



# 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.

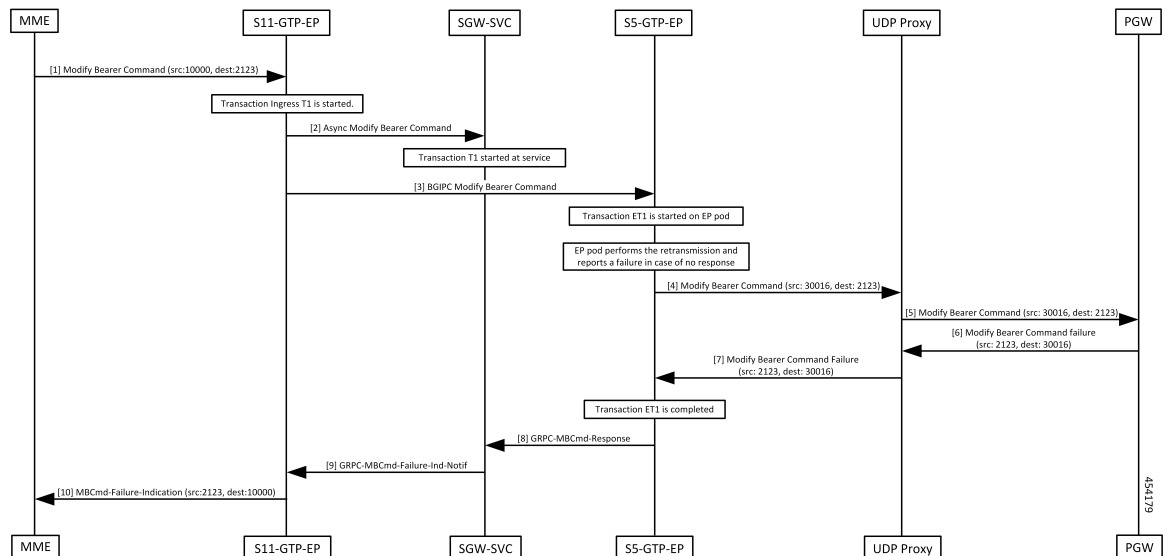
## Call Flows

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

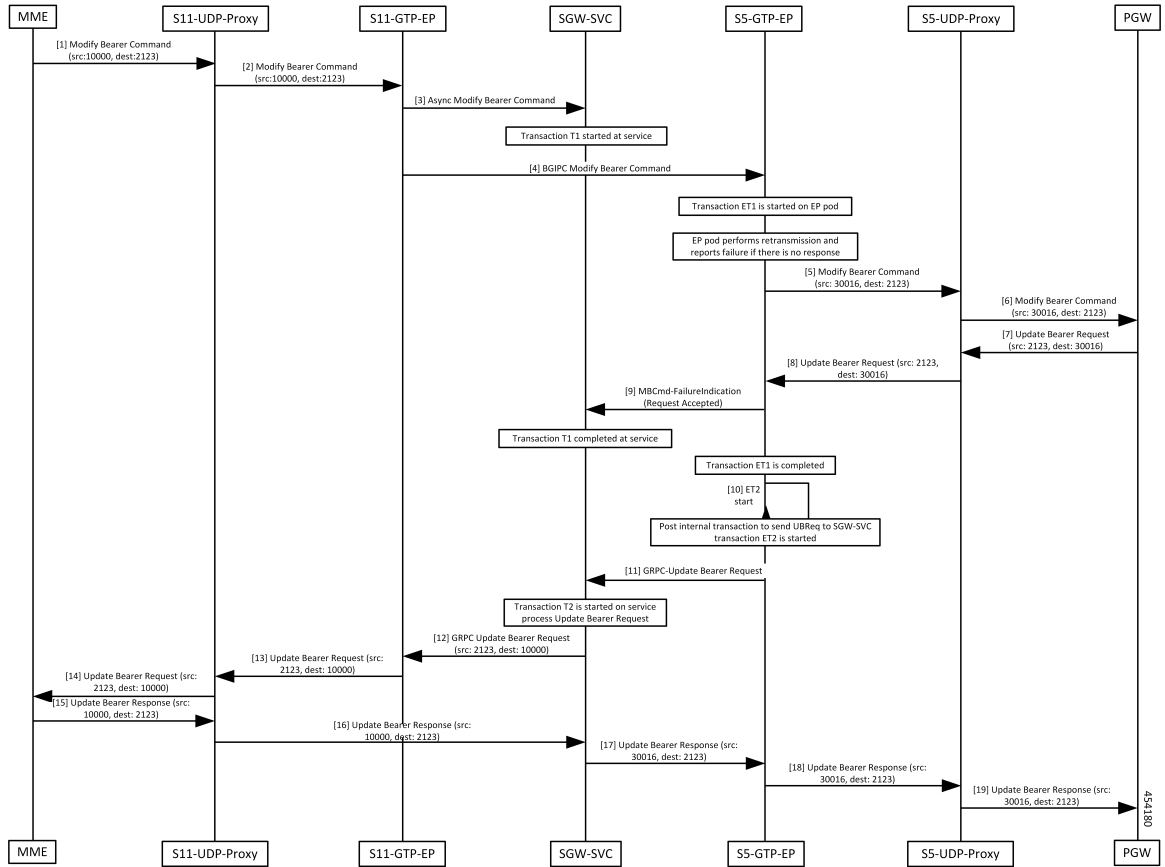


Table 4: MBC Success Handling Call Flow Description

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

