



## Multiple N4/Sx Interface

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## 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	<i>UCC 5G UPF Configuration and Administration Guide</i>

### Revision History

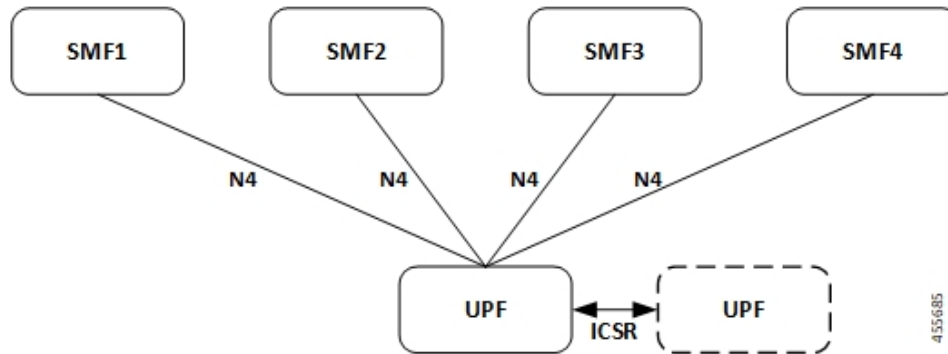
Revision Details	Release
First introduced.	2021.01.0

## 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>
```

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

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