

Modify and Delete Bearer Command Support

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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.	2021.01.0

Feature Description

cnSGW-C supports Modify Bearer Command (MBC) and Delete Bearer Command (DBC).

This feature is supported on the following pods—SGW-service, GTP-EP, and UDP-Proxy.

The SGW-service pod is responsible for handling the following:

- The MBC and DBC
- The MBC triggered Update Bearer Request
- The DBC triggered Delete Bearer Response

The GTPC-EP pod is responsible for sending the following:

- Modify Bearer Command Failure Indication (MBCFI) and Delete Bearer Command Failure Indication (DBCFI) if no response is received.
- MBCFI and DBCFI (success) on receiving Update Bearer Request and Delete Bearer Request respectively.
- Update Bearer Response and Delete Bearer Response back to PGW on receiving the respective message from the SGW-service pod.

How it Works

This section describes how this feature works.

Call Flows

This section describes the key call flows for this feature.

MBC Failure Handling Call Flow

This section describes the MBC Failure Handling call flow.

Figure 1: MBC Failure Handling Call Flow

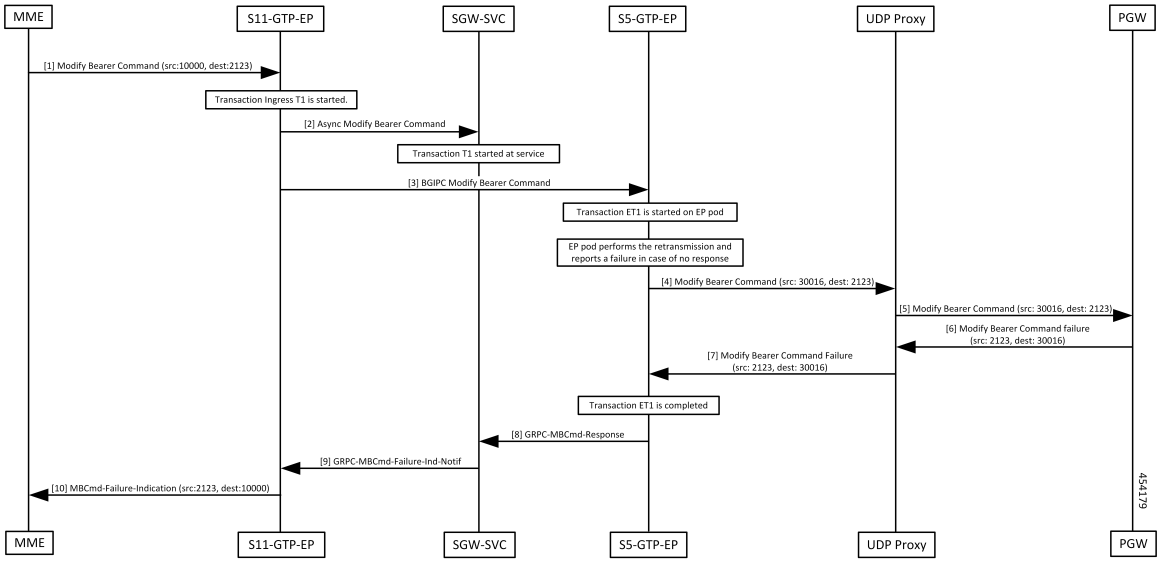


Table 3: MBC Failure Handling Call Flow Description

Step	Description
1	The MME sends the Modify Bearer Command to the S11 GTPC-EP pod.
2	The GTPC-EP pod sends the ASYNC Modify Bearer Command to the SGW-SVC pod.
3	The SGW-SVC pod forwards Modify Bearer Command to PGW. Save MBC_info in PDN for the response.
4	The GTPC-EP pod performs retransmission. If there is no response, the pod sends Modify Bearer Command Failure Indication (MBCFI) to SGW-SVC pod.
5	The UDP Proxy sends the Modify Bearer Command request to PGW.
6	The MBCFI is received on the S5 GTPC-EP pod and is forwarded to SGW-SVC pod.
7	The UDP Proxy sends the Modify Bearer Command failure details to the S5-GTP-EP.
8	The S5-GTP-EP sends the GRPC Modify Bearer Command Response to the SGW-SVC.
9	The SGW-SVC sends the GRPC Modify Bearer Command failure notification to the S11-GTP-EP.
10	The SGW-SVC pod processes MBCFI and forwards the response to MME with saved MBC_Info.

