Event Detail Records

- Feature Summary and Revision History, on page 1
- Feature Description, on page 2
- Configuring EDRs, on page 63
- OAM Support for EDR Logging, on page 68

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 support for the following enhancements:
• EDR generation for dedicated bearer and handover (pathswitchreq (Xn handover), pdun2ho, pdn5g4gHo, nrtountrustwifiho, pdun26ho, utn3gppto5g) procedures
• Archival of EDR files in EDR Monitor pod
• New commands to
  • Enable EDR for all subscribers
  • Configure transaction EDR rate, CPU threshold, session threshold, and file archival policy
	2022.04.0

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.

```
Version, Field-Count, 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 64 section in this guide.

EDR File Storage Location

This section provides details on the archival location of EDR files in SMF service pod and EDR monitor pod.

EDR Files in SMF Service Pod

The EDR file is generated in each SMF service pod where the subscriber sessions and events are processed. Based on the EDR file size, the files are archived periodically in non-persistent volume, that is, the SMF service pod. A new file is created before archiving the existing file.

The format of the transaction EDR file name and transaction collision EDR file name are as follows:

<pod-name>_<pod_instance>_<PodStartTime>.transaction.csv

<pod-name>_<pod_instance>_<PodStartTime>.transaction_collision.csv

The directory path of service pod is `/tmp/edr/`.

Example:

smf-service-n0-0_0_ 20220730233455.transaction.csv

Where the pod name is smf-service-n0-0, pod instance is 0, and the pod start time "20220730181014" means 30nd July 2022 18:10:14 UTC.

The format of compressed file name is as follows:

<pod-name>_<pod_instance>_<PodStartTime>.transaction.csv.<fileArchivedTime>.<FileRotationCounter>.gz

Example:

example-service-n0-0_1_20220730181014.transaction.csv.20220730181844.1.gz

EDR Files in EDR Monitor Pod

The SMF service pod sends all the EDR files to edr-monitor pod every 30 seconds. The EDR files remain in edr-monitor pod persistent directory as .csv file. When the total size of all the files exceeds the configured maximum file size, the oldest file is deleted.

The format of file name in edr-monitor pod is <*pod-name*>_<*pod_instance*>_<*PodStartTime*>.*transaction.csv*.

Example:

edr-monitor pod-n0-0_0_ 20220730233455.transaction.csv

The directory path of edr-monitor pod is `/logs/edr/`.

The EDR file size, maximum archived EDR file count, and maximum persistent volune size are configured through CLI commands. For information on the configuration commands, see the Configure EDR Parameters, on page 64 section.

To access the files in the persistent volume of EDR monitor pod, log on to the Ops center with required credentials, and use the edr-monitor pod ingress URL.

To determine the ingress URL, use the following command:

kubectl get ingress -n *namespace* **| grep edr**

Example:

cloud-user@svi-cndp-tb41-gr-setup-smf-cluster-2-cndp-server-1:~$ **kubectl get ingress -n smf-smf | grep edr**

edr-archives-smf-smf nginx **edr-archives.smf-smf.172.18.128.82.nip.io** 10.109.13.65 80, 443 4d5h

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	Version	EDR version number. Default value is v1. **Note** The version will change only when there is a change in the encoding order of transaction header fields or change in encoding procedure of any individual field.
2	Field Count	Total number of fields in transaction EDR header. The default value is 15.
3	Transaction ID	Transaction ID

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

Field Number	Field Name	Field Description
16	State	The transaction state. It can be: • Started • New • Ready • Active • Pending • Suspend • SuspendWaitingForResponse • SuspendWaitingForLock • Abort • Finished • Timeout • Unknown
17	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:

```
V1,15,1,2022/08/03
22:12:19.482,22,imsi-123456789012345,201,S5S8CreateSessReq,imsi-123456789012345:5,imsi-123456789012345:12.0.0.1|intershat:12.0.0.1|imsi-123456789012345:2001:db0::|intershat:2001:db0::|1|imsi-123456789012345:ebi-5|imsi-
123456789012345:intershat,roaming-status:home|rat-type:eutran-epc|supi:imsi-123456789012345|gpsi:msisdn-22331010101010|pei:imei-123456786666660|psid:5|snssai:02abf123|dnn:intershat|emergency:false|rat:wlan|access:untrusted
 non-3gpp access|
connectivity:4|udm-sdm:10.1.29.6|udm-uecm:10.1.29.6|auth-status:unauthenticated|pcfGroupId:PCF-*|policy:2|pcf:10.1.29.6|upf:198.18.1.3|upfEpKey:198.18.1.3:198.18.1.4|ipv4-addr:pool4/12.0.0.1|ipv4-pool:pool4|ipv4-range:pool4/12.0.0.1|
ipv4-startrange:pool4/12.0.0.1|ipv6-pfx:pool6/2001:db0::|ipv6-pool:pool6|ipv6-range:pool6/2001:db0::|ipv6-startrange:pool6/2001:db0::|id-index:1:0:32:768|id-value:0/1|chfGroupId:CHF-dnn=intershat;|chf:10.1.29.6|gtp-peer:198.18.1.10|
peerGtpuEpKey:198.18.1.3:198.17.1.6,success,success,PDN Connect
[LTE],S5S8CreateSessReq,Active,init_done|4G SETUP: Idle|4G SETUP: Await UDM Registration|4G
 SETUP: Await UDM Subscription Fetch|4G SETUP: Await UDM Subscribe for Notification|
4G SETUP: Await PCF Create|4G SETUP: Await Address Allocation|4G SETUP: Await PCF Update|4G
 SETUP: Await Charging
Create|finished,3,1313,V2,4,Success,201,3,,3,1316,V2,4,Success,200,3,,3,1319,V2,4,Success,201,3,,3,3329,V2,9,imsi-123456789012345,
imei-123456786666660,msisdn-223310101010101,Success,201,3,||3|1;2;2|3000 mbps|4000 mbps|1000
 mbps|2000 mbps,200000 kbps|400000
kbps,,3,3332,V2,4,Success,204,3,,3,1003,V2,4,Success,201,3,,3,524,V2,4,Success,,3,Request_Accepted,3,2051,V2,18,
imsi-123456789012345,imei-123456786666660,123456789012345,223310101010101,msisdn-223310101010101,Success,,APCO||||||2;Abf123;;|||1;1|1;0|0|,3,1,intershat,,||5|0;0;15||||,200
 mbps|400 mbps,16,12.0.0.1|2001:db0::b46d:47ff:fe47:4747,2|Abf123||,
WLAN,3,1000,V2,40,imsi-123456789012345,imei-123456786666660,123456789012345,223310101010101,msisdn-223310101010101,123|456,Eutra|Ecgi:123;456;1234567|Tai:123;456;1820,2022-08-03
 22:12:19.485844223 +0000 UTC,2022-08-03 22:12:19.772243364
+0000
```

```
UTC,Ue,,198.18.1.100,Success,3,,intershat,WLAN,+00:15+1,3,123|456,10000000,12500000,5,1|1|15,12.0.0.1|2001:db0:b46d:47ff:fe47:4747,46111554,67553994105921,1,5,,2,2|Acf123||,16,1,NR
 Capable UE,1580,198.17.1.6,6168582,198.17.1.3,intershat
```

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 64 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
PDU-SESSION-MODIFY	5
DEDICATEDBEARER	6
HANDOVER	7

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 64 section in this guide.

