

由於ims-authorization-failed斷開原因增加導致Gx成功率KPI降級的故障排除

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簡介

本文描述如何解決當增加「ims-authorization-failed」斷開原因時Gx成功率關鍵效能指標(KPI)降低時出現的問題。

必要條件

需求

思科建議您瞭解以下主題：

- 5000/5500的硬體知識
- StarOS

採用元件

本文件所述內容不限於特定軟體和硬體版本。

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

背景資訊

縮寫：

PCRF
PGW
CCR
CCA

策略和計費規則功能
封包資料網路閘道器
信用控制請求
信用控制答案

問題

服務提供商報告一個PGW中的Gx成功率KPI降級，發現斷開原因「ims-authorization-failed」計數器正在增加。

此處，「ims-authorization-failed」斷開原因描述由於IMS授權失敗而斷開的會話總數。

PGW持續報告「ims-authorization-failed」計數器。根據disconnect-reasons統計，「ims-authorization-failed」計數器導致Gx成功率的降低。

```
1st iteration-
[local]PGW# show session disconnect-reasons verbose | grep -i ims-authorization-failed
Thursday June 13 16:10:39 NZST 2019
..
Disconnect Reason    Num Disc  Percentage
-----
ims-authorization-failed                59034    1.68225

2nd iteration-
[local]PGW# show session disconnect-reasons verbose | grep -i ims-authorization-failed
Thursday June 13 16:10:59 NZST 2019
..
Disconnect Reason    Num Disc  Percentage
-----
ims-authorization-failed                59202    1.68181 >>168 counter
increased in just 20 sec of span
```

疑難排解

本節提供的資訊用於解決由於「ims-authorization-failed」斷開原因增加而導致的Gx成功率KPI降低的問題。

已針對故障方案收集監控訂戶跟蹤。

通過分析發現，對於與卡7關聯的這些sessmgr例項，觀察到「ims-authorization-failed」。總的來說，在斷開原因中收到ims-authorization-failed原因。

請參閱故障訂戶跟蹤序列：

CREATE_SESSION_REQUEST消息已從SGW傳送到PGW。

```
INBOUND>>>>> From sessmgr:102 sessmgr_pgw.c:31631 (Callid 1e283e66) 16:55:07:562
Eventid:141004(3)
[PGW-S5/S2a/S2b]GTPv2C Rx PDU, from 202.73.X.Y:31552 to 202.73.A.B:2123 (262)
TEID: 0x00000000, Message type: EGTP_CREATE_SESSION_REQUEST (0x20)
Sequence Number: 0x18A861 (1615969)
GTP HEADER
    Version number: 2
    TEID flag: Present
```

Piggybacking flag: Not present
Message Length: 0x0102 (258)

INFORMATION ELEMENTS

IMSI:

Type: 1 Length: 8 Inst: 0
Value: ABXY01106562064

USER LOCATION INFO:

Type: 86 Length: 13 Inst: 0
Value:

Location type: TAI

MCC: 530

MNC: 01

TAC: 0xA101

Location type: ECGI

MCC: AB0

MNC: XY

ECI: 0x006F902

SERVING NETWORK:

Type: 83 Length: 3 Inst: 0
Value:

MCC: AB0

MNC: XY

RADIO ACCESS TECH:

Type: 82 Length: 1 Inst: 0
Value: EUTRAN (6)

SGW-CONTROL FTEID:

Type: 87 Length: 9 Inst: 0
Value:

Interface: SGW S5/S8-C

IPv4 Flag: 1

IPv6 Flag: 0

Teid: 0x84B8A061

IPV4 Addr: 202.73.X.Y

ACCESS POINT NAME:

Type: 71 Length: 28 Inst: 0
Value: internet.mnc0XY.mcc0AB.gprs

SELECTION MODE:

Type: 128 Length: 1 Inst: 0
Value: MS or network provided APN,subscr verified (0x00)

PDN TYPE:

Type: 99 Length: 1 Inst: 0
Value: IPV4

PDN ADDRESS ALLOC:

Type: 79 Length: 5 Inst: 0
Value:

PDN Type: IPV4

IPV4 Addr: 0.0.0.0

INDICATION:

Type: 77 Length: 6 Inst: 0
Value:

DAF : 0

DTF : 0(Direct tunnel disabled)

HI : 0

DFI : 0

OI : 0

ISRSI: 0(ISR not supported)

ISRAI: 0(ISR not Activated)

