Troubleshoot 4G ASR KPI Degradation due to an Increase in mme-hss-user-unknown Disconnect Reason

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Introduction

This document describes how to troubleshoot the problem that occurs when 4G Attach Success Rate (ASR) Key Performance Indicator (KPI) degradation takes place when **mme-hss-user-unknown** disconnect reason is increased.

Prerequisites

Requirements

Cisco recommends that you have knowledge of these topics:

- Hardware knowledge of 5000/5500
- StarOS

Components Used

This document is not restricted to specific software and hardware versions.

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, ensure that you understand the potential impact of any command.

Abbreviations

ASR	Attach Success Rate
KPI	Key Performance Indicator
AIR	Authentication Information Request
AIA	Authentication Information Answer
CER	Capability Exchange Request
CEA	Capability Exchange Answer
MME	Mobility Management Entity
HSS	Home Subscriber Server
DPC	Data Processing Card
RFC	Request for Comments
AVP	Attribute–value pair

Problem

The Service provider reported the 4G ASR degradation in one MME and the disconnect reason 'mme-hss-user-unknown' was increased.

"mme-hss-user-unknown(375)" disconnect reason describes the total number of sessions disconnected because the MME HSS user is unknown.

One failure trace that was captured reported that HSS was rejecting the Authentication as result-code DIAMETER_MISSING_AVP (5005) in AIA message.

MME constantly got "DIAMETER_MISSING_AVP (5005)" from HSS and this is how the failure AIA message looks like:

```
INBOUND>>>>>  From diamproxy:52 oxy_conn_mgmt.c:3406 (Callid 4c0ea07a) 08:42:11:109
Eventid:81991(5)
Diameter message from 10.5.40.X:6000 to 10.0.231.Y:49417
Base Header Information:
   Version:            0x01        (1)
   Message Length:     0x000110    (272)
   Command Flags:      0x40        (64)  PXY
   Command Code:       0x00013e    (318) Authentication-Information-Answer
   Application ID:     0x01000023  (16777251)   3GPP-S6a
   Hop2Hop-ID:         0xadb40545  (2914256197)
   End2End-ID:         0x2cafadd5  (749710805)
  AVP Information:
     [M]  Session-Id
        Code:      0x00000107 (263) Session-Id
        Flags:     0x40       (64)  [M]
        Length:    0x000069   (105)
        Data: 0004-
diamproxy.MMEC001.MMEGI32000.MME.EPC.MNC0XY.MCC404.3GPPNET;1276027002;2496613;5c204e8b-16502
     [M]  Auth-Session-State
        Code:      0x00000115 (277) Auth-Session-State
        Flags:     0x40       (64)  [M]
        Length:    0x00000c   (12)
        Data: NO_STATE_MAINTAINED (1)
     [M]  Origin-Host
        Code:      0x00000108 (264) Origin-Host
        Flags:     0x40       (64)  [M]
        Length:    0x000033   (51)
        Data: hss101.epc.mnc0XY.mcc404.3gppnetwork.org
     [M]  Origin-Realm
        Code:      0x00000128 (296) Origin-Realm
```

```
        Flags:     0x40       (64)  [M]
        Length:    0x000029  (41)
        Data: epc.mnc0XY.mcc404.3gppnetwork.org
     [M]  Result-Code
        Code:      0x0000010c (268) Result-Code
        Flags:     0x40       (64)  [M]
        Length:    0x00000c   (12)
        Data: DIAMETER_MISSING_AVP (5005) >> DIAMETER_MISSING_AVP(5005)received from HSS
     [M]  Failed-AVP
        Code:      0x00000117 (279) Failed-AVP
        Flags:     0x40       (64)  [M]
        Length:    0x000018   (24)
         [V] [M]  Visited-PLMN-Id
            Code:      0x0000057f (1407) Visited-PLMN-Id
            Flags:     0xc0       (192) [V]  [M]
            Length:    0x00000d   (13)
            Vendor-Id: 0x000028af (10415) 3GPP
            Data: 0x00
```

Troubleshoot

This section provides information you can use in order to troubleshoot the problem of ASR KPI degradation due to an increase in mme-hss-user-unknown disconnect reason.

The collected "mon sub" is traced and compared with the success and failure scenario. The supported-features AVP is missing in the AIR from MME to HSS server.

