



Event Detail Records

- [Feature Summary and Revision History, on page 1](#)
- [Feature Description, on page 2](#)
- [Configuring EDRs, on page 44](#)
- [OAM Support for EDR Logging, on page 47](#)

Feature Summary and Revision History

Summary Data

Table 1: Summary Data

Applicable Products or Functional Area	SMF
Applicable Platforms	SMI
Feature Default Setting	Disabled - Configuration Required
Related Changes in this Release	Not Applicable
Related Documentation	Not Applicable

Revision History

Table 2: Revision History

Revision Details	Release
Introduced EDR support for PDU session modification procedure for roaming and non-roaming scenarios	2021.02.2
Provided support for event-level EDR generation	2021.02.0
Custom EDR Generation	2021.01.0

Feature Description

Event Data Records (EDRs) collect information that you can use to perform the following functions:

- Debug or understand the application behavior
- Diagnose the call flow for the specific subscribers

The SMF supports logging of EDRs for both 4G and 5G subscriber sessions including non-roaming and roaming sessions. If the EDR Support feature is enabled, then in a roaming scenario, hSMF and vSMF generate EDRs for PDU session establishment and release procedures. The SMF generates EDR files in comma-separated value (CSV) format. The SMF stores one CSV record per line. The CSV files can be optionally compressed before sending to an external server.

The SMF treats a request message and response message as one EDR event record. For example, N11SmContextCreateReq and N11SmContextCreateResp attributes are logged as an EDR event.

The SMF supports EDR file generation for transaction and transaction-collision level details for subscriber sessions. By default, the EDR generation is disabled.

In release 2021.02.0, the SMF generates EDRs with procedure-level details, event-level details, and field-level details. These granular details help in debugging errors and issues.

EDR Format

In addition to the existing Transaction EDR fields, the application appends procedure-id and event-id along with the respective field values. Application registers the procedure-id, event-id, and field-id along with the corresponding names. This mapping is used to format the CSV event entry in the EDR. Each event entry consists of comma-separated procedure-id, event-id, and field-value. These registered mappings can also be used in CLI commands to disable EDRs at procedure, event, or field level. You can enable or disable the EDRs dynamically during runtime. The existing EDR records remain the same and the runtime changes get reflected only in the newly generated EDR records.

Transaction EDR Format

Transaction-EDR-Fields, list of event-entries []

Event Entries

Procedure-id1, Event-id1, list of field-id1-values []

The following is a sample transaction entry along with a list of events in the CSV format.

```
Transaction-id-value, Start-Time, Elapsed-Time, .....,
Procedure-id1, event-id1, field-id1-value, field-id2-value.....,
Procedure-id1, event-id2, field-id1-value, field-id2-value.....,
Procedure-id1, event-id3, field-id1-value, field-id2-value.....
```



Note There might be different set of fields for a combination of procedure-id and event-id. You can enable or disable the EDRs dynamically during runtime by using a CLI command. For configuration details, see the [Configure EDR Files for Generation, on page 45](#) section in this guide.

EDR File Storage Location

The EDR file is generated in each SMF service pod where the subscriber sessions and events are processed. The location of the EDR files inside pod is as follows:

```
/tmp/edr/smf-service/<pod-instance>/transactions.csv
```

```
/tmp/edr/smf-service/<pod-instance>/transaction_collisions.csv
```

Example:

```
/tmp/edr/smf-service/1/transactions.csv
```

```
/tmp/edr/smf-service/1/transaction_collisions.csv
```

EDR Transaction File

The EDR transaction file dumps the transaction information at the end of the transaction. By default, the file generation is disabled.

The following table provides the information that is stored in the file.

Table 3: EDR Transaction File Fields

Field Number	Field Name	Field Description
1	Transaction ID	Transaction ID
2	Start Time	The transaction start time in yyyy/MM/dd HH:mm:ss.SSS format.
3	Elapsed Ms	The time taken for transaction to end in milliseconds.
4	Subscriber ID	The subscriber ID. For example, imsi-123456789012345
5	Transaction Type	The transaction type (integer) which is defined internally in the application.
6	Transaction Description	The transaction description in string format.
7	Session Primary Key	The primary key of the session.
8	Session Unique Keys	The unique keys for the session separated by .
9	Session Non Unique Keys	The non-unique keys for the session separated by .
10	Status	The transaction status (success or error).
11	Status Code	The transaction status code to indicate the failure reason.
12	Procedure Name	The procedure name for which the transaction is submitted.

Field Number	Field Name	Field Description
13	Sub Procedure Name	The sub procedure name for which the transaction is submitted.
14	State	The transaction state. It can be: <ul style="list-style-type: none"> • Started • New • Ready • Active • Pending • Suspend • SuspendWaitingForResponse • SuspendWaitingForLock • Abort • Finished • Timeout • Unknown
15	Execution stages	The list of stages the transaction went through its lifecycle separated by

NOTES:

- Each field is separated by comma (,).
- Fields session_uks, session_nuks, execution_stages are a list. These fields are separated by pipe (|). For example, session_uks is denoted as uk1|uk2|uk3.

CSV Format Examples:

```
1,2020/10/06 16:56:09.276,161,imsi-123456789012345,7,N1SmContextCreateReq,
imsi-123456789012345:5,,supi:imsi-123456789012345|gpsi:msisdn-9999988888|pei:
imei-1234567866666660|udm:209.165.202.152|dnn:intershat|rat:nr|access:3gpp access|
connectivity:5g|policy:1,success,success,PDU Session Establishment,N1SmContextCreateReq,
Active,init_done|SETUP: Idle|SETUP: Await UDM Registration|SETUP: Await UDM Subscription
Fetch|
SETUP: Await UDM Subscribe for Notification|finished

2,2020/10/06 16:56:09.432,659,imsi-123456789012345,106,NIntSelfTxnPduSetup,
imsi-123456789012345:5,33554442,supi:imsi-123456789012345|gpsi:msisdn-9999988888|pei:
imei-1234567866666660|udm:209.165.202.152|dnn:intershat|rat:nr|access:3gpp access|connectivity:
5g|pcfGroupId:PCF-dnn=intershat;|pcf:209.165.202.152|policy:2|upf:209.165.202.152|upfEpKey:209.165.202.152:
209.165.202.154|ipv4-addr:poolv4/209.165.201.1|ipv4-pool:poolv4|ipv4-range:poolv4/209.165.201.1|ipv4-startrange:
poolv4/209.165.201.1|amf:209.165.202.152,success,success,unknown,unknown,Active,init_done|SETUP:

Await PCF Internal|SETUP: Await PCF Create|SETUP: Await Address Allocation|SETUP:
Await PCF Update|SETUP: Await Charging Create|SETUP: Await UPF Setup|SETUP:
Await Assign Ebi Response|SETUP: Await N1 N2|finished
```

```
3,2020/10/06 16:56:10.151,167,imsi-123456789012345,10,N11SmContextUpdateReq,
imsi-123456789012345:5,33554442,supi:imsi-123456789012345|gpsi:msisdn-9999988888|pei:
imei-1234567866666660|udm:209.165.202.152|dnn:intershat|rat:nr|access:3gpp access|connectivity:
5g|pcfGroupId:PCF-dnn=intershat;|pcf:209.165.202.152|policy:2|upf:209.165.202.152|
upfEpKey:209.165.202.152:209.165.202.154|ipv4-addr:poolv4/209.165.201.1|ipv4-pool:poolv4|
ipv4-range:poolv4/209.165.201.1|ipv4-startrange:poolv4/209.165.201.1|amf:209.165.202.152,success,success,
PDU Session Establishment,N11SmContextUpdateReq,Active,init_done|SETUP: Await AMF Update|
SETUP: Await UPF Modify|finished
```

```
4,2020/10/06 16:56:12.404,159,imsi-123456789012345,24,N11SmContextReleaseReq,
imsi-123456789012345:5,33554442,supi:imsi-123456789012345|gpsi:msisdn-9999988888|pei:
imei-1234567866666660|udm:209.165.202.152|dnn:intershat|rat:nr|access:3gpp access|connectivity:
5g|pcfGroupId:PCF-dnn=intershat;|pcf:209.165.202.152|policy:2|upf:209.165.202.152|upfEpKey:209.165.202.152:
209.165.202.154|amf:209.165.202.152,success,success,unknown,unknown,Active,init_done|RELEASE:
Idle|
RELEASE: Await UPF Release|RELEASE: Await Resource Release|finished
```

```
5,2020/10/06 16:56:12.563,158,imsi-123456789012345,123,NIntPduReleaseComplete,
imsi-123456789012345:5,,,success,success,PDU Session Release - AMF initiated,
NIntPduReleaseComplete,Active,init_done|RELEASE: Await Internal Charging Terminate|
RELEASE: Await Charging Terminate|RELEASE: Await PCF Delete|finished|finished
```

Procedure-level EDR Generation

The Event Logging feature captures procedure-level information per subscriber. Upon completing a procedure, either successfully or unsuccessfully, the SMF generates event data records capturing the details of procedures and events.