Table 5: Event IDs

EVENT	EVENT-ID	Applicability of Events to Procedures			
		Create	Release	Modify	Ded Bea
N11SmContext CreateReq	1287	Yes	—	—	—
N11SmContext UpdateReq	1290	Yes	Yes	Yes	—
N11N1N2Message TransferReq	1299	Yes	Yes	Yes	—
N11SmContext UpdateModifyReq	1293	—	—	—	—
N11Ebi AssignmentReq	1302	Yes	—	Yes	—
N11SmContext ReleaseReq	1304	—	Yes	—	—

N11SmContext StatusNotifyReq	1310	Yes	Yes	—	—
N11N1N2Message TransferFail NotificationReq	1339	—	Yes	Yes	—
N4Session ModificationReq	527	Yes	Yes	Yes	Yes
N4Session ReleaseReq	530	Yes	Yes	—	—
N4Session EstablishmentReq	524	Yes	—	—	—
N7SmPolicy CreateReq	3329	Yes	—	—	—
N7SmPolicy DeleteReq	3335	Yes	Yes	—	—
N7SmPolicy UpdateReq	3332	Yes	—	Yes	Yes
N7SmPolicy TerminateNotify Req	3341	—	Yes	—	—
N7SmPolicy UpdateNotifyReq	3338	—	—	Yes	Yes
N10UnsubscribeFor NotificationReq	1432	—	Yes	—	—
N10SubscribeFor NotificationReq	1319	Yes	—	—	—
N10Registration Request	1313	Yes	—	—	—
N10Subscription FetchReq	1316	Yes	—	—	—
N10Deregistration Request	1325	Yes	Yes	—	—
S5S8Delete BearerCmd	2066	—	—	—	Yes
N10Update NotifyReq	1322	—	Yes	Yes	—
N40Charging DataCreateReq	1003	Yes	—	—	—
N40Charging DataUpdateReq	1004	—	—	Yes	—
N40Charging DataReleaseReq	1005	—	Yes	—	
N40Charging NotificationReq	3588	Yes	—	Yes	—
Secondary AuthenReq	2307	Yes	—	—	—
S5S8Create SessReq	2051	Yes	—	—	—
S5S8Delete BearerReq	2057	—	Yes	—	Yes
S5S8Delete SessReq	2055	—	Yes	—	
RadiusCoa DisconnectReq	2313	—	Yes	—	—
RadiusAcctReq	2309	Yes	Yes	Yes	—
metaData	1000	Yes	Yes	Yes	Yes
N16PduSession CreateReq	1444	Yes	—	—	—

N16VsmfPdu SessionRelease Req	1471	Yes	Yes	—	—
N16PduSession HsmfUpdateReq	1447	Yes	Yes	Yes	Yes
N16PduSession HsmfUpdateReq Client	1477	Yes	Yes	Yes	Yes
N16VsmfPdu SessionCreateReq	1468	Yes	—	—	—
N16PduSession VsmfUpdateReq	1451	Yes	Yes	Yes	Yes
N16PduSession NotifyReq	1458	—	Yes	—	—
N11SmContext RetrieveReq	1307	—	Yes	—	—
N16PduSession VsmfUpdateReq Client	1478	Yes	Yes	Yes	Yes
N16PduSession NotifyReqClient	1488	—	Yes	—	—
S5S8Update BearerReq	2062	—	—	—	Yes
S5S8Create BearerReq	2059	—	—	—	Yes
S5S8Bearer ResourceCmd	2061	—	—	—	Yes
S5S8Modify BearerCmd	2064	—	—	—	Yes
N4GtpuRouter AdvertisementReq	542	—	—	—	—
S5S8Modify BearerReq	2053	—	—	—	—
NInternalTxnMsg[1]	1001(xxxx)	Yes	Yes	Yes	Yes
Ntimer NotificationMsg[1]	1002(xxxx)	Yes	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 com
and NTimerNotificationMsg are two generic event IDs defined to represent such internal messages used by SMF. The **xxxx** in the Event ID
message type that is used by SMF internally for easy debuggability.

The SMF uses N40ChargingDataCreateReq, N40ChargingDataUpdateReq, and N40ChargingDataReleaseReq instead of N40ChargingDataR
and release.

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

Table 6: PDU Session Create Events

tribute	N		Name	Presence	Type	Description
XN EDR fields				M		
ROCEDURE	**E ID**	**EVENT-ID**	VERSION	M		**Event=N11SmContext CreateReq**
			FIELD-COUNT	M		
			SUPI	M		

buten u	N		Name	Presence	Type	Description
			IMEI/PEI	M		
			IMSI	M		
			MSISDN	M		
			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	N1N2MSGREQ CONTENT	PDU-SESSION-ESTB-REQUEST
			N2-REQ-MSG-TYPE	O	N1N2MSGREQ CONTENT	
			N1-RSP-MSG-TYPE	O	N1N2MSGRSP CONTENT	
			N2-RSP-MSG-TYPE	O	N1N2MSGRSP CONTENT	
			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	

Attribute number	N		Name	Presence	Type	Description
			UP-CONTEXT-STATE	O		
			N1-PDU-SESS-ID	O		
			INDIRECTFWD FLAG	O		
			DIRECTFWD FLAG	O		
			HO-STATE	O		
PROCEDURE ID		**EVENT-ID**	VERSION	M	Client	**Event=N11Sm ContextUpdateReq**
			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 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	

buten u	N		Name	Presence	Type	Description
			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	O		
			N1-VGSM-RE -ATTEMPT-IND	NA		
			N1-RE-ATTEMPT -IND	NA		
			N1-SESS-AMBR	O		

Attribute Number	N		Name	Presence	Type	Description
			N1-CONG-RE-ATTEMPT-IND	O		
			N1-RSP-ALWAYS-ON	—		
PROCEDURE ID		**EVENT-ID**	VERSION	M		**Event=N11N1N2 MessageTransfer Req**
			FIELD-COUNT	M		
			STATUS	M		
			STATUS-CODE	O		
			PDU-SESSION-TYPE	M		
			N1-REQ-MSG-TYPE	O	N1N2MSG REQCONTENT	PDU-SESSION-ESTB-ACCEPT PDU-SESSION-ESTB-REJECT PDU_SESSION_ RELEASE_ COMMAND PDU_SESSION_ MODIFICATION_ COMMAND
			N2-REQ-MSG-TYPE		N1N2MSG REQCONTENT	
			N1-RSP-MSG-TYPE	O	N1N2MSG REQCONTENT	
			N2-RSP-MSG-TYPE		N1N2MSG RSPCONTENT	
			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	O		
			N1-DNN/APN	O		
			N1-BACKOFF-TIME	NA		

buten u	N		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		
OCEDURE	**E ID**	**EVENT-ID**	VERSION	M		**Event=N7SmPolicy CreateReq**
			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		

Attribute Number	N		Name	Presence	Type	Description
PROCEDURE ID		EVENT-ID	VERSION	M		**EVENT= N4Session ModificationReq** **N10Deregistration Request** **N7SmPolicy UpdateReq** **N10Subscription FetchReq** **N10Unsubscribe ForNotificationReq** **SecondaryAuthenReq** **N10SubscribeFor NotificationReq** **N40Charging DataCreateReq** **N40Charging DataUpdateReq** **N40Charging DataReleaseReq** **N7SmPolicy DeleteReq** **N11Ebi AssignmentReq** **N4Session EstablishmentReq** **N4Session ReleaseReq** **N10Registration Request** **RadiusAcctReq** **N11SmContext RetrieveReq** **N11SmContext StatusNotifyReq**
