N3IWF for Non-3GPP Access

Table 1: Feature History

Feature Name	Release Information	Description
N3IWF for Untrusted Non-3GPP Access Network	2024.01	SMF supports the N3IWF interface for interworking between 5G core and untrusted non-3GPP networks. N3IWF facilitates seamless handover and uninterrupted connectivity for users when they transition between different network types. **Default Setting**: Disabled – Configuration Required

Feature Description

The Non-3GPP Interworking Function (N3IWF) interface in the 5G SBA (Service Based Architecture) is responsible for interworking between untrusted non-3GPP networks and the 5G core. As such, the N3IWF supports both N2 and N3 based connectivity to the core, whilst supporting IPSec connectivity towards the device. The N3IWF interface provides the access and authentication protocols from the non-3GPP Wi-Fi network to seamlessly interface with the 5G Core Network by enabling the N2 and N3 interfaces.

This interface establishes an end-to-end security association between the User Equipment (UE) and N3IWF, irrespective of the security measures implemented at the layer 2 access level (WPA2).

SMF supports only the following procedures:

- PDU session establishment over N3IWF

- PDU session release over N3IWF

Architecture

The following figure represents the non-roaming architecture of 5G core network with untrusted non-3GPP access network.
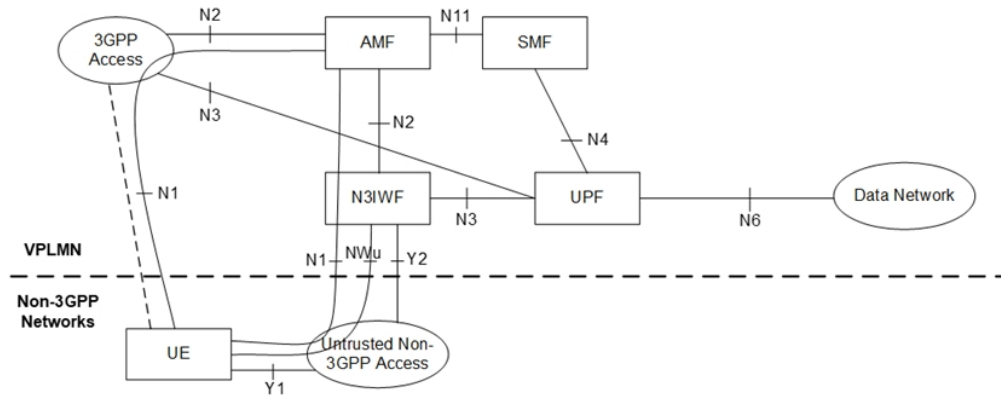
How it Works

N3IWF is deployed as a network function within the service provider's infrastructure. It interacts with various components of the 5G network architecture, such as the Access and Mobility Management Function (AMF), Session Management Function (SMF), and User Plane Function (UPF).

Call Flows

This section describes the call flows related to the N3IWF interface.

PDU Session Establishment Over N3IWF

UE performs initial registration and authentication with 5G core network using N3IWF. The 5G PDU session create over N3IWF remains the same as that of 5G NR PDU create except that the 5G PDU Create Request message includes these additional attributes:

- ratType

- anType

- n3gaLocation

Note

- 5G PDU session create over N3IWF does not require EBI assignment to be performed.

- The n3gaLocation attribute carrying N3PP TAI information is included in 3GPP-User-Location-Info AVP and sent to RADIUS server if the anType attribute is Non-3GPP Access.

- N3GaLocation information is shared only with PCF and CHF.

The following call flow describes the initiation of PDU establishment over N3IWF:
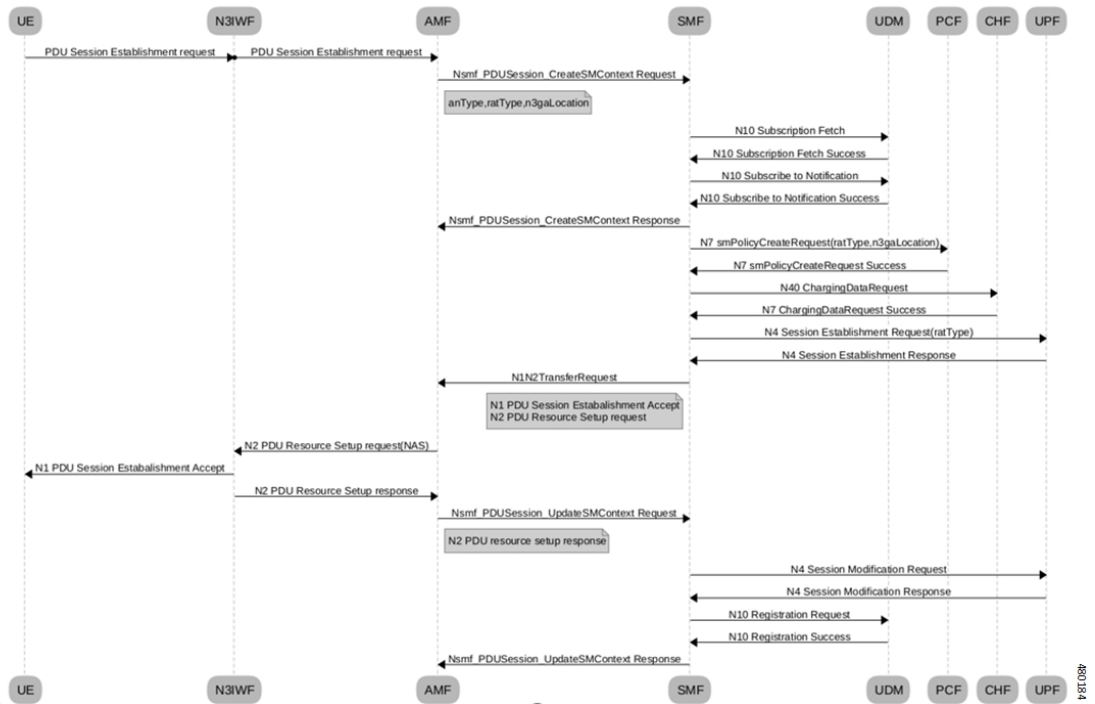
PDU Session Release over N3IWF

The PDU session release procedure over N3IWF remains the same as with the following 5G NR PDU session release procedures.

- Access triggered release
- Network triggered release
  - PCF initiated
  - Admin initiated
  - CHF triggered
  - IDLE timeout-based
  - Release due to N4 path failure

Standard Compliance

The N3IWF feature complies with the following standards:

- 3GPP 23.501 release 15 version

OAM Support

Bulk Statistics Support

This feature supports a new label "anType" as part of the smf service stats. This label defines the access network type as 3GPP access or non-3GPP access.

For more information on bulk statistics support, see the *UCC 5G SMF Metrics Reference* document applicable for this release.

Monitoring Support

The existing show subscriber and clear subscriber commands include a new filter option "an-type" to indicate the access type of subscribers. The show subscriber command output also displays information on N3Ga location.

If the UE connects to the Wi-Fi access point and attempts to attach through ePDG, the access type is categorized as non-3GPP access. In the case of N3IWF sessions attaching through AMF, the access type is 3GPP access and the an-type is non-3gpp access.

Logging Support

This feature provides support for access network type information in the procedure failure logs.