The EDR generation per procedure is configurable. For configuration details, see the [Configure EDR Files for Generation, on page 45](#) section in this guide.

The following table lists the supported procedures and the corresponding IDs.

Table 4: Procedure List

Procedure	Procedure-ID
PDN-SESSION-CREATE or PDU-SESSION-CREATE	3
PDN-SESSION-DELETE or PDU-SESSION-DELETE	4
PDN-SESSION-MODIFY	5



Note The procedure IDs remain the same for both roaming and non-roaming procedures.

Further, the SMF captures event-level information per procedure. The following table provides details on the subscriber events and the respective event IDs.

The events captured per procedure are configurable. For configuration details, see the [Configure EDR Files for Generation, on page 45](#) section in this guide.

Table 5: Event IDs

EVENT	EVENT-ID	Applicability of Events to Procedures		
		Create	Release	Modify
N11SmContextCreateReq	1287	Yes	—	—

EVENT	EVENT-ID	Applicability of Events to Procedures		
		Create	Release	Modify
N11SmContextUpdateReq	1290	Yes	Yes	Yes
N11N1N2MessageTransferReq	1299	Yes	Yes	Yes
N11SmContextUpdateModifyReq	1293	—	—	—
N11EbiAssignmentReq	1302	Yes	—	Yes
N11SmContextReleaseReq	1304	—	Yes	—
N11SmContextStatusNotifyReq	1310	—	Yes	—
N11N1N2MessageTransferFailNotificationReq	1339	—	Yes	Yes
N4SessionModificationReq	527	Yes	Yes	Yes
N4SessionReleaseReq	530	Yes	Yes	—
N4SessionEstablishmentReq	524	Yes	—	—
N7SmPolicyCreateReq	3329	Yes	—	—
N7SmPolicyDeleteReq	3335	Yes	Yes	—
N7SmPolicyUpdateReq	3332	Yes	—	Yes
N7SmPolicyTerminateNotifyReq	3341	—	Yes	—
N7SmPolicyUpdateNotifyReq	3338	—	—	Yes
N10UnsubscribeForNotificationReq	1432	—	Yes	—
N10SubscribeForNotificationReq	1319	Yes	—	—
N10RegistrationRequest	1313	Yes	—	—
N10SubscriptionFetchReq	1316	Yes	—	—
N10DeregistrationRequest	1325	Yes	Yes	—
S5S8DeleteBearerCmd	2066	—	—	—
N10UpdateNotifyReq	1322	—	Yes	Yes
N40ChargingDataCreateReq	1003	Yes	—	—
N40ChargingDataUpdateReq	1004	—	—	Yes
N40ChargingDataReleaseReq	1005	—	Yes	—
N40ChargingNotificationReq	3588	Yes	—	Yes
SecondaryAuthenReq	2307	Yes	—	—
S5S8CreateSessReq	2051	Yes	—	—
S5S8DeleteBearerReq	2057	—	Yes	—
S5S8DeleteSessReq	2055	—	Yes	—
RadiusCoaDisconnectReq	2313	—	Yes	—

EVENT	EVENT-ID	Applicability of Events to Procedures		
		Create	Release	Modify
RadiusAcctReq	2309	Yes	Yes	Yes
metaData	1000	Yes	Yes	Yes
N16PduSessionCreateReq	1444	Yes	—	—
N16VsmfPduSessionReleaseReq	1471	Yes	Yes	—
N16PduSessionHsmfUpdateReq	1447	Yes	Yes	Yes
N16PduSessionHsmf UpdateReqClient	1477	Yes	Yes	Yes
N16VsmfPduSessionCreateReq	1468	Yes	—	—
N16PduSessionVsmfUpdateReq	1451	Yes	Yes	Yes
N16PduSessionNotifyReq	1458	—	Yes	—
N11SmContextRetrieveReq	1307	—	Yes	—
N16PduSessionVsmf UpdateReqClient	1478	Yes	Yes	Yes
N16PduSessionNotifyReqClient	1488	—	Yes	—
NInternalTxnMsg ¹	1001 (xxxx)	Yes	Yes	Yes
NTimerNotificationMsg ¹	1002 (xxxx)	Yes	Yes	Yes

¹ - SMF uses several internal messages for handling 3GPP call flows. These internal events are sent and received by SMF and are not 3GPP compliant. NInternalTxnMsg and NTimerNotificationMsg are two generic event IDs defined to represent such internal messages used by SMF. The **xxxx** in the Event IDs represent the original message type that is used by SMF internally for easy debuggability.

The SMF uses N40ChargingDataCreateReq, N40ChargingDataUpdateReq, and N40ChargingDataReleaseReq instead of N40ChargingDataReq for PDU/PDN create and release.

The following tables list the detailed event record for the PDU Session Create, Modify, and Delete procedures.

Table 6: PDU Session Create Events

Number	Attributes		Name	Presence	Type	Description
	TXN EDR fields			M		
1	PROCEDURE ID	EVENT-ID	VERSION	M		Event=N11Sm Context CreateReq
			FIELD-COUNT	M		
			SUPI	M		
			IMEI/PEI	M		
			IMSI	M		
			MSISDN	M		

Number	Attributes		Name	Presence	Type	Description
			GPSI	M		
			STATUS	M		
			STATUS-CODE	O		
			N1-REQ-PDU(PDN)-SESSION-TYPE	O	PduSessionType	
			N1-REQ-SSC-MODE	O		
			CAUSE	O		
			N1-PCO	O	PCO	
			N1-REQ-MSG-TYPE	O	N1N2MSG REQCONIENT	PDU-SESSION- ESTB-REQUEST
			N2-REQ-MSG-TYPE	O	N1N2MSG REQCONIENT	
			N1-RSP-MSG-TYPE	O	N1N2MSG RSPCONIENT	
			N2-RSP-MSG-TYPE	O	N1N2MSG RSPCONIENT	
			N1-REQ-MAX-SUPP-FILTERS	O		
			N1-ALWAYS-ON	O		
			RAT-TYPE	M		
			S-NSSAI-REQUESTED	O	NSSAI	
			GUAMI	O		
			REQUEST-TYPE	O		
			AN-TYPE	O		
			OLD-PDU-SESS-ID	O		
			N1-DNN/APN	O		
			SERVING-NFID	O		
			SERVING-PLMN	O		
			UNAUTH-SUPI	O		
			S-NSSAI-ASSIGNED	O	NSSAI	
			UP-CONTEXT-STATE	O		
			N1-PDU-SESS-ID	M	NA	
2	PROCEDURE ID	EVENT-ID	VERSION	M	Client	Event=N11Sm ContextUpdateReq

Number	Attributes		Name	Presence	Type	Description
			FIELD-COUNT	M		
			STATUS	M		
			STATUS-CODE	O		
			SUPI	M		
			IMEI	M		
			IMSI	M		
			MSISDN	M		
			PDU(PDN)- SESSION-TYPE	O		
			N1-REQ-MSG-TYPE	O	N1N2MSG REQCONIENT	pdu_session_ modification_request pdu_sess_ modification_command pdu_session_release_req pdu_session_ release_command pdu_session_ release_complete pdu_session_ modification_reject pdu_session_ modification_complete pdu_session_ release_reject
			N2-REQ-MSG-TYPE	O	N1N2MSG REQCONIENT	

Number	Attributes		Name	Presence	Type	Description
			N1-RSP-MSG-TYPE	O	N1N2MSG RSPCONIENT	pdu_session_ modification_request pdu_sess_ modification_command pdu_session_release_req pdu_session_ release_command pdu_session_ release_complete pdu_session_ modification_reject pdu_session_ modification_complete pdu_session_ release_reject
			N2-RSP-MSG-TYPE	O	N1N2MSG RSPCONIENT	
			N1-PCO	NA	PCO	
			N1-QOS-RULE	O	QOS-RULE	
			N1-QOS-DESC	O	QOS-DESC	
			CAUSE	O		
			N1-ALWAYS-ON	O		
			5G-SM-CAP	O		
			N1-RSP-MAX- SUPP-FILTERS	O		
			RAT-TYPE	O		
			UP-CONTEXT-STATE	O		
			HO-STATE	O		
			N1-BACKOFF-TIME	NA		
			N1-PDU-SESS-ID	M		
			N1-VGSM-RE- ATTEMPT-IND	NA		
			N1-RE-ATTEMPT-IND	NA		
			N1-SESS-AMBR	O		
			N1-CONG-RE- ATTEMPT-IND	O		

