-xoff	0	0	0	0
rx-lc-xon	0	0	0	0
rx-cp-xoff	53	5021	15176	17316366
rx-cp-xon	53	5021	15176	17316366
rx-edc-xoff	0	0	0	0
rx-edc-xon	0	0	0	0

Increasing TX ERR due to mismatched port settings on ASR 5500 management port

In this example, tickets started to be opened referencing an increase in TX ERR counters on port 5/1, the management port on ASR 5500. At one site, it wasn't "noticed" as a problem until after a MOP was executed that implemented the creation and generation of event record files, a feature of Enhance Charging Service. No correlation could be made between implementing that feature and a sudden increase in these failures, except to note that there was also a sudden increase on throughput for the management port, which should only carry management traffic on 12/30 when the change was made. Here variable txpackets from schema PORTSch1 is graphed showing the increase:



An audit of the network showed that the issue was happening on many nodes, for example here is just a small snippet of the audit:

***** Data-path congestion information for slot 5 *****

NPU Percentage of Frames Dropped:

Subsystem	5 Sec	5 Min	15 Min	Total Frames and Drops
LC Top rx	0.00%	0.00%	0.00%	Frames: 715193480189 Drops: 0
LC Top tx	0.00%	0.00%	0.00%	Frames: 0 Drops: 0
LC Bot rx	0.00%	0.00%	0.00%	Frames: 0 Drops: 0
LC Bot tx	0.00%	0.00%	0.00%	Frames: 0 Drops: 0
LC RCC1 rx	0.00%	0.00%	0.00%	Frames: 0 Drops: 0
LC RCC1 tx	0.00%	0.00%	0.00%	Frames: 0 Drops: 0
LC RCC2 rx	0.00%	0.00%	0.00%	Frames: 0 Drops: 0
LC RCC2 tx	0.00%	0.00%	0.00%	Frames: 0 Drops: 0
CPU rx	0.00%	0.00%	0.00%	Frames: 121566003797 Drops: 0
CPU tx	0.00%	0.00%	0.00%	Frames: 59870967969 Drops: 35226625
SF A rx	0.00%	0.00%	0.00%	Frames: 224008179 Drops: 0
SF A tx	0.01%	0.00%	0.00%	Frames: 378241304254 Drops: 274645028
SF B rx	0.00%	0.00%	0.00%	Frames: 656009419 Drops: 0
SF B tx	0.00%	0.00%	0.00%	Frames: 392219947264 Drops: 320394097
EDC rx	0.00%	0.00%	0.00%	Frames: 0 Drops: 0
EDC tx	0.00%	0.00%	0.00%	Frames: 0 Drops: 0

NPU Received Flow Control Events:

Event	5 Sec	5 Min	15 Min	Total Event Count
rx-sf-xoff	21668	843417	2358340	828378025
rx-sf-xon	21811	851786	2383440	873518866
rx-lc-xoff	0	0	0	0
rx-lc-xon	0	0	0	0
rx-cp-xoff	53	5021	15176	17316366
rx-cp-xon	53	5021	15176	17316366
rx-edc-xoff	0	0	0	0
rx-edc-xon	0	0	0	0

Going back to old SSDs (since only the basic counters are being tracked by Bulkstats), it can be seen that the error was happening slowly up to 12/30, but then after the MOP execution, the error was happening at a much higher rate:

Thursday November 19 13:41:44 UTC 2015

Counters for port 5/1:

Line Card Gigabit Ethernet Port

Rx Counter	Data	Tx Counter	Data
RX SHORT CRC	0	TX ERR	5927969

Monday November 30 13:35:45 UTC 2015

Counters for port 5/1:

Line Card Gigabit Ethernet Port

Rx Counter	Data	Tx Counter	Data
RX SHORT CRC	0	TX ERR	6116249

Tuesday December 01 13:39:26 UTC 2015

Counters for port 5/1:

Line Card Gigabit Ethernet Port

Rx Counter	Data	Tx Counter	Data
RX SHORT CRC	0	TX ERR	6130958

Counters cleared ...

[local]ASR5500-PGW> show port datalink counters 5/1

Monday **January 04 02:41:29** UTC 2016

Counters for port 5/1:

Line Card Gigabit Ethernet Port

Rx Counter	Data	Tx Counter	Data
RX Unicast frames	171008921	TX Unicast frames	221976127
RX SHORT CRC	0	TX ERR	5852770

***** show port datalink counters *****

Tuesday **January 05 13:38:51** UTC 2016

Rx Counter	Data	Tx Counter	Data
RX Unicast frames	216450269	TX Unicast frames	8080952673
RX SHORT CRC	0	TX ERR	11497275

***** show port info *****

Tuesday January 05 13:33:07 UTC 2016

Port: 5/1

Port Type : 1000 Ethernet
Configured Duplex : Auto
Configured Speed : Auto
Link State : Up
Link Duplex : Half
Link Speed : 100 Mb

Issue fixed ...

Wednesday January 06 14:29:28 UTC 2016

Counters for port 5/1:

Line Card Gigabit Ethernet Port

Rx Counter	Data	Tx Counter	Data
RX SHORT CRC	0	TX ERR	0

[local]PGW> show port info 5/1

Wednesday January 06 12:58:50 UTC 2016

Port: 5/1

Port Type : 1000 Ethernet
Role : Management Port
Configured Duplex : Auto
Configured Speed : Auto
Link State : Up

```
Link Duplex      : Full
Link Speed       : 1000 Mb
```

The issue turned out to be a mismatch in the port settings between the ASR 5500 and the new switch to which it connects to, the Nexus 7000. The fix was to set ports on both ends to auto-negotiate. ASR 5500 was already set to auto, while the Nexus was set manually to full duplex. The fix:

ASR 5500 (already set to this)

```
port ethernet 5/1
  medium speed 1000 duplex full
  no shutdown
  bind interface 5/1-MGMT local
#exit
```

Nexus 7K (needed to be set to this)

```
interface Ethernet152/1/11
  description MGMT-PORT-5/01
  switchport
  switchport access vlan 10
  spanning-tree port type edge
  no snmp trap link-status
  no shutdown
```

It turns out that the issue was occurring all along but was never noticed because the only indicator was the TX ERR counter which is not something that can be measured through any automated reporting since there is no bulkstat variables for anything beyond the basic port counters (Tx/Rx packets/bytes, etc.). But the issue was severely exacerbated when the MOP was run and since Tx/Rx packets is captured by Bulkstats and is a KPI measured by the customer, it was then noticed.

So the next question was what caused the sudden increase in traffic? Examination of the change shows the following setting called "**via local-context**", which specifies using the local context port (5/1 or 6/1) for the new event traffic instead of the port 5/29 in the ECS context where existing Event Data Record (EDR) billing record traffic has always been (and continued to be) sent out the existing port 5/29 in that context. This was NOT an obvious find since that setting is rarely used in any customer config.

```
context ECS
  interface 5/29-ECS
    ip address 10.192.102.75 255.255.255.0
  #exit
```

session-event-module

```
file name evt-repo rotation volume 40000000 rotation time 120 storage-limit 500000000
exclude-checksum-record time-stamp rotated-format compression gzip
event transfer-mode push primary encrypted-url +A19y2j... via local-context module-only

edr-module active-charging-service
  file name FDR70 rotation volume 40000000 rotation time 300 storage-limit 500000000 headers
reset-indicator edr-format-name trap-on-file-delete charging-service-name omit compression gzip
file-sequence-number rulebase-seq-num
  cdr use-harddisk
  cdr remove-file-after-transfer
  cdr transfer-mode push primary encrypted-url +A0d2...
```

Increasing Bad Frames and Tx Collisions on management port due to half duplex

The interface 24/1 and 25/1 which make up the 24/1-MGMT interface are experiencing "Bad

Frames", "TX Collisions" and "TX Late Collisions".

From the show support details::

```
***** show port datalink counters *****
```

Friday January 03 14:14:59 UTC 2014

Counters for port 25/1:

SPIO 10/100/1000 Ethernet port

Rx Counter	Data	Tx Counter	Data
RX Bytes	12808872101	TX Bytes	20451927433
RX BAD frames	0	TX BAD frames	1403971
RX Runt frames	0	TX Runt frames	0
RX Oversize frames	0	TX Oversize frames	0
RX Good frames	95621882	TX Good frames	39395979
RX Multicast frames	6686008	TX Collisions	1501475
RX Broadcast frames	56656415	TX Excessive collis	0
RX Code ERROR	0	TX Late Collisions	1403968
RX CRC ERROR	0	TX CRC ERROR	0
RX length ERROR	0	TX ABORT	3
RX Align ERROR	0		

From the system a little bit later, notice the increase in Bad Frames and Collisions/Late Collisions:

```
[local]DO-HSGW> show port datalink counters 25/1
```

Friday January 03 14:26:04 UTC 2014

Counters for port 25/1:

SPIO 10/100/1000 Ethernet port

Rx Counter	Data	Tx Counter	Data
RX Bytes	12809750383	TX Bytes	20456667635
RX BAD frames	0	TX BAD frames 1404930	
RX Runt frames	0	TX Runt frames	0
RX Oversize frames	0	TX Oversize frames	0
RX Good frames	95628788	TX Good frames	39400838
RX Multicast frames	6686366	TX Collisions	1502503
RX Broadcast frames	56659440	TX Excessive collis	0
RX Code ERROR	0	TX Late Collisions	1404927
RX CRC ERROR	0	TX CRC ERROR	0
RX length ERROR	0	TX ABORT	3
RX Align ERROR	0		

This is usually indicative of a configuration mismatch on either end of the Ethernet interface. Both management ports have negotiated as **half duplex**:

```
[local]DO-HSGW> show port info 24/1
```

Friday January 03 14:33:19 UTC 2014

Port: 24/1

```
Port Type      : 1000 Ethernet Dual Media
Role           : Management Port
Description    : (None Set)
Controlled By Card : 8 (System Management Card)
Redundancy Mode : Port Mode
Framing Mode   : Unspecified
Redundant With : 25/1
Preferred Port : Non-Revertive
Physical ifIndex : 402718720
```

```

Administrative State      : Enabled
Configured Duplex      : Auto
Configured Speed         : Auto
Media Selection          : RJ45
MAC Address              : 00-05-47-02-5D-EE
Link State               : Up
Link Duplex           : Half
Link Speed               : 100 Mb
Link Aggregation Group   : None
Logical ifIndex          : 402718721
Operational State       : Down, Standby
SFP Module               : Present (1000BASE-SX, M5, M610G SFP+Cu)

```

The other end of the link, Cisco Catalyst 6500, was set to Speed = 100 and duplex = full. To fix the issue, hard-code the ASR 5000 to also be full duplex:

```

[local]DO-HSGW> show port info 24/1
Friday January 03 14:33:19 UTC 2014
Port: 24/1
  Port Type                : 1000 Ethernet Dual Media
  Role                    : Management Port
  Description              : (None Set)
  Controlled By Card      : 8 (System Management Card)
  Redundancy Mode         : Port Mode
  Framing Mode            : Unspecified
  Redundant With          : 25/1
  Preferred Port          : Non-Revertive
  Physical ifIndex        : 402718720
  Administrative State    : Enabled
  Configured Duplex      : Auto
  Configured Speed        : Auto
  Media Selection         : RJ45
  MAC Address             : 00-05-47-02-5D-EE
  Link State              : Up
  Link Duplex           : Half
  Link Speed              : 100 Mb
  Link Aggregation Group  : None
  Logical ifIndex         : 402718721
  Operational State       : Down, Standby
  SFP Module              : Present (1000BASE-SX, M5, M610G SFP+Cu)

```

Or alternatively, set BOTH sides to be auto-negotiate.

But having one sides as auto and the other side as full could result in half-duplex establishment.

Unexpected LAG Switchover - LAG Port 23/1 Issue

The following was observed where port 23/1 in the LAG was stuck in LAG negotiated state after an unexpected LAG switchover:

```

2015-May-15+16:47:40.410 [snmp 22002 info] [1/0/13147 <lagmgr:0>
trap_api.c:2387] [software internal system syslog] Internal trap notification
1205 (LAGGroupUp) card:19, port:1, partner:(007F,64-87-88-66-F7-C0,0016)
2015-May-15+16:47:40.410 [snmp 22002 info] [1/0/13147 <lagmgr:0>
trap_api.c:2387] [software internal system syslog] Internal trap notification
1204 (LAGGroupDown) card:19, port:1, partner:(007F,64-87-88-67-87-C0,0016)

2015-May-15+16:47:40.410 [lagmgr 179050 warning] [1/0/13147 <lagmgr:0>
lagmgr_state.c:1314] [software internal system critical-info syslog] LAG group
50 (global) with master port 19/1 has changed partner

```

from (007F,64-87-88-67-87-C0,0016) on 17/1, 19/1, 23/1, 27/1, 29/1
to (007F,64-87-88-66-F7-C0,0016) on 18/1, 20/1, 26/1, 28/1, 30/1

```
[local]PDSN> show port table | grep LA 17/1 Srvc 10G Ethernet Enabled Up Up Active None LA~ 19/1
18/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1 19/1 Srvc 10G Ethernet Enabled - Up -
None LA~ 19/1 20/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1 23/1 Srvc 10G Ethernet
Enabled Up Up Active None LA* 19/1
26/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1
27/1 Srvc 10G Ethernet Enabled Up Up Active None LA~ 19/1
28/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1
29/1 Srvc 10G Ethernet Enabled Up Up Active None LA~ 19/1
30/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1
```

[local]PDSN> show port info 23/1

Port: 23/1

```
Port Type          : 10G Ethernet
Role               : Service Port
Description        : Ingress-Egress Line Card
Controlled By Card : 7 (Packet Services Card 3)
Redundancy Mode    : Port Mode
Framing Mode       : Unspecified
Redundant With     : Not Redundant
Preferred Port     : Non-Revertive
Physical ifIndex   : 385941504
Administrative State : Enabled
Configured Duplex  : Auto
Configured Speed   : Auto
Configured Flow Control : Enabled
MAC Address        : 00-05-47-02-A6-96
Link State         : Up
Link Duplex        : Full
Link Speed         : 10 Gb
Flow Control       : Enabled
Link Aggregation Group : 50 (global, member)
Link Aggregation LACP : Active, Short, Auto
Link Aggregation Master : 19/1
Link Aggregation State : Agreed with LACP peer
Link Aggregation Actor : (8000,00-05-47-02-B1-97,001A,8000,1701)
Link Aggregation Peer : (007F,64-87-88-67-87-C0,0016,007F,0013)
Logical ifIndex    : 385941505
Operational State  : Up, Active
SFP Module         : Present (10G Base SR)
```

[local]PDSN>show card diag 23

Card 23:

Counters:

In Service Date : Tue Aug 24 06:58:31 2010 (Estimated)

Status:

IDEEPROM Magic Number : Good

Card Diagnostics : Pass

Current Failure : None

Last Failure : None

Card Usable : Yes

Current Environment:

Temperature: Card : 48 C (limit 90 C)

Temperature: LM87 : 49 C (limit 85 C)

Temperature: PHY : 48 C (limit 90 C)

Voltage: 1.2V : 1.205 V (min 1.140 V, max 1.260 V)

Voltage: 1.2V : 1.205 V (min 1.140 V, max 1.260 V)

Voltage: 2.5V : 2.522 V (min 2.375 V, max 2.625 V)

Voltage: 3.3V : 3.285 V (min 3.135 V, max 3.465 V)

Voltage: 1.8V : 1.805 V (min 1.710 V, max 1.890 V)

