

# IoT Services Trust Domain Equipments

The emergence of LTE-M and NB-IOT requires a dedicated management and fully secured service in replacement of the traditional Over The Top(OTT) data service. MNOs can also deploy an additional dedicated Cellular-IoT core and many Full MVNOs service providers are in the process of deploying dedicated core Networks for NB-IoT (Narrow Band Internet of Things).

The TS 23.682[10.1] facilitate communications with packet data networks and applications (e.g. Machine Type Communication(MTC) applications on the (external) network/MTC servers) in replacement of traditional IoT architecture using a proprietary dialog between the device and the Application Server over a data channel 3G,4G or WiFi.

## 1- All the equipments for the Trust Domain NB-IoT

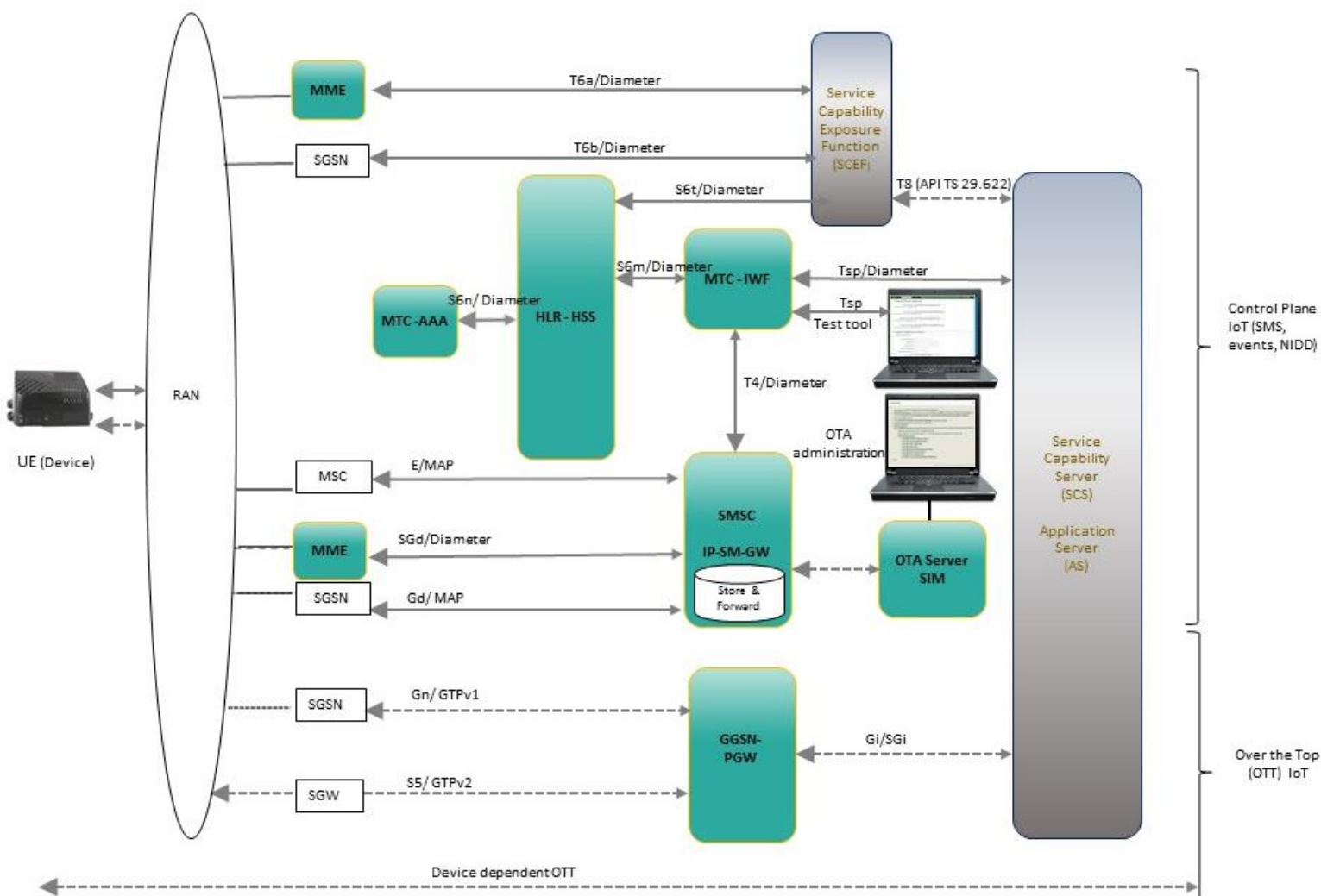


Figure 1 Standard 3GPP IoT architecture

The TS 23.682 supports the traditional IoT architecture using a proprietary dialog between the device and the Application Server over a data channel 3G, 4G or WiFi. This does not ask anything specific in the core network as it uses the standard GGSN-PGW.

On the other side, implementing Narrow Band IoT (NB-IoT) requires special Diameter interfaces in the HLR-HSS (S6m, S6n and S6t). It also requires new functions such as the MTC-IWF and MTC-AAA. The SMSC with IP-SM-GW to be able to have 4G SMS must have an additional Tsp/ Diameter interface with the SCEF to support the reception of SMS-MO and deliver status.

Halys delivers all the equipment in green in Figure 1 which constitutes the “trust domain” including test MME and the important OTA SIM server.

## **2- Library Diameter for S6t and Tsp.**

For MNOs or Full MVNOs which want to develop the SCEF or SCS, Halys provides a C Library to facilitate this.

## **3- External Identifiers handling**

Halys provides the MTC-AAA which translates Public identity with an external identifier in order to protect the Trust Domain.

## **4- Test MME and OTA SIM server**

*MME Halys with SGd (SMS 4G) capability and T6a.*