Number	Attributes		Name	Presence	Type	Description
			N1-RSP-ALWAYS-ON	NA		
3	PROCEDURE ID	EVENT-ID	VERSION	M		Event=N11N1N2 MessageTransferReq
			FIELD-COUNT	M		
			STATUS	M		
			STATUS-CODE	O		
			PDU-SESSION-TYPE	M		
			N1-REQ-MSG-TYPE	O	N1N2MSG REQCONTIENT	PDU-SESSION- ESTB-ACCEPT PDU-SESSION- ESTB-REJECT etc., PDU_SESSION_ RELEASE_COMMAND PDU_SESSION_ MODIFICATION_COMMAND
			N2-REQ-MSG-TYPE		N1N2MSG REQCONTIENT	
			N1-RSP-MSG-TYPE	O	N1N2MSG REQCONTIENT	
			N2-RSP-MSG-TYPE		N1N2MSG RSPCONTIENT	
			N1-PCO	O	PCO	
			N1-QOS-RULE	O	QOS-RULE	
			N1-QOS-DESC	O	QOS-DESC	
			CAUSE	O		
			N1-ALWAYS-ON	O		
			N1-SESSION-AMBR	O	SESS-AMBR	
			N1-PAA	O	PAA	
			N1-S-NSSAI	O	NSSAI	
			N1-PDU-SESS-ID			
			N1-DNN/APN	O		
			N1-BACKOFF-TIME	NA		
			N1-REQ-SSC- MODE-SELECTED	O		

Number	Attributes		Name	Presence	Type	Description
			N1-REQ-PDU(PDN)-SESSION-TYPE-SELECTED	O		
			N1-SSC- MODE-ALLOWED	O		
			N1-CONG-RE-ATTEMPT- IND	O		
			N1-RE-ATTEMPT-IND	NA		
			N1-RSP-AN-TYPE	NA		
4	PROCEDURE ID	EVENT-ID	VERSION	M		Event=N7SmPolicyCreateReq
			FIELD-COUNT	M		
			SUPI	M		
			IMEI/PEI	M		
			GPSI	M		
			STATUS	M		
			STATUS-CODE	O		
			PDU(PDN)-SESSION-TYPE	O		
			QOS-DESC	O	QOS-DESC	
			SESSION-AMBR	O	SESS-AMBR	
			CAUSE	O		

Number	Attributes		Name	Presence	Type	Description
5	PROCEDURE ID	EVENT-ID	VERSION	M		EVENT= N4SessionModificationReq N10DeregistrationRequest N7SmPolicyUpdateReq N10SubscriptionFetchReq N10UnsubscribeForNotificationReq SecondaryAuthenReq N10SubscribeForNotificationReq N40ChargingDataCreateReq N40ChargingDataUpdateReq N40ChargingDataReleaseReq N7SmPolicyDeleteReq N11EbiAssignmentReq N4SessionEstablishmentReq N4SessionReleaseReq N10RegistrationRequest RadiusAcctReq N11SmContext RetrieveReq
			FIELD-COUNT	M		
			STATUS	M		
			STATUS-CODE	O		
			PDU-SESSION-TYPE	M		
			CAUSE	O		
6	PROCEDURE ID	EVENT-ID	VERSION	M		Event=S5S8CreateSessReq
			FIELD-COUNT	M		
			SUPI	M		
			IMEI/PEI	M		
			IMSI	M		
			MSISDN	M		
			GPSI	M		
			STATUS	M		

Number	Attributes		Name	Presence	Type	Description
			STATUS-CODE	O		
			PCO	O	PCO	
			PDU-SESSION-TYPE	O		
			SSC-MODE	O		
			DNN/APN	O		
			QOS-RULE	O	QOS-RULE	
			QOS-DESC	O	QOS-DESC	
			SESSION-AMBR	O	SESS-AMBR	
			CAUSE	O		
			PAA	O	PAA	
			S-NSSAI	O	NSSAI	
			RAT-TYPE	M		
7	PROCEDURE ID	EVENT-ID	VERSION	M		Event=N16Pdu SessionCreateReq N16VsmfPdu SessionCreateReq
			FIELD-COUNT	M		
			SUPI	O		
			IMEI/PEI	O		
			GPSI	O		
			GUAMI	O	GUAMI	
			REQUEST-TYPE	M	RequestType	
			STATUS	M		
			STATUS-CODE	O		
			PDU/PDN-SESSION-TYPE	O	PduSessionType	
			DNN/APN	M		
			RAT-TYPE	O		
			S-NSSAI	O	NSSAI	
			SERVING-PLMN	M	PLMN-ID	
			VSMF-ID	M		
			VCNTUNNEL-INFO	M	TUNNEL-INFO	
			HO-PREP-INDICATION	O		

Number	Attributes		Name	Presence	Type	Description
			PGW-S8-CFTEID	O		
			ALWAYSONREQUESTED	O		
			UE-LOCATION	O	UELOCATION	
			ROAMING-CHRG-PROF-REQUESTED	O	CHARGING-PROF	
			ALWAYSONGRANTED	O		
			SSC-MODE	O		
			HCNTUNNEL-INFO	M	TUNNEL-INFO	
			SESSION-AMBR	O	SESS-AMBR	
			UE-IPV4-ADDRESS	O		
			UE-IPV6-PREFIX	O		
			QOS-FLOWS-SETUP-LIST	O	QFS	
			ROAMING-CHRG-PROF-SELECTED	O	CHARGING-PROF	
			CAUSE	O		
			N1SM-CAUSE	O		
			UE-IPV6-INTERFACE-ID	O		
			N1-REQ-MSG-TYPE	O		PDU_SESSION_ESTABLISHMENT_REQ
			N2-REQ-MSG-TYPE	O		
			N1-RSP-MSG-TYPE	O		PDU_SESSION_ESTABLISHMENT_ACCEPT
			N2-RSP-MSG-TYPE	O		
			N1-PDU-SESS-ID			
			N1-REQ-PDU(PDN)-SESSION-TYPE			
			N1-REQ-SSC-MODE			
			N1-PCO			
			N1-REQ-MAX-SUPP-FILTERS			
			N1-ALWAYS-ON			
			N1-REQ-PDU(PDN)-SESSION-TYPE-SELECTED			

Number	Attributes		Name	Presence	Type	Description
			N1-REQ-SSC-MODE-SELECTED			
			N1-QOS-RULES			
			N1-QOS-DESC			
			N1-SESS-AMBR			
			N1-REQ-ALWAYS-ON			
			N1-REQ-SSC-MODE-ALLOWED			
			N1-CONG-RE-ATTEMPT-IND			
			N1-RSP-RE-ATTEMPT-IND			
			N1-DNN/APN			
8	PROCEDURE ID	EVENT-ID	VERSION	M		Event= N16VsmfPduSessionReleaseReq
			FIELD-COUNT	M		
			STATUS	M		
			STATUS-CODE	O		
			CAUSE	O		
			VGMM-CAUSE	O		
			NGAP-CAUSE	O	NGAP-CAUSE	
9	PROCEDURE ID	EVENT-ID	VERSION			Event= N16PduSessionVsmfUpdateReq N16PduSessionVsmfUpdateReqClient
			FIELD-COUNT	M		
			STATUS			
			STATUS-CODE			
			REQUEST-INDICATION		N1N2MSGREQCONIENT	
			SESSION-AMBR		N1N2MSGREQCONIENT	
			ALWAYS-ON-GRANTED		Request Indication	
			CAUSE		SESS-AMBR	

Number	Attributes		Name	Presence	Type	Description
			N1SM-CAUSE			
			BACKOFF-TIMER			
			N1-REQ-MSG-TYPE	O		PDU_SESSION_MODIFICATION_COMMAND PDU_SESSION_MODIFICATION_COMMAND_REJECT
			N1-RSP-MSG-TYPE			PDU_SESSION_MODIFICATION_COMMAND PDU_SESSION_MODIFICATION_COMMAND_REJECT PDU_SESSION_MODIFICATION_REJECT
			N1-PCO	O		
			N1-QOS-RULE	O		
			N1-QOS-DESC	O		
			N1-PDU-SESS-ID	O		
			N1-ALWAYS-ON	O		
			N1-SESSION-AMBR	O		
10	PROCEDURE ID	EVENT-ID	VERSION	M		Event= N16PduSessionHsmfUpdateReq N16PduSessionHsmfUpdateReqClient
			FIELD-COUNT	M		
			STATUS	M		
			STATUS-CODE	O		
			IMEI/PEI	O		
			REQUEST-INDICATION	M	Request Indication	
			VCNTUNNEL-INFO	O	TUNNEL-INFO	
			SERVING-PLMN	O		