SGWCI: 0

SQCI : 0

UIMSI: 0(Authenticated IMSI)

CFSI : 0(F-TEID Change Indication not supported)

CRSI : 0(Location Change Reporting not supported)

PS : 1(Piggybacking feature supported)

PT : 0(GTPv2)

SI : 0
MSV : 0
RetLoc: 0
PBIC: 0
SRNI: 0
S6AF: 0
S4AF: 0
MBMDT: 0
ISRAU: 0
CCRSI: 0(CSG Information Change Reporting mechanism not supported)
CPRAI: 0
ARRL: 0
PPOF: 0
PPON / PPEI: 0
PPSI: 0
CSFBI: 0
CLII: 0
CPSR: 0
UASI: 0
DTCI: 0
BDWI: 0
PCRI: 0
AOSI: 0
AOPI: 0
EPCOSI: 0
CPOPCI: 0
S11TF: 0
PNSI: 0
WPMI: 0

APN RESTRICTION:

Type: 127 Length: 1 Inst: 0
Value: 0

AGGREGATE MAX BIT RATE:

Type: 72 Length: 8 Inst: 0
Value:
Uplk AMBR: 64000 kbps
Dnlk AMBR: 256000 kbps

PCO:

Type: 78 Length: 32 Inst: 0
Container id: 0x8021 (IPCP)
Container length: 0x10 (16)
Container content:
Conf-Req(0), Pri-DNS=0.0.0.0, Sec-DNS=0.0.0.0
Container id: 0x000D (IPv4-DNS-Server)
Container length: 0x00 (0)
Container content:
DNS Address: Request for IPv4 DNS Address allocation
Container id: 0x000A (IP address allocation via NAS signalling)
Container length: 0x00 (0)
Container content:

IP Address allocation via NAS signalling

Container id: 0x0005 (Bearer Control Mode)
Container length: 0x00 (0)
Container content:
NCQOS BCM Indicator:
Container id: 0x0010 (Link MTU)
Container length: 0x00 (0)
Container content:

BEARER CONTEXT TO BE CREATED:

Type: 93 Length: 44 Inst: 0
Value:

EPS BEARER ID:
Type: 73 Length: 1 Inst: 0
Value: 5

SGW-DATA FTEID:
Type: 87 Length: 9 Inst: 2
Value:
Interface: SGW S5/S8-U
IPv4 Flag: 1
IPv6 Flag: 0
Teid: 0x8A948061
IPV4 Addr: 202.73.X.Y
BEARER QOS:
Type: 80 Length: 22 Inst: 0
Value:
ARP: PCI = 1 (Disabled), PL = 9, PVI = 0 (Enabled)
QCI: 6
Uplnk MBR: 0 kbps
Dnlkn MBR: 0 kbps
Uplnk GBR: 0 kbps
Dnlkn GBR: 0 kbps

UE TIME ZONE:
Type: 114 Length: 2 Inst: 0
Value:
TZ: +12:00
DST: +0 hour

CHARGING CHAR:
Type: 95 Length: 2 Inst: 0
Value: 0x0800

<additional output suppressed>

PGW在EGTP_CREATE_SESSION_RESPONSE消息中向SGW傳送了「無可用資源」。

```
<<<<OUTBOUND From sessmgr:102 sessmgr_egtp.c:2906 (Callid 1e283e66) 16:55:15:492
Eventid:141005(3)
[PGW-S5/S2a/S2b]GTPv2C Tx PDU, from 202.73.195.91:2123 to 202.73.195.89:31552 (33)
TEID: 0x84B8A061, Message type: EGTP_CREATE_SESSION_RESPONSE (0x21)
Sequence Number: 0x18A861 (1615969)
GTP HEADER
  Version number: 2
  TEID flag: Present
  Piggybacking flag: Not present
  Message Length: 0x001D (29)
INFORMATION ELEMENTS
  CAUSE:
    Type: 2 Length: 2 Inst: 0
    Value:
      Cause: EGTP_CAUSE_NO_RESOURCES_AVAILABLE (0x49)
      PCE: 0
      BCE: 0
      CS: 0
  BEARER CONTEXT CREATED:
    Type: 93 Length: 11 Inst: 0
    Value:
      EPS BEARER ID:
        Type: 73 Length: 1 Inst: 0
        Value: 5
      CAUSE:
        Type: 2 Length: 2 Inst: 0
        Value:
          Cause: EGTP_CAUSE_NO_RESOURCES_AVAILABLE (0x49)
          PCE: 0
          BCE: 0
          CS: 0
```