The datalink counters didn't show any issues::

```
2015-May-15+16:47:40.410 [snmp 22002 info] [1/0/13147 <lagmgr:0>
trap_api.c:2387] [software internal system syslog] Internal trap notification
1205 (LAGGroupUp) card:19, port:1, partner:(007F,64-87-88-66-F7-C0,0016)
2015-May-15+16:47:40.410 [snmp 22002 info] [1/0/13147 <lagmgr:0>
trap_api.c:2387] [software internal system syslog] Internal trap notification
1204 (LAGGroupDown) card:19, port:1, partner:(007F,64-87-88-67-87-C0,0016)
```

```
2015-May-15+16:47:40.410 [lagmgr 179050 warning] [1/0/13147 <lagmgr:0>
lagmgr_state.c:1314] [software internal system critical-info syslog] LAG group
50 (global) with master port 19/1 has changed partner
from (007F,64-87-88-67-87-C0,0016) on 17/1, 19/1, 23/1, 27/1, 29/1
to (007F,64-87-88-66-F7-C0,0016) on 18/1, 20/1, 26/1, 28/1, 30/1
```

```
[local]PDSN> show port table | grep LA 17/1 Srvc 10G Ethernet Enabled Up Up Active None LA~ 19/1
18/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1 19/1 Srvc 10G Ethernet Enabled - Up -
None LA~ 19/1 20/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1 23/1 Srvc 10G Ethernet
Enabled Up Up Active None LA* 19/1
26/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1
27/1 Srvc 10G Ethernet Enabled Up Up Active None LA~ 19/1
28/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1
29/1 Srvc 10G Ethernet Enabled Up Up Active None LA~ 19/1
30/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1
```

```
[local]PDSN> show port info 23/1
```

```
Port: 23/1
Port Type : 10G Ethernet
Role : Service Port
Description : Ingress-Egress Line Card
Controlled By Card : 7 (Packet Services Card 3)
Redundancy Mode : Port Mode
Framing Mode : Unspecified
Redundant With : Not Redundant
Preferred Port : Non-Revertive
Physical ifIndex : 385941504
Administrative State : Enabled
Configured Duplex : Auto
Configured Speed : Auto
Configured Flow Control : Enabled
MAC Address : 00-05-47-02-A6-96
Link State : Up
Link Duplex : Full
Link Speed : 10 Gb
Flow Control : Enabled
Link Aggregation Group : 50 (global, member)
Link Aggregation LACP : Active, Short, Auto
Link Aggregation Master : 19/1
Link Aggregation State : Agreed with LACP peer
Link Aggregation Actor : (8000,00-05-47-02-B1-97,001A,8000,1701)
Link Aggregation Peer : (007F,64-87-88-67-87-C0,0016,007F,0013)
Logical ifIndex : 385941505
Operational State : Up, Active
SFP Module : Present (10G Base SR)
```

```
[local]PDSN>show card diag 23
```

Card 23:

Counters:

In Service Date : Tue Aug 24 06:58:31 2010 (Estimated)

Status:

IDEEPROM Magic Number : Good
Card Diagnostics : Pass
Current Failure : None
Last Failure : None
Card Usable : Yes

Current Environment:

Temperature: Card : 48 C (limit 90 C)
Temperature: LM87 : 49 C (limit 85 C)
Temperature: PHY : 48 C (limit 90 C)
Voltage: 1.2V : 1.205 V (min 1.140 V, max 1.260 V)
Voltage: 1.2V : 1.205 V (min 1.140 V, max 1.260 V)
Voltage: 2.5V : 2.522 V (min 2.375 V, max 2.625 V)
Voltage: 3.3V : 3.285 V (min 3.135 V, max 3.465 V)
Voltage: 1.8V : 1.805 V (min 1.710 V, max 1.890 V)

The NPU counters were OK also. Here are port 23/1 counters a few seconds later and nothing bad is incrementing:

```
2015-May-15+16:47:40.410 [snmp 22002 info] [1/0/13147 <lagmgr:0>
trap_api.c:2387] [software internal system syslog] Internal trap notification
1205 (LAGGroupUp) card:19, port:1, partner:(007F,64-87-88-66-F7-C0,0016)
2015-May-15+16:47:40.410 [snmp 22002 info] [1/0/13147 <lagmgr:0>
trap_api.c:2387] [software internal system syslog] Internal trap notification
1204 (LAGGroupDown) card:19, port:1, partner:(007F,64-87-88-67-87-C0,0016)
```

```
2015-May-15+16:47:40.410 [lagmgr 179050 warning] [1/0/13147 <lagmgr:0>
lagmgr_state.c:1314] [software internal system critical-info syslog] LAG group
50 (global) with master port 19/1 has changed partner
from (007F,64-87-88-67-87-C0,0016) on 17/1, 19/1, 23/1, 27/1, 29/1
to (007F,64-87-88-66-F7-C0,0016) on 18/1, 20/1, 26/1, 28/1, 30/1
```

```
[local]PDSN> show port table | grep LA 17/1 Srvc 10G Ethernet Enabled Up Up Active None LA~ 19/1
18/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1 19/1 Srvc 10G Ethernet Enabled - Up -
None LA~ 19/1 20/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1 23/1 Srvc 10G Ethernet
Enabled Up Up Active None LA* 19/1
26/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1
27/1 Srvc 10G Ethernet Enabled Up Up Active None LA~ 19/1
28/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1
29/1 Srvc 10G Ethernet Enabled Up Up Active None LA~ 19/1
30/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1
```

```
[local]PDSN> show port info 23/1
```

```
Port: 23/1
Port Type : 10G Ethernet
Role : Service Port
Description : Ingress-Egress Line Card
Controlled By Card : 7 (Packet Services Card 3)
Redundancy Mode : Port Mode
Framing Mode : Unspecified
Redundant With : Not Redundant
Preferred Port : Non-Revertive
Physical ifIndex : 385941504
Administrative State : Enabled
Configured Duplex : Auto
Configured Speed : Auto
Configured Flow Control : Enabled
MAC Address : 00-05-47-02-A6-96
Link State : Up
Link Duplex : Full
Link Speed : 10 Gb
```

```
Flow Control          : Enabled
Link Aggregation Group : 50 (global, member)
Link Aggregation LACP : Active, Short, Auto
Link Aggregation Master : 19/1
Link Aggregation State : Agreed with LACP peer
Link Aggregation Actor : (8000,00-05-47-02-B1-97,001A,8000,1701)
Link Aggregation Peer  : (007F,64-87-88-67-87-C0,0016,007F,0013)
Logical ifIndex       : 385941505
Operational State     : Up, Active
SFP Module            : Present (10G Base SR)
```

```
[local]PDSN>show card diag 23
```

```
Card 23:
```

```
Counters:
```

```
  In Service Date      : Tue Aug 24 06:58:31 2010 (Estimated)
```

```
Status:
```

```
  IDEEPROM Magic Number : Good
  Card Diagnostics       : Pass
  Current Failure        : None
  Last Failure           : None
  Card Usable            : Yes
```

```
Current Environment:
```

```
  Temperature: Card      : 48 C (limit 90 C)
  Temperature: LM87      : 49 C (limit 85 C)
  Temperature: PHY       : 48 C (limit 90 C)
  Voltage: 1.2V          : 1.205 V (min 1.140 V, max 1.260 V)
  Voltage: 1.2V          : 1.205 V (min 1.140 V, max 1.260 V)
  Voltage: 2.5V          : 2.522 V (min 2.375 V, max 2.625 V)
  Voltage: 3.3V          : 3.285 V (min 3.135 V, max 3.465 V)
  Voltage: 1.8V          : 1.805 V (min 1.710 V, max 1.890 V)
```

But Tech support command command "show lag event" showed continuous events on port 23/1. This is the best way to see the reported issue.

```
2015-May-15+16:47:40.410 [snmp 22002 info] [1/0/13147 <lagmgr:0>
trap_api.c:2387] [software internal system syslog] Internal trap notification
1205 (LAGGroupUp) card:19, port:1, partner:(007F,64-87-88-66-F7-C0,0016)
2015-May-15+16:47:40.410 [snmp 22002 info] [1/0/13147 <lagmgr:0>
trap_api.c:2387] [software internal system syslog] Internal trap notification
1204 (LAGGroupDown) card:19, port:1, partner:(007F,64-87-88-67-87-C0,0016)
```

```
2015-May-15+16:47:40.410 [lagmgr 179050 warning] [1/0/13147 <lagmgr:0>
lagmgr_state.c:1314] [software internal system critical-info syslog] LAG group
50 (global) with master port 19/1 has changed partner
from (007F,64-87-88-67-87-C0,0016) on 17/1, 19/1, 23/1, 27/1, 29/1
to (007F,64-87-88-66-F7-C0,0016) on 18/1, 20/1, 26/1, 28/1, 30/1
```

```
[local]PDSN> show port table | grep LA 17/1 Srvc 10G Ethernet Enabled Up Up Active None LA~ 19/1
18/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1 19/1 Srvc 10G Ethernet Enabled - Up -
None LA~ 19/1 20/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1 23/1 Srvc 10G Ethernet
Enabled Up Up Active None LA* 19/1
26/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1
27/1 Srvc 10G Ethernet Enabled Up Up Active None LA~ 19/1
28/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1
29/1 Srvc 10G Ethernet Enabled Up Up Active None LA~ 19/1
30/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1
```

```
[local]PDSN> show port info 23/1
```

```
Port: 23/1
```

```
  Port Type          : 10G Ethernet
  Role                : Service Port
```

Description : Ingress-Egress Line Card
Controlled By Card : 7 (Packet Services Card 3)
Redundancy Mode : Port Mode
Framing Mode : Unspecified
Redundant With : Not Redundant
Preferred Port : Non-Revertive
Physical ifIndex : 385941504
Administrative State : Enabled
Configured Duplex : Auto
Configured Speed : Auto
Configured Flow Control : Enabled
MAC Address : 00-05-47-02-A6-96
Link State : Up
Link Duplex : Full
Link Speed : 10 Gb
Flow Control : Enabled
Link Aggregation Group : 50 (global, member)
Link Aggregation LACP : Active, Short, Auto
Link Aggregation Master : 19/1
Link Aggregation State : Agreed with LACP peer
Link Aggregation Actor : (8000,00-05-47-02-B1-97,001A,8000,1701)
Link Aggregation Peer : (007F,64-87-88-67-87-C0,0016,007F,0013)
Logical ifIndex : 385941505
Operational State : Up, Active
SFP Module : Present (10G Base SR)

[local]PDSN>show card diag 23

Card 23:

Counters:

In Service Date : Tue Aug 24 06:58:31 2010 (Estimated)

Status:

IDEEPROM Magic Number : Good
Card Diagnostics : Pass
Current Failure : None
Last Failure : None
Card Usable : Yes

Current Environment:

Temperature: Card : 48 C (limit 90 C)
Temperature: LM87 : 49 C (limit 85 C)
Temperature: PHY : 48 C (limit 90 C)
Voltage: 1.2V : 1.205 V (min 1.140 V, max 1.260 V)
Voltage: 1.2V : 1.205 V (min 1.140 V, max 1.260 V)
Voltage: 2.5V : 2.522 V (min 2.375 V, max 2.625 V)
Voltage: 3.3V : 3.285 V (min 3.135 V, max 3.465 V)
Voltage: 1.8V : 1.805 V (min 1.710 V, max 1.890 V)

Next maintenance window, Cisco contacted and a PSC migration was done to put the card mappings back to the default mapping (so that the PSC is mapped to the Line Card physically behind it: 7 + 16 = 23), as a migration was done previous to contacting Cisco.

2015-May-15+16:47:40.410 [snmp 22002 info] [1/0/13147 <lagmgr:0>
trap_api.c:2387] [software internal system syslog] Internal trap notification
1205 (**LAGGroupUp**) card:19, port:1, partner:(007F,64-87-88-66-F7-C0,0016)

2015-May-15+16:47:40.410 [snmp 22002 info] [1/0/13147 <lagmgr:0>
trap_api.c:2387] [software internal system syslog] Internal trap notification
1204 (**LAGGroupDown**) card:19, port:1, partner:(007F,64-87-88-67-87-C0,0016)

2015-May-15+16:47:40.410 [lagmgr 179050 warning] [1/0/13147 <lagmgr:0>
lagmgr_state.c:1314] [software internal system critical-info syslog] LAG group
50 (global) with master port 19/1 has changed partner
from (007F,64-87-88-67-87-C0,0016) on 17/1, 19/1, 23/1, 27/1, 29/1
to (007F,64-87-88-66-F7-C0,0016) on 18/1, 20/1, 26/1, 28/1, 30/1

```
[local]PDSN> show port table | grep LA 17/1 Srvc 10G Ethernet Enabled Up Up Active None LA~ 19/1
18/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1 19/1 Srvc 10G Ethernet Enabled - Up -
None LA~ 19/1 20/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1 23/1 Srvc 10G Ethernet
Enabled Up Up Active None LA* 19/1
26/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1
27/1 Srvc 10G Ethernet Enabled Up Up Active None LA~ 19/1
28/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1
29/1 Srvc 10G Ethernet Enabled Up Up Active None LA~ 19/1
30/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1
```

```
[local]PDSN> show port info 23/1
```

```
Port: 23/1
Port Type          : 10G Ethernet
Role               : Service Port
Description        : Ingress-Egress Line Card
Controlled By Card : 7 (Packet Services Card 3)
Redundancy Mode    : Port Mode
Framing Mode       : Unspecified
Redundant With     : Not Redundant
Preferred Port     : Non-Revertive
Physical ifIndex   : 385941504
Administrative State : Enabled
Configured Duplex  : Auto
Configured Speed   : Auto
Configured Flow Control : Enabled
MAC Address        : 00-05-47-02-A6-96
Link State         : Up
Link Duplex        : Full
Link Speed         : 10 Gb
Flow Control       : Enabled
Link Aggregation Group : 50 (global, member)
Link Aggregation LACP : Active, Short, Auto
Link Aggregation Master : 19/1
Link Aggregation State : Agreed with LACP peer
Link Aggregation Actor : (8000,00-05-47-02-B1-97,001A,8000,1701)
Link Aggregation Peer  : (007F,64-87-88-67-87-C0,0016,007F,0013)
Logical ifIndex     : 385941505
Operational State   : Up, Active
SFP Module          : Present (10G Base SR)
```

```
[local]PDSN>show card diag 23
```

```
Card 23:
Counters:
  In Service Date      : Tue Aug 24 06:58:31 2010 (Estimated)
Status:
  IDEEPROM Magic Number : Good
  Card Diagnostics      : Pass
  Current Failure       : None
  Last Failure         : None
  Card Usable           : Yes
Current Environment:
  Temperature: Card      : 48 C (limit 90 C)
  Temperature: LM87     : 49 C (limit 85 C)
  Temperature: PHY      : 48 C (limit 90 C)
  Voltage: 1.2V         : 1.205 V (min 1.140 V, max 1.260 V)
  Voltage: 1.2V         : 1.205 V (min 1.140 V, max 1.260 V)
  Voltage: 2.5V         : 2.522 V (min 2.375 V, max 2.625 V)
  Voltage: 3.3V         : 3.285 V (min 3.135 V, max 3.465 V)
  Voltage: 1.8V         : 1.805 V (min 1.710 V, max 1.890 V)
```

