


```

lac-service LAC-SVC <<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<
max-retransmission 1
retransmission-timeout-max 1
load-balancing prioritized
allow aaa-assigned-hostname
keepalive-interval 30
peer-lns 2.2.2.2 encrypted secret +A2q4fv7h5tumla06vc2wblk9l7k3ma98myremkew1552c2vosy2h1
peer-lns 3.3.3.3 encrypted secret +A16gnydsddbqqx3okh7ln6jrwxz3s3u3lzvzo5bz0ccc0ztr0cvsh
bind address 1.1.1.1
#exit

```

An expected behavior is that, if one of the above options are configured for a L2TP based APN, the Gateway GPRS Support Node/

Packet Data Network (PDN) Gateway (GGSN/PGW) uses the IMSI or MSISDN for PPP authentication with L2TP Network Server (LNS).

The option works as expected in case there is no username provided by the User Equipment (UE).

ii

Friday April 07 2017

```

INBOUND>>>>> 09:57:08:270 Eventid:141004(3)
[PGW-S5/S2a/S2b]GTPv2C Rx PDU, from 213.151.233.172:35664 to 213.151.233.230:2123 (271)
TEID: 0x00000000, Message type: EGTP_CREATE_SESSION_REQUEST (0x20)
Sequence Number: 0x317962 (3242338)

```

GTP HEADER

```

Version number: 2
TEID flag: Present
Piggybacking flag: Not present
Message Length: 0x010B (267)

```

INFORMATION ELEMENTS

```

IMSI:
Type: 1 Length: 8 Inst: 0
Value: 231014450903030
Hex: 0100 0800 3201 4154 9030 30F0

```

```

MSISDN:
Type: 76 Length: 6 Inst: 0
Value: 421917667546
Hex: 4C00 0600 2491 7166 5764

```

```

MOBILE EQUIPMENT IDENTITY:
Type: 75 Length: 8 Inst: 0
Value: 3594050557927001
Hex: 4B00 0800 5349 5050 7529 0710

```

[...]

```

ACCESS POINT NAME:
Type: 71 Length: 38 Inst: 0
Value: ltpipsec.corp.test.mnc001.mcc231.gprs
Hex: 4700 2600 086C 7470 6970 7365 6304 636F
    7270 0474 6573 7406 6D6E 6330 3031 066D

```

6363 3233 3104 6770 7273

SELECTION MODE:

Type: 128 Length: 1 Inst: 0
Value: MS provided APN,subscr not verified (0x01)
Hex: 8000 0100 01

PDN TYPE:

Type: 99 Length: 1 Inst: 0
Value: IPV4
Hex: 6300 0100 01

[...]

PCO:

Type: 78 Length: 32 Inst: 0
Container id: 0xC023 (PAP)
Container length: 0x06 (6)
Container content:
 Auth-Req(0), Name=, Passwd=
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
Hex: 4E00 2000 80C0 2306 0100 0006 0000 8021
 1001 0000 1081 0600 0000 0083 0600 0000
 0000 0D00

[...]

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<<<<OUTBOUND 09:57:08:295 Eventid:25001(0)

PPP Tx PDU (20)

PAP 20: Auth-Req(1), Name=421917667546, Passwd= <-- username is replaced with MSISDN as the APN is configured with "msisdn-auth"

The option doesn't work if there is a username provided by UE. In this case, GGSN/PGW sends the username and password configured inside the APN.

If nothing is configured there

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INBOUND>>>> 09:47:51:254 Eventid:141004(3)

[PGW-S5/S2a/S2b]GTPv2C Rx PDU, from 213.151.233.172:35824 to 213.151.233.230:2123 (279)

TEID: 0x00000000, Message type: EGTP_CREATE_SESSION_REQUEST (0x20)

Sequence Number: 0x5C4D6C (6049132)

GTP HEADER

Version number: 2

TEID flag: Present

Piggybacking flag: Not present

Message Length: 0x0113 (275)

INFORMATION ELEMENTS

IMSI:

Type: 1 Length: 8 Inst: 0

Value: 231014450903030
Hex: 0100 0800 3201 4154 9030 30F0

MSISDN:

Type: 76 Length: 6 Inst: 0
Value: 421917667546
Hex: 4C00 0600 2491 7166 5764

MOBILE EQUIPMENT IDENTITY:

Type: 75 Length: 8 Inst: 0
Value: 3594050557927001
Hex: 4B00 0800 5349 5050 7529 0710

[...]

PCO:

Type: 78 Length: 40 Inst: 0
Container id: 0xC023 (PAP)
Container length: 0x0E (14)
Container content:
Auth-Req(0), Name=null, Passwd=null
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
Hex: 4E00 2800 80C0 230E 0100 000E 046E 756C
6C04 6E75 6C6C 8021 1001 0000 1081 0600
0000 0083 0600 0000 0000 0D00

[...]

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<<<<OUTBOUND 09:47:51:334 Eventid:25001(0)

PPP Tx PDU (16)

PAP 16: Auth-Req(1), Name=null, Passwd=null <-- username is the same as in the APN

Solution

Observed behavior is expected as per design.

The **authentication imsi-auth username-strip-apn prefer-chap-pco** (or **authentication msisdn-auth username-strip-apn prefer-chap-pco**) configuration is used when there is no Protocol Configuration Options (PCO) username coming in.

This is the order of precedence for Network Access Identifier (NAI) construction configuration:

1. If **outbound username <1-128 char string>** is configured inside the APN, this overrides all other configurations/IEs and is sent in PAP/CHAP req.
2. If UE sends PCO username/password it is sent from the UE, it is sent to LNS in Password Authentication Protocol/Challenge Handshake Authentication Protocol (PAP/CHAP) req.

3. If no username is sent from UE, then **msisdn/imsi@APN** is sent by default as username in PAP/CHAP req.

4. Further this CLI - **authentication msisdn/imsi-auth username-strip-apn** can be used to strip the APN and send only the msisdn/imsi in PAP/CHAP req.

Note that in case the authentication is done by Radius (locally) the IMSI (or MSISDN) are sent in Access-Request messages as expected.

As well in scenario of L2TP, if authentication is done by RADIUS (on LAC side), the expected username (IMSI or MSISDN) is seen in Access-Request messages, but not in Auth-Req towards LNS.