在CPS上排除VoLTE呼叫失敗由於5012(DIAMETER_UNABLE_TO_COMPLIANCE)而導致的故障

目錄

簡介

本檔案介紹如何在思科原則套件(CPS)上疑難排解由於5012(DIAMETER_UNABLE_TO_COMPLIANCE)而導致的長期演化(VoLTE)通話失敗。

問題

已報告CPS的VoLTE呼叫由於5012(DIAMETER_UNABLE_TO_COMPLIANCE)而失敗。

這些是統一引擎日誌，可以在其中看到命令代碼Rx_AAR(265)-Request，該請求由CPS接收，並應答通過Rx介面從CPS發回IP多媒體子系統(IMS)，結果代碼為DIAMETER_UNABLE_TO_COMPACT(5012)。

```
=========  HOSTNAME-qnsXX  [yyyy-mm-dd 15:32:00,673] ============

POLICY RESULT ERROR:  null

        session action = None

        TRIGGER: Message: com.broadhop.diameter2.messages.DiameterRequestMessage

                Application Id: Rx (16777236)
                Command Code: Rx_AAR (265)

                Dest realm: XXXX.ims.mncXYZ.mccXYZ.3gppnetwork.org

                Device protocol: RX_TGPP

                End to end id: 204492743 (0x0c304fc7)

                Hop by hop id: 2985189310 (0xb1ee5fbe)

                Origin state: 0

.
```

.

.

```
        SENT MESSAGES (asynchronous):  <<<<<<<<<<<

        Message: com.broadhop.diameter2.messages.DiameterResponseMessage

                Application Id: Rx (16777236)

                Command Code: Rx_AAA (265)

                Dest host: XXXX.ims.mncXYZ.mccXYZ.3gppnetwork.org
                Dest realm:XXXX.ims.mncXYZ.mccXYZ.3gppnetwork.org

                Device protocol: RX_TGPP

                End to end id: 204492743 (0x0c304fc7)

                Hop by hop id: 2985189310 (0xb1ee5fbe)

                Origin state: 0

                Stack name: null

                Origin realm: XXXX.ims.mncXYZ.mccXYZ.3gppnetwork.org

                Session-Id: pcsf-stdn.imsgroup1-111-
1111111.aaa.sbc.bbb.com;316160;1;5.2551556468.2;pcsf-stdn.imsgroup1-111-1111111

                Auth-Application-Id: 16777236

                QPS-Internal-Route-Record-Host: XXXX.ims.mncXYZ.mccXYZ.3gppnetwork.org

                QPS-Internal-Route-Record-Realm: XXXX.ims.mncXYZ.mccXYZ.3gppnetwork.org

                Result-Code: DIAMETER_UNABLE_TO_COMPLY (5012)  <<<<<<<<<<<<<
```

疑難排解

以下是整合引擎日誌中看到的行為：

對於故障情況，Consolidated-engine日誌顯示， 5012 for the Authorization/Authentication Request(AAR)，選中請求消息後，您可以看到CPS正在以Hex格式列印編解碼器資料[以粗體突出顯示]。

失敗案例：（引擎日誌）

```
HOSTNAME-qnsXX   [yyyy-mm-dd 15:33:02,529] ================================================
POLICY RESULT ERROR:  null
        session action = None
        TRIGGER: Message: com.broadhop.diameter2.messages.DiameterRequestMessage
                Application Id: Rx (16777236)
                Command Code: Rx_AAR (265)
```

Dest realm: YYYY.mncXYZ.mccXYZ.3gppnetwork.org
Device protocol: RX_TGPP
End to end id: 90747852 (0x0568b3cc)
Hop by hop id: 2509770985 (0x959810e9)
Origin state: 0
Stack name: null
Origin host: XXXX.ims.mncXYZ.mccXYZ.3gppnetwork.org
Origin realm: XXXX.ims.mncXYZ.mccXYZ.3gppnetwork.org
Session-Id: pcsf-stdn.imsgroup1-111-
1111111.aaa.sbc.bbb.com;316160;1;5.2551556468.2;pcsf-stdn.imsgroup1-111-1111111
Auth-Application-Id: 16777236
Media-Component-Description:
Media-Component-Number: 1
Media-Sub-Component:
Flow-Number: 1
Flow-Description:
Media-Sub-Component:
Flow-Number: 2