A reboot of line card 23 was performed:

```
2015-May-15+16:47:40.410 [snmp 22002 info] [1/0/13147 <lagmgr:0>
trap_api.c:2387] [software internal system syslog] Internal trap notification
1205 (LAGGroupUp) card:19, port:1, partner:(007F,64-87-88-66-F7-C0,0016)
2015-May-15+16:47:40.410 [snmp 22002 info] [1/0/13147 <lagmgr:0>
trap_api.c:2387] [software internal system syslog] Internal trap notification
1204 (LAGGroupDown) card:19, port:1, partner:(007F,64-87-88-67-87-C0,0016)
```

```
2015-May-15+16:47:40.410 [lagmgr 179050 warning] [1/0/13147 <lagmgr:0>
lagmgr_state.c:1314] [software internal system critical-info syslog] LAG group
50 (global) with master port 19/1 has changed partner
from (007F,64-87-88-67-87-C0,0016) on 17/1, 19/1, 23/1, 27/1, 29/1
to (007F,64-87-88-66-F7-C0,0016) on 18/1, 20/1, 26/1, 28/1, 30/1
```

```
[local]PDSN> show port table | grep LA 17/1 Srvc 10G Ethernet Enabled Up Up Active None LA~ 19/1
18/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1 19/1 Srvc 10G Ethernet Enabled - Up -
None LA~ 19/1 20/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1 23/1 Srvc 10G Ethernet
Enabled Up Up Active None LA* 19/1
26/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1
27/1 Srvc 10G Ethernet Enabled Up Up Active None LA~ 19/1
28/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1
29/1 Srvc 10G Ethernet Enabled Up Up Active None LA~ 19/1
30/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1
```

```
[local]PDSN> show port info 23/1
```

```
Port: 23/1
Port Type      : 10G Ethernet
Role           : Service Port
Description    : Ingress-Egress Line Card
Controlled By Card : 7 (Packet Services Card 3)
Redundancy Mode : Port Mode
Framing Mode   : Unspecified
Redundant With : Not Redundant
Preferred Port : Non-Revertive
Physical ifIndex : 385941504
Administrative State : Enabled
Configured Duplex : Auto
Configured Speed : Auto
Configured Flow Control : Enabled
MAC Address    : 00-05-47-02-A6-96
Link State     : Up
Link Duplex    : Full
Link Speed     : 10 Gb
Flow Control   : Enabled
Link Aggregation Group : 50 (global, member)
Link Aggregation LACP : Active, Short, Auto
Link Aggregation Master : 19/1
Link Aggregation State : Agreed with LACP peer
Link Aggregation Actor : (8000,00-05-47-02-B1-97,001A,8000,1701)
Link Aggregation Peer  : (007F,64-87-88-67-87-C0,0016,007F,0013)
Logical ifIndex : 385941505
Operational State : Up, Active
SFP Module      : Present (10G Base SR)
```

```
[local]PDSN>show card diag 23
```

```
Card 23:
```

```
Counters:
```

```
In Service Date : Tue Aug 24 06:58:31 2010 (Estimated)
```

```
Status:
```

```

IDEEPROM Magic Number : Good
Card Diagnostics      : Pass
Current Failure       : None
Last Failure          : None
Card Usable           : Yes
Current Environment:
Temperature: Card     : 48 C (limit 90 C)
Temperature: LM87     : 49 C (limit 85 C)
Temperature: PHY      : 48 C (limit 90 C)
Voltage: 1.2V         : 1.205 V (min 1.140 V, max 1.260 V)
Voltage: 1.2V         : 1.205 V (min 1.140 V, max 1.260 V)
Voltage: 2.5V         : 2.522 V (min 2.375 V, max 2.625 V)
Voltage: 3.3V         : 3.285 V (min 3.135 V, max 3.465 V)
Voltage: 1.8V         : 1.805 V (min 1.710 V, max 1.890 V)

```

The port is now in a good state:

```

2015-May-15+16:47:40.410 [snmp 22002 info] [1/0/13147 <lagmgr:0>
trap_api.c:2387] [software internal system syslog] Internal trap notification
1205 (LAGGroupUp) card:19, port:1, partner:(007F,64-87-88-66-F7-C0,0016)
2015-May-15+16:47:40.410 [snmp 22002 info] [1/0/13147 <lagmgr:0>
trap_api.c:2387] [software internal system syslog] Internal trap notification
1204 (LAGGroupDown) card:19, port:1, partner:(007F,64-87-88-67-87-C0,0016)

```

```

2015-May-15+16:47:40.410 [lagmgr 179050 warning] [1/0/13147 <lagmgr:0>
lagmgr_state.c:1314] [software internal system critical-info syslog] LAG group
50 (global) with master port 19/1 has changed partner
from (007F,64-87-88-67-87-C0,0016) on 17/1, 19/1, 23/1, 27/1, 29/1
to (007F,64-87-88-66-F7-C0,0016) on 18/1, 20/1, 26/1, 28/1, 30/1

```

```

[local]PDSN> show port table | grep LA 17/1 Srvc 10G Ethernet Enabled Up Up Active None LA~ 19/1
18/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1 19/1 Srvc 10G Ethernet Enabled - Up -
None LA~ 19/1 20/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1 23/1 Srvc 10G Ethernet
Enabled Up Up Active None LA* 19/1
26/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1
27/1 Srvc 10G Ethernet Enabled Up Up Active None LA~ 19/1
28/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1
29/1 Srvc 10G Ethernet Enabled Up Up Active None LA~ 19/1
30/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1

```

```
[local]PDSN> show port info 23/1
```

```

Port: 23/1
Port Type      : 10G Ethernet
Role           : Service Port
Description    : Ingress-Egress Line Card
Controlled By Card : 7 (Packet Services Card 3)
Redundancy Mode : Port Mode
Framing Mode   : Unspecified
Redundant With : Not Redundant
Preferred Port : Non-Revertive
Physical ifIndex : 385941504
Administrative State : Enabled
Configured Duplex : Auto
Configured Speed : Auto
Configured Flow Control : Enabled
MAC Address     : 00-05-47-02-A6-96
Link State      : Up
Link Duplex     : Full
Link Speed      : 10 Gb
Flow Control    : Enabled
Link Aggregation Group : 50 (global, member)
Link Aggregation LACP : Active, Short, Auto
Link Aggregation Master : 19/1

```

```
Link Aggregation State : Agreed with LACP peer
Link Aggregation Actor : (8000,00-05-47-02-B1-97,001A,8000,1701)
Link Aggregation Peer  : (007F,64-87-88-67-87-C0,0016,007F,0013)
Logical ifIndex        : 385941505
Operational State      : Up, Active
SFP Module             : Present (10G Base SR)
```

```
[local]PDSN>show card diag 23
```

```
Card 23:
```

```
Counters:
```

```
  In Service Date      : Tue Aug 24 06:58:31 2010 (Estimated)
```

```
Status:
```

```
  IDEEPROM Magic Number : Good
```

```
  Card Diagnostics      : Pass
```

```
  Current Failure       : None
```

```
  Last Failure          : None
```

```
  Card Usable           : Yes
```

```
Current Environment:
```

```
  Temperature: Card     : 48 C (limit 90 C)
```

```
  Temperature: LM87     : 49 C (limit 85 C)
```

```
  Temperature: PHY      : 48 C (limit 90 C)
```

```
  Voltage: 1.2V         : 1.205 V (min 1.140 V, max 1.260 V)
```

```
  Voltage: 1.2V         : 1.205 V (min 1.140 V, max 1.260 V)
```

```
  Voltage: 2.5V         : 2.522 V (min 2.375 V, max 2.625 V)
```

```
  Voltage: 3.3V         : 3.285 V (min 3.135 V, max 3.465 V)
```

```
  Voltage: 1.8V         : 1.805 V (min 1.710 V, max 1.890 V)
```

But the Juniper side was still having errors (no output shown here).

The issue remained unresolved on the Juniper side.

The fiber was then moved from 23/1 to 17/1 and the error stayed with 23/1 and moved to a different port on the Juniper side.

```
2015-May-15+16:47:40.410 [snmp 22002 info] [1/0/13147 <lagmgr:0>
trap_api.c:2387] [software internal system syslog] Internal trap notification
1205 (LAGGroupUp) card:19, port:1, partner:(007F,64-87-88-66-F7-C0,0016)
2015-May-15+16:47:40.410 [snmp 22002 info] [1/0/13147 <lagmgr:0>
trap_api.c:2387] [software internal system syslog] Internal trap notification
1204 (LAGGroupDown) card:19, port:1, partner:(007F,64-87-88-67-87-C0,0016)
```

```
2015-May-15+16:47:40.410 [lagmgr 179050 warning] [1/0/13147 <lagmgr:0>
lagmgr_state.c:1314] [software internal system critical-info syslog] LAG group
50 (global) with master port 19/1 has changed partner
from (007F,64-87-88-67-87-C0,0016) on 17/1, 19/1, 23/1, 27/1, 29/1
to (007F,64-87-88-66-F7-C0,0016) on 18/1, 20/1, 26/1, 28/1, 30/1
```

```
[local]PDSN> show port table | grep LA 17/1 Srvc 10G Ethernet Enabled Up Up Active None LA~ 19/1
18/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1 19/1 Srvc 10G Ethernet Enabled - Up -
None LA~ 19/1 20/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1 23/1 Srvc 10G Ethernet
Enabled Up Up Active None LA* 19/1
26/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1
27/1 Srvc 10G Ethernet Enabled Up Up Active None LA~ 19/1
28/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1
29/1 Srvc 10G Ethernet Enabled Up Up Active None LA~ 19/1
30/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1
```

```
[local]PDSN> show port info 23/1
```

```
Port: 23/1
```

```
Port Type           : 10G Ethernet
Role                : Service Port
Description         : Ingress-Egress Line Card
Controlled By Card : 7 (Packet Services Card 3)
Redundancy Mode    : Port Mode
Framing Mode       : Unspecified
Redundant With     : Not Redundant
Preferred Port     : Non-Revertive
Physical ifIndex   : 385941504
Administrative State : Enabled
Configured Duplex  : Auto
Configured Speed   : Auto
Configured Flow Control : Enabled
MAC Address        : 00-05-47-02-A6-96
Link State         : Up
Link Duplex        : Full
Link Speed         : 10 Gb
Flow Control       : Enabled
Link Aggregation Group : 50 (global, member)
Link Aggregation LACP : Active, Short, Auto
Link Aggregation Master : 19/1
Link Aggregation State : Agreed with LACP peer
Link Aggregation Actor : (8000,00-05-47-02-B1-97,001A,8000,1701)
Link Aggregation Peer : (007F,64-87-88-67-87-C0,0016,007F,0013)
Logical ifIndex    : 385941505
Operational State  : Up, Active
SFP Module         : Present (10G Base SR)
```

```
[local]PDSN>show card diag 23
```

```
Card 23:
```

```
Counters:
```

```
  In Service Date       : Tue Aug 24 06:58:31 2010 (Estimated)
```

```
Status:
```

```
  IDEEPROM Magic Number : Good
  Card Diagnostics       : Pass
  Current Failure        : None
  Last Failure           : None
  Card Usable            : Yes
```

```
Current Environment:
```

```
  Temperature: Card      : 48 C (limit 90 C)
  Temperature: LM87      : 49 C (limit 85 C)
  Temperature: PHY       : 48 C (limit 90 C)
  Voltage: 1.2V          : 1.205 V (min 1.140 V, max 1.260 V)
  Voltage: 1.2V          : 1.205 V (min 1.140 V, max 1.260 V)
  Voltage: 2.5V          : 2.522 V (min 2.375 V, max 2.625 V)
  Voltage: 3.3V          : 3.285 V (min 3.135 V, max 3.465 V)
  Voltage: 1.8V          : 1.805 V (min 1.710 V, max 1.890 V)
```

The fibers were moved back to the original location and the issue was still with port 23/1 (This is all from Juniper's perspective because as mentioned above, the issue was no longer being seen on the ASR 5000 after restarting Line Card 23).

```
2015-May-15+16:47:40.410 [snmp 22002 info] [1/0/13147 <lagmgr:0>
trap_api.c:2387] [software internal system syslog] Internal trap notification
1205 (LAGGroupUp) card:19, port:1, partner:(007F,64-87-88-66-F7-C0,0016)
2015-May-15+16:47:40.410 [snmp 22002 info] [1/0/13147 <lagmgr:0>
trap_api.c:2387] [software internal system syslog] Internal trap notification
1204 (LAGGroupDown) card:19, port:1, partner:(007F,64-87-88-67-87-C0,0016)
```


2015-May-15+16:47:40.410 [lagmgr 179050 warning] [1/0/13147 <lagmgr:0>
lagmgr_state.c:1314] [software internal system critical-info syslog] LAG group
50 (global) with master port 19/1 has changed partner
from (007F,64-87-88-67-87-C0,0016) on 17/1, 19/1, 23/1, 27/1, 29/1
to (007F,64-87-88-66-F7-C0,0016) on 18/1, 20/1, 26/1, 28/1, 30/1

```
[local]PDSN> show port table | grep LA 17/1 Srvc 10G Ethernet Enabled Up Up Active None LA~ 19/1
18/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1 19/1 Srvc 10G Ethernet Enabled - Up -
None LA~ 19/1 20/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1 23/1 Srvc 10G Ethernet
Enabled Up Up Active None LA* 19/1
26/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1
27/1 Srvc 10G Ethernet Enabled Up Up Active None LA~ 19/1
28/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1
29/1 Srvc 10G Ethernet Enabled Up Up Active None LA~ 19/1
30/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1
```

[local]PDSN> show port info 23/1

Port: 23/1

Port Type	: 10G Ethernet
Role	: Service Port
Description	: Ingress-Egress Line Card
Controlled By Card	: 7 (Packet Services Card 3)
Redundancy Mode	: Port Mode
Framing Mode	: Unspecified
Redundant With	: Not Redundant
Preferred Port	: Non-Revertive
Physical ifIndex	: 385941504
Administrative State	: Enabled
Configured Duplex	: Auto
Configured Speed	: Auto
Configured Flow Control	: Enabled
MAC Address	: 00-05-47-02-A6-96
Link State	: Up
Link Duplex	: Full
Link Speed	: 10 Gb
Flow Control	: Enabled
Link Aggregation Group	: 50 (global, member)
Link Aggregation LACP	: Active, Short, Auto
Link Aggregation Master	: 19/1
Link Aggregation State	: Agreed with LACP peer
Link Aggregation Actor	: (8000,00-05-47-02-B1-97,001A,8000,1701)
Link Aggregation Peer	: (007F,64-87-88-67-87-C0,0016,007F,0013)
Logical ifIndex	: 385941505
Operational State	: Up, Active
SFP Module	: Present (10G Base SR)

[local]PDSN>show card diag 23

Card 23:

Counters:
In Service Date : Tue Aug 24 06:58:31 2010 (Estimated)

Status:
IDEEPROM Magic Number : Good
Card Diagnostics : Pass
Current Failure : None
Last Failure : None
Card Usable : Yes

Current Environment:
Temperature: Card : 48 C (limit 90 C)
Temperature: LM87 : 49 C (limit 85 C)
Temperature: PHY : 48 C (limit 90 C)
Voltage: 1.2V : 1.205 V (min 1.140 V, max 1.260 V)

Voltage: 1.2V : 1.205 V (min 1.140 V, max 1.260 V)
Voltage: 2.5V : 2.522 V (min 2.375 V, max 2.625 V)
Voltage: 3.3V : 3.285 V (min 3.135 V, max 3.465 V)
Voltage: 1.8V : 1.805 V (min 1.710 V, max 1.890 V)

