5G Network Slicing Concepts

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By **prasanna (http://5gblogs.com/author/prasanna/)** in **(http://5gblogs.com/5g-network-slicing-conce**
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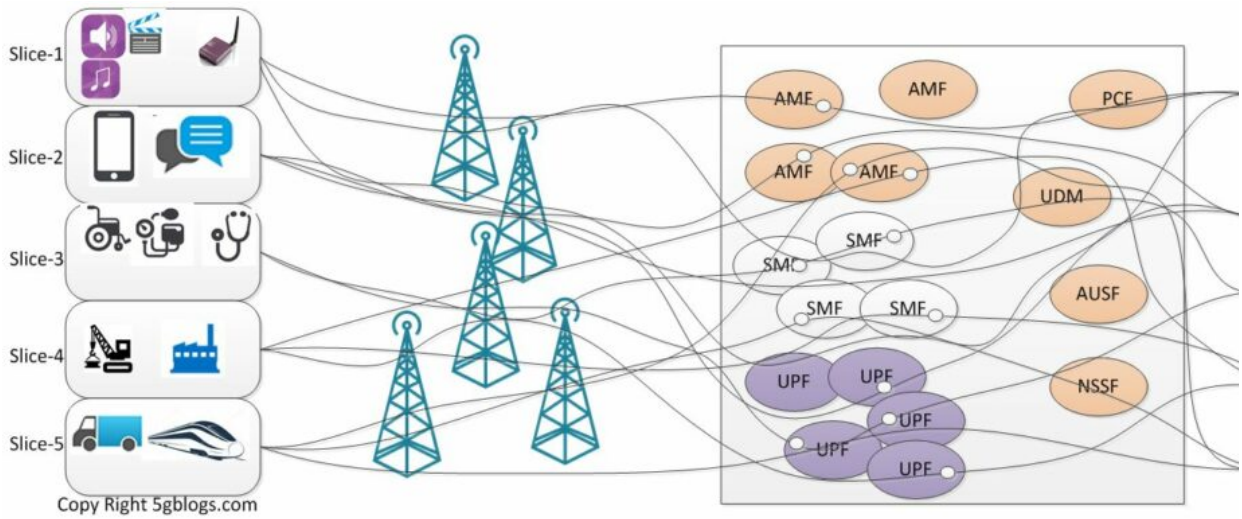
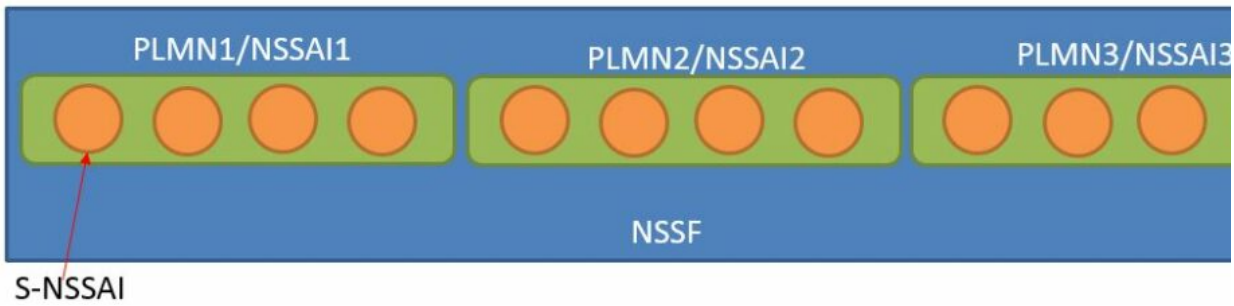
Introduction

In 5G network communication infrastructure is not just confined to mobile voice/text communication, segregated and very diversified to different services like Industrial IoT, Smart home domestic IoT, Low Medical communication, high bandwidth mobile broadband etc. And each of these services require di data behavior and QoS from network infrastructure.

In 5G each network node is equipped with special features to serve the purpose of one or multiple se the kind of service supported by a particular node is defined in NSSF(Network Slice Selection Function particular service request from UE, is served by a set of network entities associated with that Service a slice.



NSSAI(Network Slice Selection Assistance Informa Structure and Fundamentals



- Network Slice configuration Information can have multiple NSSAI
- Each PLMN can have at most one configured NSSAI
- Each NSSAI has multiple S-NSSAI slices.
- Each S-NSSAI slice has multiple DNNs configured.
- A configured NSSAI can be configured by a serving PLMN or default NSSAI configured by HPLMN.
- If Serving PLMN doesn't have specific configured PLMN then it uses default configured NSSAI from
- UE is pre-configured/provisioned by signalling message with default configured NSSAI by HPLMN.
- UE is only configured with a set of subscribed S-NSSAIs out of the default configured NSSAI, which of the S-NSSAIs configured inside default configured NSSAI in HPLMN.
- Allowed S-NSSAIs provided to the UE can have values, which are not served by Serving PLMN, in th Serving PLMN updates the allowed S-NSSAI list with mapping to corresponding S-NSSAI of the HPL

S-NSSAI and it's Structure

Each Slice is identified by S-NSSAI (single network slice selection identifier)

- SST is required value where was SD is optional
- SST refer to expected behaviour of the slice.
- SD is optional and differentiates among multiple slices with same SST.