			FIELD-COUNT	M		
			STATUS	M		
			STATUS-CODE	O		
			PDU-SESSION -TYPE	M		
			CAUSE	O		
PROCEDURE ID		EVENT-ID	VERSION	M		**Event=S5S8Create SessReq**
			FIELD-COUNT	M		
			SUPI	M		
			IMEI/PEI	M		

buten u	N		Name	Presence	Type	Description
			IMSI	M		
			MSISDN	M		
			GPSI	M		
			STATUS	M		
			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		
			HO-INDICATION			
OCEDURE	**E 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		

Attribute number	N		Name	Presence	Type	Description
			S-NSSAI	O	NSSAI	
			SERVING-PLMN	M	PLMN-ID	
			VSMF-ID	M		
			VCNTUNNEL-INFO	M	TUNNEL-INFO	
			HO-PREP-INDICATION	O		
			PGW-S8-CFTEID	O		
			ALWAYS-ON -REQUESTED	O		
			UE-LOCATION	O	UE-LOCATION	
			ROAMING-CHRG-PROF-REQUESTED	O	CHARGING-PROF	
			ALWAYS-ON-GRANTED	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	O		

buten u	N		Name	Presence	Type	Description
			N1-REQ-PDU(PDN)-SESSION-TYPE	O		
			N1-REQ-SSC -MODE	O		
			N1-PCO	O		
			N1-REQ-MAX-SUPP -FILTERS	O		
			N1-ALWAYS-ON	O		
			N1-REQ-PDU(PDN)-SESSION-TYPE-SELECTED	O		
			N1-REQ-SSC-MODE -SELECTED	O		
			N1-QOS-RULES	O		
			N1-QOS-DESC	O		
			N1-SESS-AMBR	O		
			N1-REQ-ALWAYS-ON	O		
			N1-REQ-SSC-MODE -ALLOWED	O		
			N1-CONG-RE-ATTEMPT-IND	O		
			N1-RSP-RE-ATTEMPT-IND	O		
			N1-DNN/APN	O		
OCEDURE	**E ID**	**EVENT-ID**	VERSION	M		**Event= N16VsmfPdu SessionReleaseReq**
			FIELD-COUNT	M		
			STATUS	M		
			STATUS-CODE	O		
			CAUSE	O		
			VGMM-CAUSE	O		
			NGAP-CAUSE	O	NGAP-CAUSE	
OCEDURE	**E ID**	**EVENT-ID**	VERSION	M		**Event= N16PduSession VsmfUpdateReq** **N16PduSession VsmfUpdate ReqClient**

Attribute Number	N		Name	Presence	Type	Description
			FIELD-COUNT	M		
			STATUS	M		
			STATUS-CODE	O		
			REQUEST-INDICATION	O	N1N2MSG REQCONTENT	
			SESSION-AMBR	O	N1N2MSG REQCONTENT	
			ALWAYS-ON-GRANTED	O	RequestIndication	
			CAUSE	O	SESS-AMBR	
			N1SM-CAUSE	O		
			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		
PROCEDURE ID		**EVENT-ID**	VERSION	M		**Event=N16Pdu SessionHsmf UpdateReq** **N16PduSessionHsmf UpdateReqClient**
			FIELD-COUNT	M		

buten u	N		Name	Presence	Type	Description
			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	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		
OCEDURE ID		**EVENT ID=1000**	VERSION	M		**Event=META DATA**
			FIELD-COUNT	M		

Attribute number	N		Name	Presence	Type	Description
			SUPI	M		
			IMEI/PEI	M		
			IMSI	M		
			MSISDN	M		
			GPSI			
			SERVING-PLMN	M		
			UE-LOCATION	M	UE-LOCATION	
			START-TIME	M		
			END-TIME	M		
			TRIGGER-NF	M		
			TRIGGER-EVENT	M		
			SGW-ID	O		
			STATUS	M		
			USERPLANE-STATUS	O	Userplane-status	
			DISCONNECT-REASON	O		
			DNN/APN	M		
			RAT-TYPE	M		
			UE-TIMEZONE	M		
			PDU/PDN-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		

buten u	N		Name	Presence	Type	Description
			PDU/PDN-SESSION-ID	O		
			ALWAYS-ON	O		
			EPS-IWK	O		
			S-NSSAI	O		
			MAX-SUPP-FILTERS	O		
			SSC-MODE	O		
			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

Attribute		Name	Presence	Description
TIME-STAMP	EVENT-ID1=1290	PROCEDURE-ID	M	N11SmContextUpdateReq
EVENT-LIST		VERSION	M	PduSessionModification Request (MESSAGE- 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	

Attribute		Name	Presence	Description
		IMSI	M	
		MSISDN	M	
		PDU(PDN)-SESSION -TYPE	O	
		N1-REQ-MSG-TYPE	O	N1N2MSGREQ CONTENT
		N2-REQ-MSG-TYPE	O	N1N2MSGREQ CONTENT
		N1-RSP-MSG-TYPE	O	N1N2MSGRSP CONTENT
		N2-RSP-MSG-TYPE	O	N1N2MSGRSP CONTENT
		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	
		N1-RSP-ALWAYS-ON	NA	
		DATAFORWARDING	O	
	EVENT-ID	PROCEDURE-ID	M	N10UpdateNotifyReq
		VERSION	M	
		FIELD-COUNT	M	
		STATUS	M	
		STATUS-CODE	O	
		PDU(PDN)-SESSION -TYPE	M	
		CAUSE	O	

Attribute		Name	Presence	Description
	EVENT-ID4=1299	PROCEDURE-ID	M	N11N1N2Message TransferReq
		FIELD-COUNT	M	
		STATUS	M	
		STATUS-CODE	O	
		PDU-SESSION-TYPE	M	
		N1MSGREQTYPE	O	N1N2MSGREQ CONTENT
		N2MSGREQTYPE	O	N1N2MSGREQ CONTENT
		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	
		N1-REQ-PDU(PDN) -SESSION-TYPE -SELECTED	O	
		N1-SSC-MODE-ALLOWED	O	
		N1-CONG-RE- ATTEMPT-IND	O	
		N1-RSP-RE- ATTEMPT-IND	NA	
		N1-RSP-AN-TYPE	NA	
PROCEDURE-ID	**EVENT-ID**	VERSION	M	**Event=N16PduSession HsmfUpdateReq N16PduSessionHsmf UpdateReqClient**
		FIELD-COUNT	M	
		STATUS	M	
		STATUS-CODE	O	
		IMEI/PEI	O	
		REQUEST-INDICATION	M	RequestIndication

Attribute		Name	Presence	Description
		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	
		AN-TYPE-CAN-BE -CHANGED	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	M	**Event= N16PduSession VsmfUpdateReq** **N16PduSessionVsmf UpdateReqClient**
		FIELD-COUNT	M	
		STATUS	M	
		STATUS-CODE	O	
		REQUEST-INDICATION	O	N1N2MSGREQ CONTENT
		SESSION-AMBR	O	N1N2MSGREQ CONTENT
		ALWAYS-ON-GRANTED	O	RequestIndication
		CAUSE	O	SESS-AMBR
		N1SM-CAUSE	O	
		BACKOFF-TIMER	O	
		N1-REQ-MSG-TYPE	O	PDU_SESSION_ MODIFICATION_ COM PDU_SESSION_ MODIFICATION_ COM

Attribute		Name	Presence	Description
