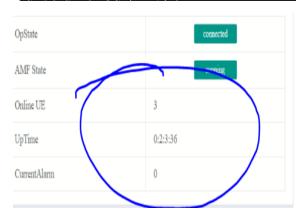# UE Register Failure

Country/Region: G/O
Equipment: nCell-F2240
Version: 5GNR_fa.tdd.fr1.2.3.0_457 (After
upgrade) +Firmware_241.00.2_N78_20221215_v2.0.11

1. Issue Description:

Same UE terminal can register under M4370, same SIM card can register under Femto when it's installed in BTI CPE CPX60P-A, but can't register under Femto when it's installed in Zebra Tablets.

Though there is only 1 UE terminal is on (zebra tablet), but several UEs were observed keep trying to attach. Keep connecting and releasing.
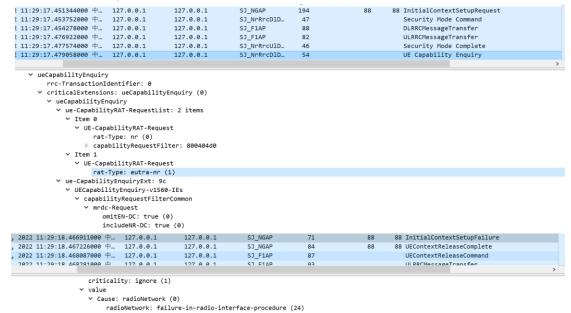

2. Suggested Troubleshooting Methods:
    a) Collect signal plane log to analyze.
    b) Configuration parameter check by web check and xml comparation.
    c) Gather log +Signal plane + FAPI log analysis.

3. Troubleshooting Procedures:

   a) From logs, UE not responds UE capability information and gNodeB respond initial contextSetupFailure.

```
2 11:29:17.451344000 中…  127.0.0.1    127.0.0.1    SJ_NGAP      194         88    88 InitialContextSetupRequest
2 11:29:17.453752000 中…  127.0.0.1    127.0.0.1    SJ_NrRrcDlD… 47                    Security Mode Command
2 11:29:17.454278000 中…  127.0.0.1    127.0.0.1    SJ_F1AP      88                    DLRRCMessageTransfer
2 11:29:17.476922000 中…  127.0.0.1    127.0.0.1    SJ_F1AP      82                    ULRRCMessageTransfer
2 11:29:17.477574000 中…  127.0.0.1    127.0.0.1    SJ_NrRrcUlD… 46                    Security Mode Complete
2 11:29:17.479058000 中…  127.0.0.1    127.0.0.1    SJ_NrRrcDlD… 54                    UE Capability Enquiry
```

```
∨ ueCapabilityEnquiry
    rrc-TransactionIdentifier: 0
    ∨ criticalExtensions: ueCapabilityEnquiry (0)
        ∨ ueCapabilityEnquiry
            ∨ ue-CapabilityRAT-RequestList: 2 items
                ∨ Item 0
                    ∨ UE-CapabilityRAT-Request
                        rat-Type: nr (0)
                        > capabilityRequestFilter: 800404d0
                ∨ Item 1
                    ∨ UE-CapabilityRAT-Request
                        rat-Type: eutra-nr (1)
            ∨ ue-CapabilityEnquiryExt: 9c
                ∨ UECapabilityEnquiry-v1560-IEs
                    ∨ capabilityRequestFilterCommon
                        ∨ mrdc-Request
                            omitEN-DC: true (0)
                            includeNR-DC: true (0)
```

```
, 2022 11:29:18.466911000 中…  127.0.0.1    127.0.0.1    SJ_NGAP   71          88    88 InitialContextSetupFailure
, 2022 11:29:18.467226000 中…  127.0.0.1    127.0.0.1    SJ_NGAP   84          88    88 UEContextReleaseComplete
, 2022 11:29:18.468087000 中…  127.0.0.1    127.0.0.1    SJ_F1AP   87                    UEContextReleaseCommand
2022 11:29:18 468281000 中    127.0.0.1    127.0.0.1    SJ_F1AP   93                    ULRRCMessageTransfer
```

```
                criticality: ignore (1)
            ∨ value
                ∨ Cause: radioNetwork (0)
                    radioNetwork: failure-in-radio-interface-procedure (24)
```
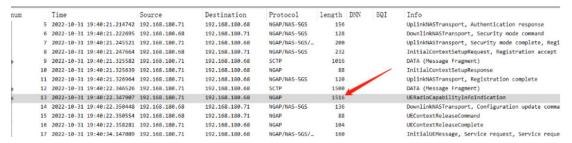
   b) Check the configuration and compare xml files, no abnormalities were found.

   c) Collect Gatherlog and signal plane logs at same time, from the log, gNb handle UE capability timeout, It could be that UE not sent out or gNodeB cant handle.