Successful AIR and AIA message are captured from the **mon sub trace**. This is the AIR message that is sent from MME to HSS:

```
INBOUND>>>>>  From diamproxy:52 oxy_conn_mgmt.c:3406 (Callid 4c0ea07a) 08:42:11:109
Eventid:81991(5)
Diameter message from 10.5.40.X:6000 to 10.0.231.Y:49417
Base Header Information:
   Version:            0x01        (1)
   Message Length:     0x000110    (272)
   Command Flags:      0x40        (64)  PXY
   Command Code:       0x00013e    (318) Authentication-Information-Answer
   Application ID:     0x01000023  (16777251)   3GPP-S6a
   Hop2Hop-ID:         0xadb40545  (2914256197)
   End2End-ID:         0x2cafadd5  (749710805)
  AVP Information:
     [M]  Session-Id
        Code:      0x00000107 (263) Session-Id
        Flags:     0x40       (64)  [M]
        Length:    0x000069   (105)
        Data: 0004-
diamproxy.MMEC001.MMEGI32000.MME.EPC.MNC0XY.MCC404.3GPPNET;1276027002;2496613;5c204e8b-16502
     [M]  Auth-Session-State
        Code:      0x00000115 (277) Auth-Session-State
        Flags:     0x40       (64)  [M]
        Length:    0x00000c   (12)
        Data: NO_STATE_MAINTAINED (1)
     [M]  Origin-Host
        Code:      0x00000108 (264) Origin-Host
        Flags:     0x40       (64)  [M]
        Length:    0x000033   (51)
        Data: hss101.epc.mnc0XY.mcc404.3gppnetwork.org
     [M]  Origin-Realm
        Code:      0x00000128 (296) Origin-Realm
```

```
        Flags:     0x40       (64)  [M]
        Length:    0x000029  (41)
        Data: epc.mnc0XY.mcc404.3gppnetwork.org
     [M]  Result-Code
        Code:      0x0000010c (268) Result-Code
        Flags:     0x40       (64)  [M]
        Length:    0x00000c   (12)
        Data: DIAMETER_MISSING_AVP (5005) >> DIAMETER_MISSING_AVP(5005)received from HSS
     [M]  Failed-AVP
        Code:      0x00000117 (279) Failed-AVP
        Flags:     0x40       (64)  [M]
        Length:    0x000018   (24)
         [V] [M]  Visited-PLMN-Id
            Code:      0x0000057f (1407) Visited-PLMN-Id
            Flags:     0xc0       (192) [V]  [M]
            Length:    0x00000d   (13)
            Vendor-Id: 0x000028af (10415) 3GPP
            Data: 0x00
```

The AIA message that is sent from HSS to MME is:

```
INBOUND>>>>>  From diamproxy:52 oxy_conn_mgmt.c:3406 (Callid 4c0ea07a) 08:42:11:109
Eventid:81991(5)
Diameter message from 10.5.40.X:6000 to 10.0.231.Y:49417
Base Header Information:
   Version:            0x01        (1)
   Message Length:     0x000110    (272)
   Command Flags:      0x40        (64)  PXY
   Command Code:       0x00013e    (318) Authentication-Information-Answer
   Application ID:     0x01000023  (16777251)   3GPP-S6a
   Hop2Hop-ID:         0xadb40545  (2914256197)
   End2End-ID:         0x2cafadd5  (749710805)
  AVP Information:
     [M]  Session-Id
        Code:      0x00000107 (263) Session-Id
        Flags:     0x40       (64)  [M]
        Length:    0x000069   (105)
        Data: 0004-
diamproxy.MMEC001.MMEGI32000.MME.EPC.MNC0XY.MCC404.3GPPNET;1276027002;2496613;5c204e8b-16502
     [M]  Auth-Session-State
        Code:      0x00000115 (277) Auth-Session-State
        Flags:     0x40       (64)  [M]
        Length:    0x00000c   (12)
        Data: NO_STATE_MAINTAINED (1)
     [M]  Origin-Host
        Code:      0x00000108 (264) Origin-Host
        Flags:     0x40       (64)  [M]
        Length:    0x000033   (51)
        Data: hss101.epc.mnc0XY.mcc404.3gppnetwork.org
     [M]  Origin-Realm
        Code:      0x00000128 (296) Origin-Realm
        Flags:     0x40       (64)  [M]
        Length:    0x000029  (41)
        Data: epc.mnc0XY.mcc404.3gppnetwork.org
     [M]  Result-Code
        Code:      0x0000010c (268) Result-Code
        Flags:     0x40       (64)  [M]
        Length:    0x00000c   (12)
        Data: DIAMETER_MISSING_AVP (5005) >> DIAMETER_MISSING_AVP(5005)received from HSS
     [M]  Failed-AVP
        Code:      0x00000117 (279) Failed-AVP
        Flags:     0x40       (64)  [M]
        Length:    0x000018   (24)
```

```
         [V] [M]  Visited-PLMN-Id
            Code:      0x0000057f (1407) Visited-PLMN-Id
            Flags:     0xc0       (192) [V]  [M]
            Length:    0x00000d   (13)
            Vendor-Id: 0x000028af (10415) 3GPP
            Data: 0x00
```