Codec-Data: uplink\r\noffer\r\nm=audio 50010 RTP/AVP 99 97 105 96\r\na=rtpmap:99 AMR-
WB/16000/1\r\na=fmtp:99 mode-change-capability=2;max-re
d=0\r\na=rtpmap:97 AMR/8000/1\r\na=fmtp:97 mode-change-capability=2;max-red=0\r\na=rtpmap:105
telephone-event/16000\r\na=fmtp:105 0-15\r\na=rtpmap:96 telephone-event/8000\r
\na=fmtp:96 0-15\r\na=curr:qos local none\r\na=curr:qos remote none\r\na=des:qos mandatory local
sendrecv\r\na=des:qos optional remote sendrecv\r\na=ptime:20\r\na=maxptime:
240\r\n
**(0x75706c696e6b0d0a6f666665720d0a6d3d617564696f203530303130205254502f41565020393920393720313035
039360d0a613d7274706d61703a393920414d522d57422f31363030302f310d0a613
d666d74703a3939206d6f64652d6368616e67652d6361706162696c6974793d323b6d61782d7265643d300d0a613d727
4706d61703a393720414d522f383030302f310d0a613d666d74703a3937206d6f64652d63686
16e67652d6361706162696c6974793d323b6d61782d7265643d300d0a613d7274706d61703a3130352074656c6570686
f6e652d6576656e742f31363030300d0a613d666d74703a31303520302d31350d0a613d72747
06d61703a39362074656c6570686f6e652d6576656e742f383030300d0a613d666d74703a393620302d31350d0a613d6
37572723a716f73206c6f63616c206e6f6e650d0a613d637572723a716f732072656d6f74652
06e6f6e650d0a613d6465733a716f73206d616e6461746f7279206c6f63616c2073656e64726563760d0a613d6465733
a716f73206f7074696f6e616c2072656d6f74652073656e64726563760d0a613d7074696d653
a32300d0a613d6d6178)**
Codec-Data: downlink\r\nanswer\r\nm=audio 36602 RTP/AVP 97
96\r\na=rtpmap:97 AMR/8000/1\r\na=fmtp:97 mode-set=0,2,4,7; mode-change-period=2;
mode-change-capability=2; mode-change-neighbor=1; max-red=0\r\na=rtpmap:96 telephone-
event/8000\r\na=fmtp:96 0-15\r\na=curr:qos local sendrecv\r\na=curr:qos remote none\r\
na=des:qos mandatory local sendrecv\r\na=des:qos mandatory remote sendrecv\r\na=conf:qos remote
sendrecv\r\na=maxptime:40\r\n**(0x646f776e6c696e6b0d0a616e737765720d0a6d3d617
564696f203336363032205254502f41565020393720393720d0a613d7274706d61703a393720414d522f383030302f310
d0a613d666d74703a3937206d6f64652d7365743d302c322c342c373b206d6f64652d6368616
e67652d706572696f643d323b206d6f64652d6368616e67652d6361706162696c6974793d323b206d6f64652d6368616
e67652d6e65696768626f723d313b206d61782d7265643d300d0a613d7274706d61703a39362
074656c6570686f6e652d6576656e742f383030300d0a613d666d74703a393620302d31350d0a613d637572723a716f7
3206c6f63616c2073656e64726563760d0a613d637572723a716f732072656d6f7465206e6f6
e650d0a613d6465733a716f73206d616e6461746f7279206c6f63616c2073656e64726563760d0a613d6465733a716f7
3206d616e6461746f72792072656d6f74652073656e64726563760d0a613d636f6e663a716f7
32072656d6f74652073656e64726563760d0a613d6d6178707)**

