

Troubleshooting de Falha de Chamada VoLTE devido a 5012 (DIAMETER_UNABLE_TO_COMPLY) no CPS

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Introduction

Este documento descreve como solucionar problemas de falha de chamada VoLTE (Voice over Long Term Evolution) devido ao 5012 (DIAMETER_UNABLE_TO_COMPLY) no Cisco Policy Suite (CPS).

Problema

Falhas de chamada VoLTE relatadas devido a 5012 (DIAMETER_UNABLE_TO_COMPLY) no CPS.

Estes são os registros do mecanismo consolidado onde você pode ver o código de comando Rx_AAR (265) - Solicitação que foi recebida pelo CPS e resposta enviada de volta ao IMS (IP Multimedia Subsystem, Subsistema Multimídia IP) do CPS na interface Rx com o código de resultado 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.imsgrp1-111-

1111111.aaa.sbc.bbb.com;316160;1;5.2551556468.2;pcsf-stdn.imsgrp1-111-1111111

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

Aqui está o comportamento como visto nos registros consolidados do mecanismo:

Em caso de falha, os registros do mecanismo consolidado mostram o 5012 para a Solicitação de autorização/autenticação (AAR), quando marcada a Mensagem de solicitação, você pode ver que o CPS está imprimindo dados de codec no formato Hex [destacado em negrito].

Caso de falha: (Logs do mecanismo)

```
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.imsgrout1-111-

1111111.aaa.sbc.bbb.com;316160;1;5.2551556468.2;pcsf-stdn.imsgrout1-111-1111111

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\nnm=audio 50010 RTP/AVP 99 97 105 96\r\n\r\nna=rtpmap:99 AMR-WB/16000/1\r\n\r\nna=fmtp:99 mode-change-capability=2;max-red=0\r\n\r\nna=rtpmap:97 AMR/8000/1\r\n\r\nna=fmtp:97 mode-change-capability=2;max-red=0\r\n\r\nna=rtpmap:105 telephone-event/16000\r\n\r\nna=fmtp:105 0-15\r\n\r\nna=rtpmap:96 telephone-event/8000\r\n\r\nna=fmtp:96 0-15\r\n\r\nna=curr:qos local none\r\n\r\nna=curr:qos remote none\r\n\r\nna=des:qos mandatory local sendrecv\r\n\r\nna=des:qos optional remote sendrecv\r\n\r\nna=ptime:20\r\n\r\nna=maxptime:240\r\n\r\n

(0x75706c696e6b0d0a6f666665720d0a6d3d617564696f203530303130205254502f415650203939203937203130352039360d0a613d7274706d61703a393920414d522d57422f31363030302f310d0a613d666d74703a3939206d6f64652d6368616e67652d6361706162696c6974793d323b6d61782d7265643d300d0a613d7274706d61703a393720414d522f383030302f310d0a613d666d74703a3937206d6f64652d6368616e67652d6361706162696c6974793d323b6d61782d7265643d300d0a613d7274706d61703a3130352074656c6570686f66e52d6576656e742f31363030300d0a613d666d74703a31303520302d31350d0a613d7274706d61703a39362074656c6570686f66e52d6576656e742f383030300d0a613d666d74703a393620302d31350d0a613d637572723a716f73206c6f63616c206e6f66e50d0a613d637572723a716f732072656d6f7465206e6f66e50d0a613d6465733a716f73206d616e6461746f7279206c6f63616c2073656e64726563760d0a613d6465733a716f73206f7074696f66e616c2072656d6f74652073656e64726563760d0a613d7074696d653a32300d0a613d6d6178)

Codec-Data: downlink\r\nanswer\r\nnm=audio 36602 RTP/AVP 97

96\r\n\r\nna=rtpmap:97 AMR/8000/1\r\n\r\nna=fmtp:97 mode-set=0,2,4,7; mode-change-period=2; mode-change-capability=2; mode-change-neighbor=1; max-red=0\r\n\r\nna=rtpmap:96 telephone-event/8000\r\n\r\nna=fmtp:96 0-15\r\n\r\nna=curr:qos local sendrecv\r\n\r\nna=curr:qos remote none\r\n\r\nna=des:qos mandatory local sendrecv\r\n\r\nna=des:qos mandatory remote sendrecv\r\n\r\nna=conf:qos remote sendrecv\r\n\r\nna=maxptime:40\r\n\r\n(0x646f776e6c696e6b0d0a616e737765720d0a6d3d617564696f203336363032205254502f4156502039372039360d0a613d7274706d61703a393720414d522f383030302f310d0a613d666d74703a3937206d6f64652d7365743d302c322c342c373b206d6f64652d6368616e67652d706572696f643d323b206d6f64652d6368616e67652d6361706162696c6974793d323b206d6f64652d6368616e67652d6e65696768626f723d313b206d61782d7265643d300d0a613d7274706d61703a39362074656c6570686f66e52d6576656e742f383030300d0a613d666d74703a393620302d31350d0a613d637572723a716f73206c6f63616c2073656e64726563760d0a613d637572723a716f732072656d6f7465206e6f66e50d0a613d6465733a716f73206d616e6461746f7279206c6f63616c2073656e64726563760d0a613d6465733a716f73206d616e6461746f72792072656d6f74652073656e64726563760d0a613d636f66e63a716f732072656d6f74652073656e64726563760d0a613d6d6178707)

DEBUG MSGS:

INFO : (core) Tagging message with ID: RX_TGPP

INFO : (rx) Sending 265 Message on session pcsf-stdn.imsgrout1-111-

1111111.aaa.sbc.bbb.com;316160;1;5.2551556468.2;pcsf-stdn.imsgrout1-111-1111111

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.imsgrp1-111-
1111111.aaa.sbc.bbb.com;316160;1;5.2551556468.2;pcsf-stdn.imsgrp1-111-1111111
  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 sucesso: (Logs do mecanismo)

Em caso de sucesso, nenhum dado Hex é visto no codec de uplink e downlink e nenhuma diferença na AAR em casos de sucesso e falha.

Para casos de sucesso, consulte **INFORMAÇÕES: (núcleo) Carga por chave bem-sucedida: imsiFramedIpKey:1111111111111111:172.16.xx.yy** em **DEBUG MSG** que não estava presente no cenário de falha.

