Resolución de problemas de falla de llamada VoLTE debido a 5012 (DIAMETER_UNABLE_TO_COMPLY) en CPS

Contenido

Introducción

Este documento describe cómo resolver problemas de falla de llamada de Voice over Long Term Evolution (VoLTE) debido a 5012 (DIAMETER_UNABLE_TO_COMPLY) en Cisco Policy Suite (CPS).

Problema

Fallas de llamadas VoLTE informadas debido a 5012 (DIAMETER_UNABLE_TO_COMPLY) en CPS.

Estos son los registros del motor consolidado donde puede ver el código de comando Rx_AAR (265) -Solicitud recibida por el CPS y respuesta enviada al Subsistema Multimedia IP (IMS) desde el CPS a través de la interfaz Rx con resultado-Código DIAMETER_UNABLE_TO_COMPLY (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)  <<<<<<<<<<<<
```

Troubleshoot

Este es el comportamiento como se ve en los registros de motor consolidado:

En caso de error, los registros de motor consolidados muestran 5012 para la Solicitud de autorización/autenticación (AAR), cuando se marca el Mensaje de solicitud, puede ver que CPS está imprimiendo datos de códec en formato hexadecimal [resaltado en negrita].

Caso de fallo: (Registros del motor)

```
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
**(0x75706c696e6b0d0a6f666665720d0a6d3d617564696f203530303130205254502f4156502039392039372031303520
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
564696f203336363032205254502f4156502039372039360d0a613d7274706d61703a393720414d522f383030302f310
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)
```

Caso de éxito: (Registros del motor)

En el caso de éxito, no se ven datos hexadecimales tanto en el códec de enlace ascendente como descendente y no hay diferencia en el AAR tanto en los casos de éxito como en los de fallo.

Para ver el caso de éxito, puede consultar **INFO : (núcleo) Carga correcta por clave: imsiFramedIpKey:11111111111111:172.16.xx.yy** en **DEBUG MSG** que no estaba presente en el escenario de falla.

```
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 no
ne\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)
```

De los logs de consolidadas-qns también parece que no se produce el enlace de Gx con la sesión Rx. Esto se puede ver en los registros de qns consolidados mediante una excepción que se

muestra aquí.

```
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)
```

Solución

El regulador de escaneo completo de la base de datos está habilitado y establecido en **5**. Se observa que el número de RAA de Rx aumenta y supera los 110 (5*22) y, al mismo tiempo, se observan las respuestas Rx AAA 5012.

Esto se debe a que el acelerador está configurado en 5 y hay 22 VM QNS y el escaneo completo de la base de datos sólo permite 110 solicitudes.

El resto de las solicitudes se descartan con la respuesta de error. Todas las solicitudes AAR realizan un escaneo de base de datos completo, ya que aún no han configurado la clave IMSIandframedIP en las claves de reserva.

Este es el procedimiento para resolver el problema:

Paso 1. Agregue **imsiFramedIpKey** en PB - cluster - lookaside key prefixes.

Paso 2. Espere hasta que se publique correctamente (espere 5 minutos después de la publicación).

Paso 3. Vuelva al terminal "Cluster Manager" y reinicie el proceso de qns usando el script **restartall.sh**.

Paso 4. Una vez finalizada la operación de reinicio, ejecute el script **diaganostics.sh** para verificar que el CPS esté activo y en ejecución.

Paso 5. Inicie sesión en la consola OSGI QNS mediante el comando telnet:

```
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.
```