



Capability to Record and Produce Call Transactions

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Feature Summary and Revision History

Summary Data

Applicable Product(s) or Functional Area	<ul style="list-style-type: none"> • ePDG • P-GW • SaMOG
Applicable Platform(s)	<ul style="list-style-type: none"> • ASR 5500 • VPC-DI • VPC-SI
Feature Default	Disabled - Configuration Required
Related Changes in This Release	Not Applicable
Related Documentation	<ul style="list-style-type: none"> • <i>Command Line Interface Reference</i> • <i>ePDG Administration Guide</i> • <i>P-GW Administration Guide</i> • <i>SaMOG Administration Guide</i> • <i>Statistics and Counters Reference</i>

Revision History

Revision Details	Release
P-GW and SaMOG supports capability to record and produce historic call transactions feature. Additional RTT record schemas have been added.	21.27
Added RTT Record Schema	21.26
First introduced.	20.0

Feature Description

Regions and Network Operations Center (NOC) uses Real Time Tool (RTT) to debug network issues and to understand user behavior. All call transactions in ePDG, P-GW, and SaMOG gets generated in RTT files. ePDG, P-GW, and SaMOG transfer RTT files to the external server through SSH File Transfer Protocol (SFTP). The comma-separated values (.CSV) format RTT files get transferred either in compressed or non-compressed format. Transfer happens based on the configuration to the external servers such as servers in the customer network either directly or through the Cisco Collector server.



Note RTT Record Schema and its procedure numbers are generalized for Gateway RTT. Contact your Cisco account representative for detailed information on the specific RTT Record Schema.

How it Works

This section describes the RTT procedures and schema.

RTT Procedures

The following table lists the RTT procedures that are specific to ePDG, P-GW and SaMOG:

Procedure Number	Procedure Name	Applicability
1	S5/S8/S2b GTP Create Session	P-GW, ePDG, SaMOG
2	S5/S8/S2b GTP Create Bearer	P-GW, ePDG, SaMOG
3	S5/S8/S2b GTP Delete Session	P-GW, ePDG, SaMOG
4	S5/S8/S2b GTP Delete Bearer	P-GW, ePDG, SaMOG
5	GTP Modify Bearer	P-GW
6	S5/S8/S2b GTP Update Bearer	P-GW, ePDG, SaMOG
7	S6b/SWm – Diameter AAR/ AAA	P-GW, ePDG, SaMOG

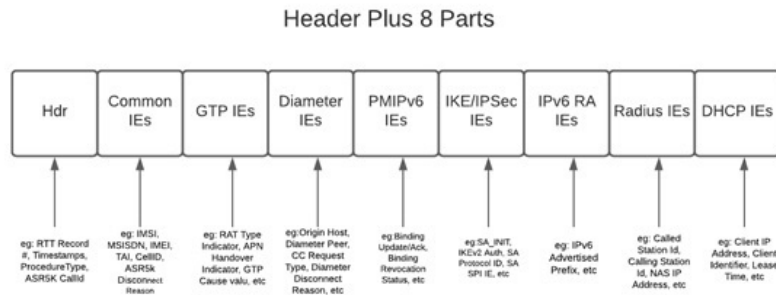
Procedure Number	Procedure Name	Applicability
8	S6b/SWm – Diameter RAR/RAA	P-GW, ePDG, SaMOG
9	S6b/SWm – Diameter Session Termination	P-GW, ePDG, SaMOG
10	S6b – Abort Session	P-GW, ePDG, SaMOG
11	Diameter Gx – CCR-I/CCA-I	P-GW
12	Diameter Gx – CCR-U/CCA-U	P-GW
13	Diameter Gx – CCR-T/CCA-T	P-GW
14	Diameter Gx – RAR/RAA	P-GW
15	Diameter Gy – CCR-I/CCA-I	P-GW
16	Diameter Gy – CCR-U/CCA-U	P-GW
17	Diameter Gy – CCR-T/CCA-T	P-GW
18	Diameter Gy – RAR/RAA	P-GW
19	PMIPv6 S2a – Binding Update/Acknowledgement	P-GW
20	PMIPv6 S2a Revocation Update/Acknowledgement	P-GW
21	SWu – IKEv2 SA INIT/Resp	ePDG
22	SWu – IKEv2 Auth Req/Resp	ePDG
23	SWu – IKEv2 Information Req/Resp	ePDG
24	SWm – Diameter EAP Request/Answer	ePDG, SaMOG
25	ePDG Router Advertisement	ePDG, SaMOG
26	SWu – CREATE_CHILD_SA Req/Resp	ePDG
27	Radius – WLC-SaMOG Access Request/Challenge	SaMOG
28	Radius – WLC-SaMOG Access Request/Accept	SaMOG
29	Radius – WLC-SaMOG Disconnect Request/Response	SaMOG
30	Radius – WLC-SaMOG Accounting Request/Response	SaMOG
31	Radius – SaMOG-Radius Server Accounting Req/Res	SaMOG