Swapping the SFPs between 23/1 and 17/1 didn't change anything.

```
2015-May-15+16:47:40.410 [snmp 22002 info] [1/0/13147 <lagmgr:0>
trap_api.c:2387] [software internal system syslog] Internal trap notification
1205 (LAGGroupUp) card:19, port:1, partner:(007F,64-87-88-66-F7-C0,0016)
2015-May-15+16:47:40.410 [snmp 22002 info] [1/0/13147 <lagmgr:0>
trap_api.c:2387] [software internal system syslog] Internal trap notification
1204 (LAGGroupDown) card:19, port:1, partner:(007F,64-87-88-67-87-C0,0016)
```

```
2015-May-15+16:47:40.410 [lagmgr 179050 warning] [1/0/13147 <lagmgr:0>
lagmgr_state.c:1314] [software internal system critical-info syslog] LAG group
50 (global) with master port 19/1 has changed partner
from (007F,64-87-88-67-87-C0,0016) on 17/1, 19/1, 23/1, 27/1, 29/1
to (007F,64-87-88-66-F7-C0,0016) on 18/1, 20/1, 26/1, 28/1, 30/1
```

```
[local]PDSN> show port table | grep LA 17/1 Srvc 10G Ethernet Enabled Up Up Active None LA~ 19/1
18/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1 19/1 Srvc 10G Ethernet Enabled - Up -
None LA~ 19/1 20/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1 23/1 Srvc 10G Ethernet
Enabled Up Up Active None LA* 19/1
26/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1
27/1 Srvc 10G Ethernet Enabled Up Up Active None LA~ 19/1
28/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1
29/1 Srvc 10G Ethernet Enabled Up Up Active None LA~ 19/1
30/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1
```

```
[local]PDSN> show port info 23/1
```

```
Port: 23/1
Port Type : 10G Ethernet
Role : Service Port
Description : Ingress-Egress Line Card
Controlled By Card : 7 (Packet Services Card 3)
Redundancy Mode : Port Mode
Framing Mode : Unspecified
Redundant With : Not Redundant
Preferred Port : Non-Revertive
Physical ifIndex : 385941504
Administrative State : Enabled
Configured Duplex : Auto
Configured Speed : Auto
Configured Flow Control : Enabled
MAC Address : 00-05-47-02-A6-96
Link State : Up
Link Duplex : Full
Link Speed : 10 Gb
Flow Control : Enabled
Link Aggregation Group : 50 (global, member)
Link Aggregation LACP : Active, Short, Auto
Link Aggregation Master : 19/1
Link Aggregation State : Agreed with LACP peer
Link Aggregation Actor : (8000,00-05-47-02-B1-97,001A,8000,1701)
Link Aggregation Peer : (007F,64-87-88-67-87-C0,0016,007F,0013)
Logical ifIndex : 385941505
Operational State : Up, Active
SFP Module : Present (10G Base SR)
```

[local]PDSN>show card diag 23

Card 23:

Counters:

In Service Date : Tue Aug 24 06:58:31 2010 (Estimated)

Status:

IDEEPROM Magic Number : Good

Card Diagnostics : Pass

Current Failure : None

Last Failure : None

Card Usable : Yes

Current Environment:

Temperature: Card : 48 C (limit 90 C)

Temperature: LM87 : 49 C (limit 85 C)

Temperature: PHY : 48 C (limit 90 C)

Voltage: 1.2V : 1.205 V (min 1.140 V, max 1.260 V)

Voltage: 1.2V : 1.205 V (min 1.140 V, max 1.260 V)

Voltage: 2.5V : 2.522 V (min 2.375 V, max 2.625 V)

Voltage: 3.3V : 3.285 V (min 3.135 V, max 3.465 V)

Voltage: 1.8V : 1.805 V (min 1.710 V, max 1.890 V)

A reset of line card 23/1 cleared the issue on the Juniper side.

2015-May-15+16:47:40.410 [snmp 22002 info] [1/0/13147 <lagmgr:0> trap_api.c:2387] [software internal system syslog] Internal trap notification 1205 (LAGGroupUp) card:19, port:1, partner:(007F,64-87-88-66-F7-C0,0016) 2015-May-15+16:47:40.410 [snmp 22002 info] [1/0/13147 <lagmgr:0> trap_api.c:2387] [software internal system syslog] Internal trap notification 1204 (LAGGroupDown) card:19, port:1, partner:(007F,64-87-88-67-87-C0,0016)

2015-May-15+16:47:40.410 [lagmgr 179050 warning] [1/0/13147 <lagmgr:0> lagmgr_state.c:1314] [software internal system critical-info syslog] LAG group 50 (global) with master port 19/1 has changed partner from (007F,64-87-88-67-87-C0,0016) on 17/1, 19/1, 23/1, 27/1, 29/1 to (007F,64-87-88-66-F7-C0,0016) on 18/1, 20/1, 26/1, 28/1, 30/1

[local]PDSN> show port table | grep LA 17/1 Srvc 10G Ethernet Enabled Up Up Active None LA~ 19/1 18/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1 19/1 Srvc 10G Ethernet Enabled - Up - None LA~ 19/1 20/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1 23/1 Srvc 10G Ethernet Enabled Up Up Active None LA* 19/1 26/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1 27/1 Srvc 10G Ethernet Enabled Up Up Active None LA~ 19/1 28/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1 29/1 Srvc 10G Ethernet Enabled Up Up Active None LA~ 19/1 30/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1

[local]PDSN> show port info 23/1

Port: 23/1

Port Type : 10G Ethernet
Role : Service Port
Description : Ingress-Egress Line Card
Controlled By Card : 7 (Packet Services Card 3)
Redundancy Mode : Port Mode
Framing Mode : Unspecified
Redundant With : Not Redundant
Preferred Port : Non-Revertive
Physical ifIndex : 385941504
Administrative State : Enabled
Configured Duplex : Auto
Configured Speed : Auto
Configured Flow Control : Enabled
MAC Address : 00-05-47-02-A6-96
Link State : Up

```

Link Duplex          : Full
Link Speed           : 10 Gb
Flow Control         : Enabled
Link Aggregation Group : 50 (global, member)
Link Aggregation LACP : Active, Short, Auto
Link Aggregation Master : 19/1
Link Aggregation State : Agreed with LACP peer
Link Aggregation Actor : (8000,00-05-47-02-B1-97,001A,8000,1701)
Link Aggregation Peer : (007F,64-87-88-67-87-C0,0016,007F,0013)
Logical ifIndex      : 385941505
Operational State    : Up, Active
SFP Module           : Present (10G Base SR)

```

```
[local]PDSN>show card diag 23
```

Card 23:

Counters:

```
In Service Date      : Tue Aug 24 06:58:31 2010 (Estimated)
```

Status:

```
IDEEPROM Magic Number : Good
```

```
Card Diagnostics      : Pass
```

```
Current Failure       : None
```

```
Last Failure          : None
```

```
Card Usable           : Yes
```

Current Environment:

```
Temperature: Card     : 48 C (limit 90 C)
```

```
Temperature: LM87     : 49 C (limit 85 C)
```

```
Temperature: PHY      : 48 C (limit 90 C)
```

```
Voltage: 1.2V         : 1.205 V (min 1.140 V, max 1.260 V)
```

```
Voltage: 1.2V         : 1.205 V (min 1.140 V, max 1.260 V)
```

```
Voltage: 2.5V         : 2.522 V (min 2.375 V, max 2.625 V)
```

```
Voltage: 3.3V         : 3.285 V (min 3.135 V, max 3.465 V)
```

```
Voltage: 1.8V         : 1.805 V (min 1.710 V, max 1.890 V)
```

Unexplained port errors on Juniper router peered with XGLC Port 27/1 (subscriber impacting)

This next example, had many of the same troubleshooting steps applied and is worth studying. It started off with some unknown resmgr 14537 warning logs being reported along with a port 25/1 bounce, but evolved into a port 27/1 issue and increased call setup failures.

```

2015-May-15+16:47:40.410 [snmp 22002 info] [1/0/13147 <lagmgr:0>
trap_api.c:2387] [software internal system syslog] Internal trap notification
1205 (LAGGroupUp) card:19, port:1, partner:(007F,64-87-88-66-F7-C0,0016)
2015-May-15+16:47:40.410 [snmp 22002 info] [1/0/13147 <lagmgr:0>
trap_api.c:2387] [software internal system syslog] Internal trap notification
1204 (LAGGroupDown) card:19, port:1, partner:(007F,64-87-88-67-87-C0,0016)

```

```

2015-May-15+16:47:40.410 [lagmgr 179050 warning] [1/0/13147 <lagmgr:0>
lagmgr_state.c:1314] [software internal system critical-info syslog] LAG group
50 (global) with master port 19/1 has changed partner
from (007F,64-87-88-67-87-C0,0016) on 17/1, 19/1, 23/1, 27/1, 29/1
to (007F,64-87-88-66-F7-C0,0016) on 18/1, 20/1, 26/1, 28/1, 30/1

```

```

[local]PDSN> show port table | grep LA 17/1 Srvc 10G Ethernet Enabled Up Up Active None LA~ 19/1
18/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1 19/1 Srvc 10G Ethernet Enabled - Up -
None LA~ 19/1 20/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1 23/1 Srvc 10G Ethernet
Enabled Up Up Active None LA* 19/1
26/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1
27/1 Srvc 10G Ethernet Enabled Up Up Active None LA~ 19/1

```

28/1	Srvc 10G Ethernet	Enabled	Up	Up	Active	None	LA+ 19/1
29/1	Srvc 10G Ethernet	Enabled	Up	Up	Active	None	LA~ 19/1
30/1	Srvc 10G Ethernet	Enabled	Up	Up	Active	None	LA+ 19/1

[local]PDSN> show port info 23/1

```
Port: 23/1
Port Type           : 10G Ethernet
Role                : Service Port
Description         : Ingress-Egress Line Card
Controlled By Card  : 7 (Packet Services Card 3)
Redundancy Mode     : Port Mode
Framing Mode        : Unspecified
Redundant With      : Not Redundant
Preferred Port      : Non-Revertive
Physical ifIndex    : 385941504
Administrative State : Enabled
Configured Duplex   : Auto
Configured Speed    : Auto
Configured Flow Control : Enabled
MAC Address         : 00-05-47-02-A6-96
Link State          : Up
Link Duplex         : Full
Link Speed          : 10 Gb
Flow Control        : Enabled
Link Aggregation Group : 50 (global, member)
Link Aggregation LACP : Active, Short, Auto
Link Aggregation Master : 19/1
Link Aggregation State : Agreed with LACP peer
Link Aggregation Actor : (8000,00-05-47-02-B1-97,001A,8000,1701)
Link Aggregation Peer : (007F,64-87-88-67-87-C0,0016,007F,0013)
Logical ifIndex     : 385941505
Operational State   : Up, Active
SFP Module          : Present (10G Base SR)
```

[local]PDSN>show card diag 23

```
Card 23:
Counters:
  In Service Date      : Tue Aug 24 06:58:31 2010 (Estimated)
Status:
  IDEEPROM Magic Number : Good
  Card Diagnostics      : Pass
  Current Failure       : None
  Last Failure          : None
  Card Usable           : Yes
Current Environment:
  Temperature: Card     : 48 C (limit 90 C)
  Temperature: LM87     : 49 C (limit 85 C)
  Temperature: PHY      : 48 C (limit 90 C)
  Voltage: 1.2V         : 1.205 V (min 1.140 V, max 1.260 V)
  Voltage: 1.2V         : 1.205 V (min 1.140 V, max 1.260 V)
  Voltage: 2.5V         : 2.522 V (min 2.375 V, max 2.625 V)
  Voltage: 3.3V         : 3.285 V (min 3.135 V, max 3.465 V)
  Voltage: 1.8V         : 1.805 V (min 1.710 V, max 1.890 V)
```

The port utilization was uneven on port 27/1:

```
2015-May-15+16:47:40.410 [snmp 22002 info] [1/0/13147 <lagmgr:0>
trap_api.c:2387] [software internal system syslog] Internal trap notification
1205 (LAGGroupUp) card:19, port:1, partner:(007F,64-87-88-66-F7-C0,0016)
2015-May-15+16:47:40.410 [snmp 22002 info] [1/0/13147 <lagmgr:0>
trap_api.c:2387] [software internal system syslog] Internal trap notification
```

1204 (LAGGroupDown) card:19, port:1, partner:(007F,64-87-88-67-87-C0,0016)

2015-May-15+16:47:40.410 [lagmgr 179050 warning] [1/0/13147 <lagmgr:0>
lagmgr_state.c:1314] [software internal system critical-info syslog] LAG group
50 (global) with master port 19/1 has changed partner
from (007F,64-87-88-67-87-C0,0016) on 17/1, 19/1, 23/1, 27/1, 29/1
to (007F,64-87-88-66-F7-C0,0016) on 18/1, 20/1, 26/1, 28/1, 30/1

```
[local]PDSN> show port table | grep LA 17/1 Srvc 10G Ethernet Enabled Up Up Active None LA~ 19/1
18/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1 19/1 Srvc 10G Ethernet Enabled - Up -
None LA~ 19/1 20/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1 23/1 Srvc 10G Ethernet
Enabled Up Up Active None LA* 19/1
26/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1
27/1 Srvc 10G Ethernet Enabled Up Up Active None LA~ 19/1
28/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1
29/1 Srvc 10G Ethernet Enabled Up Up Active None LA~ 19/1
30/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1
```

[local]PDSN> show port info 23/1

```
Port: 23/1
Port Type          : 10G Ethernet
Role               : Service Port
Description        : Ingress-Egress Line Card
Controlled By Card : 7 (Packet Services Card 3)
Redundancy Mode    : Port Mode
Framing Mode       : Unspecified
Redundant With     : Not Redundant
Preferred Port     : Non-Revertive
Physical ifIndex   : 385941504
Administrative State : Enabled
Configured Duplex  : Auto
Configured Speed   : Auto
Configured Flow Control : Enabled
MAC Address        : 00-05-47-02-A6-96
Link State         : Up
Link Duplex        : Full
Link Speed         : 10 Gb
Flow Control       : Enabled
Link Aggregation Group : 50 (global, member)
Link Aggregation LACP : Active, Short, Auto
Link Aggregation Master : 19/1
Link Aggregation State : Agreed with LACP peer
Link Aggregation Actor : (8000,00-05-47-02-B1-97,001A,8000,1701)
Link Aggregation Peer  : (007F,64-87-88-67-87-C0,0016,007F,0013)
Logical ifIndex     : 385941505
Operational State   : Up, Active
SFP Module          : Present (10G Base SR)
```

[local]PDSN>show card diag 23

```
Card 23:
Counters:
  In Service Date      : Tue Aug 24 06:58:31 2010 (Estimated)
Status:
  IDEEPROM Magic Number : Good
  Card Diagnostics      : Pass
  Current Failure       : None
  Last Failure          : None
  Card Usable           : Yes
Current Environment:
  Temperature: Card     : 48 C (limit 90 C)
  Temperature: LM87     : 49 C (limit 85 C)
```

Temperature: PHY : 48 C (limit 90 C)
Voltage: 1.2V : 1.205 V (min 1.140 V, max 1.260 V)
Voltage: 1.2V : 1.205 V (min 1.140 V, max 1.260 V)
Voltage: 2.5V : 2.522 V (min 2.375 V, max 2.625 V)
Voltage: 3.3V : 3.285 V (min 3.135 V, max 3.465 V)
Voltage: 1.8V : 1.805 V (min 1.710 V, max 1.890 V)