DEBUG MSGS:
INFO : (core) Tagging message with ID: RX_TGPP
INFO : (rx) Sending 265 Message on session pcsf-stdn.imsgroup1-111-
1111111.aaa.sbc.bbb.com;316160;1;5.2551556468.2;pcsf-stdn.imsgroup1-111-1111111
INFO : (balance) Error found, rolling back transaction
ERROR : (core) Error processing policy request: null
SERVICE CALC MSGS:
USE CASES:
SENT MESSAGES (asynchronous):
Message: com.broadhop.diameter2.messages.DiameterResponseMessage

```
                Application Id: Rx (16777236)
                Command Code: Rx_AAA (265)
                Dest host: XXXX.ims.mncXYZ.mccXYZ.3gppnetwork.org
                Dest realm: XXXX.ims.mncXYZ.mccXYZ.3gppnetwork.org
                Device protocol: RX_TGPP
                End to end id: 90747852 (0x0568b3cc)
                Hop by hop id: 2509770985 (0x959810e9)
                Origin state: 0
                Stack name: null
                Origin realm: YYYY.ims.mncXYZ.mccXYZ.3gppnetwork.org
                Session-Id: pcsf-stdn.imsgroup1-111-
1111111.aaa.sbc.bbb.com;316160;1;5.2551556468.2;pcsf-stdn.imsgroup1-111-1111111
                Auth-Application-Id: 16777236
                QPS-Internal-Route-Record-Host: XXXX.ims.mncXYZ.mccXYZ.3gppnetwork.org
                QPS-Internal-Route-Record-Realm: XXXX.ims.mncXYZ.mccXYZ.3gppnetwork.org
                Result-Code: DIAMETER_UNABLE_TO_COMPLY (5012)
```

成功案例：（引擎日誌）

對於成功案例，在上行鏈路和下行鏈路編解碼器中均未看到十六進位制資料，而在成功和失敗案例中，AAR均無差異。

如需成功案例，請參閱**INFO：（核心）按金鑰成功載入：在DEBUG MSG下的** IMSIFramedIpKey:111111111111111:172.16.xx.yy，故障場景中不存在。

```
HOSTNAME-qnsXX  [yyyy-mm-dd 15:33:30,543]
POLICY RESULT SUCCESS:
        session action = None
        domainId = IMS
        locationId = ims
        SERVICES: IMS_DEFAULT
        TRIGGER: Message: com.broadhop.diameter2.messages.DiameterRequestMessage
                Application Id: Rx (16777236)
                Command Code: Rx_AAR (265)
                Dest realm: YYYY.ims.mncXYZ.mccXYZ.3gppnetwork.org
                Device protocol: RX_TGPP
                End to end id: 182837146 (0x0ae5df9a)
                Hop by hop id: 2274945953 (0x8798eba1)
                Origin state: 0
                Stack name: null
                Origin host: XXXX.ims.mncXYZ.mccXYZ.3gppnetwork.org
                Origin realm: XXXX.ims.mncXYZ.mccXYZ.3gppnetwork.org
                Session-Id: pcsf-stdn.imsgroup1-111-
1111111.aaa.sbc.bbb.com;316160;1;5.2551556468.2;pcsf-stdn.imsgroup1-111-1111111
                Auth-Application-Id: 16777236
                Media-Component-Description:
                                Media-Component-Number: 1
                                Media-Sub-Component:
                                                Flow-Number: 1

                                Media-Sub-Component:
                                                Flow-Number: 2

                                Codec-Data: uplink\r\noffer\r\nm=audio 50008 RTP/AVP 116 107 118
96 111 110\r\na=rtpmap:116 AMR-WB/16000/1\r\na=fmtp:116 mode-change-capabil
ity=2;max-red=220\r\na=rtpmap:107 AMR-WB/16000/1\r\na=fmtp:107 octet-align=1;mode-change-
capability=2;max-red=220\r\na=rtpmap:118 AMR/8000/1\r\na=fmtp:118 mode-change-capab
ility=2;max-red=220\r\na=rtpmap:96 AMR/8000/1\r\na=fmtp:96 octet-align=1;mode-change-
capability=2;max-red=220\r\na=rtpmap:111 telephone-event/16000\r\na=fmtp:111 0-15\r\na=
```