The failure AIR and AIA messages are captured from the **mon sub trace**.

The AIR message that is sent from MME to HSS is:

```
<<<<OUTBOUND  From diamproxy:52 diamproxy_rlf.c:553 (Callid 4c0ea07a) 08:42:11:089
Eventid:81990(5)
Diameter message from 10.0.231.Y:49417 to 10.5.40.X:6000
 Base Header Information:
  Version:            0x01        (1)
  Message Length:     0x000150    (336)
  Command Flags:      0xc0        (192) REQ PXY
  Command Code:       0x00013e    (318) Authentication-Information-Request
  Application ID:     0x01000023  (16777251)   3GPP-S6a
  Hop2Hop-ID:         0xadb40545  (2914256197)
  End2End-ID:         0x2cafadd5  (749710805)
 AVP Information:
    [M]  Session-Id
       Code:      0x00000107 (263) Session-Id
       Flags:     0x40       (64)  [M]
       Length:    0x000069   (105)
       Data: 0004-
diamproxy.MMEC001.MMEGI32000.MME.EPC.MNC0XY.MCC404.3GPPNET;1276027002;2496613;5c204e8b-16502
    [M]  Auth-Session-State
       Code:      0x00000115 (277) Auth-Session-State
       Flags:     0x40       (64)  [M]
       Length:    0x00000c   (12)
       Data: NO_STATE_MAINTAINED (1)
    [M]  Origin-Host
       Code:      0x00000108 (264) Origin-Host
       Flags:     0x40       (64)  [M]
       Length:    0x00004f   (79)
       Data: 0004-diamproxy.MMEC001.MMEGI32000.MME.EPC.MNC0XY.MCC404.3GPPNETWORK.ORG
    [M]  Origin-Realm
       Code:      0x00000128 (296) Origin-Realm
       Flags:     0x40       (64)  [M]
       Length:    0x00002d   (45)
       Data: MME.epc.mnc0XY.mcc404.3gppnetwork.org
    [M]  Destination-Realm
       Code:      0x0000011b (283) Destination-Realm
       Flags:     0x40       (64)  [M]
       Length:    0x000029   (41)
       Data: epc.mnc0XY.mcc404.3gppnetwork.org
    [M]  User-Name
       Code:      0x00000001 (1) User-Name
       Flags:     0x40       (64)  [M]
       Length:    0x000017   (23)
       Data: 404XY0000022222
```

The AIA message that is sent from HSS to MME is:

```
INBOUND>>>>>  From diamproxy:52 oxy_conn_mgmt.c:3406 (Callid 4c0ea07a) 08:42:11:109
Eventid:81991(5)
Diameter message from 10.5.40.X:6000 to 10.0.231.Y:49417
 Base Header Information:
  Version:            0x01        (1)
  Message Length:     0x000110    (272)
```

```
  Command Flags:      0x40        (64)  PXY
  Command Code:       0x00013e    (318) Authentication-Information-Answer
  Application ID:     0x01000023  (16777251)   3GPP-S6a
  Hop2Hop-ID:         0xadb40545  (2914256197)
  End2End-ID:         0x2cafadd5  (749710805)
 AVP Information:
    [M]  Session-Id
       Code:      0x00000107 (263) Session-Id
       Flags:     0x40       (64)  [M]
       Length:    0x000069   (105)
       Data: 0004-
diamproxy.MMEC001.MMEGI32000.MME.EPC.MNC0XY.MCC404.3GPPNET;1276027002;2496613;5c204e8b-16502
    [M]  Auth-Session-State
       Code:      0x00000115 (277) Auth-Session-State
       Flags:     0x40       (64)  [M]
       Length:    0x00000c   (12)
       Data: NO_STATE_MAINTAINED (1)
    [M]  Origin-Host
       Code:      0x00000108 (264) Origin-Host
       Flags:     0x40       (64)  [M]
       Length:    0x000033   (51)
       Data: hss101.epc.mnc0XY.mcc404.3gppnetwork.org
    [M]  Origin-Realm
       Code:      0x00000128 (296) Origin-Realm
       Flags:     0x40       (64)  [M]
       Length:    0x000029   (41)
       Data: epc.mnc0XY.mcc404.3gppnetwork.org
    [M]  Result-Code
       Code:      0x0000010c (268) Result-Code
       Flags:     0x40       (64)  [M]
       Length:    0x00000c   (12)
        Data: DIAMETER_MISSING_AVP (5005)              >>DIAMETER_MISSING_AVP(5005)received from
HSS
    [M]  Failed-AVP
       Code:      0x00000117 (279) Failed-AVP
       Flags:     0x40       (64)  [M]
       Length:    0x000018   (24)
        [V] [M]  Visited-PLMN-Id
           Code:      0x0000057f (1407) Visited-PLMN-Id
           Flags:     0xc0       (192) [V]  [M]
           Length:    0x00000d   (13)
           Vendor-Id: 0x000028af (10415) 3GPP
           Data: 0x00
```