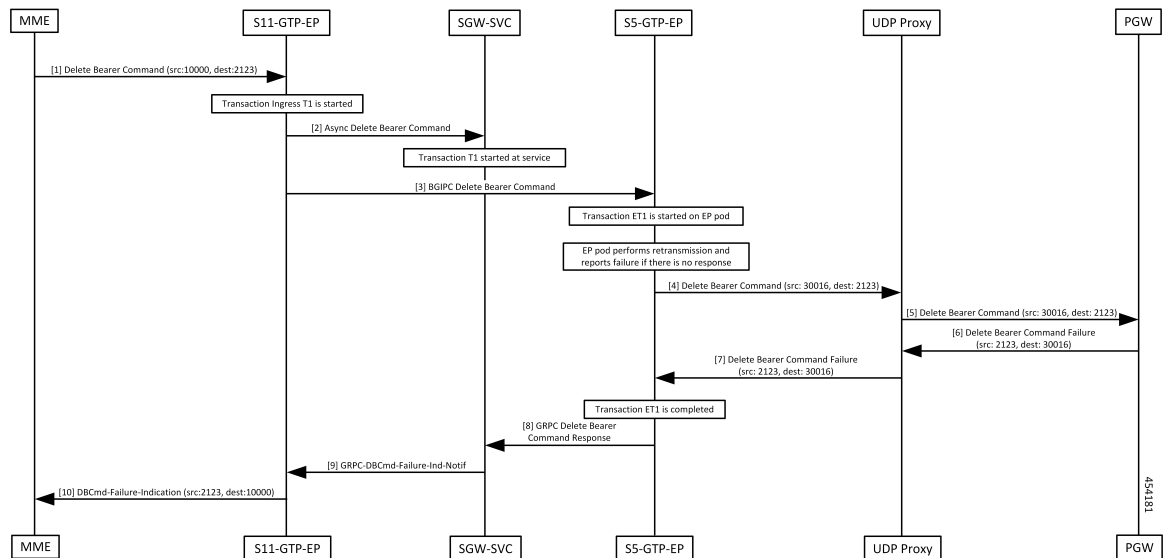


Table 5: DBC Failure Handling Call Flow Description

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-DBCcmd-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

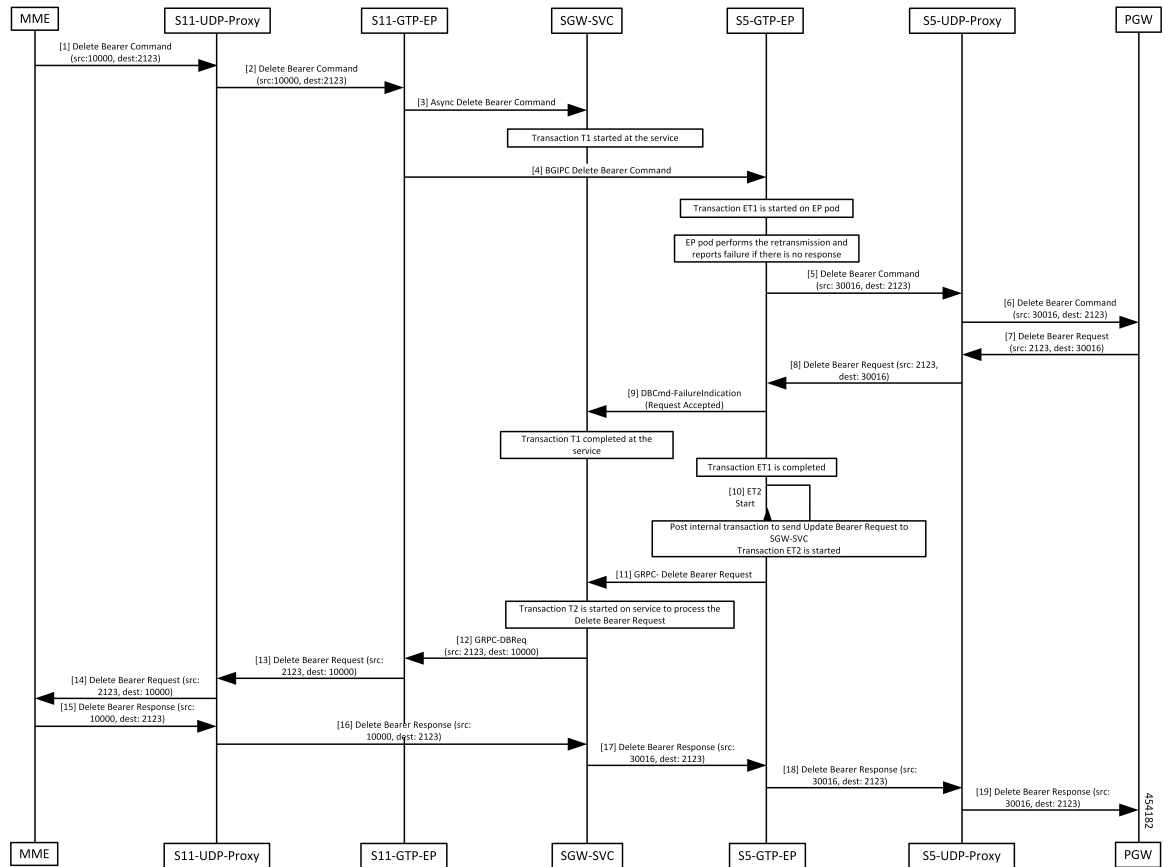


Table 6: DBC Success Handling Call Flow Description

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.