Number	Attributes		Name	Presence	Type	Description
			AN-TYPE	O	AccessType	
			RAT-TYPE	O		
			HO-PREP-INDICATION	O		
			CAUSE	O		
			VGMM-CAUSE	O		
			NGAP-CAUSE	O	NGAP -CAUSE	
			ALWAYS-ON	O		
			EPS-IWK	O		
			AN-TYPE-CAN- BE-CHANGED	O		
			UE-LOCATION	O	UE- LOCATION	
			N1-REQ-MSG-TYPE	O		PDU_SESSION_ MODIFICATION_REQUEST PDU_SESSION_ RELEASE_REQUEST
			N1-RSP-MSG-TYPE	O		
			N1-PDU-SESS-ID	O		
			N1-PCO	O		
			N1-RSP-MAX -SUPP-FILTERS	O		
			N1-REQ-ALWAYS-ON	O		
			N1-QOS-RULES	O		
			N1-QOS-DESC	O		
11	PROCEDURE ID	EVENT-ID= 1000	VERSION	M		Event=META DATA
			FIELD-COUNT	M		
			SUPI	M		
			IMEI/PEI	M		
			IMSI	M		
			MSISDN	M		
			GPSI			
			SERVING-PLMN	M		

Number	Attributes		Name	Presence	Type	Description
			UE-LOCATION	M	UELOCATION	
			START-TIME	M		
			END-TIME	M		
			TRIGGER-NF	M		
			TRIGGER-EVENT	M		
			USERPLANE-STATUS	M	Userplane-status	
			CAUSE	M		
			SGW-ID	O		
			DISCONNECT-REASON	O		
			STATUS	M		
			STATUS-CODE	O		
			DNN/APN	M		
			RAT-TYPE	M		
			UE-TIMEZONE	M		
			PDU-SESSION-TYPE	M		
			UE-PLMN	M		
			SUBSCRIBED-SESS-AMBR-UPLINK	M		
			SUBSCRIBED-SESS-AMBR-DOWNLINK	M		
			SUBSCRIBED-5QI	M		
			SUBSCRIBED-ARP	M		
			PAA	M		
			LOCAL-SEID	M		
			REMOTE-SEID	M		
			ROAMING-STATUS	M		
			CONNECTION-TIME	M	NA	NA
			PDU-SESSION-ID	O		
			ALWAYS-ON	O		
			EPS-IWK	O		
			S-NSSAI	O		
			MAX-SUPP-FILTERS	O		
			SSC-MODE	O		

Number	Attributes		Name	Presence	Type	Description
			UE-TYPE	O		
			LOCAL-CFTEID-TEID	O		
			LOCAL-CFTEID-IP	O		
			REMOTE-CFTEID-TEID	O		
			REMOTE-CFTEID-IP	O		
			VIRTUAL-DNN/APN	O		

Table 7: PDU Session Modify Events

Attributes		Name	Presence	Description
TIME-STAMP	EVENT-ID1=1290	PROCEDURE-ID	M	N11SmContextUpdateReq
EVENT-LIST		VERSION	M	PduSessionModificationRequest (MESSAGE-ID=201) 5G-SM-CAP MAX-SUPP-FILTERS PCO ALWAYS-ON QOS-RULE QOS-DESC CAUSE
		FIELD-COUNT	M	
		STATUS	M	
		STATUS-CODE	O	
		SUPI	M	
		IMEI	M	
		IMSI	M	
		MSISDN	M	
		PDU(PDN)-SESSION-TYPE	O	
		N1-REQ-MSG-TYPE	O	N1N2MSGREQCONTENT
		N2-REQ-MSG-TYPE	O	N1N2MSGREQCONTENT
		N1-RSP-MSG-TYPE	O	N1N2MSGRSPCONTENT
		N2-RSP-MSG-TYPE	O	N1N2MSGRSPCONTENT

Attributes		Name	Presence	Description
		N1-PCO	Not applicable*	PCO
		N1-QOS-RULE	O	QOS-RULE
		N1-QOS-DESC	O	QOS-DESC
		CAUSE	O	
		N1-ALWAYS-ON	O	
		5G-SM-CAP	O	
		N1-RSP-MAX-SUPP-FILTERS	O	
		RAT-TYPE	O	
		UPCONIEXTSTATE	O	
		HO-STATE	O	
		N1-BACKOFF-TIME	Not applicable*	
		N1-PDU-SESS-ID	M	
		N1-VGSM-RE-ATTEMPT-IND	Not applicable*	
		N1-RE-ATTEMPT-IND	Not applicable*	
		N1-SESS-AMBR	O	
		N1-CONG-RE-ATTEMPT-IND	O	
		N1-RSP-ALWAYS-ON	O	
	EVENT-ID3=3332	PROCEDURE-ID	M	N10UpdateNotifyReq
		VERSION	M	
		FIELD-COUNT	M	
		STATUS	M	
		STATUS-CODE	O	
		SUPI	M	
		CAUSE	O	
	EVENT-ID4=1299	PROCEDURE-ID	M	N11N1N2MessageTransferReq

Attributes		Name	Presence	Description
		FIELD-COUNT	M	
		STATUS	M	
		STATUS-CODE	O	
		PDU-SESSION-TYPE	M	
		N1MSGREQTYPE	O	N1N2MSGREQCONTENT
		N2MSGREQTYPE	O	N1N2MSGREQCONTENT
		N1-PCO	O	PCO
		N1-QOS-RULE	O	QOS-RULE
		N1-QOS-DESC	O	QOS-DESC
		CAUSE	O	
		N1-ALWAYS-ON	O	
		NI-SESSION-AMBR	O	SESS-AMBR
		N1-PAA	O	PAA
		N1-S-NSSAI	O	NSSAI
		N1-PDU-SESS-ID		
		N1-DNN/APN	O	
		NI-BACKOFF-TIME	Not applicable*	
		N1-REQ-SSC-MODE-SELECTED	O	
		N1-REQ-SSC-TIME-SELECTED	O	
		N1-SSC-MODE-ALLOWED	O	
		N1-CONG-RE-ATTEMPT-IND	O	
		N1-RSP-RE-ATTEMPT-IND	Not applicable*	
		N1-RSP-AN-TYPE	Not applicable*	
PROCEDURE ID	EVENT-ID	VERSION	M	Event=N16PduSessionHsmfUpdateReq, N16PduSessionHsmfUpdateReqClient,
		FIELD-COUNT	M	
		STATUS	M	
		STATUS-CODE	O	

Attributes		Name	Presence	Description
		IMEI/PEI	O	
		REQUEST-INDICATION	M	RequestIndication
		VCNTUNNEL-INFO	O	TUNNEL-INFO
		SERVING-PLMN	O	
		AN-TYPE	O	AccessType
		RAT-TYPE	O	
		HO-PREP-INDICATION	O	
		CAUSE	O	
		VGMM-CAUSE	O	
		NGAP-CAUSE	O	NGAP-CAUSE
		ALWAYS-ON	O	
		EPS-IWK	O	
		ALWAYS-ON-GRANTED	O	
		N1-PDU-SESS-ID	O	
		N1-PCO	O	
		N1-RSP-MAX-SUPP-FILTERS-REQUESTED	O	
		N1-ALWAYS-ON	O	
		N1-QOS-RULES	O	
		N1-QOS-DESC	O	
PROCEDURE ID	EVENT-ID	VERSION		Event=N16PduSessionVsmfUpdateReq N16PduSessionVsmfUpdateReqClient
		FIELD-COUNT	M	
		STATUS		
		STATUS-CODE		
		REQUEST-INDICATION		N1N2MSGREQCONTENT
		SESSION-AMBR		N1N2MSGREQCONTENT
		ALWAYS-ON-GRANTED		RequestIndication
		CAUSE		SESS-AMBR

Attributes		Name	Presence	Description
		N1SM-CAUSE		
		BACKOFF-TIMER		
		NI-REQ-MSG-TYPE	O	PDU_SESSION_ MODIFICATION_COMMAND PDU_SESSION_MODIFICATION_ COMMAND_REJECT
		NI-RSP-MSG-TYPE		PDU_SESSION_ MODIFICATION_COMMAND PDU_SESSION_MODIFICATION_ COMMAND_REJECT PDU_SESSION_MODIFICATION_REJECT
		N1-PCO	O	
		N1-QOS-RULE	O	
		N1-QOS-DESC	O	
		N1-PDU-SESS-ID	O	
		N1-ALWAYS-ON	O	
		NI-SESSION-AMBR	O	
	EVENT-ID	PROCEDURE-ID	M	N4SessionModificationReq N40ChargingNotificationReq N11N1N2MessageTransferFailNotificationReq RadiusAcctReq N40ChargingDataCreateReq N40ChargingDataUpdateReq N40ChargingDataReleaseReq N11EbiAssignmentReq N7SmPolicyUpdateNotifyReq N7SmPolicyUpdateReq
		VERSION	M	
		FIELD-COUNT	M	
		STATUS	M	
		STATUS-CODE	O	
		PDU-SESSION- TYPE	O	
		CAUSE	O	