As per the **mon sub trace**, the error "DIAMETER_MISSING_AVP (5005)" is received for 0004-diamproxy, which is associated with DPC card 2 only.

```
[local]SGSN-MME-03# show diameter  peers full endpoint DRA1 | grep -i -E "CPU|LOCAL HOST"
Monday December 24 11:34:47 IST 2018
 Local Hostname: 0001-diamproxy.MMEC001.MMEGI32000.MME.EPC.MNC0XY.MCC404.3GPPNETWORK.ORG
 CPU: 8/1                                Task: diamproxy-49
 Local Hostname: 0002-diamproxy.MMEC001.MMEGI32000.MME.EPC.MNC0XY.MCC404.3GPPNETWORK.ORG
 CPU: 9/1                                Task: diamproxy-50
 Local Hostname: 0003-diamproxy.MMEC001.MMEGI32000.MME.EPC.MNC0XY.MCC404.3GPPNETWORK.ORG
 CPU: 3/1                                Task: diamproxy-51
  Local Hostname: 0004-diamproxy.MMEC001.MMEGI32000.MME.EPC.MNC0XY.MCC404.3GPPNETWORK.ORG
  CPU: 2/1                                 Task: diamproxy-52
 Local Hostname: 0005-diamproxy.MMEC001.MMEGI32000.MME.EPC.MNC0XY.MCC404.3GPPNETWORK.ORG
 CPU: 4/1                                Task: diamproxy-53
 Local Hostname: 0006-diamproxy.MMEC001.MMEGI32000.MME.EPC.MNC0XY.MCC404.3GPPNETWORK.ORG
 CPU: 7/1                                Task: diamproxy-54
```

```
 Local Hostname: 0001-diamproxy.MMEC001.MMEGI32000.MME.EPC.MNC0XY.MCC404.3GPPNETWORK.ORG
 CPU: 8/1                                Task: diamproxy-49
 Local Hostname: 0002-diamproxy.MMEC001.MMEGI32000.MME.EPC.MNC0XY.MCC404.3GPPNETWORK.ORG
 CPU: 9/1                                Task: diamproxy-50
 Local Hostname: 0003-diamproxy.MMEC001.MMEGI32000.MME.EPC.MNC0XY.MCC404.3GPPNETWORK.ORG
 CPU: 3/1                                Task: diamproxy-51
 Local Hostname: 0004-diamproxy.MMEC001.MMEGI32000.MME.EPC.MNC0XY.MCC404.3GPPNETWORK.ORG
 CPU: 2/1                                Task: diamproxy-52
 Local Hostname: 0005-diamproxy.MMEC001.MMEGI32000.MME.EPC.MNC0XY.MCC404.3GPPNETWORK.ORG
 CPU: 4/1                                Task: diamproxy-53
 Local Hostname: 0006-diamproxy.MMEC001.MMEGI32000.MME.EPC.MNC0XY.MCC404.3GPPNETWORK.ORG
 CPU: 7/1                                Task: diamproxy-54
[local]SGSN-MME-03#
```