		N1-RSP-MSG-TYPE		PDU_SESSION_ MODIFICATION_ COMMA PDU_SESSION_ MODIFICATION_ COMMA 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	
	EVENT-ID	PROCEDURE-ID	M	N4Session ModificationReq N40Charging NotificationReq N11N1N2MessageTransfer FailNotificationRe RadiusAcctReq N40ChargingData CreateReq N40ChargingData UpdateReq N40ChargingData ReleaseReq N11EbiAssignmentReq N7SmPolicyUpdate NotifyReq N7SmPolicyUpdateReq
		VERSION	M	
		FIELD-COUNT	M	
		STATUS	M	
		STATUS-CODE	O	
		PDU-SESSION-TYPE	O	
		CAUSE	O	
	EVENT-ID1=1000	PROCEDURE-ID	M	META-DATA
		VERSION	M	
		FIELD-COUNT	M	
		SUPI	M	
		IMEI/PEI	M	
		IMSI	M	
		MSISDN	M	

Attribute		Name	Presence	Description
		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	NA	
		STATUS	M	
		SUBSCRIBED-SESS -AMBR-UPLINK	M	
		SUBSCRIBED-SESS -AMBR-DOWNLINK	M	
		ALWAYS-ON	O	
		MAX-SUPP-FILTERS	O	
		LOCAL-CFTEID-TEID	O	
		LOCAL-CFTEID-IP	O	
		REMOTE-CFTEID-TEID	O	
		REMOTE-CFTEID-IP	O	

Table 8: PDU Session Delete Events

m	u	N	Name	Presence	Type	Description
fields				M		

n	u	N	Name	Presence	Type	Description
E ID		**EVENT-ID**	**VERSION**	**M**		**EVENT=N11Sm ContextReleaseReq** **N40ChargingData ReleaseReq** **N7SmPolicy DeleteReq** **N10Unsubscribe ForNotificationReq** **N10Deregistration Request** **N7SmPolicy TerminateNotifyReq** **RadiusCoa DisconnectReq** **RadiusAcctReq** **N7SmPolicy TerminateNotifyReq** **N40Charging NotificationReq** **N10Update NotifyReq** **N11SmContext StatusNotifyReq** **N11N1N2Message TransferFail NotificationReq** **S5S8DeleteSessReq** **N11SmContext RetrieveReq**
			FIELD-COUNT	M		
			STATUS	M		
			STATUS-CODE	O		
			PDU(PDN)-SESSION -TYPE	M		
			CAUSE	O		
E ID		**EVENT-ID**	VERSION	M		**Event=N11SmContext UpdateReq**
			FIELD-COUNT	M		
			STATUS	M		
			STATUS-CODE	O		
			SUPI	M		
			IMEI	M		
			IMSI	M		
			MSISDN	M		
			PDU(PDN)- SESSION-TYPE	O		

m	u	N	Name	Presence	Type	Description
			N1-REQ-MSG-TYPE	O	N1N2MSGREQ CONTENT	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	N1N2MSGREQ CONTENT	
			N1-RSP-MSG-TYPE	O	N1N2MSGRSP CONTENT	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	N1N2MSGRSP CONTENT	
			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	O		

n	u	N	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		
			DATAFORWARDING	O		
E ID	**EV**	**ENT-ID**	VERSION	**M**		**Event=N11N1N2 MessageTransfer Req**
			FIELD-COUNT	M		
			STATUS	M		
			STATUS-CODE	O		
			PDU-SESSION-TYPE	M		
			N1-REQ-MSG-TYPE	O	N1N2MSGREQ CONTENT	PDU-SESSION- ESTB-ACCEPT PDU-SESSION- ESTB-REJECT PDU_SESSION_ RELEASE_ COMMAND PDU_SESSION_ MODIFICATION_ COMMAND
			N2-REQ-MSG-TYPE	O	N1N2MSGREQ CONTENT	
			N1-RSP-MSG-TYPE		N1N2MSGREQ CONTENT	
			N2-RSP-MSG-TYPE		N1N2MSGREQ CONTENT	
			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		

m	u	N	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		
URE ID	**EVE**	**ENT-ID**	VERSION	M		**Event=N16Pdu SessionHsmf UpdateReq** **N16PduSessionHsmf UpdateReqClient**
			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	NGAP-CAUSE	
			ALWAYS-ON	O		
			EPS-IWK	O		
			AN-TYPE-CAN-BE-CHANGED	O		
			N1-PDU-SESS-ID	O		
			N1-PCO	O		
			N1-RSP-MAX-SUPP-FILTERS	O		
			N1-ALWAYS-ON	O		

n	u	N	Name	Presence	Type	Description
			N1-QOS-RULES	O		
			N1-QOS-DESC	O		
E ID		**EVENT-ID**	VERSION	M		**Event= N16PduSession VsmfUpdateReq** **N16PduSessionVsmf UpdateReqClient**
			FIELD-COUNT	M		
			STATUS	M		
			STATUS-CODE	O		
			REQUEST- INDICATION	O	N1N2MSGREQ CONTENT	
			SESSION-AMBR	O	N1N2MSGREQ CONTENT	
			ALWAYS-ON- GRANTED	O	RequestIndication	
			CAUSE	O	SESS-AMBR	
			N1SM-CAUSE	O		
			BACKOFF-TIMER	O		
			N1-REQ-MSG-TYPE	O		PDU_SESSION_ MODIFICATION _COMMAND PDU_SESSION_ MODIFICATION_ COMMAND_REJECT
			N1-RSP-MSG-TYPE	O		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		
E ID		**EVENT-ID**	VERSION	M		**Event= N16Vsmf PduSession ReleaseReq**
			FIELD-COUNT	M		
			STATUS	O		
			STATUS-CODE	O		
			CAUSE	O		

m	u	N	Name	Presence	Type	Description
			VGMM-CAUSE	O		
			NGAP-CAUSE	O		
URE ID	**EVE**	**ENT-ID**	VERSION	M		**Event=N16Pdu SessionNotify ReqClient N16PduSession NotifyReq**
			FIELD-COUNT	M		
			STATUS	M		
			STATUS-CODE	O		
			RESOURCE-STATUS	O	Resourcestatus	
			CAUSE	O		
URE ID	**EVE**	**ENT-ID**	VERSION	M		**Event=S5S8Delete BearerReq**
			FIELD-COUNT	M		
			STATUS	M		
			STATUS-CODE	O		
			LBI-REQUESTED	O		
			EBIS	O		
			FAILED-BEARER -CTX	O	BEARER-CTX	
			CAUSE-REQUESTED	O		
			PCO	O		
			CAUSE-RESPONDED	O		
			LBI-RESPONDED	O		
			UE-LOCAL-IP	O		
			UE-UDP-PORT	O		
			BEARER-CTX	O		
URE ID	**EVE**	**NT-ID=1000**	VERSION	M		**Event= META-DATA**
			FIELD-COUNT	M		
			SUPI	M		
			IMEI/PEI	M		
			IMSI	M		
			MSISDN	M		
			GPSI			
			SERVING-PLMN	M		
			UE-LOCATION	M		

n	u	N	Name	Presence	Type	Description
			START-TIME	M		
			END-TIME	M		
			TRIGGER-NF	M		
			TRIGGER-EVENT	M		
			SGW-ID	O		
			STATUS	M		
			USERPLANE -STATUS	M		
			DISCONNECT -REASON	O		
			STATUS	M		
			UPDATE-TIME	—		

Table 9: Dedicated Bearer Events

Attribute		Name	Presence	Type	Description
TXN EDR fields			M		
PROCEDURE ID	**EVENT-ID**	**VERSION**	**M**		**Event=N7SmPolicy UpdateNotif** **N7SmPolicy UpdateReq** **N4Session ModificationReq** **N10UpdateNotify Req**
