排除故障Gx成功率KPI下降由于在IMS授权失败的断开原因的一增加

目录

简介

本文描述如何排除故障发生的问题，当Gx成功率关键性能指示器(KPI)下降发生，当‘IMS授权失败的’断开原因增加时。

先决条件

要求

Cisco 建议您了解以下主题：

- 硬件知识5000/5500
- StarOS

使用的组件

本文档不限于特定的软件和硬件版本。

本文档中的信息都是基于特定实验室环境中的设备编写的。
本文档中使用的所有设备最初均采用原始（默认）配置。如果您的网络处于活动状态，请确保您了解所有命令的潜在影响。

背景信息

简称：

PCRF	策略和正在充电规则功能
PGW	信息包数据网络网关
CCR	信贷管制请求
CCA	信贷管制答案

CFC	控制功能虚拟卡
FC	服务功能虚拟卡
KPI	关键绩效指标(KPI)

问题

发现在一PGW和断开原因'IMS授权失败的'计数器的服务提供商报告的Gx成功率KPI下降增加。

这里，'IMS授权失败的'断开原因描述会话总数被断开由于IMS验证失败。

PGW经常报告的'IMS授权失败的'计数器。根据断开原因统计信息，造成Gx成功率的下降的'IMS授权失败的'计数器。

```
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
```

故障排除

此部分提供信息排除故障Gx成功率KPI下降问题由于在'IMS授权失败的'断开原因的一增加。

监视器用户trace为故障情景收集。
从分析，发现'IMS授权失败'对关联与卡7.的那些sessmgr实例被观察了。总之， IMS授权失败的原因在断开原因接收。

参考失败用户trace顺序：

CREATE_SESSION_REQUEST信息从SGW传送了到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
                WPMSI: 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
                        Dnlnk MBR: 0 kbps
                        Uplnk GBR: 0 kbps
                        Dnlnk 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 suprresed>
```

PGW没有发送‘资源联机’对在EGTP_CREATE_SESSION_RESPONSE消息的SGW。

```
<<<<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
```

整体，IMS授权失败的原因在断开原因接收。

```
***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关联与卡7 IMS授权失败的计数器接收的实例编号是102。

```
[local]PGW# show task resources facility sessmgr instance 102
Thursday June 13 16:56:14 NZST 2019
                  task   cputime        memory     files      sessions
cpu facility      inst  used  allc   used  alloc used allc  used  allc S status
----------------------- ----------- ------------- --------- ------------- ------
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
```

当配置被检查，被看到多diamproxy配置优良是。

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

然后发现‘IMS授权失败的’对diamproxy设备没有产生的卡被观察了。

在这种情况下， diamproxy设备没有产生与卡7。

```
[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
                  task   cputime        memory     files      sessions
cpu facility      inst  used  allc   used  alloc used allc  used  allc S status
----------------------- ----------- ------------- --------- ------------- ------
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
```

解决方案

发现diamproxy设备未为卡7产生，虽然卡7是活跃的。为了产生diamproxy设备， diamctrl设备需要重新启动或CF卡切换需要被执行。

此行动方案实现作为建议的。

与暂挂CFC卡的切换活动CFC卡。

在卡切换以后，各自diamproxy适当地产生了，并且Gx KPI是回到正常根据预期值。

```
******** 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
                  task   cputime        memory     files      sessions
cpu facility      inst  used  allc   used  alloc used allc  used  allc S status
----------------------- ----------- ------------- --------- ------------- ------
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      >>diamproxy
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
```

各自diamproxy设备在活动以后产生了，并且直径消息适当地然后被交换了在PGW和PCRF之间。