It seems to be ' **mme-hss-user-unknown'** disconnect reason is increased for those sessmgr instance which instance associated with DPC card 2 only.

```
[local]SGSN-MME-03# show diameter  peers full endpoint DRA1 | grep -i -E "CPU|LOCAL HOST"
Monday December 24 11:34:47 IST 2018
 Local Hostname: 0001-diamproxy.MMEC001.MMEGI32000.MME.EPC.MNC0XY.MCC404.3GPPNETWORK.ORG
 CPU: 8/1                                Task: diamproxy-49
 Local Hostname: 0002-diamproxy.MMEC001.MMEGI32000.MME.EPC.MNC0XY.MCC404.3GPPNETWORK.ORG
 CPU: 9/1                                Task: diamproxy-50
 Local Hostname: 0003-diamproxy.MMEC001.MMEGI32000.MME.EPC.MNC0XY.MCC404.3GPPNETWORK.ORG
 CPU: 3/1                                Task: diamproxy-51
  Local Hostname: 0004-diamproxy.MMEC001.MMEGI32000.MME.EPC.MNC0XY.MCC404.3GPPNETWORK.ORG
  CPU: 2/1                                Task: diamproxy-52
 Local Hostname: 0005-diamproxy.MMEC001.MMEGI32000.MME.EPC.MNC0XY.MCC404.3GPPNETWORK.ORG
 CPU: 4/1                                Task: diamproxy-53
 Local Hostname: 0006-diamproxy.MMEC001.MMEGI32000.MME.EPC.MNC0XY.MCC404.3GPPNETWORK.ORG
 CPU: 7/1                                Task: diamproxy-54
 Local Hostname: 0001-diamproxy.MMEC001.MMEGI32000.MME.EPC.MNC0XY.MCC404.3GPPNETWORK.ORG
 CPU: 8/1                                Task: diamproxy-49
 Local Hostname: 0002-diamproxy.MMEC001.MMEGI32000.MME.EPC.MNC0XY.MCC404.3GPPNETWORK.ORG
 CPU: 9/1                                Task: diamproxy-50
 Local Hostname: 0003-diamproxy.MMEC001.MMEGI32000.MME.EPC.MNC0XY.MCC404.3GPPNETWORK.ORG
 CPU: 3/1                                Task: diamproxy-51
 Local Hostname: 0004-diamproxy.MMEC001.MMEGI32000.MME.EPC.MNC0XY.MCC404.3GPPNETWORK.ORG
 CPU: 2/1                                Task: diamproxy-52
 Local Hostname: 0005-diamproxy.MMEC001.MMEGI32000.MME.EPC.MNC0XY.MCC404.3GPPNETWORK.ORG
 CPU: 4/1                                Task: diamproxy-53
 Local Hostname: 0006-diamproxy.MMEC001.MMEGI32000.MME.EPC.MNC0XY.MCC404.3GPPNETWORK.ORG
 CPU: 7/1                                Task: diamproxy-54
[local]SGSN-MME-03#
```

Disconnect reason for smgr-instance 749:

```
[local]SGSN-MME-03# show session disconnect-reasons smgr-instance 749|grep -i hss-us
Monday December 24 13:45:17 IST 2018
mme-hss-user-unknown                                    788     8.97597
[local]SGSN-MME-03# show session disconnect-reasons smgr-instance 749|grep -i hss-us
Monday December 24 13:45:19 IST 2018
mme-hss-user-unknown                                    790     8.99158
```

-------------------- -

Disconnect reason for smgr-instance 762:

```
[local]SGSN-MME-03# show session disconnect-reasons smgr-instance 762|grep -i hss-us
Monday December 24 13:45:26 IST 2018
mme-hss-user-unknown                                    743     8.16125
[local]SGSN-MME-03# show session disconnect-reasons smgr-instance 762|grep -i hss-us
Monday December 24 13:45:31 IST 2018
mme-hss-user-unknown                                    744     8.16147
[local]SGSN-MME-03# show session disconnect-reasons smgr-instance 762|grep -i hss-us
Monday December 24 13:45:32 IST 2018
mme-hss-user-unknown                                    749     8.20732
```

```
[local]SGSN-MME-03# show session disconnect-reasons smgr-instance 762|grep -i hss-us
Monday December 24 13:45:34 IST 2018
mme-hss-user-unknown                                        750     8.20659
```