Halys provides its *comprehensive OTA SIM server* using SMS or pull BIP/CAT-TP which is important for IoT, as it allows to add or change the IMSI security domain of the M2M SIM cards in the devices for a commercial change of their MNO. The UICC card type fulfills conveniently the requirements for IoT.

### References

- [10.1] 3GPP TS 23.682 v15.0.0 (2017-03), “Digital cellular telecommunications system (Phase 2+) (GSM); Universal Mobile Telecommunications System (UMTS); LTE; Architecture enhancements to facilitate communications with packet data networks and applications”, Release 15. *IoT standard architecture*
- [10.2] 3GPP TS 29.336 v14.1.0 (2017-05), “Universal Mobile Telecommunications System (UMTS); LTE; Home Subscriber Server (HSS) diameter interfaces for interworking with packet data networks and applications”, Release 14, *The S6m/S6n/S6t protocols Diameter interfaces with a HSS “ready IoT”*.
- [10.3] 3GPP TS 29.229 v14.2.0 (2017-03), “Universal Mobile Telecommunications System (UMTS); LTE; Diameter-based T4 Interface for communications with packet data networks and applications”, Release 14, *Protocol Diameter on interface T4 between MTC-IWF and SMSC*.
- [10.4] 3GPP TS 29.128 v14.2.9 (2017-03), “LTE; Universal Mobile Telecommunications System (UMTS); Mobility Management Entity (MME) and Serving GPRS Support Node (SGSN) interfaces for interworking with packet data networks and applications”, Release 14, *Protocol Diameter on interface T6a, T6b between MME or SGSN and MTC-IWF of the IoT ready core. To be IoT ready, the MMEs and SGSNs must have this interface as well as SGd to have the SMS capability of course*.
- [10.5] 3GPP TS 29.368 V14.2.0 (2017-07), “Universal Mobile Telecommunications System (UMTS); LTE; Tsp interface protocol between the MTC Interworking Function (MTC-IWF) and Service Capability Server (SCS) »,Release 14. *Tsp/Diameter between the SCS and the MTC-IWF*.
- [10.6] 3GPP TS 29.122 V0.2.0 (2017-09), «T8 Reference point for Northbound APIs», Release 15, *uses the RESTfull protocol*.