		FIELD-COUNT	M		
		STATUS	M		
		STATUS-CODE	O		
		PDU-SESSION -TYPE	O		
		CAUSE	O		
PROCEDURE ID	**EVENT-ID**	VERSION	**M**		**Event=S5S8Delete BearerCmd**
		FIELD-COUNT	M		
		STATUS	M		
		STATUS-CODE	O		
		BEARER-CTX-REQUESTED	O	BEARER-CTX	
		CAUSE	O		
		BEARER-CTX-RESPONDED	O	BEARER-CTX	
		RECOVERY	O		

Attribute		Name	Presence	Type	Description
PROCEDURE ID	**EVENT-ID**	VERSION	**M**		**Event= S5S8Bearer Resource**
		FIELD-COUNT	M		
		STATUS	M		
		STATUS-CODE	O		
		LBI-REQUESTED	O		
		RAT-TYPE	O		
		SERVING-PLMN	O		
		EBI	O		
PROCEDURE ID	**EVENT-ID**	VERSION	M		**Event=S5S8Modify BearerCr**
		FIELD-COUNT	M		
		STATUS	M		
		STATUS-CODE	O		
		APN-AMBR	O		
		BEARER-CTX	O	BEARER-CTX	
		CAUSE	O		
		RECOVERY	O		
PROCEDURE ID	**EVENT-ID**	VERSION	M		**Event=S5S8Update BearerRe**
		FIELD-COUNT	M		
		STATUS	M		
		STATUS-CODE	O		
		AMBR	O		
		BEARER-CTX	O	BEARER-CTX	
		CAUSE	O		
		RECOVERY	O		
PROCEDURE ID	**EVENT-ID**	VERSION	M		**Event=S5S8Create BearerRe**
		FIELD-COUNT	M		
		STATUS	M		
		STATUS-CODE	O		
		LINKED-BEARER -ID	O		
		PCO	O		
		BEARER-CTX	O	BEARER-CTX	
		CAUSE	O		

Attribute		Name	Presence	Type	Description
PROCEDURE ID	**EVENT-ID**	VERSION	M		**Event=S5S8Delete BearerReq**
		FIELD-COUNT	M		
		STATUS	M		
		STATUS-CODE	O		
		LBI-REQUESTED	O		
		EBIS	O		
		FAILED-BEARER -CTX	O	BEARER-CTX	
		CAUSE- REQUESTED	O		
		PCO	O		
		CAUSE- RESPONDED	O		
		LBI-RESPONDED	O		
		UE-LOCAL-IP	O		
		UE-UDP-PORT	O		
		BEARER-CTX	O		
PROCEDURE ID	**EVENT-ID**	VERSION	M		**Event=Metadata**
		FIELD-COUNT	M		
		STATUS	M		
		STATUS-CODE	O		
		SUPI	M		
		IMEI/PEI	O		
		IMSI	M		
		MSISDN	O		
		GPSI	O		
		SERVING-PLMN	O		
		UE-LOCATION	O		
		START-TIME	O		
		END-TIME	O		
		TRIGGER-NF	O		
		TRIGGER-EVENT	O		
		SGW-ID	O		
		STATUS	O		

Attribute		Name	Presence	Type	Description
		SUBSCRIBED-SESS -AMBR-UPLINK	O		
		SUBSCRIBED-SESS -AMBR-DOWNLINK	O		
		LOCAL-CFTEID -TEID	O		
		LOCAL-CFTEID -IP	O		
		REMOTE-CFTEID -TEID	O		
		REMOTE-CFTEID -IP	O		

Table 10: Handover Events

Attribute		Name	Presence	Type	Description
TXN EDR fields			M		
PROCEDURE-ID	**EVENT-ID**	**VERSION**	**M**		**N4Session ModificationReq** **N40ChargingData ReleaseRe** **N40ChargingData UpdateRe** **N40ChargingData CreateReq** **RadiusAcctReq** **N4GtpuRouter Advertisemen** **N7SmPolicy UpdateReq** **N7SmPolicyUpdate NotifyRe** **N11SmContext RetrieveReq** **S5S8Delete SessReq** **N11EbiAssignment Req** **N11SmContextStatus NotifyR**
		FIELD-COUNT	M		
		STATUS	M		
		STATUS-CODE	O		
		PDU(PDN)-SESSION -TYPE	M		
		CAUSE	O		
PROCEDURE ID	**EVENT-ID**	VERSION	M		**Event=N11SmContext Updat**
		FIELD-COUNT	M		
		STATUS	M		

Attribute		Name	Presence	Type	Description
		STATUS-CODE	O		
		SUPI	M		
		IMEI/PEI	M		
		IMSI	M		
		MSISDN	M		
		PDU(PDN)-SESSION -TYPE	O		
		N1-REQ-MSG-TYPE	O	N1N2MSGREQ CONTENT	pdu_session_ modification_reques pdu_sess_ modification _comman pdu_session_ release_req pdu_session_ release_command pdu_session_ release_complete pdu_session_ modification_reject pdu_session_ modification _compl pdu_session_ release_reject
		N2-REQ-MSG-TYPE	O	N1N2MSGREQ CONTENT	
		N1-RSP-MSG-TYPE	O	N1N2MSGRSP CONTENT	pdu_session_ modification_reques pdu_sess_modification _command pdu_session_ release_req pdu_session_ release_command pdu_session_ release_complete pdu_session_ modification_reject pdu_session_ modification _compl pdu_session_ release_reject
		N2-RSP-MSG-TYPE	O	N1N2MSGRSP CONTENT	
		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		

Attribute		Name	Presence	Type	Description
		N1-RSP-MAX-SUPP-FILTERS	O		
		RAT-TYPE	O		
		UP-CONTEXT -STATE	O		
		HO-STATE	O	Hostate	
		N1-BACKOFF-TIME	NA		
		N1-PDU-SESS-ID	O		
		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		
		DATAFORWARDING	O		
PROCEDURE ID	**EVENT-ID**	**VERSION**	**M**		**Event=N11N1N2 MessageTra**
		FIELD-COUNT	M		
		STATUS	M		
		STATUS-CODE	O		
		PDU-SESSION-TYPE	M		
		N1-REQ-MSG-TYPE	O	N1N2MSGREQ CONTENT	PDU-SESSION- ESTB-ACCE PDU-SESSION- ESTB-REJEC PDU_SESSION_ RELEASE_ PDU_SESSION_ MODIFICAT _COMMAND
		N2-REQ-MSG-TYPE	O	N1N2MSGREQ CONTENT	
		N1-RSP-MSG-TYPE	O	N1N2MSGREQ CONTENT	
		N2-RSP-MSG-TYPE	O	N1N2MSGREQ CONTENT	
		N1-PCO	O	PCO	
		N1-QOS-RULE	O	QOS-RULE	
		N1-QOS-DESC	O	QOS-DESC	

Attribute		Name	Presence	Type	Description
		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	O		
		N1-DNN/APN	O		
		N1-BACKOFF-TIME	NA		
		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		
PROCEDURE ID	**EVENT-ID**	VERSION	M		**Event=S5S8Create SessReq**
		FIELD-COUNT	M		
		SUPI	M		
		IMEI/PEI	M		
		IMSI	M		
		MSISDN	M		
		GPSI	M		
		STATUS	M		
		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	

Attribute		Name	Presence	Type	Description
		SESSION-AMBR	O	SESS-AMBR	
		CAUSE	O		
		PAA	O	PAA	
		S-NSSAI	O	NSSAI	
		RAT-TYPE	M		
		HO-INDICATION	O		
PROCEDURE ID	**EVENT-ID**	VERSION	M		**Event=S5S8Update BearerRe**
		FIELD-COUNT	M		
		STATUS	M		
		STATUS-CODE	O		
		AMBR	O		
		BEARER-CTX	O	BEARER-CTX	
		CAUSE	O		
		RECOVERY	O		
PROCEDURE ID	**EVENT-ID**	VERSION	M		**Event=S5S8Create BearerRe**
		FIELD-COUNT	M		
		STATUS	M		
		STATUS-CODE	O		
		LINKED-BEARER -ID	O		
		PCO	O		
		BEARER-CTX	O	BEARER-CTX	