On the Juniper MX-960 side of the PDSN interface in question, the input errors were steadily increasing:

```
2015-May-15+16:47:40.410 [snmp 22002 info] [1/0/13147 <lagmgr:0>
trap_api.c:2387] [software internal system syslog] Internal trap notification
1205 (LAGGroupUp) card:19, port:1, partner:(007F,64-87-88-66-F7-C0,0016)
2015-May-15+16:47:40.410 [snmp 22002 info] [1/0/13147 <lagmgr:0>
trap_api.c:2387] [software internal system syslog] Internal trap notification
1204 (LAGGroupDown) card:19, port:1, partner:(007F,64-87-88-67-87-C0,0016)
```

```
2015-May-15+16:47:40.410 [lagmgr 179050 warning] [1/0/13147 <lagmgr:0>
lagmgr_state.c:1314] [software internal system critical-info syslog] LAG group
50 (global) with master port 19/1 has changed partner
from (007F,64-87-88-67-87-C0,0016) on 17/1, 19/1, 23/1, 27/1, 29/1
to (007F,64-87-88-66-F7-C0,0016) on 18/1, 20/1, 26/1, 28/1, 30/1
```

```
[local]PDSN> show port table | grep LA 17/1 Srvc 10G Ethernet Enabled Up Up Active None LA~ 19/1
18/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1 19/1 Srvc 10G Ethernet Enabled - Up -
None LA~ 19/1 20/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1 23/1 Srvc 10G Ethernet
Enabled Up Up Active None LA* 19/1
26/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1
27/1 Srvc 10G Ethernet Enabled Up Up Active None LA~ 19/1
28/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1
29/1 Srvc 10G Ethernet Enabled Up Up Active None LA~ 19/1
30/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1
```

```
[local]PDSN> show port info 23/1
```

```
Port: 23/1
Port Type : 10G Ethernet
Role : Service Port
Description : Ingress-Egress Line Card
Controlled By Card : 7 (Packet Services Card 3)
Redundancy Mode : Port Mode
Framing Mode : Unspecified
Redundant With : Not Redundant
Preferred Port : Non-Revertive
Physical ifIndex : 385941504
Administrative State : Enabled
Configured Duplex : Auto
Configured Speed : Auto
Configured Flow Control : Enabled
MAC Address : 00-05-47-02-A6-96
Link State : Up
Link Duplex : Full
Link Speed : 10 Gb
Flow Control : Enabled
Link Aggregation Group : 50 (global, member)
Link Aggregation LACP : Active, Short, Auto
Link Aggregation Master : 19/1
Link Aggregation State : Agreed with LACP peer
Link Aggregation Actor : (8000,00-05-47-02-B1-97,001A,8000,1701)
Link Aggregation Peer : (007F,64-87-88-67-87-C0,0016,007F,0013)
Logical ifIndex : 385941505
Operational State : Up, Active
SFP Module : Present (10G Base SR)
```

```
[local]PDSN>show card diag 23
```

Card 23:

Counters:

In Service Date : Tue Aug 24 06:58:31 2010 (Estimated)

Status:

IDEEPROM Magic Number : Good

Card Diagnostics : Pass

Current Failure : None

Last Failure : None

Card Usable : Yes

Current Environment:

Temperature: Card : 48 C (limit 90 C)

Temperature: LM87 : 49 C (limit 85 C)

Temperature: PHY : 48 C (limit 90 C)

Voltage: 1.2V : 1.205 V (min 1.140 V, max 1.260 V)

Voltage: 1.2V : 1.205 V (min 1.140 V, max 1.260 V)

Voltage: 2.5V : 2.522 V (min 2.375 V, max 2.625 V)

Voltage: 3.3V : 3.285 V (min 3.135 V, max 3.465 V)

Voltage: 1.8V : 1.805 V (min 1.710 V, max 1.890 V)

The ports on the PDSN were cleaned and as a result there was a LAG switchover and the port imbalance went away on the newly active (even numbered) ports along with the errors on the Juniper side stopping. Previously seen CHAP and LCP errors related to Mobile IP call setups also stopped.

```
2015-May-15+16:47:40.410 [snmp 22002 info] [1/0/13147 <lagmgr:0>
trap_api.c:2387] [software internal system syslog] Internal trap notification
1205 (LAGGroupUp) card:19, port:1, partner:(007F,64-87-88-66-F7-C0,0016)
```

```
2015-May-15+16:47:40.410 [snmp 22002 info] [1/0/13147 <lagmgr:0>
trap_api.c:2387] [software internal system syslog] Internal trap notification
1204 (LAGGroupDown) card:19, port:1, partner:(007F,64-87-88-67-87-C0,0016)
```

```
2015-May-15+16:47:40.410 [lagmgr 179050 warning] [1/0/13147 <lagmgr:0>
lagmgr_state.c:1314] [software internal system critical-info syslog] LAG group
50 (global) with master port 19/1 has changed partner
```

```
from (007F,64-87-88-67-87-C0,0016) on 17/1, 19/1, 23/1, 27/1, 29/1
to (007F,64-87-88-66-F7-C0,0016) on 18/1, 20/1, 26/1, 28/1, 30/1
```

```
[local]PDSN> show port table | grep LA 17/1 Srvc 10G Ethernet Enabled Up Up Active None LA~ 19/1
18/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1 19/1 Srvc 10G Ethernet Enabled - Up -
None LA~ 19/1 20/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1 23/1 Srvc 10G Ethernet
Enabled Up Up Active None LA* 19/1
```

```
26/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1
27/1 Srvc 10G Ethernet Enabled Up Up Active None LA~ 19/1
28/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1
29/1 Srvc 10G Ethernet Enabled Up Up Active None LA~ 19/1
30/1 Srvc 10G Ethernet Enabled Up Up Active None LA+ 19/1
```

```
[local]PDSN> show port info 23/1
```

Port: 23/1

Port Type : 10G Ethernet
Role : Service Port
Description : Ingress-Egress Line Card
Controlled By Card : 7 (Packet Services Card 3)
Redundancy Mode : Port Mode
Framing Mode : Unspecified
Redundant With : Not Redundant
Preferred Port : Non-Revertive
Physical ifIndex : 385941504
Administrative State : Enabled
Configured Duplex : Auto


```
Configured Speed      : Auto
Configured Flow Control : Enabled
MAC Address          : 00-05-47-02-A6-96
Link State           : Up
Link Duplex          : Full
Link Speed           : 10 Gb
Flow Control         : Enabled
Link Aggregation Group : 50 (global, member)
Link Aggregation LACP : Active, Short, Auto
Link Aggregation Master : 19/1
Link Aggregation State : Agreed with LACP peer
Link Aggregation Actor : (8000,00-05-47-02-B1-97,001A,8000,1701)
Link Aggregation Peer : (007F,64-87-88-67-87-C0,0016,007F,0013)
Logical ifIndex      : 385941505
Operational State    : Up, Active
SFP Module           : Present (10G Base SR)
```

```
[local]PDSN>show card diag 23
```

Card 23:

Counters:

In Service Date : Tue Aug 24 06:58:31 2010 (Estimated)

Status:

IDEEPROM Magic Number : Good

Card Diagnostics : Pass

Current Failure : None

Last Failure : None

Card Usable : Yes

Current Environment:

Temperature: Card : 48 C (limit 90 C)

Temperature: LM87 : 49 C (limit 85 C)

Temperature: PHY : 48 C (limit 90 C)

Voltage: 1.2V : 1.205 V (min 1.140 V, max 1.260 V)

Voltage: 1.2V : 1.205 V (min 1.140 V, max 1.260 V)

Voltage: 2.5V : 2.522 V (min 2.375 V, max 2.625 V)

Voltage: 3.3V : 3.285 V (min 3.135 V, max 3.465 V)

Voltage: 1.8V : 1.805 V (min 1.710 V, max 1.890 V)

After resetting the port statistics and failing the LAG back to the odd ports, the input errors on the Juniper began increasing again. Since the path had already been cleaned it was decided to bypass the entire existing path completely, replacing both SFPs (port 0/1/2 on the Juniper and port 27/1 on the PDSN) and running a fiber directly between the nodes. Once traffic was returned to the odd LAG the input errors continued to increment exactly as had been witnessed with the existing path. The port utilization also went back to imbalanced on port 27.

```
show interfaces xe-0/1/2 extensive | grep Error
```

BPDU Error: None, MAC-REWRITE Error: None, Loopback: None,

Input errors:

Errors: 2898, Drops: 0, Framing errors: 114, Runts: 0, Policed discards: 0,

L3 incompletes: 2784, L2 channel errors: 0, L2 mismatch timeouts: 0,

FIFO errors: 0, Resource errors: 0

As both SFPs and the fiber were completely new and the path was a straight shot between the nodes, it would seem the input errors are starting upstream of the fibers, possibly in the PDSN XCLC 27. Traffic was failed back to the even ports to stop impact for the time being before deciding on next steps. Juniper did confirm bad IPv4/IPv6 packets from ASR port 27.

On a later maintenance window, the fibers were swapped between ports 23 and 27:

```
show interfaces xe-0/1/2 extensive | grep Error
```

BPDU Error: None, MAC-REWRITE Error: None, Loopback: None,
Input errors:

Errors: 2898, Drops: 0, Framing errors: 114, Runts: 0, Policed discards: 0,
L3 incompletes: 2784, L2 channel errors: 0, L2 mismatch timeouts: 0,
FIFO errors: 0, Resource errors: 0

And after a LAG switchover port 27 continued to send errors and port imbalance.

Mon May 11 05:37:20 2015 Internal trap notification 1204 (LAGGroupDown) card:19,
port:1, partner:(007F,2C-21-72-5E-57-C0,0016) Mon May 11 05:37:20 2015 Internal trap
notification 1205 (LAGGroupUp) card:19,
port:1, partner:(007F,2C-21-72-1A-B7-C0,0016) [local]NWBLWICZPN2 DO-PDSN> show port utilization
table

Monday May 11 05:40:06 UTC 2015

----- Average Port Utilization (in mbps) -----

Port Type Current 5min 15min

Rx Txx Rx Tx Rx Tx

Port	Type	Current	5min	15min	Rx	Txx	Rx	Tx	Rx	Tx
19/1	10G Ethernet	357	386	137	138	45	46			
20/1	10G Ethernet	0	0	178	168	314	301			
23/1	10G Ethernet	346	349	173	185	57	61			
26/1	10G Ethernet	0	0	197	189	324	316			
27/1	10G Ethernet			404	1921	147	701	49	233	
28/1	10G Ethernet	0	0	207	226	299	318			

Mon May 11 05:40:42 2015 Internal trap notification 39 (AAAASvrUnreachable)
server 1 ip address 209.165.200.225 Mon May 11 05:41:05 2015 Internal trap notification 40
(AAAASvrReachable)
server 1 ip address 209.165.200.225 Mon May 11 05:41:42 2015 Internal trap notification 39
(AAAASvrUnreachable)
server 1 ip address 209.165.200.225 Mon May 11 05:42:05 2015 Internal trap notification 40
(AAAASvrReachable)
server 1 ip address 209.165.200.225 Mon May 11 05:49:42 2015 Internal trap notification 39
(AAAASvrUnreachable)
server 1 ip address 209.165.200.225 Mon May 11 05:50:04 2015 Internal trap notification 40
(AAAASvrReachable)
server 1 ip address 209.165.200.225 Mon May 11 05:52:42 2015 Internal trap notification 39
(AAAASvrUnreachable)
server 1 ip address 209.165.200.225 Mon May 11 05:53:05 2015 Internal trap notification 40
(AAAASvrReachable)
server 1 ip address 209.165.200.225 Mon May 11 05:54:29 2015 Internal trap notification 1204
(LAGGroupDown) card:19,

port:1, partner:(007F,2C-21-72-1A-B7-C0,0016) Mon May 11 05:54:29 2015 Internal trap
notification 1205 (LAGGroupUp) card:19,
port:1, partner:(007F,2C-21-72-5E-57-C0,0016)

The fibers were swapped back:

Mon May 11 05:37:20 2015 Internal trap notification 1204 (LAGGroupDown) card:19,
port:1, partner:(007F,2C-21-72-5E-57-C0,0016) Mon May 11 05:37:20 2015 Internal trap
notification 1205 (LAGGroupUp) card:19,
port:1, partner:(007F,2C-21-72-1A-B7-C0,0016) [local]NWBLWICZPN2 DO-PDSN> show port utilization
table

Monday May 11 05:40:06 UTC 2015

----- Average Port Utilization (in mbps) -----

Port Type Current 5min 15min

Rx Txx Rx Tx Rx Tx

Port	Type	Current	5min	15min	Rx	Txx	Rx	Tx	Rx	Tx
19/1	10G Ethernet	357	386	137	138	45	46			
20/1	10G Ethernet	0	0	178	168	314	301			
23/1	10G Ethernet	346	349	173	185	57	61			

```

26/1 10G Ethernet 0 0 197 189 324 316
27/1 10G Ethernet 404 1921 147 701 49 233
28/1 10G Ethernet 0 0 207 226 299 318

```

```

Mon May 11 05:40:42 2015 Internal trap notification 39 (AAAASvrUnreachable)
server 1 ip address 209.165.200.225 Mon May 11 05:41:05 2015 Internal trap notification 40
(AAAAAuthSvrReachable)
server 1 ip address 209.165.200.225 Mon May 11 05:41:42 2015 Internal trap notification 39
(AAAAAuthSvrUnreachable)
server 1 ip address 209.165.200.225 Mon May 11 05:42:05 2015 Internal trap notification 40
(AAAAAuthSvrReachable)
server 1 ip address 209.165.200.225 Mon May 11 05:49:42 2015 Internal trap notification 39
(AAAAAuthSvrUnreachable)
server 1 ip address 209.165.200.225 Mon May 11 05:50:04 2015 Internal trap notification 40
(AAAAAuthSvrReachable)
server 1 ip address 209.165.200.225 Mon May 11 05:52:42 2015 Internal trap notification 39
(AAAAAuthSvrUnreachable)
server 1 ip address 209.165.200.225 Mon May 11 05:53:05 2015 Internal trap notification 40
(AAAAAuthSvrReachable)
server 1 ip address 209.165.200.225 Mon May 11 05:54:29 2015 Internal trap notification 1204
(LAGGroupDown) card:19,

```

```

port:1, partner:(007F,2C-21-72-1A-B7-C0,0016) Mon May 11 05:54:29 2015 Internal trap
notification 1205 (LAGGroupUp) card:19,
port:1, partner:(007F,2C-21-72-5E-57-C0,0016)

```

XCLC 27 was reseated:

```

Mon May 11 05:37:20 2015 Internal trap notification 1204 (LAGGroupDown) card:19,
port:1, partner:(007F,2C-21-72-5E-57-C0,0016) Mon May 11 05:37:20 2015 Internal trap
notification 1205 (LAGGroupUp) card:19,
port:1, partner:(007F,2C-21-72-1A-B7-C0,0016) [local]NWBLWICZPN2 DO-PDSN> show port utilization
table

```

```

Monday May 11 05:40:06 UTC 2015
----- Average Port Utilization (in mbps) -----
Port Type Current 5min 15min
Rx Txx Rx Tx Rx Tx
-----
19/1 10G Ethernet 357 386 137 138 45 46
20/1 10G Ethernet 0 0 178 168 314 301
23/1 10G Ethernet 346 349 173 185 57 61
26/1 10G Ethernet 0 0 197 189 324 316
27/1 10G Ethernet 404 1921 147 701 49 233
28/1 10G Ethernet 0 0 207 226 299 318

```

```

Mon May 11 05:40:42 2015 Internal trap notification 39 (AAAASvrUnreachable)
server 1 ip address 209.165.200.225 Mon May 11 05:41:05 2015 Internal trap notification 40
(AAAAAuthSvrReachable)
server 1 ip address 209.165.200.225 Mon May 11 05:41:42 2015 Internal trap notification 39
(AAAAAuthSvrUnreachable)
server 1 ip address 209.165.200.225 Mon May 11 05:42:05 2015 Internal trap notification 40
(AAAAAuthSvrReachable)
server 1 ip address 209.165.200.225 Mon May 11 05:49:42 2015 Internal trap notification 39
(AAAAAuthSvrUnreachable)
server 1 ip address 209.165.200.225 Mon May 11 05:50:04 2015 Internal trap notification 40
(AAAAAuthSvrReachable)
server 1 ip address 209.165.200.225 Mon May 11 05:52:42 2015 Internal trap notification 39
(AAAAAuthSvrUnreachable)
server 1 ip address 209.165.200.225 Mon May 11 05:53:05 2015 Internal trap notification 40
(AAAAAuthSvrReachable)
server 1 ip address 209.165.200.225 Mon May 11 05:54:29 2015 Internal trap notification 1204
(LAGGroupDown) card:19,

```

port:1, partner:(007F,2C-21-72-1A-B7-C0,0016) Mon May 11 05:54:29 2015 Internal trap notification 1205 (LAGGroupUp) card:19,
port:1, partner:(007F,2C-21-72-5E-57-C0,0016)

The LAG was made active again and the issue was still seen.