Slice/Service type	SST value	Characteristics.
eMBB	1	Slice suitable for the handling of 5G enhanced Mobile Broac
URLLC	2	Slice suitable for the handling of ultra- reliable low latency communications.
MIoT	3	Slice suitable for the handling of massive IoT.

- UE during Registration and PDU session Establishment sends S-NSSAI value and optionally HPLMN value, if in visiting area.
- The requested NSSAI signalled by UE to network allows the network to select appropriate serving A Network slice and network slice instance.
- Based on the subscription data, one UE can have subscription to multiple S-NSSAIs and one of the marked as default S-NSSAI.
- Subscription information for each S-NSSAI may have multiple DNN and one of them is default DNN

Services provided by NSSF

Service Name	Description	Referenc TS 23.50
Nnssf_NSSelection	Provides the requested Network Slice information to the Requester.	5.2.16
Nnssf_NSSAIAvailability	Provides NF consumer on the availability of S-NSSAIs on a per TA basis.	5.2.16

Nnssf_NSSelection_Get service operation

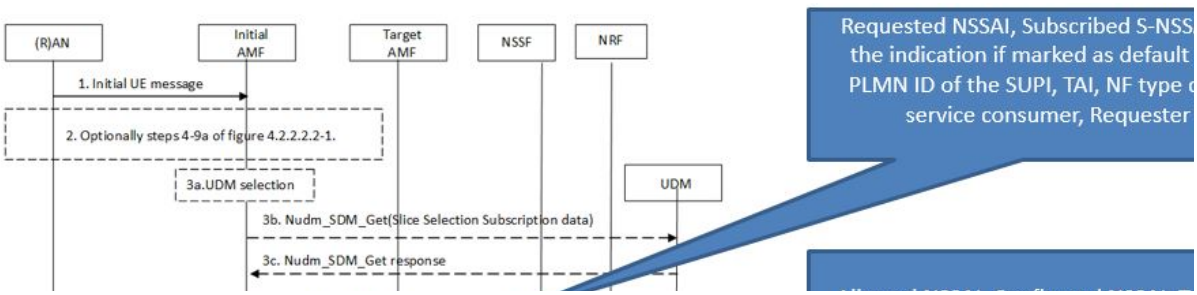
- May be invoked during Registration, for serving AMF selection and re-allocation.
- PDU session establishment procedure, for SMF selection.
- UE configuration update procedure, to update allowed S-NNAIs to UEs in current serving PLMN.

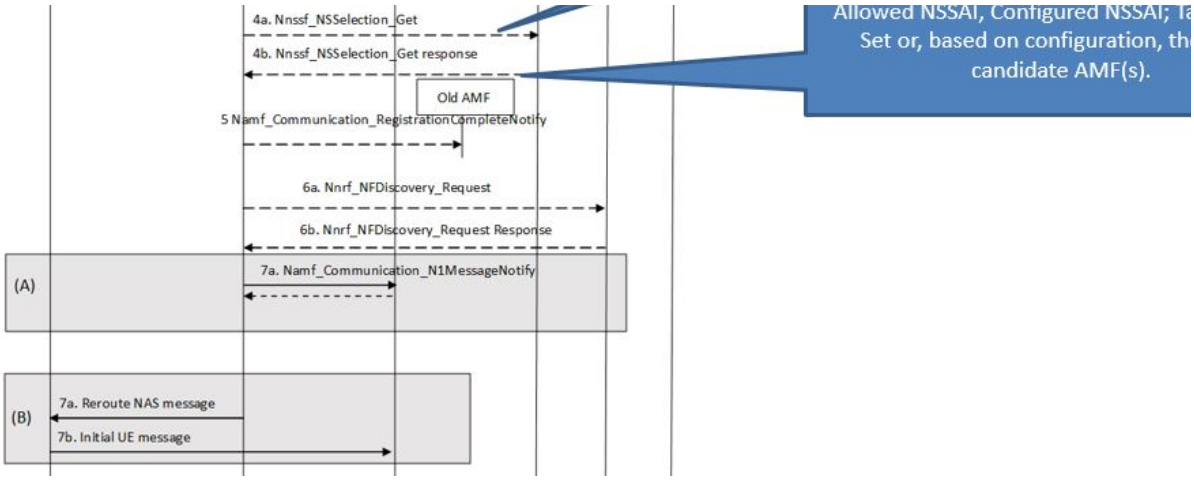
Nnssf_NSSAIAvailability

- Nnssf_NSSAIAvailability_Update : In this process, AMF updates NSSF with S-NSSAIs supported by A and gets back availability of S-NSSAIs for each TA.
- Nnssf_NSSAIAvailability_Notify : AMF notify NSSF with restricted S-NSSAIs per TA using this proced

AMF Re-allocation Procedure

During UE registration procedure, if AMF doesn't support one or more requested S-NSSAIs which is all SPLMN/HPLMN then it request NSSF to provide the appropriate AMF to redirect the registration reque UE.





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