Delete Bearer and Delete Session Request

Feature Summary and Revision History

Summary Data

Table 1: Summary Data

Applicable Product(s) or Functional Area	cnSGW-C
Applicable Platform(s)	SMI
Feature Default Setting	Enabled - Always-on
Related Documentation	Not Applicable

Revision History

Table 2: Revision History

Revision Details	Release
First introduced.	2020.04

Feature Description

This feature supports the following:

- Deletion of Session Request from the MME
- Deletion of Bearer Request from the PGW

This deletion helps in clearing the PDN connection at the SGW, which in turn clears resources at the cnSGW-C, and releases all the relevant TEIDs.

Delete from MME

1. cnSGW-C sends the Sx Modification Request to the User Plane (UP) to mark the forwarding action as DROP so that all uplink or downlink packets are dropped at the SGW-U.
2. cnSGW-C sends the Delete Session Request to the PGW/SMF.
3. After SGW receives the Delete Session Response from the PGW/SMF, cnSGW-C sends the Sx Terminate Request to the UP to clear the session.
4. After UP confirms the deletion of the SGW-U session, cnSGW-C releases the allocated ID by sending request to the Node Manager, and the Delete Session Response to the MME.

Delete from PGW

1. cnSGW-C sends the Sx Modification Request to the UP to mark the forwarding action as DROP so that all the uplink and downlink packets are dropped at the SGW-U.
2. cnSGW-C sends the Delete Bearer Request to the MME.
3. After SGW receives the Delete Bearer Response from the MME, the cnSGW-C sends the Sx Terminate Request to the UP to clear the session.
4. After UP confirms the deletion of the SGW-U session, cnSGW-C releases the allocated ID by sending request to the Node Manager, and the Delete Bearer Response to the PGW.

Standard Compliance

The Delete Bearer and Delete Session Request Support feature complies with the following standards:

- *3GPP TS 23.401 "General Packet Radio Service (GPRS) enhancements for Evolved Universal Terrestrial Radio Access Network (E-UTRAN) access"*
- *3GPP TS 23.214 "Architecture enhancements for control and user plane separation of EPC nodes"*
- *3GPP TS 29.274 "3GPP Evolved Packet System (EPS); Evolved General Packet Radio Service (GPRS) Tunnelling Protocol for Control plane (GTPv2-C); Stage 3"*
- *3GPP TS 29.244 "Interface between the Control Plane and the User Plane nodes"*

How it Works

This section describes how this feature works.

Call Flows

This section describes the key call flows for this feature.

Figure 1: Delete from MME Call Flow

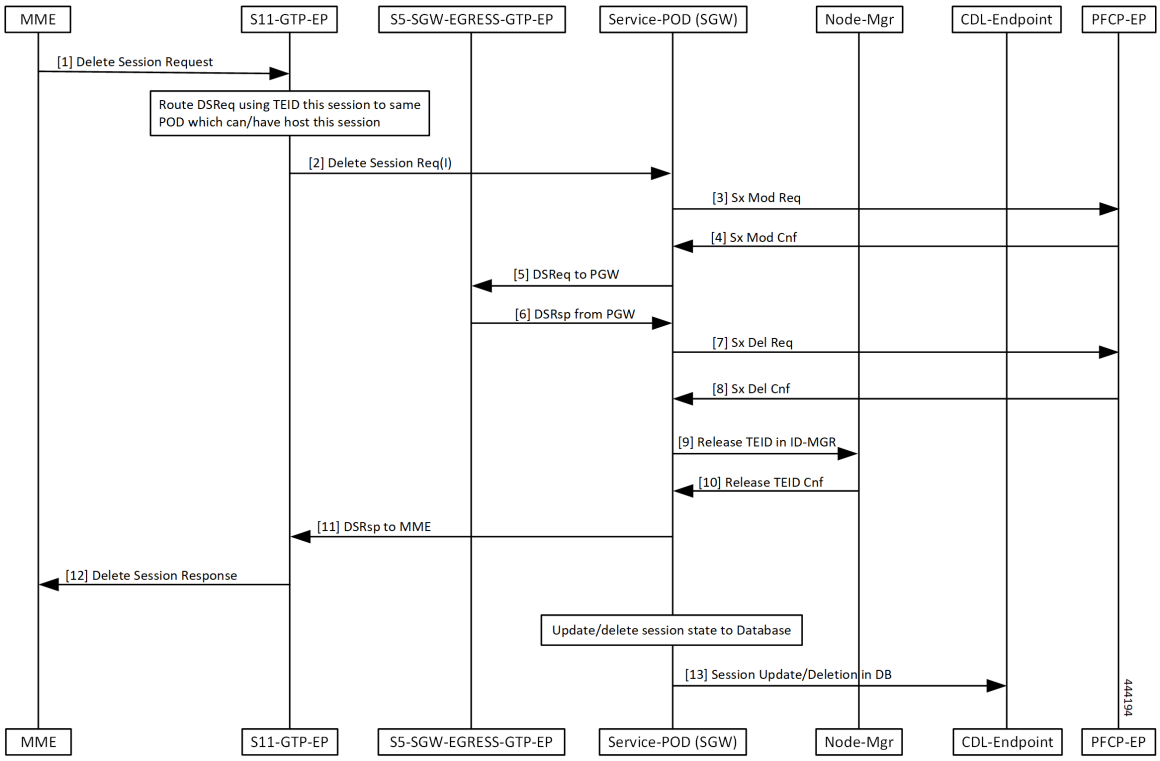

Table 3: Delete from MME Call Flow Description

Step	Description
1	The MME sends the Delete Session Request to the S11-GTP-EP.
2	The S11-GTP-EP routes this message with TEID value to the Service-POD (SGW) which handles this session.
3	The Service-POD (SGW) sends the Sx Modification Request to PFCP-EP.
4	The PFCP-EP sends the Sx Modification Confirmation to the Service-POD (SGW).
5	The Service-POD (SGW) sends the Delete Session Request to the PGW through the S5-SGW-EGRESS-GTP-EP.
6	The Service-POD (SGW) receives the Delete Session Request from the PGW through the S5-SGW-EGRESS-GTP-EP.
7	The Service-POD (SGW) sends the Sx Delete Request to PFCP-EP.
8	The Service-POD (SGW) receives the Sx Delete Confirmation from PFCP-EP.
9	The Service-POD (SGW) sends Release TEID in ID-MGR to Node-Mgr.
10	The Service-POD (SGW) receives the Release TEID Confirmation from the Node-Mgr.