總體而言，在斷開原因中收到ims-authorization-failed原因。

```

***CONTROL*** From sessmgr:102 sessmgr_func.c:5311 (Callid 1e283e66) 16:55:15:493 Eventid:10285
>>disconnect received for sessmr 102
CALL STATS: <xyz12591615@internet>, msid <ABXY01106562064>, Call-Duration(sec): 0
input pkts: 0                output pkts: 0
input bytes: 0              output bytes: 0
input bytes dropped: 0     output bytes dropped: 0
input pkts dropped: 0      output pkts dropped: 0
pk rate from user(bps): 0  pk rate to user(bps): 0
ave rate from user(bps): 0 ave rate to user(bps): 0
sust rate from user(bps): 0 sust rate to user(bps): 0
pk rate from user(pps): 0  pk rate to user(pps): 0
ave rate from user(pps): 0 ave rate to user(pps): 0
sust rate from user(pps): 0 sust rate to user(pps): 0
link online/active percent: 0
ipv4 bad hdr: 0             ipv4 ttl exceeded: 0
ipv4 fragments sent: 0     ipv4 could not fragment: 0
ipv4 input acl drop: 0     ipv4 output acl drop: 0
ipv4 bad length trim: 0
ipv4 input non-mip drop: 0  ipv4 output non-mip drop: 0
ipv4 input css drop: 0     ipv4 output css drop: 0
output gre xoff pkts drop: 0 output gre xoff bytes drop: 0
ipv4 output no-flow drop: 0
ipv4 source violations: 0  ipv4 early pdu drop: 0
ipv4 proxy-dns redirect: 0 ipv4 proxy-dns pass-thru: 0
ipv4 proxy-dns drop: 0    ipv4 proxy-dns redirect tcp connection: 0
ipv6 bad hdr: 0           ipv6 bad length trim: 0
ip source violation no acct: 0 ip source violation ignored: 0
dlnk pkts exceeded bw: 0   dlnk pkts violated bw: 0
uplnk pkts exceeded bw: 0  uplnk pkts violated bw: 0
dormancy total: 0         handoff total: 0

```

Disconnect Reason: ims-authorization-failed

Last Progress State: IMS Authorizing

此外，sessmgr例項編號是102，其與卡7相關聯，針對卡7接收了ims-authorization-failed計數器。

```

[local]PGW# show task resources facility sessmgr instance 102
Thursday June 13 16:56:14 NZST 2019

```

cpu facility	task inst	cputime		memory		files		sessions		S	status
		used	allc	used	alloc	used	allc	used	allc		
7/0 sessmgr	102	8.80%	100%	792.2M	2.34G	45	500	3097	32504	I	good
Total	1	8.80%		792.2M		45		3097			

檢查配置時，發現多個diamproxy配置正常。

```

[local]PGW# show config | grep multiple
Thursday June 13 15:15:11 NZST 2019
require diameter-proxy multiple

```

然後發現，對於未生成diamproxy功能的卡，觀察到了「ims-authorization-failed」。

在本例中，diamproxy設施未與卡7生成。

```

[local]PGW# show card table
Thursday June 13 14:53:53 NZST 2019

```

Slot	Card Type	Oper State	SPOF	Attach
1: CFC	Control Function Virtual Card	Standby	-	
2: CFC	Control Function Virtual Card	Active	No	
3: FC	2-Port Service Function Virtual Card	Active	No	

```

4: FC      2-Port Service Function Virtual Card  Active  No
5: FC      2-Port Service Function Virtual Card  Active  No
6: FC      2-Port Service Function Virtual Card  Active  No
7: FC      2-Port Service Function Virtual Card  Active  No
8: FC      2-Port Service Function Virtual Card  Active  No
9: FC      2-Port Service Function Virtual Card  Active  No
10: FC     2-Port Service Function Virtual Card  Active  No
11: FC     2-Port Service Function Virtual Card  Active  No
12: FC     2-Port Service Function Virtual Card  Active  No
13: FC     2-Port Service Function Virtual Card  Active  No
14: FC     2-Port Service Function Virtual Card  Active  No
15: FC     2-Port Service Function Virtual Card  Standby -
16: FC     2-Port Service Function Virtual Card  Active  No

```

```

-----
[local]PGW# show task resources facility diamproxy all
Thursday June 13 14:55:31 NZST 2019