Mon May 11 05:37:20 2015 Internal trap notification 1204 (LAGGroupDown) card:19,
port:1, partner:(007F,2C-21-72-5E-57-C0,0016) Mon May 11 05:37:20 2015 Internal trap notification 1205 (LAGGroupUp) card:19,
port:1, partner:(007F,2C-21-72-1A-B7-C0,0016) [local]NWBLWICZPN2 DO-PDSN> show port utilization table

Monday May 11 05:40:06 UTC 2015

----- Average Port Utilization (in mbps) -----

Port Type Current 5min 15min

Rx Txx Rx Tx Rx Tx

Port	Type	Current	5min	15min	Current	5min	15min
19/1	10G Ethernet	357	386	137	138	45	46
20/1	10G Ethernet	0	0	178	168	314	301
23/1	10G Ethernet	346	349	173	185	57	61
26/1	10G Ethernet	0	0	197	189	324	316
27/1	10G Ethernet			404	1921	147	701
						49	233
28/1	10G Ethernet	0	0	207	226	299	318

Mon May 11 05:40:42 2015 Internal trap notification 39 (AAAASvrUnreachable)
server 1 ip address 209.165.200.225 Mon May 11 05:41:05 2015 Internal trap notification 40 (AAAASvrReachable)
server 1 ip address 209.165.200.225 Mon May 11 05:41:42 2015 Internal trap notification 39 (AAAASvrUnreachable)
server 1 ip address 209.165.200.225 Mon May 11 05:42:05 2015 Internal trap notification 40 (AAAASvrReachable)
server 1 ip address 209.165.200.225 Mon May 11 05:49:42 2015 Internal trap notification 39 (AAAASvrUnreachable)
server 1 ip address 209.165.200.225 Mon May 11 05:50:04 2015 Internal trap notification 40 (AAAASvrReachable)
server 1 ip address 209.165.200.225 Mon May 11 05:52:42 2015 Internal trap notification 39 (AAAASvrUnreachable)
server 1 ip address 209.165.200.225 Mon May 11 05:53:05 2015 Internal trap notification 40 (AAAASvrReachable)
server 1 ip address 209.165.200.225 Mon May 11 05:54:29 2015 Internal trap notification 1204 (LAGGroupDown) card:19,

port:1, partner:(007F,2C-21-72-1A-B7-C0,0016) Mon May 11 05:54:29 2015 Internal trap notification 1205 (LAGGroupUp) card:19,
port:1, partner:(007F,2C-21-72-5E-57-C0,0016)

A PSC migration of PSC 11 (resides behind Line Card 27) to 16 clears the issue as the LAG switches to even ports (expected).

Mon May 11 05:37:20 2015 Internal trap notification 1204 (LAGGroupDown) card:19,
port:1, partner:(007F,2C-21-72-5E-57-C0,0016) Mon May 11 05:37:20 2015 Internal trap notification 1205 (LAGGroupUp) card:19,
port:1, partner:(007F,2C-21-72-1A-B7-C0,0016) [local]NWBLWICZPN2 DO-PDSN> show port utilization table

Monday May 11 05:40:06 UTC 2015

----- Average Port Utilization (in mbps) -----

Port Type Current 5min 15min

Rx Txx Rx Tx Rx Tx

Port	Type	Current	5min	15min	Current	5min	15min
19/1	10G Ethernet	357	386	137	138	45	46
20/1	10G Ethernet	0	0	178	168	314	301
23/1	10G Ethernet	346	349	173	185	57	61
26/1	10G Ethernet	0	0	197	189	324	316

27/1	10G Ethernet	404	1921	147	701	49	233
28/1	10G Ethernet	0	0	207	226	299	318

```

Mon May 11 05:40:42 2015 Internal trap notification 39 (AAAASvrUnreachable)
server 1 ip address 209.165.200.225 Mon May 11 05:41:05 2015 Internal trap notification 40
(AAAAAuthSvrReachable)
server 1 ip address 209.165.200.225 Mon May 11 05:41:42 2015 Internal trap notification 39
(AAAAAuthSvrUnreachable)
server 1 ip address 209.165.200.225 Mon May 11 05:42:05 2015 Internal trap notification 40
(AAAAAuthSvrReachable)
server 1 ip address 209.165.200.225 Mon May 11 05:49:42 2015 Internal trap notification 39
(AAAAAuthSvrUnreachable)
server 1 ip address 209.165.200.225 Mon May 11 05:50:04 2015 Internal trap notification 40
(AAAAAuthSvrReachable)
server 1 ip address 209.165.200.225 Mon May 11 05:52:42 2015 Internal trap notification 39
(AAAAAuthSvrUnreachable)
server 1 ip address 209.165.200.225 Mon May 11 05:53:05 2015 Internal trap notification 40
(AAAAAuthSvrReachable)
server 1 ip address 209.165.200.225 Mon May 11 05:54:29 2015 Internal trap notification 1204
(LAGGroupDown) card:19,

port:1, partner:(007F,2C-21-72-1A-B7-C0,0016) Mon May 11 05:54:29 2015 Internal trap
notification 1205 (LAGGroupUp) card:19,
port:1, partner:(007F,2C-21-72-5E-57-C0,0016)

```

PSC 11 was reseated and then rebooted (latter should be unnecessary)

```

Mon May 11 05:37:20 2015 Internal trap notification 1204 (LAGGroupDown) card:19,
port:1, partner:(007F,2C-21-72-5E-57-C0,0016) Mon May 11 05:37:20 2015 Internal trap
notification 1205 (LAGGroupUp) card:19,
port:1, partner:(007F,2C-21-72-1A-B7-C0,0016) [local]NWBLWICZPN2 DO-PDSN> show port utilization
table

```

```

Monday May 11 05:40:06 UTC 2015
----- Average Port Utilization (in mbps) -----
Port Type Current 5min 15min
Rx Txx Rx Tx Rx Tx
-----
19/1 10G Ethernet 357 386 137 138 45 46
20/1 10G Ethernet 0 0 178 168 314 301
23/1 10G Ethernet 346 349 173 185 57 61
26/1 10G Ethernet 0 0 197 189 324 316
27/1 10G Ethernet 404 1921 147 701 49 233
28/1 10G Ethernet 0 0 207 226 299 318

```

```

Mon May 11 05:40:42 2015 Internal trap notification 39 (AAAASvrUnreachable)
server 1 ip address 209.165.200.225 Mon May 11 05:41:05 2015 Internal trap notification 40
(AAAAAuthSvrReachable)
server 1 ip address 209.165.200.225 Mon May 11 05:41:42 2015 Internal trap notification 39
(AAAAAuthSvrUnreachable)
server 1 ip address 209.165.200.225 Mon May 11 05:42:05 2015 Internal trap notification 40
(AAAAAuthSvrReachable)
server 1 ip address 209.165.200.225 Mon May 11 05:49:42 2015 Internal trap notification 39
(AAAAAuthSvrUnreachable)
server 1 ip address 209.165.200.225 Mon May 11 05:50:04 2015 Internal trap notification 40
(AAAAAuthSvrReachable)
server 1 ip address 209.165.200.225 Mon May 11 05:52:42 2015 Internal trap notification 39
(AAAAAuthSvrUnreachable)
server 1 ip address 209.165.200.225 Mon May 11 05:53:05 2015 Internal trap notification 40
(AAAAAuthSvrReachable)
server 1 ip address 209.165.200.225 Mon May 11 05:54:29 2015 Internal trap notification 1204
(LAGGroupDown) card:19,

port:1, partner:(007F,2C-21-72-1A-B7-C0,0016) Mon May 11 05:54:29 2015 Internal trap

```

notification 1205 (LAGGroupUp) card:19,
port:1, partner:(007F,2C-21-72-5E-57-C0,0016)

Migration was done back to PSC 11 and the issue started again. The problem had been seemingly isolated to PSC 11 connected to XGLC 27.

Mon May 11 05:37:20 2015 Internal trap notification 1204 (LAGGroupDown) card:19,
port:1, partner:(007F,2C-21-72-5E-57-C0,0016) Mon May 11 05:37:20 2015 Internal trap
notification 1205 (LAGGroupUp) card:19,
port:1, partner:(007F,2C-21-72-1A-B7-C0,0016) [local]NWBLWICZPN2 DO-PDSN> show port utilization
table

Monday May 11 05:40:06 UTC 2015

----- Average Port Utilization (in mbps) -----

Port Type Current 5min 15min

Rx Txx Rx Tx Rx Tx

19/1	10G Ethernet	357	386	137	138	45	46		
20/1	10G Ethernet	0	0	178	168	314	301		
23/1	10G Ethernet	346	349	173	185	57	61		
26/1	10G Ethernet	0	0	197	189	324	316		
27/1	10G Ethernet			404	1921	147	701	49	233
28/1	10G Ethernet			0	0	207	226	299	318

Mon May 11 05:40:42 2015 Internal trap notification 39 (AAAASvrUnreachable)
server 1 ip address 209.165.200.225 Mon May 11 05:41:05 2015 Internal trap notification 40
(AAAASvrReachable)
server 1 ip address 209.165.200.225 Mon May 11 05:41:42 2015 Internal trap notification 39
(AAAASvrUnreachable)
server 1 ip address 209.165.200.225 Mon May 11 05:42:05 2015 Internal trap notification 40
(AAAASvrReachable)
server 1 ip address 209.165.200.225 Mon May 11 05:49:42 2015 Internal trap notification 39
(AAAASvrUnreachable)
server 1 ip address 209.165.200.225 Mon May 11 05:50:04 2015 Internal trap notification 40
(AAAASvrReachable)
server 1 ip address 209.165.200.225 Mon May 11 05:52:42 2015 Internal trap notification 39
(AAAASvrUnreachable)
server 1 ip address 209.165.200.225 Mon May 11 05:53:05 2015 Internal trap notification 40
(AAAASvrReachable)
server 1 ip address 209.165.200.225 Mon May 11 05:54:29 2015 Internal trap notification 1204
(LAGGroupDown) card:19,

port:1, partner:(007F,2C-21-72-1A-B7-C0,0016) Mon May 11 05:54:29 2015 Internal trap
notification 1205 (LAGGroupUp) card:19,
port:1, partner:(007F,2C-21-72-5E-57-C0,0016)

A Migration was done back to PSC 16 to clear the issue for the time being until an RMA replacement:

Mon May 11 06:56:07 2015 Internal trap notification 1256 (MigrateStart) from
card 11 to card 16 Mon May 11 06:56:43 2015 Internal trap notification 1024 (PortDown) card 27
port
1 port type 10G Ethernet Mon May 11 06:56:43 2015 Internal trap notification 55 (CardActive)
card 27 type
10 Gig Ethernet Line Card Mon May 11 06:56:44 2015 Internal trap notification 55 (CardActive)
card 16 type
Packet Services Card 3 Mon May 11 06:56:44 2015 Internal trap notification 55 (CardActive) card
40 type
Redundancy Crossbar Card Mon May 11 06:56:44 2015 Internal trap notification 55 (CardActive)
card 41 type
Redundancy Crossbar Card Mon May 11 06:56:44 2015 Internal trap notification 60 (CardDown) card
11 type
Packet Services Card 3 Mon May 11 06:56:44 2015 Internal trap notification 1257

```

(MigrateComplete) from
card 11 to card 16 Mon May 11 06:56:44 2015 Internal trap notification 1025 (PortUp) card 27
port 1
port type 10G Ethernet Mon May 11 06:57:58 2015 Internal trap notification 5 (CardUp) card 11
type
Packet Services Card 3 [local]PDSN> show rct stats Monday May 11 07:08:26 UTC 2015 RCT stats
Details (Last 4 Actions) Action Type From To Start Time Duration -----
-----
Migration Planned 11 16 2015-May-11+06:26:04.373 36.453 sec Shutdown N/A 11 0 2015-May-
11+06:39:48.153 0.223 sec Migration Planned 16 11 2015-May-11+06:51:55.785 41.630 sec Migration
Planned 11 16 2015-May-11+06:56:08.452 35.037 sec RCT stats Summary ----- Migrations
= 3, Average time = 37.707 sec Switchovers = 0 [local]PDSN> show card mappings Monday May 11
07:10:22 UTC 2015 Slot Mapping Slot -----
----- 17 None - 18 None - 19 10 Gig Ethernet Line Card <-- direct --> 3 Packet
Services Card 3 20 10 Gig Ethernet Line Card <-- direct --> 4 Packet Services Card 3 21 1000
Ethernet Line Card <-- direct --> 5 Packet Services Card 3 22 None - 23 10 Gig Ethernet Line
Card <-- direct --> 7 Packet Services Card 3 24 Switch Processor I/O Card <-----> 8
System Management Card 25 Switch Processor I/O Card <-----> 8 System Management Card 26
10 Gig Ethernet Line Card <-- direct --> 10 Packet Services Card 3 27 10 Gig Ethernet Line Card
<--- RCCs ---> 16 Packet Services Card 3
28 10 Gig Ethernet Line Card <-- direct --> 12 Packet Services Card 3

```

But the RMA still did not resolve the issue.

```

Mon May 11 06:56:07 2015 Internal trap notification 1256 (MigrateStart) from
card 11 to card 16 Mon May 11 06:56:43 2015 Internal trap notification 1024 (PortDown) card 27
port
1 port type 10G Ethernet Mon May 11 06:56:43 2015 Internal trap notification 55 (CardActive)
card 27 type
10 Gig Ethernet Line Card Mon May 11 06:56:44 2015 Internal trap notification 55 (CardActive)
card 16 type
Packet Services Card 3 Mon May 11 06:56:44 2015 Internal trap notification 55 (CardActive) card
40 type
Redundancy Crossbar Card Mon May 11 06:56:44 2015 Internal trap notification 55 (CardActive)
card 41 type
Redundancy Crossbar Card Mon May 11 06:56:44 2015 Internal trap notification 60 (CardDown) card
11 type
Packet Services Card 3 Mon May 11 06:56:44 2015 Internal trap notification 1257
(MigrateComplete) from
card 11 to card 16 Mon May 11 06:56:44 2015 Internal trap notification 1025 (PortUp) card 27
port 1
port type 10G Ethernet Mon May 11 06:57:58 2015 Internal trap notification 5 (CardUp) card 11
type
Packet Services Card 3 [local]PDSN> show rct stats Monday May 11 07:08:26 UTC 2015 RCT stats
Details (Last 4 Actions) Action Type From To Start Time Duration -----
-----
Migration Planned 11 16 2015-May-11+06:26:04.373 36.453 sec Shutdown N/A 11 0 2015-May-
11+06:39:48.153 0.223 sec Migration Planned 16 11 2015-May-11+06:51:55.785 41.630 sec Migration
Planned 11 16 2015-May-11+06:56:08.452 35.037 sec RCT stats Summary ----- Migrations
= 3, Average time = 37.707 sec Switchovers = 0 [local]PDSN> show card mappings Monday May 11
07:10:22 UTC 2015 Slot Mapping Slot -----
----- 17 None - 18 None - 19 10 Gig Ethernet Line Card <-- direct --> 3 Packet
Services Card 3 20 10 Gig Ethernet Line Card <-- direct --> 4 Packet Services Card 3 21 1000
Ethernet Line Card <-- direct --> 5 Packet Services Card 3 22 None - 23 10 Gig Ethernet Line
Card <-- direct --> 7 Packet Services Card 3 24 Switch Processor I/O Card <-----> 8
System Management Card 25 Switch Processor I/O Card <-----> 8 System Management Card 26
10 Gig Ethernet Line Card <-- direct --> 10 Packet Services Card 3 27 10 Gig Ethernet Line Card
<--- RCCs ---> 16 Packet Services Card 3
28 10 Gig Ethernet Line Card <-- direct --> 12 Packet Services Card 3

```

It required a chassis reload to finally resolve the issue. No root cause was ever determined. But, the point here is the troubleshooting steps taken to attempt to resolve the issue finally worked with a reload. Sometimes the results are not what originally are expected based on the troubleshooting

steps taken. It was thought that the RMA was for sure going to finally solve the issue but it did not. Nonetheless the proper steps to eliminate potential culprits were taken.

