Multiple N4/Sx Interface

Feature Summary and Revision History

Summary Data

Table 1: Summary Data

Applicable Product (s) or Functional Area	5G-UPF
Applicable Platforms	VPC-SI
Feature Default Setting	Disabled – Configuration Required
Related Changes in this Release	Not Applicable
Related Documentation	*UCC 5G UPF Configuration and Administration Guide*

Revision History

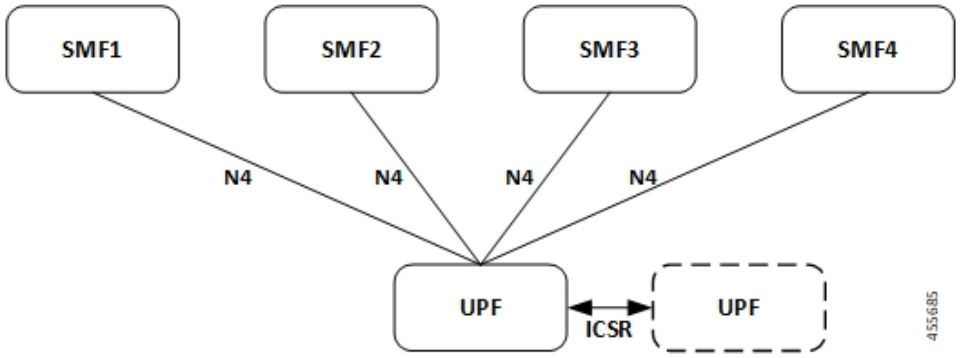
Revision Details	Release
First introduced.	2021.01.0

Feature Description

The Multiple N4 Interface feature enables a single UPF to establish multiple N4 interfaces with as many SMFs. Integration of multiple SMFs with a single UPF results in optimal usage of resources.

Architecture

The following illustration depicts the architecture of Multiple N4 Interface.



How it Works

The functionality of Multiple N4 Interface feature involves:

- Single UPF has multiple N4/Sx interface associations with each SMF.
- There is no slicing of configuration in UPF per individual SMF.
- The ECS/ACS configuration at the UPF is a union of all the individual SMF-specific configurations. For example:

  SMF1 has rulebase *RB1* and no *RB2*.

  SMF2 has rulebase *RB2* and no *RB1*.

  The UPF has both rulebase, *RB1* and *RB2* to cater the sessions from *RB1* and *RB2*.
- A maximum of four SMF peers are connected to a single UPF.
- Overlapping IP pools from multiple SMFs are segregated based on the VRF ID.
- Individual N4 association release purges sessions of the impacted SMF peer.
- UPF redundancy works seamlessly.
- In rare instance of any conflict amongst different SMF configurations, it will not be resolved at the UPF and will be installed in the sequence in which such CLIs were configured.

Configuring Multiple N4 Interface

This section provides information about CLI commands that are available in support of this feature.

Configuring Multiple SMF on UPF

Use the following CLI commands to configure multiple SMF on UPF by adding multiple peer node under Control Plane Group Configuration mode.

```
configure
  user-plane-service service_name
    associate control-plane-group group_name
  control-plane-group group_name
    peer-node-id ipv4-address ipv4_address interface n4
    peer-node-id ipv4-address ipv4_address interface n4
    . . .
    . . .
    . . .
    end
```

Monitoring and Troubleshooting

This section provides information about monitoring and troubleshooting the Multiple N4 Interface feature.

Show Commands and/or Outputs

This section describes the show commands that are available in support of this feature.

show ip chunks

The output of this CLI command is enhanced to display the IP pools pushed to the UPF from multiple SMFs in Gi context.

show ipv6 chunks

The output of this CLI command is enhanced to display the IPv6 pools pushed to the UPF from multiple SMFs in Gi context.

show subscribers user-plane-only full all

The output of this CLI command is enhanced to display the corresponding Control Plane address.

show sx peers

The output of this CLI command is enhanced to display the peer ID with corresponding number of sessions.

show user-plane-service statistics peer-address <address>

The output of this CLI command is enhanced to display per peer statistics in SMF.