```
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.imsgrp1-111-
1111111.aaa.sbc.bbb.com;316160;1;5.2551556468.2;pcsf-stdn.imsgrp1-111-1111111
    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 5008 RTP/AVP 116 107 118
```

96 111 110\r\na=rtpmap:116 AMR-WB/16000/1\r\na=fmtp:116 mode-change-capability=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-capability=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 sendrecv\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\nnm=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:1111111111111111:172.16.xx.yy <<<<<<<<
    INFO : (core) Start session triggered
    INFO : (rx) Success binding to Gx session 0008-
diameterproxy.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.imsgr oup1-111-
1111111.aaa.sbc.bbb.com;316160;1;5.2551556468.2;pcsf-stdn.imsgr oup1-111-1111111
    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-
diameterproxy.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.imsgr oup1-111-
1111111.aaa.sbc.bbb.com;316160;1;5.2551556468.2;pcsf-stdn.imsgr oup1-111-1111111
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)

```

Nos logs consolidados-qns também parece que a associação de Gx com sessão Rx não acontece. Isso pode ser visto nos logs consolidados-qns por uma exceção mostrada aqui.

```
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)
```

Solução

O acelerador de varredura completo do banco de dados está ativado e definido como 5. Observou-se que o número de RAAs de Rx aumenta e vai além de 110 (5*22) e, ao mesmo tempo, observam-se respostas de AAA de Rx 5012.

Isso porque a limitação está definida como 5 e há 22 VMs QNS e a verificação completa de DB permite apenas 110 solicitações.

Todas as outras solicitações estão sendo descartadas com a resposta do erro. Todas as solicitações AAR fazem uma varredura completa do banco de dados, pois ainda não configuraram a chave IMSIand framedIP em chaves de pesquisa.

Este é o procedimento para resolver o problema:

Etapa 1. Adicione **imsiFramedIpKey** em PB - cluster - prefixos de chave de pesquisa.

Etapa 2. Aguarde a publicação ser bem-sucedida (aguarde 5 minutos após a publicação).

Etapa 3. Volte para o terminal "Cluster Manager" e reinicie o processo qns usando o script **restartall.sh**.

Etapa 4. Quando a operação de reinicialização estiver concluída, execute o script **diaganostics.sh** para verificar se o CPS está ativo e em execução.

Etapa 5. Faça login no console QNS OSGI usando o 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.