LAG switchover failed to stick due to failed XGLC

A LAG switchover odd to even ports (19, 23, 27 => 20, 26, 28) would not hold and would switch back within a minute. That could imply a problem with one or more of the LAG ports not being able to maintain the connection. Note the decrease in port utilization, but the dataset is limited because of the short time the even ports would stay active:

```
[XGWout]XGW# show port util table
Thursday April 26 07:17:31 UTC 2012
```

Port	Type	----- Average Port Utilization (in mbps) -----					
		Current		5min		15min	
		Rx	Tx	Rx	Tx	Rx	Tx
19/1	10G Ethernet	895	907	906	931	939	983
20/1	10G Ethernet	0	0	20	14	6	4
21/1	1000 Ethernet	0	0	0	3	0	3
22/1	1000 Ethernet	3	46	3	46	3	47
23/1	10G Ethernet	948	946	883	917	918	956
26/1	10G Ethernet	0	0	16	11	5	3
27/1	10G Ethernet	949	950	989	934	1029	955
28/1	10G Ethernet	0	0	4	14	1	4

```
[XGWout]XGW# link-aggregation port switch to 20/1
Thursday April 26 07:20:20 UTC 2012
Are you sure? [Yes|No]: yes
Thursday April 26 07:20:22 UTC 2012
```

```
2012-Apr-26+07:20:22.826 [lagmgr 179050 warning] [1/0/2337 <lagmgr:0>
lagmgr_state.c:1163] [software internal system critical-info syslog] LAG group
50 (global) with master port 19/1 has changed partner from (007F,00-26-88-8E-
4F-F0,0034) to (007F,00-26-88-A7-FF-F0,0034)
```

```
Apr 26 07:21:28 kslxmsce2.msc.vzwnet.com evlogd: [local-60sec28.393]
[lagmgr 179050 warning] [1/0/2337 <lagmgr:0> lagmgr_state.c:1163]
[software internal system critical-info syslog] LAG group 50 (global)
with master port 19/1 has changed partner from
(007F,00-26-88-A7-FF-F0,0034) to (007F,00-26-88-8E-4F-F0,0034) [XGWout]XGW# show port util table
Thursday April 26 07:20:46 UTC 2012 ----- Average Port Utilization (in mbps) ----- Port Type
Current 5min 15min Rx Tx Rx Tx Rx Tx -----
--- ----- 19/1 10G Ethernet 0 0 896 917 927 965 20/1 10G Ethernet 678 526 45 33 15 11
21/1 1000 Ethernet 0 0 0 3 0 3 22/1 1000 Ethernet 3 45 3 46 3 46 23/1 10G Ethernet 0 0 881 898
903 943 26/1 10G Ethernet 627 442 16 11 5 3 27/1 10G Ethernet 0 0 874 850 980 914 28/1 10G
Ethernet 138 436 15 47 5 15 [XGWout]XGW# show port util table Thursday April 26 07:24:58 UTC
2012 ----- Average Port Utilization (in mbps) ----- Port Type Current 5min 15min Rx Tx Rx Tx
Rx Tx -----
----- 19/1 10G
Ethernet 847 911 742 719 860 874 20/1 10G Ethernet 0 0 137 104 52 39 21/1 1000 Ethernet 0 0 0 4
0 4 22/1 1000 Ethernet 3 48 3 47 3 47 23/1 10G Ethernet 840 804 710 718 837 862 26/1 10G
Ethernet 0 0 133 95 50 35 27/1 10G Ethernet 833 814 671 697 883 856 28/1 10G Ethernet 0 0 33 92
12 35
```

In order to troubleshoot further, one of the LAG ports (27/1) was disabled, forcing the LAG switchover to remain in place and not switch back (the system will not switchover unless the ports to switch over to have a higher capacity than the currently active ports). As can be seen below, the port utilization goes down significantly on the EVEN ports. When the port 27/1 is re-enabled, the LAG switches back to the odd ports without intervention due to the EVEN ports having more capacity.

```
[XGWout]XGW# show port util table
```


Thursday April 26 07:17:31 UTC 2012

```

----- Average Port Utilization (in mbps) -----
Port   Type
      Current      5min      15min
      Rx      Tx      Rx      Tx      Rx      Tx
-----
19/1  10G Ethernet  895   907   906   931   939   983
20/1  10G Ethernet   0     0    20    14     6     4
21/1  1000 Ethernet  0     0     0     3     0     3
22/1  1000 Ethernet  3    46     3    46     3    47
23/1  10G Ethernet  948   946   883   917   918   956
26/1  10G Ethernet   0     0    16    11     5     3
27/1  10G Ethernet  949   950   989   934  1029   955
28/1  10G Ethernet   0     0     4    14     1     4

```

[XGWout]XGW# link-aggregation port switch to 20/1

Thursday April 26 07:20:20 UTC 2012

Are you sure? [Yes|No]: yes

Thursday April 26 07:20:22 UTC 2012

2012-Apr-26+07:20:22.826 [lagmgr 179050 warning] [1/0/2337 <lagmgr:0>
lagmgr_state.c:1163] [software internal system critical-info syslog] LAG group
50 (global) with master port 19/1 has changed partner from (007F,00-26-88-8E-
4F-F0,0034) to (007F,00-26-88-A7-FF-F0,0034)

Apr 26 07:21:28 kslxmsce2.msc.vzwnet.com evlogd: [local-60sec28.393]

[lagmgr 179050 warning] [1/0/2337 <lagmgr:0> lagmgr_state.c:1163]

[software internal system critical-info syslog] LAG group 50 (global)

with master port 19/1 has changed partner from

(007F,00-26-88-A7-FF-F0,0034) to (007F,00-26-88-8E-4F-F0,0034) [XGWout]XGW# show port util table

```

Thursday April 26 07:20:46 UTC 2012 ----- Average Port Utilization (in mbps) ----- Port Type
Current 5min 15min Rx Tx Rx Tx Rx Tx -----
--- -----
19/1  10G Ethernet  0  0  896  917  927  965  20/1  10G Ethernet  678  526  45  33  15  11
21/1  1000 Ethernet  0  0  0  3  0  3  22/1  1000 Ethernet  3  45  3  46  3  46  23/1  10G Ethernet  0  0  881  898
903  943  26/1  10G Ethernet  627  442  16  11  5  3  27/1  10G Ethernet  0  0  874  850  980  914  28/1  10G
Ethernet  138  436  15  47  5  15 [XGWout]XGW# show port util table Thursday April 26 07:24:58 UTC
2012 ----- Average Port Utilization (in mbps) ----- Port Type Current 5min 15min Rx Tx Rx Tx
Rx Tx -----
19/1  10G
Ethernet  847  911  742  719  860  874  20/1  10G Ethernet  0  0  137  104  52  39  21/1  1000 Ethernet  0  0  0  4
0  4  22/1  1000 Ethernet  3  48  3  47  3  47  23/1  10G Ethernet  840  804  710  718  837  862  26/1  10G
Ethernet  0  0  133  95  50  35  27/1  10G Ethernet  833  814  671  697  883  856  28/1  10G Ethernet  0  0  33  92
12  35

```

It is not obvious over which port the problem exists, and the Tx utilization is not that uneven.

"show port npu counters" clearly show a problem with error counter "Bad IPv4 header" increasing at a high rate (and it shouldn't be happening at all), but due to this being a LAG implementation, based on the current implementation, all the counters are cummulative for all the LAG ports in a LAG group, and so it cannot be determined which port is having the problem - it could be any of them. (the stats for all ports combined are found under the master port, in this case 19/1 - stats on all individual LAG ports of the LAG group have NO meaning and should be ignored).

But, tech support command "show npu stats debug all_pacs" captures NPU stats on a PSC basis, and the following shows that the problem is clearly "associated with" PSC 12 and its (default) connected XGLC 28:

```

***** show npu stats debug all_pacs *****
Thursday April 26 09:01:41 UTC 2012
Line 524176:  debug-pkt-drop-invalid-iphdr          3601919
Line 524245:  debug-pkt-drop-invalid-iphdr             265
Line 524303:  debug-pkt-drop-invalid-iphdr             141
Line 524407:  debug-pkt-drop-invalid-iphdr          3468928
Line 524471:  debug-pkt-drop-invalid-iphdr             216

```

```

Line 524529:  debug-pkt-drop-invalid-iphdr          3701708
Line 524595:  debug-pkt-drop-invalid-iphdr          6501414 <= NPU debug
stats for slot 12 ***** show port npu counters ***** Thursday April 26 09:01:40 UTC 2012
Counters for port 19/1 Counter Rx Frames Rx Bytes Tx Frames Tx Bytes -----
----- Bad IPv4 header 6493067 2820637429
n/a                n/a

```

```

***** show npu stats debug all_pacs *****
Thursday April 26 09:03:36 UTC 2012
Line 985303:  debug-pkt-drop-invalid-iphdr          3601919
Line 985372:  debug-pkt-drop-invalid-iphdr           292
Line 985430:  debug-pkt-drop-invalid-iphdr           141
Line 985534:  debug-pkt-drop-invalid-iphdr          3468928
Line 985598:  debug-pkt-drop-invalid-iphdr           226
Line 985656:  debug-pkt-drop-invalid-iphdr          3701708
Line 985722:  debug-pkt-drop-invalid-iphdr          7190387 <= NPU debug
stats for slot 12 (INCREASING) ***** show port npu counters ***** Thursday April 26
09:03:35 UTC 2012 Counters for port 19/1 Counter Rx Frames Rx Bytes Tx Frames Tx Bytes -----
----- Bad IPv4 header 7182088
3089244876                n/a                n/a

```

The question still becomes what card is actually causing this issue, the PSC 12 connected to XGLC 28, or XGLC 28 itself?

Typically NPU problems would be resolved with a PSC migration of the PSC 12 connected to XGLC 28, implying an issue with the PSC. When this was attempted on a later maintenance window, it failed to resolve the issue, as did a Line Card reset as well as an npumgr reset.

Here is the troubleshooting output of npumgr reset, XGLC 28 reset, and PSC migration 12 to 16, the latter of which results in PSC 16 being connected to XGLC 28 and so eliminates PSC 12 being the issue. Checks for debug-pkt-drop-invalid-iphdr increasing were done in between each of the steps to confirm that the issue was not resolved. Shutdown of one of the LAG ports (27/1) was done to force a LAG switchover to remain switched over for data collection purposes, and a no shut allowed for the LAG to switch back when done testing.

```

[local]XGW# show port util table
Saturday April 28 05:03:49 UTC 2012

```

Port	Type	----- Average Port Utilization (in mbps) -----					
		Current		5min		15min	
		Rx	Tx	Rx	Tx	Rx	Tx
19/1	10G Ethernet	2311	2395	2384	2415	2384	2402
20/1	10G Ethernet	0	0	0	0	0	0
21/1	1000 Ethernet	0	9	0	9	0	9
22/1	1000 Ethernet	4	70	4	77	4	73
23/1	10G Ethernet	2230	2224	2222	2293	2202	2268
26/1	10G Ethernet	0	0	0	0	0	0
27/1	10G Ethernet	2496	2433	2505	2427	2440	2381
28/1	10G Ethernet	0	0	0	0	0	0

```

[local]XGW(config)# port ether 27/1
Saturday April 28 05:04:44 UTC 2012
[local]XGW(config-port-27/1)# shutdown
Saturday April 28 05:04:50 UTC 2012

```

```

Sat Apr 28 05:04:50 2012 Internal trap notification 35 (PortLinkDown) card 27
port 1 ifindex 453050368 Sat Apr 28 05:04:50 2012 Internal trap notification 1024 (PortDown)
card 27 port
1 ifindex 453050368port type 10G Ethernet Sat Apr 28 05:04:50 2012 Internal trap notification 93
(CardStandby) card 27 [local]XGW# show port table all Saturday April 28 05:04:59 UTC 2012 Port
Type Admin Oper Link State Redundant -----