Attributes		Name	Presence	Description
	EVENT-ID1= 1000	PROCEDURE-ID	M	META-DATA
		VERSION	M	
		FIELD-COUNT	M	
		SUPI	M	
		IMEI	M	
		IMSI	M	
		MSISDN	M	
		GPSI	M	
		SERVING-PLMN	M	
		UE-LOCATION	M	
		START-TIME	M	
		END-TIME	M	
		TRIGGER-NF	M	
		TRIGGER-EVENT	M	
		USERPLANE-STATUS	M	
		SGW-ID	O	
		DISCONNECT-REASON	Not applicable*	
		STATUS	M	
		SUBSCRIBED-SESS-AMBR-UPLINK	M	
		SUBSCRIBED-SESS-AMBR-DOWNLINK	M	
		ALWAYS-ON	O	
		MAX-SUPP-FILTERS	O	
		LOCAL-CFTEID-TED	O	
		LOCAL-CFTEID-IP	O	
		REMOTE-CFTEID-TED	O	
		REMOTE-CFTEID-IP	O	

* - The field is not applicable to this procedure for the stated event. However, it still holds a place holder in the EDR. Where it is not applicable, the field is left empty.

Table 8: PDU Session Delete Events

Number	Attributes	Event ID	Name	Presence	Type	Description
	TXN EDR fields			M		
1	PROCEDURE ID	EVENT ID	VERSION	M		EVENT=N11SmContextReleaseReq, N40ChargingDataReleaseReq, N7SmPolicyDeleteReq, N10UnsubscribeForNotificationReq, N10DeregistrationRequest, N7SmPolicyTerminateNotifyReq, N40ChargingNotificationReq, RadiusCoaDisconnectReq, RadiusAcctReq, N7SmPolicyTerminateNotifyReq, N40ChargingNotificationReq, N10UpdateNotifyReq, N11SmContextStatusNotifyReq, N11N1N2MessageTransferFailNotificationReq
			FIELD-COUNT	M		
			STATUS	M		
			STATUS-CODE	O		
			PDU(PDN)SESSION-TYPE	M		
			CAUSE	O		
2	PROCEDURE ID	EVENT ID	VERSION	M	Client	Event=N11SmContextUpdateReq
			FIELD-COUNT	M		
			STATUS	M		
			STATUS-CODE	O		
			SUPI	M		
			IMEI	M		
			IMSI	M		
			MSISDN	M		
			PDU(PDN)SESSION-TYPE	O		

Number	Attributes		Name	Presence	Type	Description
			N1-REQ-MSG-TYPE	O	N1N2MSG REQCONTENT	pdu_session_modification_request pdu_sess_modification_command pdu_session_release_req pdu_session_release_command pdu_session_release_complete pdu_session_modification_reject pdu_session_modification_complete pdu_session_release_reject
			N2-REQ-MSG-TYPE	O	N1N2MSG REQCONTENT	
			N1-RSP-MSG-TYPE	O	N1N2MSG RSPCONTENT	pdu_session_modification_request pdu_sess_modification_command pdu_session_release_req pdu_session_release_command pdu_session_release_complete pdu_session_modification_reject pdu_session_modification_complete pdu_session_release_reject
			N2-RSP-MSG-TYPE	O	N1N2MSG RSPCONTENT	
			N1-PCO	NA	PCO	
			N1-QOS-RULE	O	QOS-RULE	
			N1-QOS-DESC	O	QOS-DESC	
			CAUSE	O		
			N1-ALWAYS-ON	O		
			5G-SM-CAP	O		
			N1-RSP-MAX-SUPP-FILTERS	O		
			RAT-TYPE	O		
			UP-CONTEXT-STATE	O		
			HO-STATE	O		
			N1-BACKOFF-TIME	NA		
			N1-PDU-SESS-ID	M		

Number	Attributes		Name	Presence	Type	Description
			N1-VGSM-RE-ATTEMPT-IND	NA		
			N1-RE-ATTEMPT-IND	NA		
			N1-SESS-AMBR	O		
			N1-CONG-RE-ATTEMPT-IND	O		
			N1-RSP-ALWAYS-ON	NA		
3	PROCEDURE ID	EVENT	PROCEDURE-ID	M		Event=N1N2MessageTransferReq
			FIELD-COUNT	M		
			STATUS	M		
			STATUS-CODE	O		
			PDU-SESSION-TYPE	M		
			N1-REQ-MSG-TYPE	O	N1N2MSG REQCONIENT	PDU-SESSION-ESTB-ACCEPT, PDU-SESSION-ESTB-REJECT etc., PDU_SESSION_RELEASE_COMMAND PDU_SESSION_MODIFICATION_COMMAND
			N2-REQ-MSG-TYPE	O	N1N2MSG REQCONIENT	
			N1-RSP-MSG-TYPE		N1N2MSG REQCONIENT	
			N2-RSP-MSG-TYPE		N1N2MSG REQCONIENT	
			N1-PCO	O	PCO	
			N1-QOS-RULE	O	QOS-RULE	
			N1-QOS-DESC	O	QOS-DESC	
			CAUSE	O		
			N1-ALWAYS-ON	O		
			N1-SESSION-AMBR	O	SESS-AMBR	
			N1-PAA	O	PAA	
			N1-S-NSSAI	O	NSSAI	
			N1-PDU-SESS-ID			
			N1-DNN/APN	O		
			N1-BACKOFF-TIME	NA		

Number	Attributes		Name	Presence	Type	Description
			N1-REQ-SSC-MODE-SELECTED	O		
			N1-REQ-PDU(PDN)-SESSION-TYPE-SELECTED	O		
			N1-SSC-MODE-ALLOWED	O		
			N1-CONG-RE-ATTEMPT-IND	O		
			N1-RE-ATTEMPT-IND	NA		
			N1-RSP-AN-TYPE	NA		
4	PROCEDURE ID	EVENT ID	VERSION	M		Event=N16PduSession HsmfUpdateReq N16PduSession HsmfUpdateReqClient
			FIELD-COUNT	M		
			STATUS	M		
			STATUS-CODE	O		
			IMEI/PEI	O		
			REQUEST-INDICATION	M	RequestIndication	
			VCNTUNNEL-INFO	O	TUNNEL-INFO	
			SERVING-PLMN	O		
			AN-TYPE	O	AccessType	
			RAT-TYPE	O		
			HO-PREP-INDICATION	O		
			CAUSE	O		
			VGMM-CAUSE	O		
			NGAP-CAUSE	O	NGAPCAUSE	
			ALWAYS-ON	O		
			EPS-IWK	O		
			AN-TYPE-CAN-BE-CHANGED	O		
			N1-PDU-SESS-ID	O		
			N1-PCO	O		
			N1-RSP-MAX-SUP-FILTERS	O		
			N1-ALWAYS-ON	O		
			N1-QOS-RULES	O		
			N1-QOS-DESC	O		

Number	Attributes		Name	Presence	Type	Description
5	PROCEDURE ID	EMEND	VERSION			Event= N16PduSessionVsmfUpdateReq N16PduSession VsmfUpdateReqClient
			FIELD-COUNT	M		
			STATUS			
			STATUS-CODE			
			REQUEST-INDICATION		N1N2MSG REQCONIENT	
			SESSION-AMBR		N1N2MSG REQCONIENT	
			ALWAYS-ON-GRANTED		Request Indication	
			CAUSE		SESS-AMBR	
			N1SM-CAUSE			
			BACKOFF-TIMER			
			N1-REQ-MSG-TYPE	O		PDU_SESSION_ MODIFICATION_COMMAND PDU_SESSION_ MODIFICATION_ COMMAND_REJECT
			N1-RSP-MSG-TYPE			PDU_SESSION_ MODIFICATION_COMMAND PDU_SESSION_ MODIFICATION_ COMMAND_REJECT PDU_SESSION_ MODIFICATION_REJECT
			N1-PCO	O		
			N1-QOS-RULE	O		
			N1-QOS-DESC	O		
			N1-PDU-SESS-ID	O		
			N1-ALWAYS-ON	O		
			N1-SESSION-AMBR	O		
6	PROCEDURE ID	EMEND	VERSION	M		Event=N16VsmfPdu SessionReleaseReq

Number	Attributes		Name	Presence	Type	Description
			FIELD-COUNT	M		
			STATUS	O		
			STATUS-CODE	O		
			CAUSE	O		
			VGMM-CAUSE	O		
7	PROCEDURE ID	EVENT ID	VERSION	M		Event=N16Pdu SessionNotifyReqClient N16PduSessionNotifyReq
			FIELD-COUNT	M		
			STATUS	M		
			STATUS-CODE	O		
			RESOURCE-STATUS	O	Resourcestatus	
			CAUSE	O		
8	PROCEDURE ID	EVENT ID =1000	VERSION	M		Event= META-DATA
			FIELD-COUNT	M		
			SUPI	M		
			IMSI	M		
			IMEI	M		
			MSISDN	M		
			GPSI			
			SERVING-PLMN	M		
			UE-LOCATION	M		
			START-TIME	M		
			END-TIME	M		
			TRIGGER-NF	M		
			TRIGGER-EVENT	M		
			USERPLANE-STATUS	M		
			CAUSE	M		
			SGW-ID	O		
			DISCONNECT-REASON	O		
			STATUS	M		
			UPDATE-TIME	NA		

For details on the listed attributes, see the table in the [EDR Transaction File, on page 3](#) section.

