

New Radio Dual Connectivity

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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	Enabled – Always-on
Related Changes in this Release	Not Applicable
Related Documentation	Not Applicable

Revision History

Table 2: Revision History

Revision Details	Release
First introduced.	2021.02.0

Feature Description

New Radio Dual Connectivity (NR-DC) is a dual connectivity configuration using the 5G standalone core. In this configuration, both the primary and secondary RAN nodes are 5G gNBs. SMF supports 5G aggregation along with NR-DC to achieve higher 5G data rates.

This feature has the following key points:

- Use NR-DC only for data traffic
- Use only default flow for data traffic
- One tunnel is sufficient
- SMF requires no configuration

The NR-DC feaure is applicable to both roaming and non-roaming scenarios.

How it Works

The RAN-initiated QoS flow is offloaded from Primary Node (PN) to Secondary Node (SN). After the flow is created, PN may switch the traffic to SN. SN allocates new DL TEID and sends it to PN. Then, PN initiates the PDU Session resource modify request with that DL TEID. SMF updates only the DL FAR to switch the traffic to SN. The switch from SN to PN can happen. However, SMF has no behavioral change.

Call Flows

This section describes the call flow of RAN-initiated Qos flow offloading from PN to SN.

RAN-Initiated QoS Flow Offloading Call Flow

This section describes the call flow of RAN-initiated QoS flow offloading from PN to SN.

Figure 1: RAN-Initiated QoS Flow Offloading Call Flow

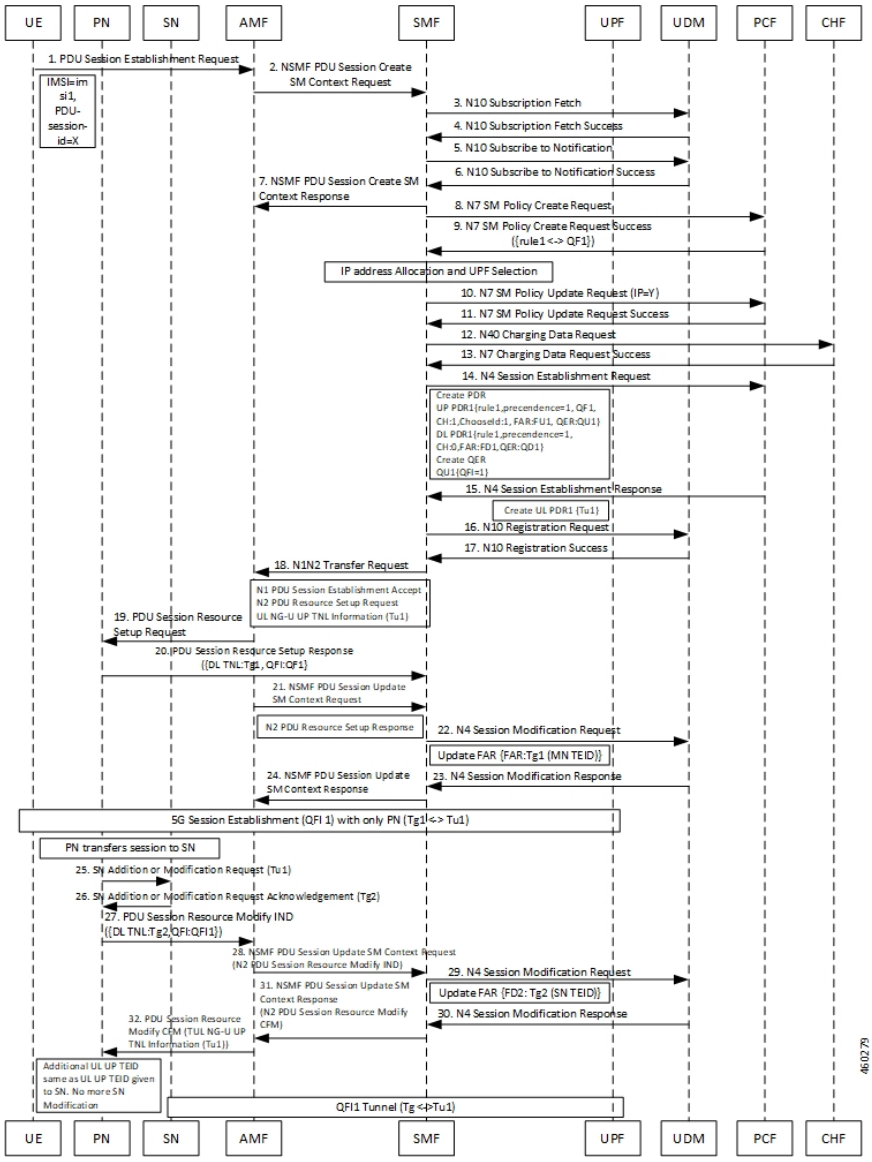


Table 3: RAN-Initiated QoS Flow Offloading Call Flow Description

Step	Description
1	UE sends the PDU Session Establishment Request to AMF.
2	AMF sends the NSMF PDU Session Create SM Context Request to SMF.
3	SMF sends the N10 Registration Request to UDM.
4	UDM sends the N10 Registration successful notification to SMF.
5	SMF sends the N10 subscription fetch message to UDM.

Step	Description
6	UDM sends the N10 subscription fetch successful acknowledgment to SMF.
7	SMF sends the N10 Subscribe to Notification message to UDM.
8	UDM sends the N10 Subscribe to Notification successful notification to SMF.
9	SMF sends the NSMF PDU Session Create SM Context Response to AMF.
10	SMF sends the N7 SM Policy Create Request to PCF.
11	PCF sends the N7 SM Policy Create Request Success notification to SMF.
12	Based on the IP address allocation and UPF selection, SMF sends the N7 SM Policy Update Request to PCF.
13	PCF sends the N7 SM Policy Update Request successful notification to SMF.
14	SMF sends N40 Charging Data Request to CHF.
15	CHF sends the N7 Charging Data Request Success notification to SMF.
16	SMF sends the N4 Session Establishment Request to UPF.
17	UPF sends the N4 Session Establishment Response to SMF.
18	SMF sends the N1N2 Transfer Request to AMF.
19	AMF sends the PDU Session Resource Setup Request to PN.
20	PN sends the PDU Session Resource Setup Response notification with DL tunnel and QFI information to SMF.
21	AMF sends the NSMF PDU Session Update SM Context Request to SMF.
22	SMF sends the N4 Session Modification Request to UPF.
23	UPF sends the N4 Session Modification Response message to SMF.
24	SMF sends the NSMF PDU Session Update SM Context Response to AMF.
25	After the 5G session is established with only PN, PN transfers the session to SN. Then, PN sends the Addition or Modification Request to SN.
26	SN sends the Addition or Modification Request acknowledgment to PN.
27	PN sends the PDU Session Resource Modify Indication message to AMF.
28	AMF sends the NSMF PDU Session Update SM Context Request to SMF.
29	SMF sends the N4 Session Modification Request to UPF.
30	UPF sends the N4 Session Modification Response message to SMF.
31	SMF sends the NSMF PDU Session Update SM Context Response to AMF.

Step	Description
32	AMF sends the PDU Session Resource Modify CFM request to PN. Another UL UP TEID remains same as UL UP TEID that is provided to SN and requires no further modification to SN. QFI1 Tunnel is available from SN to UPF.