Procedure Number	Procedure Name	Applicability
32	WLC – SaMOG DHCP Discover/Offer	SaMOG
33	WLC – SaMOG DHCP Request/Ack/Nak	SaMOG
34	WLC – SaMOG DHCP Release/Ack/Nak	SaMOG

RTT Record Schema

The following figure details the RTT schema for ePDG, P-GW and SaMOG. The first six IEs, Common IEs to IPv6RA IEs are common for ePDG, P-GW and SaMOG. The last two fields, Radius IEs and DHCP IEs are specific to SaMOG.

Figure 1: RTT Record Schema



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RTT schema has a Header followed by eight blocks of Information Elements (IEs). There are 220 IEs that are grouped into 8 blocks. Schemas 1 to 170 are specific to ePDG. Schemas 1 to 170 + 10 (180) CUPS schemas are specific to P-GW and schemas 171 to 220 are specific to SaMOG. For more information on CUPS schemas, refer to the *Ultra Packet Core CUPS User Plane Administration Guide*. Contact your Cisco account representative for the complete list of RTT Record Schema IEs.

The following table lists the RTT Record schemas:

IE	Description	Format Example	Relevant Procedures
1	Gateway RTT Record Number	Counter in <proclet-type> <instance-id> <RTT-record-#>	All
2	Gateway RTT Version Number	Version 3 in R20.0	All
3	Procedure Number	Defined in CFS Table 1	All
4	Gateway Name	Host Name of the Chassis	All
5	Procedure Start Time (GMT)	Time in UTC, (to ms accuracy)	All
6	Procedure End Time (GMT)	Time in UTC, (to ms accuracy)	All

IE	Description	Format Example	Relevant Procedures
7	ASR5K CallID	Internal CallID, for example [376efb10]	All
8	GW Name	Gateway name (ePDG/P-GW/SaMOG) for which the RTT record is generated.	All
9 to 10	Reserved		
11	IMSI	Example [311480076488840]	1, 11, 12, 13, 22, 24, 27, 28, 30, 32, 33 and 34
12	MSISDN	Example [19728256305]	1, 5, 7, 15, 16 and 17
13	IMEISV	Example [9900028823793406]	1, 11 and 15
14	TAI - MCC/MNC/TAC	Example string [311-480-0x3B00]	1 through 6 ,11, 12, 15 and 16
15	Cell ID	ECI. Example [0xE70D01]	1 through 6, 11, 12, 15 and 16
16	ASR5.5K Disconnect Reason	Internal reason for session disconnect (Example: timeout, error). For more information, refer to the <i>Statistics and Counters Reference Guide</i> .	All (pending error)
17	MAC Address	MAC address of the UE device. This attribute is same as the calling-station-ID, in case of SaMOG radius call flow. Example: 0034567890AB	24, 27, 28, 29, 30, 31, 32, 33 and 34
18 to 20	Reserved		
21	Serving Network	MCC MNC. Example [311480]	1 and 5
22	Radio Access Technology	Defined in TS29.274, example [6 = E-UTRAN]	22
23	Handover Indicator	HI field in Indication attribute; example [0 = New PDN; 1 = Handover]	1 and 5
24	SGW/HSGW/ePDG/SaMOG Control TEID	Tunnel Identifier for Peer. Example [0x26B609F0]	1, 2 and 5
25	PGW Control TEID	Tunnel Identifier for PGW. Example [0x084BC005]	1 and 2