When checked further, the supported vendor IDs had been 'none' for the HSS peer with DPC card 2.

```
[local]SGSN-MME-03# show diameter peers full peer-host dra01.epc.mnc0XY.mcc404.3gppnetwork.org

--------------------------------------------------------------------------------
Context: s6a Endpoint: HSS_DRA01
--------------------------------------------------------------------------------
Peer Hostname: dra01.epc.mnc0xy.mcc404.3gppnetwork.org
 Local Hostname: 0004-diamproxy.MMEC001.MMEGI32000.MME.EPC.MNC0XY.MCC404.3GPPNETWORK.ORG
 Peer Realm: epc.mnc0XY.mcc404.3gppnetwork.org
 Local Realm: MME.epc.mnc0XY.mcc404.3gppnetwork.org
 Peer Address: 10.5.40.X:6000
 State: OPEN [SCTP]
 CPU: 2/1                                Task: sessmgr-4
 Messages Out/Queued: H0.L0/H0.L0
 Supported Vendor IDs: None                          >> Supported Vendor IDs: none instead of
10415
  Admin Status: Enable
  DPR Disconnect: N/A
  Peer Backoff Timer running:N/A
-----------
Peer Hostname: dra01.epc.mnc0xy.mcc404.3gppnetwork.org
  Local Hostname: 0004-diamproxy.MMEC001.MMEGI32000.MME.EPC.MNC0XY.MCC404.3GPPNETWORK.ORG
  Peer Realm: epc.mnc0XY.mcc404.3gppnetwork.org
  Local Realm: MME.epc.mnc0XY.mcc404.3gppnetwork.org
  Peer Address: 10.5.40.X:6000
  State: OPEN [SCTP]
  CPU: 2/2                                 Task: sessmgr-8
  Messages Out/Queued: H0.L0/H0.L0
  Supported Vendor IDs: None                          >> Supported Vendor IDs: none instead of
10415
  Admin Status: Enable
  DPR Disconnect: N/A
  Peer Backoff Timer running:N/A
------------
Peer Hostname: dra01.epc.mnc0xy.mcc404.3gppnetwork.org
  Local Hostname: 0004-diamproxy.MMEC001.MMEGI32000.MME.EPC.MNC0XY.MCC404.3GPPNETWORK.ORG
  Peer Realm: epc.mnc0XY.mcc404.3gppnetwork.org
  Local Realm: MME.epc.mnc0XY.mcc404.3gppnetwork.org
 Peer Address: 10.5.40.X:6000
  State: OPEN [SCTP]
  CPU: 2/0                                 Task: sessmgr-15
  Messages Out/Queued: H0.L0/H0.L0
  Supported Vendor IDs: None                          >> Supported Vendor IDs: none instead of
10415
  Admin Status: Enable
  DPR Disconnect: N/A
  Peer Backoff Timer running:N/A
------------
Peer Hostname: dra01.epc.mnc0xy.mcc404.3gppnetwork.org
  Local Hostname: 0004-diamproxy.MMEC001.MMEGI32000.MME.EPC.MNC0XY.MCC404.3GPPNETWORK.ORG
  Peer Realm: epc.mnc0XY.mcc404.3gppnetwork.org
  Local Realm: MME.epc.mnc0XY.mcc404.3gppnetwork.org
  Peer Address: 10.5.40.X:6000
  State: OPEN [SCTP]
  CPU: 2/0                                 Task: sessmgr-20
  Messages Out/Queued: H0.L0/H0.L0
  Supported Vendor IDs: None                          >> Supported Vendor IDs: none instead of
10415
```

```
  Admin Status: Enable
  DPR Disconnect: N/A
  Peer Backoff Timer running:N/A
------------
Peer Hostname: dra01.epc.mnc0xy.mcc404.3gppnetwork.org
  Local Hostname: 0004-diamproxy.MMEC001.MMEGI32000.MME.EPC.MNC0XY.MCC404.3GPPNETWORK.ORG
  Peer Realm: epc.mnc0XY.mcc404.3gppnetwork.org
  Local Realm: MME.epc.mnc0XY.mcc404.3gppnetwork.org
  Peer Address: 10.5.40.X:6000
  State: OPEN [SCTP]
  CPU: 2/1                              Task: sessmgr-27
  Messages Out/Queued: H0.L0/H0.L0
  Supported Vendor IDs: None                          >> Supported Vendor IDs: none instead of
10415
  Admin Status: Enable
  DPR Disconnect: N/A
  Peer Backoff Timer running:N/A

<additional outputs supressed>
```

Solution

It seems that the "Supported Vendor IDs" AVP is not negotiated with DPC Card 2 and so the failure is observed for that card only.

