TAI Selection from AMF

Feature Summary and Revision History

Summary Data

Applicable Product(s) or Functional Area	SMF
Applicable Platform(s)	SMI
Feature Default Setting	Enabled – Always-on
Related Changes in this Release	Not Applicable
Related Documentation	Not Applicable

Revision History

Table 1: Revision History

Revision Details	Release
First introduced.	2021.01.0

Feature Description

The SMF provides optional configuration to configure locations based on the Tracking Area Identity (TAI) group and priority. When this configuration is available, the SMF sends the configured TAI, that is, TAIList

and TAIRangeList, to the Network Function (NF) Repository Function (NRF) during the SMF service registration. The SMF can register to the NRF with this TAI group and the priority.

Important Any change in the configuration results in SMF Service update towards the NRF with the new configured TAIList and TAIRangeList values.

When the AMF requests a list of SMFs from the NRF, it can make a selection based on the supported location and priority.

For more details on the NF registration and NF registration Update, see the NF Profile Update section in the NF Discovery and Management chapter.

How it Works

The SMF uses priority attribute that is added in the smfInfo data type to enable the discovery and selection of SMF. This functionality is based on the relative priorities registered by the target SMFs in different smfInfo entries with different TAI lists.

The following table lists the feature-specific attributes that are part of NFProfile and SMFInfo data types.

Table 2: NFProfile

smfInfo	SmfInfo	O	0..1	Specific data for the SMF (DNNs).
smfInfoList	map(SmfInfo)	O	1..N	Multiple entries of SmfInfo. This attribute provides additional information to the smfInfo. smfInfoList may be present even if the smfInfo is absent. The key of the map will be a (unique) valid JSON string per clause 7 of IETF RFC 8259, with a maximum of 32 characters.
Note The absence of both the smfInfo and smfInfoList attributes in an SMF profile indicates that the SMF can be selected for any S-NSSAI, DNN, TAI, and access type.				

Table 3: SMFInfo

Attribute Name	Data Type	P	Cardinality	Description
sNssaiSmfInfoList	array(sNssaiSmfInfoItem)	M	1..N	List of parameters supported by the SMF per S-NSSAI.

Attribute Name	Data Type	P	Cardinality	Description
taiList	array(Tai)	O	1..N	The list of TAIs the SMF can serve. It contains the non-3GPP access TAI. The absence of this attribute and the taiRangeList attribute indicate that the SMF can be selected for any TAI in the serving network.
taiRangeList	array(TaiRange)	O	1..N	The range of TAIs the SMF can serve. It contains the non-3GPP access TAI. The absence of this attribute and the taiList attribute indicate that the SMF can be selected for any TAI in the serving network.
priority	integer	O	0..1	Priority (relative to other NFs of the same type) in the range of 0-65535, to be used for NF selection for a service request matching the attributes of the SmfInfo; lower values indicate a higher priority. See the precedence rules in the description of the priority attribute in NFProfile, if Priority is also present in the nfServiceList parameters or in NFProfile. The NRF overwrites the received priority value when exposing an NFProfile with the Nnrf_NFDiscovery service.
Note	An SMF profile may contain multiple SmfInfo entries, with each entry containing a different list of TAIs and a different priority, to differentiate the priority to select the SMF based on the user location. The priority in SmfInfo has the least precedence, that is. it applies between SMFs or SMF Services with the same priority.			

NOTES:

- SmfInfo in NFProfile is sent if there's no change in configuration (all tai-groups data being sent without priority).
- SmfInfoList map is a new element in NFprofile.
- Each SmfInfoList entry doesn't contain all tai-group-list data. Each element contains entries of the same priority tai-groups per NSSAI.

Note All tai-groups under a slice is expected to be of the same priority.