IE	Description	Format Example	Relevant Procedures
26	AN GW Address	IP Address of Remote GW: HSGW or SGW	1, 2 and 5
27	Access Point Name	String, example: [Customerims.mnc311.mcc480.3 gppnetwork.org]	1
28	Framed-IP Address	UE assigned IPv4 address	1, 11, 12 and 13
29	Framed-IPv6 Address	UE assigned IPv6 prefix/address	1, 11, 12 and 13
30	Uplink AMBR	In Kbps; example [0-4294967295]	1 and 6
31	Downlink AMBR	In Kbps; example [0-4294967295]	1 and 6
32	PCO DNS IPv6 Address – Primary	IPv6 Address of Primary DNS server	1
33	PCO DNS IPv6 Address – Secondary^Tertiary	Secondary IPv6 Address ^ Tertiary IPv6 Address for DNS	1
34	PCO DNS IPv4 Address – Primary	IPv4 address	1
35	PCO DNS IPv4 Address - Secondary	Secondary IPv4 Address ^ Tertiary IPv6 Address for DNS	1
36	List of EPS Bearer IDs (Successful)	Each bearer Id shall be separated by a “ ” Example 1 3 5	1, 2, 4, 5 and 6
37	Linked Bearer Identity	Based on TS29.274, example [0-15]	2, 3, 4 and 5
38	Uplink MBR	In Kbps. MBR. Example 1234 3456 567 MBR of each bearer shall be separated by “ ” and has the same order as of IE 37	1 and 6
39	Downlink MBR	Same as Uplink MBR	1 and 6
40	Uplink GBR	In Kbps. GBR. Example 1234 3456 567 MBR of each bearer shall be separated by “ ” and has same order as of IE 37	1 and 6
41	Downlink GBR	Same as Uplink GBR	1 and 6

IE	Description	Format Example	Relevant Procedures
42	GTP Cause Value	Based on TS29.274 Request/Acceptance/Rejection Cause, example [1-255]	1 to 6
43	Piggyback Record Indicator	Explicit indication of piggyback message record, example (0=no; 1=yes)	2 and 5
44	Reserved		
45	SGW/HSGW/ePDG/SaMOG Data TEID	Tunnel Identifier for Peer, example [0x26B609F0]	1,2 and 5
46	PGW Data TEID	Tunnel Identifier for P-GW, example [0x084BC005]	1 and 2
47 to 50	Reserved		
51	Session ID	Session-ID for Authentication Session, example, UTF8 String [0006-diamproxy.WSBOMAGJPNC. S6b.vzims.com; 21604107; 449305093; 536f9359-503]	7 to 18 and 24
52	Auth-Application ID	Example [S6b = 16777999 , Gx = 16777238, Gy = 4]	7 to 18 and 24
53	PGW-Host (Origin Host)	FQDN of PGW, example [0004-diamproxy. WSBOMAGJPNC. Gy.vzims. com]	7 to 18 and 24
54	Diameter Peer Address Realm	FQDN of 3GPP AAA, PCRF OCS realm, example [Customerims.com]	7 to 18 and 24
55	Dest Peer Host	FQDN of 3GPP AAA, PCRF, OCS host, example [njbbpcrf1a.vzims.com]	7 to 18 and 24
56	CC Request Type	Example Enumerated [1-3, for I, U, T]	11, 12, 13, 15, 16 and 17
57	CC Request Number	Example [0]	11, 12, 13, 15, 16 and 17
58	Result Code	Diameter Result Code based on RFC3588, example [2001]	7 to 18 and 24
59	Origin State ID	Example [1366695723]	7 to 18