As per the RFC 3588,

Supported-Vendor-Id AVP - This is used in the CER and CEA messages in order to inform the peer that the sender supports (a subset of) the vendor-specific AVPs defined by the vendor identified in this AVP.

Vendor-Id AVP - In combination with the Supported-Vendor-Id AVP, this might be used in order to know which vendor-specific attributes might be sent to the peer.

In order to exchange the capabilities between diameter peer and client, this action plan is suggested to the service provider.

The action plan is to migrate DPC Card 2 with standby DPC Card 10.

```
[local]SGSN-MME-03# show diameter peers full peer-host dra01.epc.mnc0XY.mcc404.3gppnetwork.org

--------------------------------------------------------------------------------
Context: s6a Endpoint: HSS_DRA01
--------------------------------------------------------------------------------
Peer Hostname: dra01.epc.mnc0xy.mcc404.3gppnetwork.org
 Local Hostname: 0004-diamproxy.MMEC001.MMEGI32000.MME.EPC.MNC0XY.MCC404.3GPPNETWORK.ORG
 Peer Realm: epc.mnc0XY.mcc404.3gppnetwork.org
 Local Realm: MME.epc.mnc0XY.mcc404.3gppnetwork.org
 Peer Address: 10.5.40.X:6000
 State: OPEN [SCTP]
 CPU: 2/1                              Task: sessmgr-4
 Messages Out/Queued: H0.L0/H0.L0
 Supported Vendor IDs: None                          >> Supported Vendor IDs: none instead of
10415
  Admin Status: Enable
  DPR Disconnect: N/A
  Peer Backoff Timer running:N/A
-----------
Peer Hostname: dra01.epc.mnc0xy.mcc404.3gppnetwork.org
  Local Hostname: 0004-diamproxy.MMEC001.MMEGI32000.MME.EPC.MNC0XY.MCC404.3GPPNETWORK.ORG
  Peer Realm: epc.mnc0XY.mcc404.3gppnetwork.org
  Local Realm: MME.epc.mnc0XY.mcc404.3gppnetwork.org
  Peer Address: 10.5.40.X:6000
  State: OPEN [SCTP]
  CPU: 2/2                              Task: sessmgr-8
```

```
  Messages Out/Queued: H0.L0/H0.L0
  Supported Vendor IDs: None                          >> Supported Vendor IDs: none instead of
10415
  Admin Status: Enable
  DPR Disconnect: N/A
  Peer Backoff Timer running:N/A
------------
Peer Hostname: dra01.epc.mnc0xy.mcc404.3gppnetwork.org
  Local Hostname: 0004-diamproxy.MMEC001.MMEGI32000.MME.EPC.MNC0XY.MCC404.3GPPNETWORK.ORG
  Peer Realm: epc.mnc0XY.mcc404.3gppnetwork.org
  Local Realm: MME.epc.mnc0XY.mcc404.3gppnetwork.org
 Peer Address: 10.5.40.X:6000
  State: OPEN [SCTP]
  CPU: 2/0                                Task: sessmgr-15
  Messages Out/Queued: H0.L0/H0.L0
  Supported Vendor IDs: None                          >> Supported Vendor IDs: none instead of
10415
  Admin Status: Enable
  DPR Disconnect: N/A
  Peer Backoff Timer running:N/A
------------
Peer Hostname: dra01.epc.mnc0xy.mcc404.3gppnetwork.org
  Local Hostname: 0004-diamproxy.MMEC001.MMEGI32000.MME.EPC.MNC0XY.MCC404.3GPPNETWORK.ORG
  Peer Realm: epc.mnc0XY.mcc404.3gppnetwork.org
  Local Realm: MME.epc.mnc0XY.mcc404.3gppnetwork.org
  Peer Address: 10.5.40.X:6000
  State: OPEN [SCTP]
  CPU: 2/0                                Task: sessmgr-20
  Messages Out/Queued: H0.L0/H0.L0
  Supported Vendor IDs: None                          >> Supported Vendor IDs: none instead of
10415
  Admin Status: Enable
  DPR Disconnect: N/A
  Peer Backoff Timer running:N/A
------------
Peer Hostname: dra01.epc.mnc0xy.mcc404.3gppnetwork.org
  Local Hostname: 0004-diamproxy.MMEC001.MMEGI32000.MME.EPC.MNC0XY.MCC404.3GPPNETWORK.ORG
  Peer Realm: epc.mnc0XY.mcc404.3gppnetwork.org
  Local Realm: MME.epc.mnc0XY.mcc404.3gppnetwork.org
  Peer Address: 10.5.40.X:6000
  State: OPEN [SCTP]
  CPU: 2/1                                Task: sessmgr-27
  Messages Out/Queued: H0.L0/H0.L0
  Supported Vendor IDs: None                          >> Supported Vendor IDs: none instead of
10415
  Admin Status: Enable
  DPR Disconnect: N/A
  Peer Backoff Timer running:N/A

<additional outputs supressed>
```

The service provider performed DPC Card 2 migration with standby DPC card 10.