		CAUSE	O		
PROCEDURE ID	**EVENT-ID**	VERSION	M		**Event=S5S8Delete BearerRe**
		FIELD-COUNT	M		
		STATUS	M		
		STATUS-CODE	O		
		LBI-REQUESTED	O		
		EBIS	O		
		FAILED-BEARER -CTX	O	BEARER-CTX	
		CAUSE-REQUESTED	O		
		PCO	O		
		CAUSE-RESPONDED	O		

Attribute		Name	Presence	Type	Description
		LBI-RESPONDED	O		
		UE-LOCAL-IP	O		
		UE-UDP-PORT	O		
		BEARER-CTX	O		
PROCEDURE ID	**EVENT-ID**	VERSION	M		**Event=S5S8Delete BearerCmd**
		FIELD-COUNT	M		
		STATUS	M		
		STATUS-CODE	O		
		BEARER-CTX-REQUESTED	O	BEARER-CTX	
		CAUSE	O		
		BEARER-CTX-RESPONDED	O	BEARER-CTX	
		RECOVERY	O		
PROCEDURE ID	**EVENT-ID**	VERSION	M		**Event=S5S8Modify BearerReq**
		FIELD-COUNT	M		
		STATUS	M		
		STATUS-CODE	O		
		MEI	O		
		SERVING-PLMN	O		
		RAT-TYPE	O		
		FQ_TEID	O		
		AMBR- REQUESTED	O		
		MME-S4SGSN-ID	O		
		M-MBR	O		
		UE-LOCAL-ADDR	O		
		HENB-LOCAL -ADDR	O		
		UE-UDP-PORT	O		
		CAUSE	O		
		RECOVERY	O		
		LINKED-EBI	O		
		MSISDN	O		

Attribute		Name	Presence	Type	Description
		AMBR-RESP	O		
		APN-RESTRICT	O		
		BEARER-CTX-RESPONDED	O		
PROCEDURE ID	**EVENT-ID**	VERSION	M		**Event=N16Pdu SessionHsmf** **N16PduSession HsmfUpdate**
		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	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_ MODIFICAT PDU_SESSION_ RELEASE_
		N1-RSP-MSG-TYPE	O		
		N1-PDU-SESS-ID	O		
		N1-PCO	O		
		N1-RSP-MAX-SUPP-FILTERS	O		
		N1-REQ-ALWAYS-ON	O		

Attribute		Name	Presence	Type	Description
		N1-QOS-RULES	O		
		N1-QOS-DESC	O		
PROCEDURE ID	**EVENT-ID**	VERSION	M		**Event=N16Pdu SessionCreateRe** **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		
		PGW-S8-CFTEID	O		
		ALWAYS-ON-REQUESTED	O		
		UE-LOCATION	O	UE-LOCATION	
		ROAMING-CHRG-PROF-REQUESTED	O	CHARGING-PROF	
		ALWAYS-ON-GRANTED	O		
		SSC-MODE	O		
		HCNTUNNEL-INFO	M	TUNNEL-INFO	
		SESSION-AMBR	O	SESS-AMBR	
		UE-IPV4-ADDRESS	O		

Attribute		Name	Presence	Type	Description
		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_ ESTABLISH
		N2-REQ-MSG-TYPE	O		
		N1-RSP-MSG-TYPE	O		PDU_SESSION_ ESTABLISHM
		N2-RSP-MSG-TYPE	O		
		N1-PDU-SESS-ID	O		
		N1-REQ-PDU(PDN) -SESSION-TYPE	O		
		N1-REQ-SSC-MODE	O		
		N1-PCO	O		
		N1-REQ-MAX-SUPP-FILTERS	O		
		N1-ALWAYS-ON	O		
		N1-REQ-PDU(PDN)-SESSION-TYPE -SELECTED	O		
		N1-REQ-SSC-MODE -SELECTED	O		
		N1-QOS-RULES	O		
		N1-QOS-DESC	O		
		N1-SESS-AMBR	O		
		N1-REQ-ALWAYS -ON	O		
		N1-REQ-SSC-MODE -ALLOWED	O		
		N1-CONG-RE-ATTEMPT-IND	O		
		N1-RSP-RE-ATTEMPT-IND	O		

Attribute		Name	Presence	Type	Description
		N1-DNN/APN	O		
PROCEDURE ID	**EVENT-ID**	VERSION	M		**Event=N11SmContext CreateRe**
		FIELD-COUNT	M		
		SUPI	M		
		IMEI/PEI	M		
		IMSI	M		
		MSISDN	M		
		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	N1N2MSGREQ CONTENT	PDU-SESSION -ESTB-REQUEST
		N2-REQ-MSG-TYPE	O	N1N2MSGREQ CONTENT	
		N1-RSP-MSG-TYPE	O	N1N2MSGRSP CONTENT	
		N2-RSP-MSG-TYPE	O	N1N2MSGRSP CONTENT	
		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		

Attribute		Name	Presence	Type	Description
		SERVING-PLMN	O		
		UNAUTH-SUPI	O		
		S-NSSAI- ASSIGNED	O	NSSAI	
		UP-CONTEXT -STATE	O		
		N1-PDU-SESS -ID	O		
		INDIRECTFWDFLAG	O		
		DIRECTFWDFLAG	O		
		HO-STATE	O		
PROCEDURE ID	**EVENT-ID**	VERSION	M		**Event=Metadata**
		FIELD-COUNT	M		
		SUPI	M		
		IMEI/PEI	O		
		IMSI	M		
		MSISDN	O		
		GPSI	O		
		SERVING-PLMN	O		
		UE-LOCATION	O		
		START-TIME	O		
		END-TIME	O		
		TRIGGER-NF	O		
		TRIGGER-EVENT	O		
		SGW-ID	O		
		STATUS	O		
		RAT-TYPE	O		
		UE-TIMEZONE	O		
		SESS-AMBR- UPLINK	O		
		SESS-AMBR-DOWNLINK	O		
		LINKED-EBI	O		
		USERPLANE- STATUS	O		
		LOCAL-CFTEID -TEID	O		
		LOCAL-CFTEID -IP	O		

Attribute		Name	Presence	Type	Description
		REMOTE-CFTEID -TEID	O		
		REMOTE-CFTEID -IP	O		
		DISCONNECT -REASON	O		

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
- Unstrutured = 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

- PartialRecordMethod (type: Number)
  - PartialRecordMethod_DummyEnum = 0
  - DEFAULT = 1
  - INDIVIDUAL = 2

- TriggerCategory (type : Number)
  - TriggerCategory_DummyEnum = 0
  - IMMEDIATE_REPORT = 1
  - DEFERRED_REPORT = 2

- TriggerType (type: Number)
  - TriggerType_DummyEnum = 0
  - QUOTA_THRESHOLD = 1
  - QHT = 2
  - FINAL = 3
  - QUOTA_EXHAUSTED = 4
  - VALIDITY_TIME = 5
  - OTHER_QUOTA_TYPE = 6
  - FORCED_REAUTHORISATION = 7
  - UNUSED_QUOTA_TIMER = 8
  - UNIT_COUNT_INACTIVITY_TIMER = 9
  - ABNORMAL_RELEASE = 10
  - QOS_CHANGE = 11
  - VOLUME_LIMIT = 12
  - TIME_LIMIT = 13
  - PLMN_CHANGE = 14
  - USER_LOCATION_CHANGE = 15

- RAT_CHANGE = 16
- UE_TIMEZONE_CHANGE = 17
- TARIFF_TIME_CHANGE = 18
- MAX_NUMBER_OF_CHANGES_IN_CHARGING_CONDITIONS = 19
- MANAGEMENT_INTERVENTION = 20
- CHANGE_OF_UE_PRESENCE_IN_PRESENCE_REPORTING_AREA = 21
- CHANGE_OF_3GPP_PS_DATA_OFF_STATUS = 22
- SERVING_NODE_CHANGE = 23
- REMOVAL_OF_UPF = 24
- ADDITION_OF_UPF = 25
- START_OF_SERVICE_DATA_FLOW = 26
- AMBR_CHANGE = 27

- Resourcestatus (type: Number)
  - DummyEnum = 0
  - RELEASED = 1

- HoState (type: Number)
  - DummyEnum = 0
  - NONE = 1
  - PREPARING = 2
  - PREPARED = 3
  - COMPLETED = 4
  - CANCELLED = 5

For details on the listed attributes, see the tables in the EDR Attributes, on page 54 section.