rtpmap:110 telephone-event/8000\r\na=fmtp:110 0-15\r\na=curr:qos local none\r\na=curr:qos remote none\r\na=des:qos mandatory local sendrecv\r\na=des:qos optional remote sen
drecv\r\na=ptime:20\r\na=maxptime:240\r\n (uplink
offer
m=audio 50008 RTP/AVP 116 107 118 96 111 110 **Note: Codec-Data is in readable form not like how it was in failure case.**
a=rtpmap:116 AMR-WB/16000/1
a=fmtp:116 mode-change-capability=2;max-red=220
a=rtpmap:107 AMR-WB/16000/1
a=fmtp:107 octet-align=1;mode-change-capability=2;max-red=220
a=rtpmap:118 AMR/8000/1
a=fmtp:118 mode-change-capability=2;max-red=220
a=rtpmap:96 AMR/8000/1
a=fmtp:96 octet-align=1;mode-change-capability=2;max-red=220
a=rtpmap:111 telephone-event/16000
a=fmtp:111 0-15
a=rtpmap:110 telephone-event/8000
a=fmtp:110 0-15
a=curr:qos local none
a=curr:qos remote none
a=des:qos mandatory local sendrecv
a=des:qos optional remote sendrecv
a=ptime:20
a=maxptime:240
)
Codec-Data: downlink\r\nanswer\r\nm=audio 3302 RTP/AVP 118 110\r\na=rtpmap:118 AMR/8000/1\r\na=fmtp:118 mode-set=0,2,4,7; mode-change-period=2; mode-change-capability=2; mode-change-neighbor=1; max-red=0\r\na=rtpmap:110 telephone-event/8000\r\na=fmtp:110 0-15\r\na=curr:qos local sendrecv\r\na=curr:qos remote none\r\na=des:qos mandatory local sendrecv\r\na=des:qos mandatory remote sendrecv\r\na=conf:qos remote sendrecv\r\na=maxptime:40\r\n (downlink
answer
m=audio 3302 RTP/AVP 118 110
a=rtpmap:118 AMR/8000/1
a=fmtp:118 mode-set=0,2,4,7; mode-change-period=2; mode-change-capability=2; mode-change-neighbor=1; max-red=0
a=rtpmap:110 telephone-event/8000
a=fmtp:110 0-15
a=curr:qos local sendrecv
a=curr:qos remote none
a=des:qos mandatory local sendrecv
a=des:qos mandatory remote sendrecv
a=conf:qos remote sendrecv
a=maxptime:40
)
Media-Type: AUDIO (0)
Max-Requested-Bandwidth-UL: 64000
Max-Requested-Bandwidth-DL: 41000
Flow-Status: ENABLED (2)
RS-Bandwidth: 0
RR-Bandwidth: 0
Subscription-Id:
Subscription-Id-Type: END_USER_SIP_URI (2)
Subscription-Id-Data:
sip:+911234567890@ims.mncXYZ.mccXYZ.3gppnetwork.org
Subscription-Id:
Subscription-Id-Type: END_USER_IMSI (1)
Subscription-Id-Data: <1111111111111111>
AF-Charging-Identifier: "PCSF:1-sbc"
Specific-Action: INDICATION_OF_LOSS_OF_BEARER (2)
Specific-Action: INDICATION_OF_RECOVERY_OF_BEARER (3)
Specific-Action: INDICATION_OF_RELEASE_OF_BEARER (4)
Specific-Action: IP_CAN_CHANGE (6)
Framed-IP-Address: **172.16.xx.yy** (0x0aAAAAcB)

```
                Supported-Features:
                                Vendor-Id: XXXX

                Service-Info-Status: FINAL SERVICE INFORMATION (0)
                QPS-Internal-Route-Record-Host: XXXX.ims.mncXYZ.mccXYZ.3gppnetwork.org
                QPS-Internal-Route-Record-Realm: XXXX.ims.mncXYZ.mccXYZ.3gppnetwork.org
        DEBUG MSGS:
                INFO   : (core) Tagging message with ID: RX_TGPP
                INFO   : (core) Successful load by key:
imsiFramedIpKey:111111111111111:172.16.xx.yy  <<<<<<<<<
                INFO   : (core) Start session triggered
                INFO   : (rx) Success binding to Gx session 0008-
diamproxy.AAAA.cisco.com;11111111;111111111;5c765a28-3b02 by IMSI And IP Address
                INFO   : (TGPP) [Rel8, Rel9, Rel10] features supported for Vendor-Id XXXX,
Feature-List-ID X
                INFO   : (core) domain: IMS
                INFO   : (rx) Sending AAA Message on session pcsf-stdn.imsgroup1-111-
1111111.aaa.sbc.bbb.com;316160;1;5.2551556468.2;pcsf-stdn.imsgroup1-111-1111111
                INFO   : (gx) Installing preconfigured rule: _1_1_2_AF_AUDIO
                INFO   : (gx) Installing preconfigured rule: _1_1_1_AF_AUDIO
                INFO   : (et) Event trigger 2 added
                INFO   : (et) Event trigger 5 added
                INFO   : (et) Event trigger 6 added
                INFO   : (et) Event trigger 7 added
                INFO   : (gx) Sending RAR Message on session 0008-
diamproxy.AAAA.cisco.com;11111111;111111111;5c765a28-3b02
        SERVICE CALC MSGS:
        USE CASES:
                INFO   : (use-cases) Use case 'XXXX IMS Default', status: true, Condition: No
Condition Set
        SENT MESSAGES (asynchronous):
        Message: com.broadhop.diameter2.messages.DiameterResponseMessage
                Application Id: Rx (16777236)
                Command Code: Rx_AAA (265)
                Dest host: XXXX.ims.mncXYZ.mccXYZ.3gppnetwork.org
                Dest realm: XXXX.ims.mncXYZ.mccXYZ.3gppnetwork.org
                Device protocol: RX_TGPP
                End to end id: 182837146 (0x0ae5df9a)
                Hop by hop id: 2274945953 (0x8798eba1)
                Origin state: 0
                Stack name: null
                Origin realm: pcrf.mncXYZ.mccXYZ.3gppnetwork.org
                Session-Id: pcsf-stdn.imsgroup1-111-
1111111.aaa.sbc.bbb.com;316160;1;5.2551556468.2;pcsf-stdn.imsgroup1-111-1111111
                Auth-Application-Id: 16777236
                IP-CAN-Type: 3GPP_EPS (5)
                RAT-Type: EUTRAN (1004)
                Supported-Features:
                        Vendor-Id: XXXX

                QPS-Internal-Route-Record-Host: XXXX.ims.mncXYZ.mccXYZ.3gppnetwork.org
                QPS-Internal-Route-Record-Realm: XXXX.ims.mncXYZ.mccXYZ.3gppnetwork.org
           Result-Code: DIAMETER_SUCCESS (2001)
```