```

cpu	facility	task inst	cputime		memory		files		sessions			status
			used	allc	used	alloc	used	allc	used	allc	S	
3/0	diamproxy	8	1.10%	90%	43.75M	250.0M	271	2500	--	--	-	good
4/0	diamproxy	9	1.09%	90%	43.89M	250.0M	266	2500	--	--	-	good
5/0	diamproxy	10	1.09%	90%	43.93M	250.0M	237	2500	--	--	-	good
9/0	diamproxy	1	1.08%	90%	43.63M	250.0M	212	2500	--	--	-	good
10/0	diamproxy	4	1.08%	90%	43.88M	250.0M	258	2500	--	--	-	good
12/0	diamproxy	11	1.11%	90%	43.93M	250.0M	229	2500	--	--	-	good
13/0	diamproxy	2	1.09%	90%	43.75M	250.0M	258	2500	--	--	-	good
14/0	diamproxy	7	1.06%	90%	43.88M	250.0M	256	2500	--	--	-	good
16/0	diamproxy	13	1.04%	90%	43.89M	250.0M	199	2500	--	--	-	good

解決方案

發現儘管卡7處於活動狀態，但並沒有生成卡7的diamproxy設施。為了生成diamproxy設施，需要重新啟動diamctrl設施或執行CF卡切換。

這項行動計畫已按建議得到執行。

使用備用CFC卡切換活動CFC卡。

換卡後，各自的diamproxy已正確生成，Gx KPI根據預期值恢復正常。

```

***** show card table all *****
Thursday June 13 22:17:54 NZST 2019<tel:2019>
Slot      Card Type                               Oper State  SPOF  Attach
-----
1: CFC   Control Function Virtual Card         Active    No    >>CFC card
1 active post switchover
2: CFC    Control Function Virtual Card           Standby    -
3: FC     2-Port Service Function Virtual Card   Active    No
4: FC     2-Port Service Function Virtual Card   Active    No
5: FC     2-Port Service Function Virtual Card   Active    No
6: FC     2-Port Service Function Virtual Card   Active    No
7: FC     2-Port Service Function Virtual Card   Active    No
8: FC     2-Port Service Function Virtual Card   Active    No
9: FC     2-Port Service Function Virtual Card   Active    No
10: FC    2-Port Service Function Virtual Card   Active    No
11: FC    2-Port Service Function Virtual Card   Active    No

```

```

12: FC      2-Port Service Function Virtual Card    Active      No
13: FC      2-Port Service Function Virtual Card    Active      No
14: FC      2-Port Service Function Virtual Card    Active      No
15: FC      2-Port Service Function Virtual Card    Standby     -
16: FC      2-Port Service Function Virtual Card    Active      No

```

[local]PGW# show task resources facility diamproxy all

Thursday June 13 14:55:31 NZST 2019

cpu	facility	task inst	cputime		memory		files		sessions			status
			used	allc	used	alloc	used	allc	used	allc	S	
3/0	diamproxy	8	0.95%	90%	43.86M	250.0M	130	2500	--	--	-	good
4/0	diamproxy	9	0.98%	90%	44.00M	250.0M	130	2500	--	--	-	good
5/0	diamproxy	10	1.00%	90%	44.00M	250.0M	135	2500	--	--	-	good
7/0	diamproxy	3	0.26%	90%	43.73M	250.0M	278	2500	--	--	-	good
instance 3 spawn with card 7												
8/0	diamproxy	5	0.31%	90%	43.73M	250.0M	277	2500	--	--	-	good
9/0	diamproxy	1	1.00%	90%	43.86M	250.0M	130	2500	--	--	-	good
10/0	diamproxy	4	0.98%	90%	43.96M	250.0M	133	2500	--	--	-	good
11/0	diamproxy	6	0.24%	90%	43.74M	250.0M	277	2500	--	--	-	good
12/0	diamproxy	11	1.04%	90%	44.01M	250.0M	144	2500	--	--	-	good
13/0	diamproxy	2	0.97%	90%	43.84M	250.0M	134	2500	--	--	-	good
14/0	diamproxy	7	1.04%	90%	43.99M	250.0M	138	2500	--	--	-	good
16/0	diamproxy	13	0.96%	90%	43.74M	250.0M	261	2500	--	--	-	good

>>diamproxy

PGW和PCRF之間交換活動和diameter消息後，產生各自的diamproxy設施。