Procedure EDR Example:

V1,15,28514,10:36.1,97,imsi-310310120106401,1287,N11SmContextCreateReq,imsi-310310120106401:5,,roaming-status:home|ue-type:nr-capable|supi:imsi-310310120106401
|gpsi:msisdn-12000006001|pei:imeisv-1031014232100100|psid:5|snssai:001|dnn:fast.t-mobile.com|emergency:false|rat:nr|access:3gpp
access|connectivity:5g|udm-uecm:10.178.118.192
|udm-sdm:10.178.118.192|auth-status:unauthenticated,success,success,PDU Session
Establishment,N11SmContextCreateReq,Active,init_done|SETUP: Idle|SETUP: Await UDM
Registration|
SETUP: Await UDM Subscription
Fetch|finished,3,1287,V2,33,imsi-310310120106401,imeisv-1031014232100100,3.1031E+14,12000006001,msisdn-12000006001,Success,,2,1,,,193|,,,,,,,NR,
1|||,0100BC|310|310,1,1,,fast.t-mobile.com,3a4528c-851d-4728-856c-1b186ec992e5,310|310,0,,,5,0,0,3,1313,V2,4,Success,201,2,,3,1316,V2,4,Success,200,2,,3,1319,V2,4,Success,201,
2,,,,,,,,,,,,,,,,,,,,,,,,,,,,
V1,15,28528,12:11.5,96,imsi-310310120106401,1304,N11SmContextReleaseReq,imsi-310310120106401:5,imsi-310310120106401:fast.t-mobile.com,snssai:001|emergency:false|peerGtpuEPKey:
10.193.123.12:172.18.90.205|namespace:smf,success,success,PDU Session Release - AMF
initiated,N11SmContextReleaseReq,Active,init_done|RELEASE: Idle|RELEASE: Await UPF Release|
prepone_response|prepone_response|RELEASE: Await Charging Terminate|RELEASE: Await PCF

```
Delete|RELEASE: Await UDM Unsubscribe to
notify|finished,4,530,V2,4,Success,,2,Request_Accepted,
4,1304,V2,4,Success,,2,,4,3335,V2,4,Success,204,2,,4,1325,V2,4,Success,204,2,,4,1000,V2,15,imsi-310310120106401,imeisv-1031014232100100,3.1031E+14,1200000601,msisdn-1200000601,310|
310,NR|Ncgi:310;310;0147AD5C2|Tai:310;310;025289,2022-09-01 20:12:11.545199056 +0000
UTC,2022-09-01 20:12:11.631685285 +0000 UTC,amf,1304,,Success,8,disc_pdurel_amf_init_release,,
```

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.

Note The transaction collision EDRs support only up to a maximum of 10 subscribers and not all subscribers unlike the transaction EDRs. The transaction collision EDRs do not support configuration of EDR generation rate, CPU threshold, session limiting, and procedure or event information.

Table 11: 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 |.

Field Number	Field Name	Field Description
11	Active Transactions After Collision	Transactions in the active state after collision handling separated by |.
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 12: QOS-RULE

QOS-RULE-LIST	qr-id|qr-opcode|qr-dqr|qr-qfi|qr-prededence|num-filters| **filters:**flter-id;flter-dir;cmp-type-match-a cmp-type-proto;proto-id;cmp-type-local-addr;local-ip; local-port;cmp-type-remote-addr;;remote-ip;cmp-type-remote-port; remote-port;cmp-type-tos;tos-trffic-class			
	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		O
			PKT-FILTER-ID	M
			PKT-FILTER-DIRECTION	M
			CMP-TYPE-MATCH-ALL	O

			CMP-TYPE-PROTO	O
			PROTO-ID	O
			CMP-TYPE-LOCAL-ADDRESS	O
			LOCAL-IP-ADDRESS	O
			LOCAL-CMP-TYPE-PORT	O
			LOCAL-PORT	O
			CMP-TYPE-REMOTE-ADDRESS	O
			REMOTE-IP-ADDRESS	O
			CMP-TYPE-REMOTE-PORT	O
			REMOTE-PORT	O
			CMP-TYPE-TOS	O
			TOS-TRAFFIC-CLASS	O

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

Table 13: 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 14: 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 15: 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 16: 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 17: 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 18: 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 19: 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 20: PAA

PAA	[ipv4-addr|ipv6-addr]	
Sub field	**Presence**	**Type**
IPV4-ADDR	O	String
IPV6-ADDR	O	String

Table 21: 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 22: 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 23: GUAMI

GUAMI	[amf-id|plmn-id]	
Sub field	**Presence**	**Type**

AMF-ID	M	String
PLMN-ID	M	PLMN-ID

Table 24: SESS-AMBR

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

Table 25: UE-LOCATION

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

Table 26: ECGI or NCGI

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

Table 27: TAI

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

Table 28: 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 29: NGAP-CAUSE

NGAP-CAUSE	[group|value]	
GROUP	O	Number
VALUE	O	Number

Table 30: TUNNEL-INFO

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

Table 31: QFS

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

Table 32: CHARGING-PROF

CHARGING-PROF	partial-rec-method|category:max-cc:time-limit;type:vol-limit			
	PARTIAL-REC-METHOD			PartialRecordMethod
	TRIGGERS-LIST	TRIGGERS	CATEGORY	TriggerCategory
			MAX-CCC	
			TIME-LIMIT	
			TYPE	TriggerType
			VOL-LIMIT	

Table 33: BEARER-CTX

BEARER-CTX	[ebi|pkt-flow-id|cause|pco|tft|fqteid|qos-desc|charging-id]

Sub field	Presence	Type
EBI/LBI	M	
PKT-FLOW-ID	O	
CAUSE	O	
PCO	O	PCO
TFT	O	
FQTEID	O	
QOS-DESC	O	QOS-DESC
CHARGING-ID	O	

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

Table 34: 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	76
N2_PDU_SESSION_RESOURCE_RELEASE_RESPONSE	130
N2_PDU_SESSION_RESOURCE_SETUP_REQUEST	77
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
N2_PDU_SESSION_HANDOVER_PREP_UNSUCCESS_TRANSFER	93
N2_PDU_SESSION_HANDOVER_COMMAND_TRANSFER	91
N2_PDU_SESSION_PATH_SWITCH_REQUEST_ACK_TRANSFER	84
N2_PDU_SESSION_PATH_SWITCH_REQUEST_ UNSUCCESS_TRANSFER	97
N2_PDU_SESSION_PATH_SWITCH_REQUEST_TRANSFER	82
N2_PDU_SESSION_HANDOVER_REQUIRED_TRANSFER	85
N2_PDU_SESSION_HANDOVER_REQUEST_ACK_TRANSFER	87
N2_PDU_SESSION_HANDOVER_RESOURCE_ ALLOC_UNSUCCESS_TRANSFER	89
N2_PDU_SESSION_PATH_SWITCH_REQUEST_ SETUP_FAILED_TRANSFER	95
N2_PDU_SESSION_RESOURCE_SETUP_UNSUCCESS_TRANSFER	99
N2_PDU_SESSION_RESOURCE_NOTIFY_TRANSFER	101
N2_PDU_SESSION_SECONDARY_RAT_USAGE_TRANSFER	103
N2_PDU_SESSION_RESOURCE_NOTIFY_RELEASED_TRANSFER	105
N2_PDU_SESSION_RESOURCE_SETUP_FAIL_TRANSFER	107
N2_PDU_SESSION_PATH_SWITCH_SETUP_FAIL_TRANSFER	109
N2_PDU_SESSION_HANDOVER_RESPONSE_ ALLOC_FAIL_TRANSFER	111

Limitations

The EDR Logging feature has the following limitations:

- Event record generation does not work for the following scenarios:
  - All handover (HO) procedures except Xn HO, N2 HO, 5G to 4G HO, 4G to 5G HO, 5G to Wi-Fi HO, and Wi-Fi to 5G HO
  - Idle-Active transition
  - Active-Idle transition
  - 4G PDN modification
- 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.