The following tables list the detailed event record for the SMF DEDICATED BEARER and SMF IDLE-MODE procedures.

Table 9: SMF IDLE-MODE Events

Attributes	Type	Category	Instances	Description
EVENT-ID	string	M	SINGLE	pdn-im
EDR-PROFILE-ID	string	M	SINGLE	from config
VERSION	string	M	SINGLE	from config
NODE-ID	string	M	SINGLE	
SERVICE	string	M	SINGLE	SMF or AMF or PCF or SGW-C or PGW-C
KEY	string	M	SINGLE	IMSI+PDU-SESSION-ID
IMSI	string	M	SINGLE	
OPERATION	string	M	SINGLE	IM ENTRY or IM EXIT
TRIGGER-NF	string	M	SINGLE	smf or amf or upf
TRIGGER-EVENT	string	M	SINGLE	DLDR/ERIR/UPIR/AN-INIT
UE-LOCATION	string	M	SINGLE	mcc-mnc-tac-ncgi or mcc-mnc-tac-ecgi
SERVING-PLMN	string	M	SINGLE	
LOCAL-UFTEID-TEID	integer	O	SINGLE	
LOCAL-UFTEID-IP	string	O	SINGLE	
REMOTE-UFTEID-TEID	integer	O	SINGLE	
REMOTE-UFTEID-IP	string	O	SINGLE	
AMF-ID	string	M	SINGLE	
USERPLANE-STATUS	string	M	SINGLE	activated or deactivated
UPDATE-TIME	string	M	SINGLE	
CAUSE	string	M	SINGLE	
DISCONNECT-REASON	string	O	SINGLE	
N1-MESSAGES	protobuf	O	MULTIPLE	
N2-MESSAGES	protobuf	O	MULTIPLE	
N11-MESSAGES	protobuf	O	MULTIPLE	

NOTES:

- subscribed-sess-ambr-uplink and subscribed-sess-ambr-downlink: These fields are captured in the metadata event for some of the procedures. The values for these fields are printed as saved in pducontext.

Bitrates in the metadata event are without any unit such as bps, kbps, or mbps. The default bitrate is read as bits per second (bps).

- Status: In event METADATA (id = 1000), this field indicates the status of the procedure. For other events, it indicates the type of received response message or intended outgoing response type. The status can be one of the following:
 - Success
 - Failed
 - PartialFailure
 - NoRspValidation: This status is used in case the request is sent in **ASYNC (fire and forget)** mode and the response is neither expected nor processed in SMF.
- Status-code: This field indicates HTTP status-code of the response message. This field should be empty for outgoing response messages as smf-service is unaware of the actual status-code filled by rest-ep. In such cases, the status field indicates the response type that SMF intended to send, such as success or failure response.
- Userplane-status is of type number. The number can be one of the following:
 - UpStateNone = 0
 - UpStateEstablishing = 1 // UPF Session is being established or setup
 - UpStateActivating = 2 // UPF Session is being modified to Activate Access Tunnel
 - UpStateActivated = 3 // UPF Session Active for Access & Core Tunnel
 - UpStateDeactivating = 4 // UPF Session is being modified to Deactivate Access Tunnel
 - UpStateDeactivated = 5 // UPF Session Deactivated for Access, valid Core Tunnel Only
 - UpStateModifying = 6 // UPF Session is being modified for QoS or flow parameters
 - UpStateDeleting = 7 // UPF Session is being Released
 - UpStateDeleted = 8 // UPF Session is Released
- PduSessionType is of type number. The number can be one of the following:
 - UnknownSessionType or Invalid = 0
 - Ipv4PduSession = 1
 - Ipv6PduSession = 2
 - Ipv4V6PduSession = 3
 - Unstructured = 4
 - Ethernet = 5
 - FutureUsePduSessionType = 7
- SSC mode is of type number. The number can be one of the following:
 - UnknownSscMode = 0

- SscMode1 = 1
- SscMode2 = 2
- SscMode3 = 3
- DupSscMode1 = 4
- DupSscMode2 = 5
- DupSscMode3 = 6
- FutureUseSscMode = 7

- Eps Iwk (Type: Number)
 - EpsInterworkingIndication_DummyEnum = 0
 - EpsInterworkingIndication_NONE = 1
 - EpsInterworkingIndication_WITH_N26 = 2
 - EpsInterworkingIndication_WITHOUT_N26 = 3

- Roaming status (Type: Number)
 - ROAMING_STATUS_NONE = 0
 - ROAMING_STATUS_HOMER = 1 //HOMER
 - ROAMING_STATUS_VISITOR_LBO = 2 //LBO
 - ROAMING_STATUS_VISITOR_HR = 3 //IN-HR
 - ROAMING_STATUS_ROMER = 4 //OUT-HR

- PreemptionCapability (type: Number)
 - 5G:**
 - 0: "PreemptionCapability_DummyEnum"
 - 1: "NOT_PREEMPT"
 - 2: "MAY_PREEMPT"

 - 4G and Wi-Fi:**
 - 0: Disabled
 - 1: Enabled

- PreemptionVulnerability (type: Number)
 - 5G:**
 - 0: "PreemptionVulnerability_DummyEnum"
 - 1: "NOT_PREEMPTABLE"
 - 2: "PREEMPTABLE"

4G and Wi-Fi:

- 0: Disabled
- 1: Enabled

- Disconnect-Reason (type: String)
Disconnect-Reason contains a self-explanatory string. If it holds a number, then the string interpretation is as follows:
 - PduRelReason_Error = 1
 - PduRelReason_SessIdleTimeout = 2
 - PduRelReason_SessCpIdleTimeout = 3
 - PduRelReason_SessAbsoluteTimeout = 4

- RequestType (type: Number)
 - RequestType_DummyEnum = 0
 - INITIAL_REQUEST = 1
 - EXISTING_PDU_SESSION = 2
 - INITIAL_EMERGENCY_REQUEST = 3
 - EXISTING_EMERGENCY_PDU_SESSION = 4

- RequestIndication (type: Number)
 - RequestIndication_DummyEnum = 0
 - UE_REQ_PDU_SES_MOD = 1
 - UE_REQ_PDU_SES_REL = 2
 - PDU_SES_MOB = 3
 - NW_REQ_PDU_SES_AUTH = 4
 - NW_REQ_PDU_SES_MOD = 5
 - NW_REQ_PDU_SES_REL = 6
 - EBI_ASSIGNMENT_REQ = 7

- AccessType (type: Number)
 - AccessType_DummyEnum = 0
 - AccessType_3GPP_ACCESS = 1
 - AccessType_NON_3GPP_ACCESS AccessType = 2

Procedure EDR Example:

1,2021/03/18 13:43:40.892,1448,imsi-123456789012345,1287,N11SmContextCreateReq,

.

```

.
.
3,1313,V1,Success,201,1,,3,1316,V1,Success,200,1,,3,1319,V1,Success,201,1,,3,1287,V1,
imsi-123456789012345,imei-123456786666660,123456789012345,9999988888,msisdn-9999988888,
Success,,1,0,,193|,,,,,NR,3,3329,V1,imsi-123456789012345,imei-123456786666660,msisdn-9999988888,
Success,201,1,3|1;2;7|3000 mbps|4000 mbps|1000 mbps|2000 mbps,20 kbps|20
kbps,,3,3332,V1,Success,
204,1,,3,3585,V1,Success,201,1,,3,524,V1,Success,,1,Request_Accepted,3,1299,V1,Success,200,194|,
77|,,,,,1,1,intershat,2|1|0|2|128|1|filters:0;3;1;;|3|1|0|2|192|1|filters:0;3;1;;|1|1|1|1|255|1|
filters:0;3;1;;,5|0 kbps|0 kbps|0 kbps|0 kbps|3||6000 mbps|8000 mbps|2000 mbps|4000 mbps,20
kbps|
20 kbps,N1_N2_TRANSFER_INITIATED,209.165.200.235|,2|Abf123||,0

```

In the preceding example, the initial entries represent the transaction EDRs and last part provided here represents the procedure-level EDRs.

