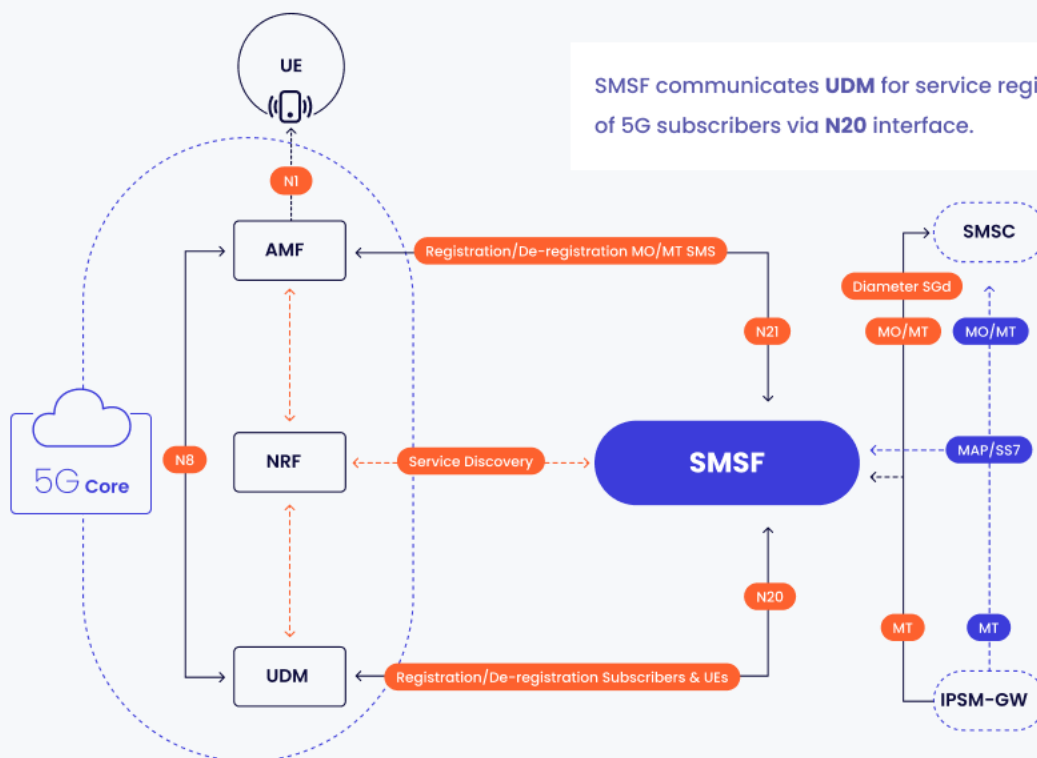


# SMS FUNCTION (SMSF)

## SMS is still the largest channel that access billions of users and IoT devices

Increase in 5G coverage will trigger the exponential increase in Broadband and Critical IoT device usage. When the NB-IoT, Cat-M, and Legacy IoT categories are combined, the total number of IoT devices is expected to reach **5 billion** by 2025.

SMS Function (SMSF) enables service registration and SMS delivery in 5G network. AMF submits the MO SMS to SMSF and SMSF sends the MT SMS to AMF via the **NAS (Non-Access Stratum)**. It interconnects the legacy SMS enablers such as SMSC and IP-SMGW via **MAP** and **Diameter Sgd** interfaces.



SMSF communicates UDM for service registration and de-registration of 5G subscribers via N20 interface.

Traditional operations such as **device triggering** and **SIM OTA** will be a key feature of many IoT use cases, and operators will execute SMS delivery via SMSF. SMSF will be a key element for **Multifactor authentication** and communication with **legacy network subscribers** as well.



## Service Provisioning



- **Nsmf\_SMSService - Activate** Activate SMS service for a given service user, which results in creating or updating a UE Context for SMS in SMSF.
- **Nudm\_SDM\_Get** Retrieve UE's individual Subscription Data
- **Create UE Context** SMSF stores the SMS subscription information and the AMF address that is serving the UE
- **Nsmf\_SMSService - Deactivate** Deactivate SMS service for a given service user, which results in deleting or updating a UE Context for SMS in SMSF
- **Nudm\_SDM\_Subscribe** SMSF subscribes to be notified using Nudm\_SDM\_Subscribe when the SMS Management Subscription data is modified and UDM may subscribe to notifications from UDR by Nudr\_DM\_Subscribe.
- **Nudm\_SDM\_Unsubscribe** service operation to unsubscribe
- **Nudm\_UECM\_Deregistration** Service operation from UDM to trigger UDM to delete SMSF address of the UE
- **Nudr\_DR\_Update** Service operation for UDM to update UE context in SMSF
- **Remove the UE Context** Allows operators to serve multiple tenants on multiple domains like service providers, resellers and customers.

## Send SMS



- **MT SMS over NAS** Service operation to forward SMS ack message to AMF both for CM-IDLE and CM-CONNECTED mode
- **Nudm\_SDM\_Get** Retrieve UE's individual Subscription Data
- **Namf\_MT\_EnableReachability Request** Service operation for AMF to page the UE
- **Namf\_Communication\_NIN2MessageTransfer** SMSF forward the SMS message to AMF, receipt acknowledgement and last message indication.
- **Nsmf\_SMSService\_UplinkSMS** SMSF receives forward ack and delivery report
- **Forwarding Subsequent SMS** Subsequent SMS sending

## Receive SMS



- **MO SMS over NAS** Receive mobile originating SMS both CM-IDLE and CM-Connected mode
- **Nsmf\_SMSService\_UplinkSMS** The AMF forwards the SMS message and SUPI to the SMSF serving the UE over N20
- **Namf\_Communication\_NIN2MessageTransfer service** Service operation to send SMS forwarding acknowledgement to AMF
- **SMS Receive over MAP/SS7** IPSM-GW / SMSC transfer SMS to SMSF over MAP/SS7
- **SMS Recieve over Diameter SGd** IPSM-GW / SMSC transfer SMS to SMSF over Diameter SGd

## Interfaces



- **Namf-I** AMF N21 Interface
- **Nudm-I** UDM N20 Interface
- **Nnrf-I** NRF Interface
- **Nsmf-I** SMSF Interface
- **Sgd-I** Diameter SGd for SMSC/IPSMGW
- **SEPP-I** SEPP Interface for Roaming Handling

## Infrastructure



- **VNF Deployment** Deployable on Virtual Network Functions
- **CNF Deployment** Containerized Software Deployment
- **CNF on VMware** CNF Deployment on VMware
- **Georedundancy** Georedundant Deployment

**Defne Telekomünikasyon AŞ,**

headquartered in Istanbul, Turkey, established in 1996, is a leading global provider of telecom solutions, software products, and services for communications networks. Defne's solutions enable network operators and service providers to monetize every potential connection beyond limits while enhancing the subscriber experience.

Backed up with professional and managed services, Defne offers solutions in call completion, messaging, value added services and roaming business lines of telco. Expertise in IN, IVR, and messaging combined with a wealth of skilled resources, allows Defne to provide reliable and scalable solutions that seamlessly integrate with existing customer infrastructure.



+90 212 909 85 85



sales@defne.com.tr



Maslak Mahallesi, Maslak Meydan Sokak, Spring Giz Plaza,  
No:5, Kat:9 Sariyer, ISTANBUL, 34485 Turkey