Configure EDR Reporting

Note EDR generation occurs after you configure the subscriber ID. Then, you can enable EDR reporting for a specific subscriber or for all the subscribers. If you have enabled the EDR reporting for all the subscribers, then the SMF ignores the individual subscriber ID configuration.

Note To optimize the performance, it is recommended to enable EDR reporting only for a subset of subscribers with specific procedure ID.

To enable or disable the EDR generation for subscribers, use the following sample configuration:

```
config
    edr reporting { enable [ all subscribers | file [ transaction |
transaction-collision ] ] | disable file [ transaction |
transaction-collision ] }
    edr all subscribers
    end
```

NOTES:

- **edr reporting { enable [all subscribers | file [transaction | transaction-collision]] | disable file [transaction | transaction-collision] }**—Specify this keyword to configure the EDR reporting on SMF. Use the **edr reporting enable** command to enable the EDR reporting functionality. Use the **edr reporting disable***file* command to disable the EDR reporting functionality for a specific file. By default, the EDR reporting is disabled.
- Use the **edr reporting enable all subscribers** command or **edr all subscribers** to enable the EDR for all the subscribers.

Note

- To enable EDR reporting for a subscriber, use the **edr subscribers** *subscriber_id* command. *subscriber_id* must be an alphanumeric string. The default value is empty. Ensure 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 a maximum of 10 subscribers for generation of transaction collision EDRs.

Configure EDR Files for Generation

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

```
config
   edr file { transaction | transaction-collision }
      procedure-id procedure_value
         event-id event_value
            field-id field_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_value*: Specify the procedure ID or procedure name for which the event reporting must be enabled.
- **event-id** *event_value*: Specify the event ID or event name for which the event reporting must be enabled.
- **field-id** *field_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 one or more procedures are enabled, then all the other procedures will be disabled and will not be populated in the transaction EDR. Similarly, if one or more events are enabled under a procedure, all other events under that procedure will be disabled and will not be populated in the transaction EDR.
- 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
  procedure-id 24 32
  procedure-id 25
    event-id 5 7 8
    event-id 5
      field-id 10 12 14
```

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

Configure EDR Parameters

To define the EDR parameters, use the following sample configuration:

```
config
   [ no ] edr file transaction
      field priorityClass
      flush interval file_flush_interval
      limit [ size file_size | count file_count| storage edr_storage_size ]
      procedure procedure_value event event_value field field_value
```

```
rate rate_value
reporting [ disable | enable ]
threshold [ cpu cpu_threshold | session session_thresold  ]
end
```

NOTES:

- **field priorityClass**—Specify the priority class of the message. The message can be a default priority message or a high-priority message. Enabling this CLI displays an additional field in the EDR transaction files with an additional field containing one of the following two values:
  - DefaultPriority
  - HighPriority
- **flush interval** *file_flush_interval*—Specify the time interval, in milliseconds, to flush the EDR files. The default value is 1000 ms.
- **limit [size** *file_size* **| count** *file_count*| **storage** *edr_storage_size***]**—Specify the file-related limits.
  - Use the **limit size** *file_size* command to specify the maximum size of an EDR file, after which the EDR file is compressed and new CSV file is created. The default file size is 100 MB.

    The *file_size* must be an integer in the range of 1 to 2048.

Note The system periodically monitors the 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.

  - Use the **limit count** *file_count* command to specify the maximum number of EDR files to be preserved. The default file count is 10.

    The *file_count* must be an integer in the range of 2 to 128.

    When the configured file count is reached, the file is moved to persistent volume and then deleted.
  - Use the **limit storage** *edr_storage_size* command to specify the EDR storage size of persistent volume in GiB.

    The *edr_storage_size* must be an integer in the range of 0 to 64. Set the value to 0 to disable persistent volume in edr-monitor pod. The default storage size is 24 GiB.

Important The storage limit can be changed only in “system mode shutdown” mode. Hence, disabling of persistent volume can be done only when the system is in shutdown state.

- **procedure** *procedure_value* **event** *event_value* **field** *field_value*—Specify the transaction-level procedure ID configuration information. The *procedure_value* must be a procedure ID or a procedure name. The *event_value* must be an event ID or an event name along with a field value.

Note

- By default, all the procedure IDs, event IDs, and field IDs, which are registered during the application-start, are enabled.
- If one or more procedures are enabled, then all other procedures are disabled and are not populated in the transaction EDR.
- If one or more events are enabled in a procedure, then all other events in that procedure are disabled and are not populated in the transaction EDR.
- If one or more fields are enabled in an event, then all other fields in that event are disabled and are not populated in the transaction EDR.
- For the disabled procedure IDs, no event-start, add field, or event-end are honored.
- For the disabled event IDs in a procedure ID, no event-start, event-end, or add field are honored for the procedure ID and event ID combination.
- For a disabled field ID within an event ID, no add-field is honored, and a blank entry is available instead of value in CSV entry.

- **rate** *rate_value* —Specify the allowed rate per second to generate EDR records. The default rate is 4096.

  rate_value must be an integer in the range of 32 to 65535.

  When the EDR generation rate limit is reached, transaction EDRs are dropped and a metric is added to track EDR generated, dropped, drop reason, and so on. Note that the rate limiting is performed per service (smf-service) pod instance.

- **reporting [disable | enable]**—Specify the file for which you have to enable or disable reporting.

Important The edr-monitor pods are spawned only when the transaction edr is enabled.

- **threshold [cpu** *cpu_threshold* **| session** *session_thresold* **]**—Specify the threshold to limit the EDR generation.
  - Use the **threshold cpu** *cpu_threshold* command to configure the CPU threshold in percentage. If the threshold is breached for a SMF service pod instance, then the application stops generating EDRs. The *cpu_threshold* must be an integer in the range of 1 to 100, with default value of 80%.
  - Use the **threshold session** *session_thresold* command to configure session threshold per GR instance. If the threshold is breached for a GR instance, then the application stops generating EDRs. The *session_thresold* must be an integer in the range of 0 to 1,000,000, with default value of 100,000.

Note If the rack is running with active-active mode, the session threshold is applied individually for both the GR instances.

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

Bulk Statistics for EDR Transactions and EDR Reporting

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.

Following metric is used to monitor the EDR count and status.

- edr_total

  Labels:

  - name – Name of the transaction EDR.
  - status – Status of the EDR transaction if it is successful or has any errors.
  - status_code – The following status codes are supported:
    - EdrReportingDisabled
    - EdrTxnReportingDisabled
    - EdrSessThreshold
    - EdrCpuThreshold
    - EdrRateLimitExceeded
    - EdrFileWriteFailed
    - EdrInvalidEdrId
    - EdrQueueFull
    - EdrIgnored_NoEventRecorded