MBC Success Handling Call Flow

This section describes the MBC Success Handling call flow.

Figure 2: MBC Success Handling Call Flow

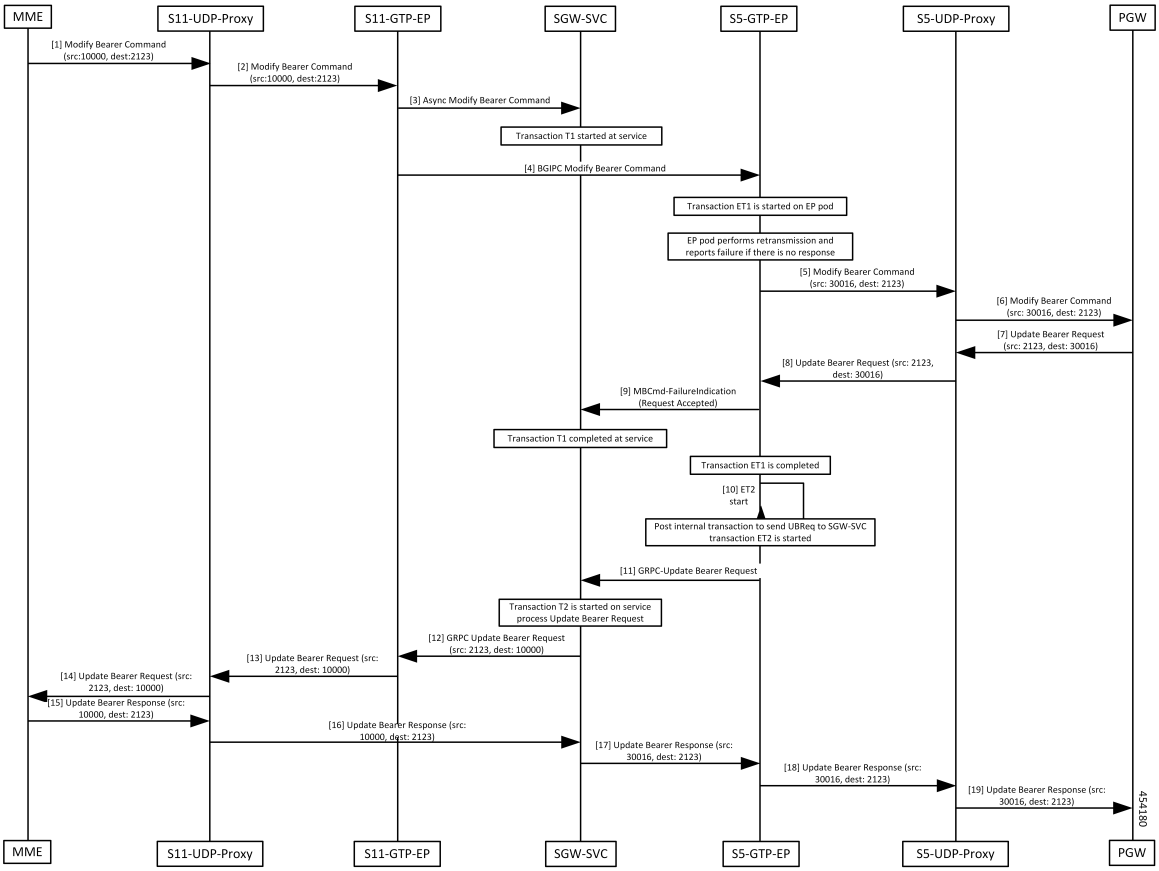


Table 4: MBC Success Handling Call Flow Description

Step	Description
1	The MME sends the Modify Bearer Command to the S11-UDP-Proxy.
2	The S11-UDP-Proxy forwards the Modify Bearer Command to the S11-GTP-EP pod.
3	The S11-GTP-EP pod sends the ASYNC Modify Bearer Command to the SGW-SVC pod. The SGW-SVC pod forwards the Modify Bearer Command to the PGW. Save MBC_info in PDN for response.
4	The S11-GTP-EP pod performs the retransmission. If there is no response, the pod sends the Modify Bearer Command Failure Indication (MBCFI) to the S5-GTP-EP pod.
5	The S5-GTP-EP sends the Modify Bearer Command to the S5-UDP-Proxy.
6	The S5-UDP-Proxy forwards the Modify Bearer Command to the PGW.
7	The PGW sends the Update Bearer Request to the S5-UDP-Proxy.
8	The S5-UDP-Proxy sends the Update Bearer Request (src: 2123, dest: 30016) to the S5-GTP-EP.

Step	Description
9	The S5-GTP-EP pod sends MBCmd-FailureIndication to SGW-SVC pod to end the transaction. Post internal transaction, the GRPC Update Bearer Request is sent to the SGW-SVC pod.
10	The S5-GTP-EP starts the ET2.
11	The S5-GTP-EP sends the GRPC Update Bearer Request to SGW-SVC pod.
12	The SGW-SVC pod processes the Update Bearer Request and consumes the saved MBC_Info to send Update Bearer Request to the S11-GTP-EP.
13	The S11-GTP-EP sends the Update Bearer Request to the S11-UDP-Proxy.
14	The S11-UDP-Proxy forwards the Update Bearer Request to the MME.
15	The MME sends Update Bearer Response to the SGW-SVC pod.
16	The S11-UDP-Proxy processes and sends the Update Bearer Response to the SGW-SVC pod.
17	The SGW-SVC pods forward the Update Bearer Response to the S5-GTP-EP pod.
18	The S5-GTP-EP pod sends the Update Bearer Response to the S5-UDP-Proxy.
19	The S5-UDP-Proxy sends the Update Bearer Response to the PGW.

DBC Failure Handling Call Flow

This section describes the DBC Failure Handling call flow.