此外，從整合qns日誌中，似乎沒有將Gx與Rx會話繫結。此處顯示的異常可在consolidated-qns日誌中看到。

```
HOSTNAME-qnsXX yyyy-mm-dd 02:23:03,445 [pool-3-thread-1] WARN
c.b.policy.impl.RulesPolicyService - An exception was thrown while executing a policy action.
```

```
java.lang.NullPointerException: null   <<<<<<<<<<

        at
com.broadhop.diameter2.policy.rx.tgpp.DiameterRxTGPPDeviceMgr.getGxSession(DiameterRxTGPPDeviceM
gr.java:1104)

        at
com.broadhop.diameter2.policy.rx.tgpp.DiameterRxTGPPDeviceMgr.filterEvent(DiameterRxTGPPDeviceMg
r.java:7418)

        at com.broadhop.blueprint.master.MasterBlueprint.filterEvent(MasterBlueprint.java:1283)

        at
com.broadhop.blueprint.master.MasterBlueprint.executionPreSession2(MasterBlueprint.java:245)

        at
com.broadhop.policy.Rule_Execute_Presession_Phase_2__392a9765_1022_4823_b082_cde9f22abf37__e4Baw
WmREeKEu46lGH_XOQ__0.consequence(Unknown Source)
```

解決方案

已啟用全DB掃描調節，並將其設定為**5**。可以觀察到Rx AAR的數量增加並超過110(5*22)，同時觀察到Rx AAA響應5012。

這是因為限制設定為5且有22個QNS VM，並且完整資料庫掃描僅允許110個請求。

正在丟棄所有其他請求，並返回錯誤響應。由於所有AAR請求尚未在後備金鑰中配置IMSIandframedIP金鑰，因此它們都會執行完整的資料庫掃描。

以下是解決此問題的程式：

步驟1.在PB - cluster - lookside key prefixes下新增**imsiFramedIpKey**。

步驟2.等待成功發佈（發佈後等待5分鐘）。

步驟3.返回到「Cluster Manager」終端，並使用restartall.sh指令碼重**新啟動qns**進程。

步驟4.完成重新啟動操作後，請運行**diaganostics.sh**指令碼，以驗證CPS是否已啟動並正在運行。

步驟5.使用telnet命令登入到其中一個QNS OSGI控制檯：

```
telnet <qns vm host name> 9091        [Eg:- telnet qns01 9091]

Execute “rebuildAllSkRings” command on OSGI console to rebuild the configured “Lookaside Key
Prefixes” so qns process start utilizing it

osgi> rebuildAllSkRings
```

Please wait until execution completes

Execute “disconnect” command on console and it waits for user input just press “Enter” key to come out from OSGI console.

```
osgi> disconnect

Disconnect from console? (y/n; default=y)

Connection closed by foreign host.
```