```

```
----- 19/1 10G Ethernet Enabled - Up - None ~19/1 Untagged Enabled Up - Active -
20/1 10G Ethernet Enabled Up Up Active None +19/1 [local]XGW# show port util table Saturday
April 28 05:05:42 UTC 2012 ----- Average Port Utilization (in mbps) ----- Port Type Current
5min 15min Rx Tx Rx Tx Rx Tx -----
--- 19/1 10G Ethernet 0 0 2150 2182 2311 2333 20/1 10G Ethernet 1488 1064 0 0 0 0 21/1
1000 Ethernet 0 0 0 9 0 10 22/1 1000 Ethernet 4 70 4 72 4 73 23/1 10G Ethernet 0 0 2163 2225
2182 2251 26/1 10G Ethernet 1353 989 94 68 31 22 28/1 10G Ethernet 372 1042 14 41 4 13
[local]XGW# show npu stats debug all-pacs Saturday April 28 05:07:28 UTC 2012 NPU debug stats
for slot 12 debug-pkt-drop-invalid-iphdr 10786357 [local]XGW# show npu stats debug all-pacs
Saturday April 28 05:07:47 UTC 2012 NPU debug stats for slot 12 debug-pkt-drop-invalid-iphdr
10966718 [local]XGW# task kill facility npumgr instance 12 Saturday April 28 05:33:18 UTC 2012
Sat Apr 28 05:33:18 2012 Internal trap notification 73 (ManagerFailure) facility
npumgr instance 12 card 12 cpu 1 Sat Apr 28 05:33:18 2012 Internal trap notification 150
(TaskFailed) facility
npumgr instance 12 on card 12 cpu 1 Sat Apr 28 05:33:26 2012 Internal trap notification 35
(PortLinkDown) card 28
port 1 ifindex 469827585 Sat Apr 28 05:33:26 2012 Internal trap notification 1024 (PortDown)
card 28 port
1 ifindex 469827585port type 10G Ethernet Sat Apr 28 05:33:26 2012 Internal trap notification 36
(PortLinkUp) card 28 port
1 ifindex 469827585 Sat Apr 28 05:33:26 2012 Internal trap notification 1025 (PortUp) card 28
port 1
ifindex 469827585port type 10G Ethernet [local]XGW# show port util table Saturday April 28
05:34:24 UTC 2012 ----- Average Port Utilization (in mbps) ----- Port Type Current 5min 15min
Rx Tx Rx Tx Rx Tx -----
19/1 10G Ethernet 0 0 0 0 0 0 20/1 10G Ethernet 894 723 837 661 935 728 21/1 1000 Ethernet 0 36
0 7 0 7 22/1 1000 Ethernet 4 127 4 78 4 79 23/1 10G Ethernet 0 0 0 0 0 0 26/1 10G Ethernet 906
647 780 571 865 644 28/1 10G Ethernet 356 649 0 0 0 0 [local]XGW# show npu stats debug slot 12
Saturday April 28 05:35:16 UTC 2012 NPU debug stats for slot 12 debug-pkt-drop-invalid-iphdr
540273 [local]XGW# show npu stats debug slot 12 Saturday April 28 05:35:38 UTC 2012 NPU debug
stats for slot 12 debug-pkt-drop-invalid-iphdr 692665 Sat Apr 28 05:38:49 2012 Internal trap
notification 35 (PortLinkDown) card 28
port 1 ifindex 469827584 Sat Apr 28 05:38:49 2012 Internal trap notification 1024 (PortDown)
card 28 port
1 ifindex 469827584port type 10G Ethernet Sat Apr 28 05:38:49 2012 Internal trap notification 35
(PortLinkDown) card 28
port 1 ifindex 469827585 Sat Apr 28 05:38:49 2012 Internal trap notification 60 (CardDown) card
28 Sat Apr 28 05:38:51 2012 Internal trap notification 5 (CardUp) card 28 Sat Apr 28 05:38:51
2012 Internal trap notification 4 (CardRebootRequest) card 28 Sat Apr 28 05:38:51 2012 Internal
trap notification 84 (ServiceLossLC) Slots 28
and 44 has configured for card type 10 Gig Ethernet Line Card, but neither active Sat Apr 28
05:38:53 2012 Internal trap notification 55 (CardActive) card 28 Sat Apr 28 05:38:53 2012
Internal trap notification 1111 (ServiceLossLCClear)
Slots 28 and 44 has configured for card type 10 Gig Et hernet Line Card, one of them is active
now Sat Apr 28 05:38:53 2012 Internal trap notification 93 (CardStandby) card 28 Sat Apr 28
05:38:55 2012 Internal trap notification 36 (PortLinkUp) card 28 port
1 ifindex 469827584 Sat Apr 28 05:38:55 2012 Internal trap notification 1025 (PortUp) card 28
port 1
ifindex 469827584port type 10G Ethernet Sat Apr 28 05:38:55 2012 Internal trap notification 55
(CardActive) card 28 Sat Apr 28 05:38:55 2012 Internal trap notification 36 (PortLinkUp) card 28
port
1 ifindex 469827585 Sat Apr 28 05:38:55 2012 Internal trap notification 1025 (PortUp) card 28
port 1
ifindex 469827585port type 10G Ethernet [local]XGW# show port util table Saturday April 28
05:39:47 UTC 2012 ----- Average Port Utilization (in mbps) ----- Port Type Current 5min 15min
Rx Tx Rx Tx Rx Tx -----
19/1 10G Ethernet 0 0 0 0 0 0 20/1 10G Ethernet 236 174 688 544 816 637 21/1 1000 Ethernet 0 17
0 7 0 7 22/1 1000 Ethernet 3 29 3 69 4 75 23/1 10G Ethernet 0 0 0 0 0 0 26/1 10G Ethernet 201
156 779 568 810 597 28/1 10G Ethernet 114 181 0 0 0 0 [local]XGW# show npu stats debug slot 12
Saturday April 28 05:40:04 UTC 2012 NPU debug stats for slot 12 debug-pkt-drop-invalid-iphdr
2219078 [local]XGW# show npu stats debug slot 12 Saturday April 28 05:40:15 UTC 2012 NPU debug
stats for slot 12 debug-pkt-drop-invalid-iphdr 2289375 [local]XGW# show port util table Saturday
April 28 05:41:08 UTC 2012 ----- Average Port Utilization (in mbps) ----- Port Type Current
5min 15min Rx Tx Rx Tx Rx Tx -----
```

```

--- ----- 19/1 10G Ethernet 0 0 0 0 0 0 20/1 10G Ethernet 769 545 682 528 804 625 21/1 1000
Ethernet 0 0 0 6 0 6 22/1 1000 Ethernet 3 70 3 63 4 73 23/1 10G Ethernet 0 0 0 0 0 0 26/1 10G
Ethernet 723 560 634 480 760 561 28/1 10G Ethernet 317 585 81 141 27 47 [local]XGW# show npu
stat debug slot 12 clear Saturday April 28 05:41:59 UTC 2012 NPU debug stats for slot 12 debug-
pkt-drop-invalid-iphdr 2980554 [local]XGW# show npu stat debug slot 12 clear Saturday April 28
05:42:10 UTC 2012 debug-pkt-drop-invalid-iphdr 60103 Sat Apr 28 05:42:43 2012 Internal trap
notification 16 (PACMigrateStart) from
card 12 to card 16 Sat Apr 28 05:43:55 2012 Internal trap notification 17 (PACMigrateComplete)
from
card 12 to card 16 Sat Apr 28 05:44:45 2012 Internal trap notification 5 (CardUp) card 12 Sat
Apr 28 05:44:45 2012 Internal trap notification 93 (CardStandby) card 12 [local]XGW# show npu
stat debug slot 16 clear Saturday April 28 05:44:35 UTC 2012 NPU debug stats for slot 16 debug-
pkt-drop-invalid-iphdr 14650 [local]XGW# show npu stat debug slot 16 clear Saturday April 28
05:45:48 UTC 2012 NPU debug stats for slot 16 debug-pkt-drop-invalid-iphdr 70940 Sat Apr 28
05:45:20 2012 Internal trap notification 126 (SRPSwitchoverInitiated) vpn SRP ipaddr
10.209.74.164 Sat Apr 28 05:45:21 2012 Internal trap notification 121 (SRPStandby) vpn SRP
ipaddr 10.209.74.164 rtmod 2 [local]XGW(config)# port ether 27/1 Saturday April 28 05:52:27 UTC
2012 [local]XGW(config-port-27/1)# no shut Saturday April 28 05:52:35 UTC 2012 Sat Apr 28
05:52:35 2012 Internal trap notification 36 (PortLinkUp) card 27 port
1 ifindex 453050368 Sat Apr 28 05:52:35 2012 Internal trap notification 1025 (PortUp) card 27
port 1
ifindex 453050368port type 10G Ethernet Sat Apr 28 05:52:35 2012 Internal trap notification 55
(CardActive) card 27 Sat Apr 28 05:52:35 2012 Internal trap notification 36 (PortLinkUp) card 27
port
1 ifindex 453050369 Sat Apr 28 05:52:35 2012 Internal trap notification 1025 (PortUp) card 27
port 1
ifindex 453050369port type 10G Ethernet [local]XGW# link-aggregation port switch to 19/1
Saturday April 28 05:56:39 UTC 2012 Are you sure? [Yes|No]: yes Saturday April 28 05:56:42 UTC
2012

Sat Apr 28 07:09:46 2012 Internal trap notification 120 (SRPActive) vpn SRP
ipaddr 10.209.74.164 rtmod 2

```

```

[local]XGW# show card table
Saturday April 28 06:06:09 UTC 2012

```

Slot	Card Type	Oper State	SPOF	Attach
1: PSC	Packet Services Card 2	Active	No	- -
2: PSC	Packet Services Card 2	Active	No	- -
3: PSC	Packet Services Card 2	Active	No	19 -
4: PSC	Packet Services Card 2	Active	No	20 -
5: PSC	Packet Services Card 2	Active	No	21 37
6: PSC	Packet Services Card 2	Active	No	22 38
7: PSC	Packet Services Card 2	Active	No	23 -
8: SMC	System Management Card	Active	No	24 25
9: SMC	System Management Card	Standby	-	- -
10: PSC	Packet Services Card 2	Active	No	26 -
11: PSC	Packet Services Card 2	Active	No	27 -
12: PSC	Packet Services Card 2	Standby	-	- -
13: PSC	Packet Services Card 2	Active	No	- -
14: PSC	Packet Services Card 2	Active	No	- -
15: PSC	Packet Services Card 2	Active	No	- -
16: PSC	Packet Services Card 2	Active	No	28 -

The unlikely conclusion ended up being a defective Line Card, which when replaced, resolved the issue.

Note: when XGLC 28 was replaced, the system re-attached the replacement XGLC to Demux PSC 1 instead of the previously attached PSC 16. The Card-Slot-Port task (CSP) has the right to attach an XGLC to any free PSC it desires to, in this case PSC 1 instead of PSC 16. As a result, the testing of XGLC 28 was against PSC 1 and not PSC 16 or PSC 12, but at this point based on all the testing done so far (i.e. the issue happens whether connected to PSC 12 or PSC 16), it had been concluded that the failures were due to XGLC 28 and not any PSC.

Sun Apr 29 05:17:25 2012 Internal trap notification 60 (CardDown) card 28
 Sun Apr 29 05:17:25 2012 Internal trap notification 7 (CardRemoved) card 28
 Sun Apr 29 05:19:56 2012 Internal trap notification 8 (CardInserted) card 28
 Sun Apr 29 05:19:58 2012 Internal trap notification 5 (CardUp) card 28
 Sun Apr 29 05:20:00 2012 Internal trap notification 55 (CardActive) card 28

[local]XGW# show port util table
 Sunday April 29 05:23:53 UTC 2012

Port	Type	Average Port Utilization (in mbps)					
		Current		5min		15min	
		Rx	Tx	Rx	Tx	Rx	Tx
19/1	10G Ethernet	1817	1770	1852	1868	1899	1929
20/1	10G Ethernet	0	0	0	0	0	0
21/1	1000 Ethernet	0	0	0	7	0	7
22/1	1000 Ethernet	3	55	3	58	3	59
23/1	10G Ethernet	1685	1867	1718	1858	1782	1868
26/1	10G Ethernet	0	0	0	0	0	0
27/1	10G Ethernet	1982	1866	1982	1846	2022	1927
28/1	10G Ethernet	0	0	0	0	0	0

[local]XGW# link-aggregation port switch to 20/1
 Sunday April 29 05:33:18 UTC 2012
 Are you sure? [Yes|No]: yes
 Sunday April 29 05:33:21 UTC 2012

2012-Apr-29+05:33:21.124 [lagmgr 179050 warning] [1/0/2337 <lagmgr:0>
 lagmgr_state.c:1163] [software internal system critical-info syslog] LAG group
 50 (global) with master port 19/1 has changed partner from (007F,00-26-88-8E-
 4F-F0,0034) to (007F,00-26-88-A7-FF-F0,0034) [local]LENYKSCJPNR XGW# show port util table Sunday
 April 29 05:34:05 UTC 2012 ----- Average Port Utilization (in mbps) ----- Port Type Current
 5min 15min Rx Tx Rx Tx Rx Tx Rx Tx -----
 --- ----- 19/1 10G Ethernet 0 0 1724 1688 1795 1783 20/1 10G Ethernet 1785 1737 112 108 37 36
 21/1 1000 Ethernet 0 29 0 8 0 7 22/1 1000 Ethernet 3 55 3 56 3 57 23/1 10G Ethernet 0 0 1430
 1522 1609 1720 26/1 10G Ethernet 1632 1790 89 95 29 31 27/1 10G Ethernet 0 0 1719 1669 1865 1780
28/1 10G Ethernet 1840 1738 0 0 0 0

[local]XGW# show npu stats debug slot 1
 Sunday April 29 05:34:18 UTC 2012
 NPU debug stats for slot 1
 debug-pkt-drop-invalid-iphdr 9

[local]XGW# show card table
 Sunday April 29 05:34:27 UTC 2012

Slot	Card Type	Oper State	SPOF	Attach
1: PSC	Packet Services Card 2	Active	No	28 -
2: PSC	Packet Services Card 2	Active	No	- -
3: PSC	Packet Services Card 2	Active	No	19 -
4: PSC	Packet Services Card 2	Active	No	20 -
5: PSC	Packet Services Card 2	Active	No	21 37
6: PSC	Packet Services Card 2	Active	No	22 38
7: PSC	Packet Services Card 2	Active	No	23 -
8: SMC	System Management Card	Active	No	24 25
9: SMC	System Management Card	Standby	-	- -
10: PSC	Packet Services Card 2	Active	No	26 -
11: PSC	Packet Services Card 2	Active	No	27 -
12: PSC	Packet Services Card 2	Standby	-	- -
13: PSC	Packet Services Card 2	Active	No	- -
14: PSC	Packet Services Card 2	Active	No	- -
15: PSC	Packet Services Card 2	Active	No	- -
16: PSC	Packet Services Card 2	Active	No	- -

```
[local]LENYKSCJPNR XGW# show port npu count 28/1
Sunday April 29 05:35:39 UTC 2012
Counters for port 28/1
```

Counter	Rx Frames	Rx Bytes	Tx Frames	Tx Bytes
Bad IPv4 header	0	0	n/a	n/a

```
[local]XGW# show npu stats debug all-pac
Sunday April 29 05:36:05 UTC 2012
NPU debug stats for slot 1
  debug-pkt-drop-invalid-iphdr          32
```

```
[local]XGW# show npu stats debug all-pac | grep debug-pkt-drop-invalid-iphdr
Sunday April 29 05:36:47 UTC 2012
```

debug-pkt-drop-invalid-iphdr	41	<== PSC 1
debug-pkt-drop-invalid-iphdr	3722008	
debug-pkt-drop-invalid-iphdr	920	
debug-pkt-drop-invalid-iphdr	141	
debug-pkt-drop-invalid-iphdr	3579872	
debug-pkt-drop-invalid-iphdr	47	
debug-pkt-drop-invalid-iphdr	3817343	

```
[local]XGW# show port util table
Sunday April 29 05:37:52 UTC 2012
```

Port	Type	Average Port Utilization (in mbps)					
		Current		5min		15min	
		Rx	Tx	Rx	Tx	Rx	Tx
19/1	10G Ethernet	0	0	301	297	1300	1280
20/1	10G Ethernet	1686	1603	1490	1454	496	484
21/1	1000 Ethernet	0	0	0	6	0	7
22/1	1000 Ethernet	3	53	3	55	3	55
23/1	10G Ethernet	0	0	448	475	1265	1349
26/1	10G Ethernet	1539	1692	1383	1460	461	486
27/1	10G Ethernet	0	0	252	246	1334	1288
28/1	10G Ethernet	1758	1705	1413	1390	471	463