Post activity, the supported vendor IDs(10415) appeared to be ok for card 10 with the respective hss-peer and the ASR KPI seemed to be ok too.

```
[local]SGSN-MME-03# show diameter peers full peer-host dra01.epc.mnc0XY.mcc404.3gppnetwork.org

--------------------------------------------------------------------------------
Context: s6a Endpoint: HSS_DRA01
--------------------------------------------------------------------------------
Peer Hostname: dra01.epc.mnc0xy.mcc404.3gppnetwork.org
 Local Hostname: 0004-diamproxy.MMEC001.MMEGI32000.MME.EPC.MNC0XY.MCC404.3GPPNETWORK.ORG
 Peer Realm: epc.mnc0XY.mcc404.3gppnetwork.org
```

```
 Local Realm: MME.epc.mnc0XY.mcc404.3gppnetwork.org
 Peer Address: 10.5.40.X:6000
 State: OPEN [SCTP]
 CPU: 10/1                              Task: sessmgr-4
 Messages Out/Queued: H0.L0/H0.L0
  Supported Vendor IDs: 10415                          >> Supported Vendor IDs: 10415
  Admin Status: Enable
  DPR Disconnect: N/A
  Peer Backoff Timer running:N/A
------------
  Peer Hostname: dra01.epc.mnc0xy.mcc404.3gppnetwork.org
  Local Hostname: 0004-diamproxy.MMEC001.MMEGI32000.MME.EPC.MNC0XY.MCC404.3GPPNETWORK.ORG
  Peer Realm: epc.mnc0XY.mcc404.3gppnetwork.org
  Local Realm: MME.epc.mnc0XY.mcc404.3gppnetwork.org
  Peer Address: 10.5.40.X:6000
  State: OPEN [SCTP]
  CPU: 10/0                              Task: sessmgr-15
  Messages Out/Queued: H0.L0/H0.L0
Supported Vendor IDs: 10415                            >> Supported Vendor IDs: 10415
  Admin Status: Enable
 DPR Disconnect: N/A
 Peer Backoff Timer running:N/A
------------
Peer Hostname: dra01.epc.mnc0xy.mcc404.3gppnetwork.org
 Local Hostname: 0004-diamproxy.MMEC001.MMEGI32000.MME.EPC.MNC0XY.MCC404.3GPPNETWORK.ORG
 Peer Realm: epc.mnc0XY.mcc404.3gppnetwork.org
 Local Realm: MME.epc.mnc0XY.mcc404.3gppnetwork.org
 Peer Address: 10.5.40.X:6000
 State: OPEN [SCTP]
 CPU: 10/1                              Task: sessmgr-27
 Messages Out/Queued: H0.L0/H0.L0
 Supported Vendor IDs: 10415                           >> Supported Vendor IDs: 10415
  Admin Status: Enable
  DPR Disconnect: N/A
  Peer Backoff Timer running:N/A
------------
Peer Hostname: dra01.epc.mnc0xy.mcc404.3gppnetwork.org
  Local Hostname: 0004-diamproxy.MMEC001.MMEGI32000.MME.EPC.MNC0XY.MCC404.3GPPNETWORK.ORG
  Peer Realm: epc.mnc0XY.mcc404.3gppnetwork.org
  Local Realm: MME.epc.mnc0XY.mcc404.3gppnetwork.org
  Peer Address: 10.5.40.X:6000
  State: OPEN [SCTP]
  CPU: 10/2                              Task: sessmgr-29
  Messages Out/Queued: H0.L0/H0.L0
  Supported Vendor IDs: 10415                           >> Supported Vendor IDs: 10415
 Admin Status: Enable
 DPR Disconnect: N/A
 Peer Backoff Timer running:N/A

<additional outputs supressed>
```

The supported vendor IDs should be of '10415' value when the diameter peer connection is established between MME and HSS in order to exchange the operational diameter messages.