



Virtual Routing and Forwarding

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Feature Summary and Revision History

Summary Data

Table 1: Summary Data

Applicable Product(s) or Functional Area	SMF
Applicable Platform(s)	SMI
Feature Default Setting	Disabled – Configuration Required
Related Changes in this Release	Not Applicable
Related Documentation	Not Applicable

Revision History

Table 2: Revision History

Revision Details	Release
Added VRF support for Diameter interfaces.	2023.04.0
The following enhancements are introduced: • Extended the maximum number of VRFs to 129 • Static and Dynamic Policy Removal	2023.01.0
First introduced.	2020.02.5

Feature Description

Virtual Routing and Forwarding (VRF) is a technology that allows multiple instances of a routing table to coexist within the same router at the same time. As the routing instances are independent, you can use the same or overlapping IP addresses without conflicting with each other.

In private APN (PAPN) deployments, the same SMF can support multiple PAPNs, requiring authentication and accounting with the enterprise AAA servers. As the AAA servers belong to different mobile virtual network operators (MVNOs), it's possible that their address ranges overlap. The SMF uses VRF to allow the overlapping AAA server addresses in PAPN or MVNO.



Important Currently SMF doesn't support the overlapping addresses for the AAA client.

SMF uses VRF to also remove the Dynamic and Static routes based on UDP interfaces that are optimized by using the default route of VRF. This action replaces the policies with one default route per interface to improve the operational performance.

SMF enables configuration of VRF in the IP pool. The SMF sends IP address details along with the configured VRF name to UPF. UPF maps the IP address to VRF configured within UPF.

SMF supports up to 129 VRFs with a scale of 2K TPS for private APNs and DNNs.



Note This implementation is backward compatible if you haven't configured a VRF. In such a case, the creation of a TCP socket towards the Diameter server is applicable with no VRF name configuration.

Configuring Virtual Routing and Forwarding

VRF Configuration

The VRF configuration is applicable for both PAPN, and Static and Dynamic use cases.

To configure the VRFs in global configuration mode, use the following sample configuration:

```
config
  vrf name vrf_name gateway gateway_ipv4_address gatewayIpv6 gateway_ipv6_address
  device interface_name linkDevice linked_device_name
end
```



Important VRF creation and deletion operations are supported. To modify the existing VRF, VRF must be deleted and then added again.

NOTES:

- **vrf name** *vrf_name* —Specify the VRF name. The maximum VRF length supported is 15.

- **gateway** *gateway_ipv4_address*—Specify the IPv4 address of the gateway.
- **gatewayIpv6** *gateway_ipv6_address*—Specify the IPv6 address of the gateway.
- **device** *interface_name*—Specify the name of the public bonded interface.
- **linkDevice** *linkedDevice_name*—Specify the name of the private bonded interface. This field is applicable only for Static and Dynamic use case.