"2022/09/06 CST 11:29:17.479952 cpcellapp0[25148] DEBUG 2862690 UeState.cc:3647 UeAwaitCapability::handleUeCapabilityReTxTimeout UeId[105] crnti[7261]--------------------------------
2022/09/06 CST 11:29:17.479952 cpcellapp0[25148] DEBUG 2862691 UeClass.h:2976 UeClass::startUeTimerEvent[UE$DEFAULT$TIMEOUT] with timer[RR$CUECAP$_TIMER: 0 seconds 500000 useconds] now"

Collect the access signal plane log of same UE terminal under M4370 for comparation. The packet size of UE capability information is more than default MSS 1500.

```
num   Time                    Source          Destination     Protocol     length DNN 5QI  Info
  5  2022-10-31 19:40:21.214742 192.168.180.71  192.168.180.68  NGAP/NAS-5GS   156            UplinkNASTransport, Authentication response
  6  2022-10-31 19:40:21.222695 192.168.180.71  192.168.180.68  NGAP/NAS-5GS   128            DownlinkNASTransport, Security mode command
  7  2022-10-31 19:40:21.245521 192.168.180.71  192.168.180.68  NGAP/NAS-5GS/… 200            UplinkNASTransport, Security mode complete, Regi
  8  2022-10-31 19:40:21.247664 192.168.180.68  192.168.180.71  NGAP/NAS-5GS   232            InitialContextSetupRequest, Registration accept
  9  2022-10-31 19:40:21.325582 192.168.180.71  192.168.180.68  SCTP          1016            DATA (Message Fragment)
 10  2022-10-31 19:40:21.325639 192.168.180.71  192.168.180.68  NGAP           88             InitialContextSetupResponse
 11  2022-10-31 19:40:21.326964 192.168.180.71  192.168.180.68  NGAP/NAS-5GS   120            UplinkNASTransport, Registration complete
 12  2022-10-31 19:40:22.346526 192.168.180.71  192.168.180.68  SCTP          1500            DATA (Message Fragment)
 13  2022-10-31 19:40:22.347907 192.168.180.71  192.168.180.68  NGAP          1516            UERadioCapabilityInfoIndication
 14  2022-10-31 19:40:22.350448 192.168.180.68  192.168.180.71  NGAP/NAS-5GS   136            DownlinkNASTransport, Configuration update comma
 15  2022-10-31 19:40:22.350554 192.168.180.68  192.168.180.71  NGAP           88             UEContextReleaseCommand
 16  2022-10-31 19:40:22.358281 192.168.180.71  192.168.180.68  NGAP          104             UEContextReleaseComplete
 17  2022-10-31 19:40:34.147089 192.168.180.71  192.168.180.68  NGAP/NAS-5GS/… 160            InitialUEMessage, Service request, Service reque
```
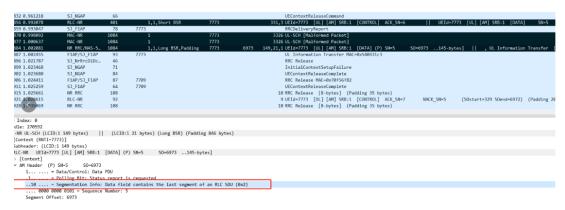
M4370 not enquiry capability of EN-DC, but Femto enquiry the capability of EN-DC.

Collect the fapi3 log when pre-schedule is enabled, can observe the UE capability

information were reported to gNodeB, but failed to wrap due to big package size. Need develop a new version to remove the enquiry of EN-DC capability.

After upgrade new version which remove the capability enquiry of EN-DC, UE (Zebra tablets) registered successfully.

4. Conclusion.
   The UE Terminal supports EN-DC and Femto also enquiry the capability of EN_DC, the big size packet of UE capability information can't be handled by existing Femto version. The latest version 5GNR_fa.tdd.fr1.2.3.0_457 has fixed it.