Figure 3: DBC Failure Handling Call Flow

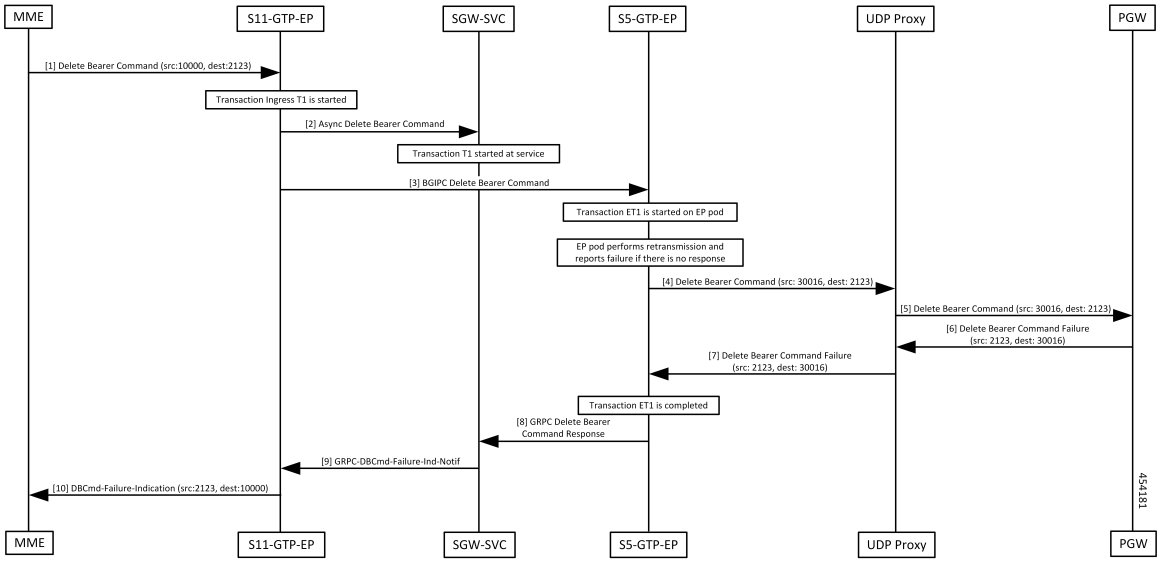


Table 5: DBC Failure Handling Call Flow Description

Step	Description
1	The MME sends the Delete Bearer Command to the S11-GTP-EP pod.
2	The S11-GTP-EP pod sends the ASYNC Delete Bearer Command to the SGW-SVC pod.
3	The SGW-SVC pod forwards Delete Bearer Command to the PGW. Save DBC_info in PDN for response. The EP pod performs retransmission. If there is no response, the pod sends the Delete Bearer Command Failure Indication (DBCFI) to the SGW-SVC pod.
4	The S5-GTP-EP sends the Delete Bearer Command to the UDP Proxy.
5	The UDP Proxy forwards the Delete Bearer Command to the PGW.
6	The PGW sends the Delete Bearer Command Failure to the UDP Proxy. DBCFI is received on S5 GTPC-EP pod and is forwarded to the SGW-SVC pod.
7	The UDP Proxy forwards the Delete Bearer Command Failure to the S5-GTP-EP.
8	The S5-GTP-EP sends the GRPC Delete Bearer Command Response to the SGW-SVC.
9	The SGW-SVC pod sends the GRPC-DBCmd-Failure-Ind-Notif to the S11-GTP-EP.
10	The S11-GTP-EP pod processes the DBCFI and forwards the response to MME with the saved DBC_Info.

DBC Success Handling Call Flow

This section describes the DBC Success Handling call flow.