- If tai-group-list has tai-groups of different priority configured under a slice, tai-groups are logically grouped based on priority. SmfInfo has data of tai-group of one priority and subsequent priority tai-group(s) data in each of SmfInfoList entry.
- If no tai-group is associated with any slice, then old behaviour prevails. If there's tai-group association for few slices and few without, then the smfinfolist entries of slices without tai-group have no TAI details.
- For any tai-group if priority isn't defined, it's grouped separately and sent as a SmfInfo entry or different SmfInfoList entry.
- Key for each SmfInfoList map element is incremental counter string.

Configuring TAI Selection Feature

Configuring TAI Group List

Use the following configuration to configure TAI Group List.

```
config
nssai name nssai_name
   sst sst ssd ssd
   dnn dnn
   tai-group-list tai_group_list
   end
```

NOTES:

- **tai-group-list** *tai_group_list* : Configures TAI group list.

Verifying TAI Group List

Use the following show command to verify TAI Group List:

```
show running-config nssai
```

```
nssai name slice1
sst 02
sdt Abf123
dnn [ dnn1 intershat intershat1 intershat2 ]
tai-group-list [ tai-group-1 tai-group-2 tai-group-3 ]
exit
```

```
nssai name slice2
sst 02
sdt abc456
dnn [ dnn1 intershat ]
tai-group-list [ tai-group-4 tai-group-5 tai-group-6 ]
exit
```

Configuring TAI Group

This section describes how to configure the TAI Group.

Configuring the TAI Group involves the following steps:

- Configuring TAC List, on page 5
- Configuring TAC Range List, on page 5

Configuring TAC List

To configure the TAC list within TAI profile, use the following sample configuration.

```
config
   profile tai-group tai_group_name
      mcc mcc_value mnc mnc_value
      tac list [ tac_list_values ]
      end
```

NOTES:

- **mcc** *mcc_value* **mnc** *mnc_value*: Configure the Mobile Country Code (MCC) and Mobile Network Code (MNC).
  - **mcc** *mcc_value*: Specify the Mobile Country Code (MCC). *mcc_value* must be a string in the three-digit pattern.
  - **mnc** *mnc_value*: Specify the Mobile Network Code (MNC). *mnc_value* must be a string in the two-or-three-digit pattern.
- **tac list [** *tac_list_values* **]**: Configure the list of TAC values. For example, [1111 2222 3333]

Configuring TAC Range List

To configure the TAC range list within TAI profile, use the following sample configuration.

```
config
   profile tai-group tai_group_name
      mcc mcc_value mnc mnc_value
      tac range start start_value end end_value
      end
```

NOTES:

- **tac range start** *start_value* **end** *end_value*: Configure a specific TAC range or multiple TAC range lists. For example, **tac range start DDDD end EEEE**

  You can configure a maximum of 16 values in a range.

- Use the **no tac range start** *start_value* **end** *end_value* command to remove a specific TAC range or TAC ranges.

Verifying the TAI Group Configuration

To verify the TAI group configuration, use the following command:

show running-config profile tai-group *tai_group_name*

The following is an example of the configuration:

```
show running-config profile tai-group t1
profile tai-group t1
mcc 111 mnc 222
  tac list [ 1111 2222 3333 ]
  tac range start 4444 end 5555
  exit
exit
mcc 333 mnc 44
  tac list [ AAAA BBBB CCCC ]
  tac range start DDDD end EEEE
  exit
exit
exit
```

Configuring Priority

To configure the priority of TAI group, use the following sample configuration:

```
config
profile tai-group tai_group_name
   priority priority
   end
```

NOTES:

- **priority** *priority* : Specify the priority of the TAI group.

Verifying the Priority Configuration

To verify the configuration associated with TAI group priority, use the following show command:

show running-config profile tai-group

```
profile tai-group t1
mcc 123 mnc 456
priority 1
tac list [ 1234 789123 ]
tac range start 1234 end 1980
exit
exit
exit
profile tai-group t2
priority 1
mcc 456 mnc 123
tac list [ 0000 123456 ]
tac range start 3456 end 9000
exit
```

```
exit
exit
```