EDR Transaction Collision

This EDR file dumps the transaction collision information whenever the collision occurs. It is useful to debug collision scenarios.

Table 10: EDR Transaction Collision File Fields

Field Number	Field Name	Field Description
1	Subscriber ID	The subscriber ID. For example, imsi-123456789012345
2	Collision Time	Collision time in yyyy/MM/dd HH:mm:ss.SSS format.
3	Force Resolution	Indicates whether the resolution is forced (true/false).
4	Collision Cause	The cause of collision.
5	New Transactions Before Collision	Transactions in the new state before collision handling separated by .
6	Pending Transactions Before Collision	Transactions in the pending state before collision handling separated by .
7	Active Transactions Before Collision	Transactions in the active state before collision handling separated by .
8	Suspended Transactions Before Collision	Transactions in the suspended state before collision handling separated by .
9	New Transactions After Collision	Transactions in the new state after collision handling separated by .
10	Pending Transactions After Collision	Transactions in the pending state after collision handling separated by .
11	Active Transactions After Collision	Transactions in the active state after collision handling separated by .

Field Number	Field Name	Field Description
12	Suspended Transactions After Collision	Transactions in the suspended state after collision handling separated by .
13	Aborted Transactions After Collision	Transactions in the aborted state after collision handling separated by .

CSV Format Examples:

```
supi:imsi-123456789012345,2020/10/06 16:15:11.801,true,SessionLockSamePriority,17,,,,,|17,,
supi:imsi-123456789012345,2020/10/06 16:15:11.824,true,SessionLockSamePriority,18,,,,,|18,,
supi:imsi-123456789012345,2020/10/06 16:15:11.857,true,SessionLockSamePriority,19,,,,,|19,,
supi:imsi-123456789012345,2020/10/06 16:15:11.883,true,SessionLockSamePriority,20,,,,,|20,,
supi:imsi-123456789012345,2020/10/06 16:15:11.888,true,SessionLockRelease,,,,,,,x
```

EDR Attributes

This section provides details of the EDR attributes and its sub attributes.

Table 11: QOS-RULE

QOS-RULE-LIST	qr-id qr-opcode qr-dqr qr-qfi qr-precedence num-filters filters:flter-id;flter-dir;fltr-cmp-type;ip;port;remote-cmp-type;remote-ip;remote-port			
	Field	Sub field	Sub-sub field	Presence
—	QOS-RULE	—	—	—
—	—	QOS-RULE-ID	—	M
—	—	QOS-RULE-OPCODE	—	M
—	—	QOS-RULE-DQR	—	M
—	—	QOS-RULE-QFI	—	M
—	—	QOS-RULE-PRECEDENCE	—	M
—	—	NO-PKT-FILTERS	—	—
—	—	PKT-FILTER-LIST	—	M
—	—	—	PKT-FILTER-ID	M
—	—	—	PKT-FILTER-DIRECTION	M
—	—	—	PKT-FILTER-CMP-TYPE	M

—	—	—	PKT-FILTER-IP-ADDRESS	O
—	—	—	PKT-FILTER-PORT	O
—	—	—	PKT-FILTER-REMOTE-CMP-TYPE	O
—	—	—	PKT-FILTER-REMOTE-IP-ADDRESS	O
—	—	—	PKT-FILTER-REMOTE-PORT	O



Note Delimiters subject to change based on the position of QOS-RULE in the attribute.

Table 12: QOS-DESC

QOS-DESC	[qfi opcode 5qi arp mbr-ul mbr-dl gbr-ul gbr-dl]	
Sub field	Type	Presence
QFI		M
Opcode		M
5QI		O
ARP	ARP	O
MBR-UPLINK		O
MBR-DOWNLINK		O
GBR-UPLINK		O
GBR-DOWNLINK		O



Note Delimiters subject to change based on the position of QOS-DESC in the attribute.

Table 13: PCO

PCO	[type PCSCF-ADDR-LIST DNS-ADDR-LIST pdu-session-id QOS-RULE-LIST SESSION-AMBR QOS-DESC S-NSSAI ms-support-nw_addr-tft nw-support-nw_addr-tft PCSCF-ADDR-REQ DNS-ADDR-REQ mtu-req mtu-size]		
Sub field	Type	Presence	
TYPE	String	M	EPCO or PCO or APCO

PCSCF-ADDR-LIST	PCSCF-ADDR	O	From CSR Response being sent from SMF
DNS-ADDR-LIST	DNS-ADDR	O	From CSR Response being sent from SMF
PDU-SESSION-ID		O	From CSR Response being sent from SMF
QOS-RULE-LIST	QOS-RULE	O	From CSR Response being sent from SMF
SESSION-AMBR	SESS-AMBR	O	From CSR Response being sent from SMF
QOS-DESC	QOS-DESC	O	From CSR Response being sent from SMF
S-NSSAI	NSSAI	O	From CSR Response being sent from SMF
MS-SUPPORT-NW_ADDR-TFT	Boolean	O	From CSR Request being received
NW-SUPPORT-NW_ADDR-TFT	Boolean	O	From CSR Response being sent from SMF
PCSCF-ADDR-REQ	PCSCF-ADDR-REQ	O	From CSR Request being received
DNS-ADDR-REQ	DNS-ADDR-REQ	O	From CSR Request being received
IPV4-MTU-REQUEST	Boolean	O	From CSR Request being received
IPV4-MTU-SIZE	String	O	From CSR Response being sent from SMF



Note In the preceding table, CSR Request and CSR Response messages refer to 4G and Wi-Fi call flows. N11 SM Context Create Request and Response messages refer to 5G call flows.

Table 14: PCSCF-ADDR-REQ

PCSCF-ADDR-REQ	[pco-pcsf-addr-ipv4-req;pco-pcsf-addr-ipv6-req]	
Sub field	Presence	Type
PCO-PCSF-ADDR-IPV4-REQ	M	Boolean
PCO-PCSF-ADDR-IPV6-REQ	M	Boolean

Table 15: PCSCF-ADDR

PCSCF-ADDR	[ipv4-primary;ipv4-secondary;ipv4-tertiary;ipv6-primary;ipv6-secondary;ipv6-tertiary]	
Sub field	Presence	Type
PCSF-ADDR-IPV4-LIST	O	List
PCSF-ADDR-IPV6-LIST	O	List

Table 16: DNS-ADDR

DNS-ADDR	[ipv4-primary;ipv4-secondary;ipv4-tertiary;ipv6-primary;ipv6-secondary;ipv6-tertiary]	
Sub field	Presence	Type
DNS-ADDR-IPV4-LIST	O	List
DNS-ADDR-IPV6-LIST	O	List

Table 17: DNS-ADDR-REQ

DNS-ADDR-REQ	[pco-pcsf-addr-ipv4-req;pco-pcsf-addr-ipv6-req]	
Sub field	Presence	Type
PCO-PCSF-ADDR-IPV4-REQ	M	Boolean
PCO-PCSF-ADDR-IPV6-REQ	M	Boolean

Table 18: NSSAI

NSSAI	[sst sd hplmnsst hplmnsd]	
Sub field	Presence	Type
SST	M	Number
SD	O	String
HPLMN-SST	O	Number
HPLMN-SD	O	String



Note Delimiters subject to change based on the position of S-NSSAI in the attribute.

Table 19: PAA

PAA	[ipv4-addr ipv6-addr]	
Sub field	Presence	Type

IPV4-ADDR	O	String
IPV6-ADDR	O	String

Table 20: N1N2MSGREQCONTENT or N1N2MSGRSPCONTENT

N1N2MSGREQCONTENT / N1N2MSGRSPCONTENT	[msg-type cause]	
Sub field	Presence	Type
MSG-TYPE	M	SMF N1N2MsgType
Cause	O	String

Example: 195|REQUEST_REJECTED_UNSPECIFIED

Table 21: PLMN-ID

PLMN-ID	[mcc mnc]
Sub field	Presence
MCC	M
MNC	M



Note Delimiters subject to change based on the position of PLMN-ID in the parent attribute.