Figure 4: DBC Success Handling Call Flow

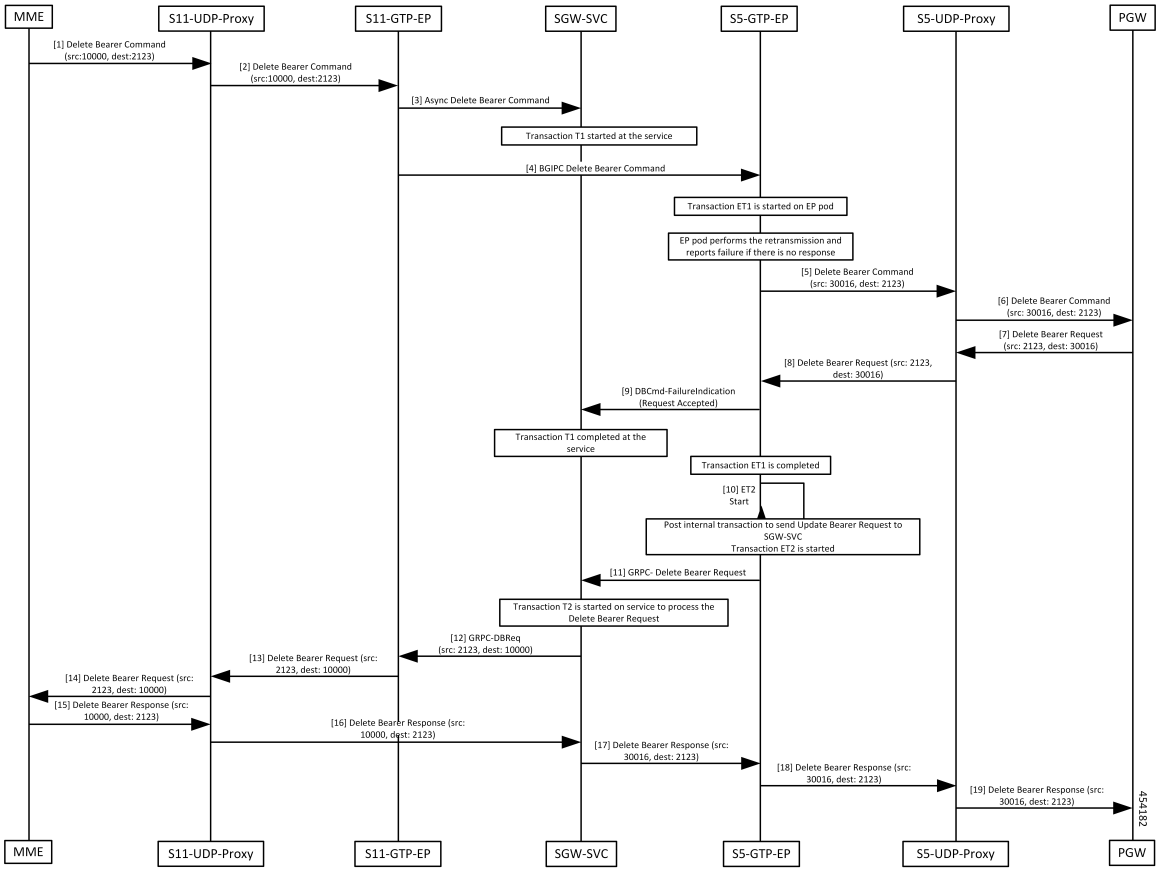


Table 6: DBC Success Handling Call Flow Description

Step	Description
1	The MME sends a Delete Bearer Command to the S11-UDP-Proxy.
2	The S11-UDP-Proxy forwards the Delete Bearer Command to the S11-GTP-EP.
3	The S11-UDP-Proxy sends the ASYNC Delete Bearer Command to the SGW-SVC pod.
4	The SGW-SVC pod sends the BGIPC Delete Bearer Command to the S5-GTP-EP. Save DBC_info in the PDN for response.
5	The EP pod performs the retransmission and reports a failure if there is no response. The pod sends the Delete Bearer Command Failure Indication (DBCFI) to the SGW-SVC pod. The S5-GTP-EP sends the Delete Bearer Command to the S5-UDP-Proxy.
6	The S5-UDP-Proxy send the Delete Bearer Command to the PGW.
7	The PGW sends the Delete Bearer Request to the S5-UDP-Proxy pod.
8	The S5-UDP-Proxy pod forwards the Delete Bearer Request to the S5-GTP-EP.

Step	Description
9	The S5-GTP-EP pod sends the DBCFI (with Request as ACCEPTED) to the SGW-SVC pod to end the transaction. The SGW-SVC pod ends the transaction and consumes this DBCFI. The post internal transaction sends the GRPCE_DBReq to SGW-SVC pod.
10	After the ET1 transaction is completed, the S5-GTP-EP starts.
11	The S5-GTP-EP pod sends the GRPC-DBRequest to the SGW-SVC.
12	The SGW-SVC pod processes the Delete Bearer Request and used saved DBC_Info to send the Updated Bearer Request to the MME.
13	The S11-GTP-EP pod sends the Delete Bearer Request to the S11-UDP-Proxy pod.
14	The S11-UDP-Proxy forwards the Delete Bearer Request to the MME.
15	The MME sends the Delete Bearer Response to the S11-UDP-Proxy pod.
16	The S11-UDP-Proxy processes the Delete Bearer Response to the SGW-SVC.
17	The SGW-SVC forwards the Delete Bearer Response to the S5-GTP-EP.
18	The S5-GTP-EP pod sends the Delete Bearer Response to the S5-UDP-Proxy.
19	The S5-UDP-Proxy sends the Delete Bearer Response to the PGW.