Step	Description
11	The Service-POD (SGW) sends the Delete Session Response to S11-GTP-EP.
12	The S11-GTP-EP sends the Delete Session Response to the MME.
13	The Service-POD (SGW) sends the Session Update or Delete in database message to the CDL.

Figure 2: Delete from PGW Call Flow

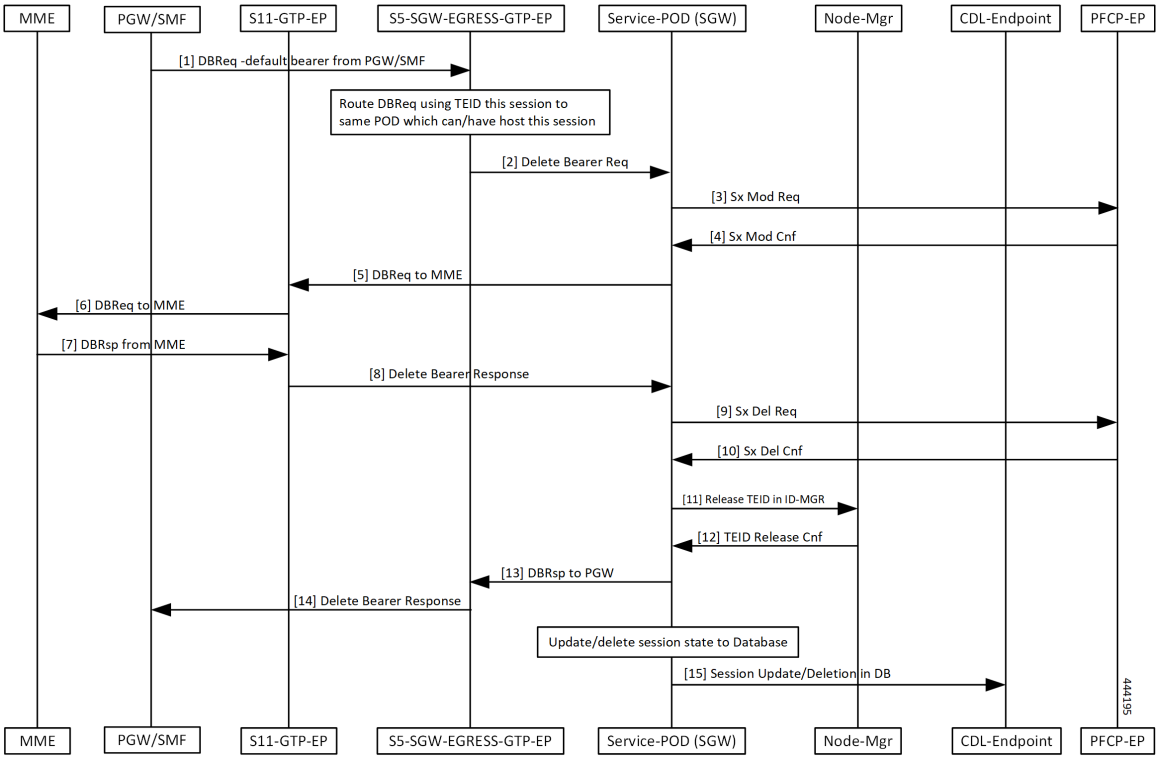

Table 4: Delete from PGW Call Flow Description

Step	Description
1	The PGW/SMF sends the Delete Bearer Request to the S5-SGW-EGRESS-GTP-EP.
2	The S5-SGW-EGRESS-GTP-EP performs routing of this message with TEID value to the same pod that has hosted this session. The S5-SGW-EGRESS-GTP-EP sends the Delete Bearer Request to the Service-POD (SGW).
3	The Service-POD (SGW) sends the Sx Modification Request to PFCP-EP and receives Sx Mod Cnf from it.
4	The PFCP-EP sends the Sx Modification Confirmation to the Service-POD (SGW).
5	The Service-POD (SGW) sends the Delete Bearer Request to the MME through the S11-GTP-EP.
6	The S11-GTP-EP forwards the Delete Bearer Request to the MME.

Step	Description
7	The MME sends the Delete Bearer Response to the S11-GTP-EP.
8	The S11-GTP-EP forwards the Delete Bearer Response to the Service-POD (SGW).
9	The Service-POD (SGW) sends the Sx Delete Request to the PFCP-EP.
10	The Service-POD (SGW) receives the Sx Delete Confirmation from the PFCP-EP.
11	The Service-POD (SGW) sends the Release TEID in ID-MGR to the Node-Mgr.
12	The Service-POD (SGW) receives the Release TEID Confirmation from the Node-Mgr.
13	The S11-GTP-EP sends the Delete Bearer Response to the PGW through S5-SGW-EGRESS-GTP-EP.
14	The S5-SGW-EGRESS-GTP-EP sends the Delete Bearer Response to the PGW/SMF.
15	The Service-POD (SGW) sends the Session Update or Delete in database message to the CDL.