Table 22: GUAMI

GUAMI	[amf-id plmn-id]	
Sub field	Presence	Type
AMF-ID	M	String
PLMN-ID	M	PLMN-ID

Table 23: SESS-AMBR

SESS-AMBR	[ambr-dl ambr-ul]	
Sub field	Presence	Type
AMBR-DL	O	String
AMBR-UL	O	String

Table 24: UE-LOCATION

UE-LOCATION	[locationType Ecgi : ECGI Tai :TAI] or [locationType Ncgi : NCGI Tai :TAI]		
Sub field	Presence	Type	—
locationType	M	String	"Eutra" or "NR"
ECGI or NCGI	O	ECGI/NCGI	—
Tai	O	TAI	—

Table 25: ECGI or NCGI

ECGI / NCGI	[plmn-id;cellId]		
Sub field	Presence	Type	
Plmn-id	M	PLMN-ID	
Cell-id	M	String	

Table 26: TAI

TAI	[plmn-id;tac]		
Sub field	Presence	Type	
Plmn-id	M	PLMN-ID	
tac	M	String	

Table 27: ARP

ARP	[preEmpCap;preEmpVul;priority]		
PRE-EMP-CAP	M	PreemptionCapability	
PRE-EMP-VUL	M	PreemptionVulnerability	
PRIORITY	M	Number	



Note Delimiters subject to change based on the position of ARP in the attribute.

Table 28: NGAP-CAUSE

NGAP-CAUSE	[group value]		
GROUP	O	Number	

VALUE	O	Number
-------	---	--------

Table 29: TUNNEL-INFO

TUNNEL-INFO	[gtp-teid ipv4-addr ipv6-addr]	
GTP-TEID	O	String
IPV4-ADDR	O	String
IPV6-ADDR		String

Table 30: QFS

QFS	[qos-rule qos-desc]	
Qos-rules	O	QOS-RULE
Qos-desc	O	QOS-DESC

The SMF generates detailed records with field-level details per event. The following table lists the different N1N2 messages and the associated IDs.

Table 31: SMF N1N2 Message Types

Message	Message ID
PDU-SESSION-ESTB-REQUEST	193
PDU-SESSION-ESTB-ACCEPT	194
PDU-SESSION-ESTB-REJECT	195
PDU-SESSION-MOD-REQ	201
PDU-SESSION-MOD-CMD	203
PDU-SESSION-MOD-CMD-REJ	202
PDU-SESSION-MOD-CMD-COMP	204
PDU-SESSION-REL-REQ	209
PDU-SESSION-REL-CMD	211
PDU-SESSION-REL-REJ	210
PDU-SESSION-REL-COMP	212
N2_PDU_SESSION_RESOURCE_RELEASE_COMMAND	85
N2_PDU_SESSION_RESOURCE_RELEASE_RESPONSE	130
N2_PDU_SESSION_RESOURCE_SETUP_REQUEST	77

Message	Message ID
N2_PDU_SESSION_RESOURCE_SETUP_RESPONSE_TRANSFER	78
N2_PDU_SESSION_RESOURCE_MODIFY_CONFIRM_TRANSFER	62
N2_PDU_SESSION_RESOURCE_MODIFY_INDICATION_TRANSFER	63
N2_PDU_SESSION_RESOURCE_MODIFY_REQUEST_TRANSFER	64
N2_PDU_SESSION_RESOURCE_MODIFY_RESPONSE_TRANSFER	65
N2_PDU_SESSION_RESOURCE_MODIFY_UNSUCCESS_TRANSFER	79

Limitations

The EDR Logging feature has the following limitations:

- Event record generation does not work for the following scenarios:
 - Handover
 - Idle-Active transition
 - Active-Idle transition
- The SMF supports only IMSI (SUPI)-based EDR reporting.
- The SMF currently supports EDR generation in CSV format. The EDR file storage format is not configurable.
- This feature is not applicable to a procedure that does not send a response explicitly to an incoming request.

Configuring EDRs

This section describes how to configure the EDR Logging feature.

Enable EDR Reporting



Note Currently, the EDR file generation works for only specific subscribers. EDR generation occurs after configuring the subscriber ID.

Use the following sample configuration to enable or disable the EDR generation for particular subscribers.

```

config
  edr reporting enable
  edr subscribers subscriber_id
end
    
```

NOTES:

- **edr reporting enable:** Specify this keyword to enable the EDR reporting on SMF. Use the **edr reporting disable** command to disable the EDR reporting functionality. By default, the EDR reporting is disabled.
- **edr subscribers subscriber_id :** Specify the ID of subscribers for which the EDR reporting must be enabled. *subscriber_id* must be an alphanumeric string. The default value is empty.



Note Be sure to specify the exact subscriber key in this command. The SMF supports only IMSI (SUPI)-based EDR reporting.

- Configure a minimum of one subscriber upon enabling the EDR reporting.
- You can configure up to a maximum of 10 subscribers for EDR generation.

Configure EDR Files for Generation

Use the following sample configuration to generate the EDR events at transaction level.

```
config
  edr file { transaction | transaction-collision }
    disable procedure-id procedure_id_value
  procedure-id procedure_id_value
    disable event-id event_id_value
  event-id event_id_value
    disable field-id field_id_value
  end
```

- **edr file { transaction | transaction-collision }:** Specify to generate EDR files with transaction or transaction-collision level details for subscriber sessions.
- **procedure-id procedure_id_value:** Specify the procedure ID or procedure name for which the event reporting must be enabled.
- **event-id event_id_value:** Specify the event ID or event name for which the event reporting must be enabled.
- **field-id field_id_value:** Specify the field ID or field name for which the event reporting must be enabled.
- All procedure IDs, event IDs, and field IDs registered by application, are enabled by default.
- If a procedure-id is disabled, no event start, add field, or event-end will be honored for the procedure-id.
- If an event-id is disabled within a procedure id, then event-start, event-end, or add field will not be honored for the procedure-id and event-id combination.
- If a field-id is disabled for an event-id, then add-field will not be honored, and a blank entry will be present instead of value in CSV entry.

Example Configuration:

```
edr file transaction
  disable procedure-id 24 32
  procedure-id 25
```

```
disable event-id 5 7 8
event-id 5
  disable field-id 10 12 14
```

In the preceding example, **disable event-id 5 7 8** means disable the event-id 5, 7, and 8 for procedure-id 25. The **disable field-id 10 12 14** means disable the field-id 10, 12, and 14 for procedure-id 25 and event-id 5.

Configure EDR Parameters

Use the following sample configuration to configure the EDR parameters.

```
config
  edr file transaction
    limit size file_size count file_count
    flush interval file_flush_interval
  end
```

NOTES:

- **limit size file_size count file_count**: Specify the maximum size of one EDR file, after which the EDR file is compressed and new CSV file is created. The default file size is 100 MB.



Note The system periodically monitors the file size of an EDR file once per second or after the configured flush interval, whichever value is higher. After the EDR file reaches its maximum size, it's compressed and new CSV file is created. However, in some scenarios, the data is being continuously written to the EDR file just before the system performs a periodic check based on the previously mentioned threshold limits. This results in an EDR file that might slightly exceed the configured maximum file size.

- **count file_count**: Specify the maximum number of EDR files to be preserved. The default file count is 10.
- **flush interval file_flush_interval**: Specify the time interval, in milliseconds, to flush the EDR files. The default value is 1000 ms.

Verifying EDR Transactions

Use the following show commands to display the currently registered procedures, events, and fields for the application along with their respective IDs.

```
show edr transaction-procedure procedure_id event event_id
show edr event event_id
```

You can provide all the procedures and events. Otherwise, you can provide a particular procedure name and event name or procedure-id and event-id.



Note The show command output is based on the mapping registered by the application.

The following is an example of the show command output.

```
Procedure-id 20, Procedure-Name: xyz
  Event-id 1, Event-Name: abc
    1 - Field1-Name
    2 - Field2-Name
    ...
    ...
  Event-id 2, Event-Name: efgh
    1 - Field1-Name
    2 - Field2-Name
    ...
    ...
...
...
...
Procedure-id 21, Procedure-Name: bbbb
  Event-id 1, Event-Name: cccc
    1 - Field1-Name
    2 - Field2-Name
    ...
    ...
  Event-id 2, Event-Name: dddd
    1 - Field1-Name
    2 - Field2-Name
    ...
    ...
...
```

This output helps the operator to know current CSV format of a particular procedure-id and event-id pair.

OAM Support for EDR Logging

This section describes operations, administration, and maintenance information for this feature.

Bulk Statistics Support

The SMF maintains the following bulk statistics as part of this feature.

- `edr_error_total`

Labels:

- `error_code` – The EDR writing error code

This metric is pegged whenever an error occurs during EDR writing. This metric displays "EdrQueueFull" as the `error_code` when the writing queue is full and the EDR is dropped.