IE	Description	Format Example	Relevant Procedures
60	Service-Selection	AVP used for providing APN name for authorization, example [Customerinternet]	12 and 24
61	Charging Gateway Function Host	FQDN of CGF, example [cgfl.NEE29.vzims.com]	5 and 7
62	Charging Group ID	Charging ID of each bearer shall be separated by “ ” in the order same as that of IE 37 followed by 44	5 and 7
63	Server-Name (CSCF Address)	Only on IMS APN, example [pccsf1.CTX07.vzims.com]	7
64	Framed-pool	Pool name from which IPv4 address is to be allocated, example [int41]	7
65	Framed-IPv6-Pool	Pool name from which IPv6 prefix is to be allocated, example [ims61]	7
66	Auth-Request-Type	Based on TS29.273 and 29.212. Example Enumerated [1-3]	7 and 24
67	Re-Auth-Request-Type	Based on TS29.273 and 29.212. Example Enumerated [0-1]	8, 14 and 18
68	Diameter Termination Cause	Based on TS29.273 and 29.212. Example Enumerated [1-8]	9, 13 and 17
69	QoS Class Identifier	QCI, example [8]	11, 12, 15 and 16
70	IP-CAN Type	Example [5 = 3GPP-EPS]	11, 12 and 14
71	Event Trigger	Based on TS29.212, Series of Pipe Delimited Triggers, example [1 = QOS_CHANGE]	11 and 12
72	Reserved IE / Unused		
73	Charging-Rule-Remove	Name of the removed Charging rule, example String [RTRRule3300]	12
74	Charging-Rule-Install	Name of the installed Charging rule, example String[RTRRule3300]	11
75	Multiple Services Indicator	Based on TS32.299, example Enumerated [0-1]	15, 16 and 17

IE	Description	Format Example	Relevant Procedures
76	Multiple Services Credit Control Rating-Group	Identifier of Rating Troup, example [3300]	15, 16 and 17
77	Multiple Services Credit Control Granted Service Unit	CC-Total-Octets, example [524288000]	15
78 to 80	Reserved		
81	EAP Auth-Session-State	Example: STATE_MAINTAINED (0)	24
82	WLAN User-Name	Example: 0311150123456701@wlan.mnc150. mcc311.3 gppnetwork.org	24
83	RAT Type	Example: 0 = WLAN	24
84	Visited Network Identifier	Example: mnc150.mcc311.3gppnetwork.org	24
85	EAP-Master-Session-Key	MSK	24
86	APN Configuration	PDN-Type Service = Selection Gateway	24
87 to 90	Reserved		
91	MAG IP Address	MAG IP Address	19 and 20
92	LMA IP Address	LMA IP Address	19 and 20
93	IMSI-NAI	Example: 631148000021024@nai.epc.mnc480. mcc311.3 gppnetwork.org	19 and 20
94	Service Selection Mobility Option	Set to EPS APN Name, formatted as 3GPP TS 23.003, example, Customerims	19 and 20
95	Home Network Prefix Option	Dynamic or Static Prefix assigned plus IID allocated for UE	19 and 20
96	IPv4 Address Request	Address/Prefix, example. 192.0.2.1/32	19
97	IPv4 Address Acknowledgement	Status:Address/Prefix, example. 0:192.0.2.1/32	19
98	IPv4 Default Router	IPv4 Address, example. 2.2.2.2	19
99	Uplink GRE key	Hex, e.g. 0x004D90CC	19

IE	Description	Format Example	Relevant Procedures
100	Downlink GRE key	Hex, example. 0xCC904D00	19
101	Charging Characteristics	Hex, example. 0x0A	19
102	Charging ID	Hex, example. 0x5E9BD665	19
103	Serving Network	MCC-MNC	19
104	Base Station ID	Hex, example. 001C0001008A	19
105	MEID	Decimal String, example. 99000044001930	
106	Binding Sequence #	16 bit unsigned integer for Binding Update and Ack	19
107	Lifetime	16 bit unsigned integer representing time before binding unit is considered expired. Example. 0x0708	19
108	Handoff Indicator Option	HO Indicator Example. 0x01 = new attachment	19
109	Access Technology Type (ATT)	Example. 0x09 = eHRPD	19
110	Proxy Binding Status	8-bit unsigned integer indicating status of BU processing.	19
111	PCO DNS IPv6 Address	DNS IPv6 Address. if multiple, format = "Addr1 Addr2"	19
112	PCO DNS IPv4 Address	DNS IPv4 Address. if multiple, format = "Addr1 Addr2"	19
113	P-CSCF Address	P-CSCF IPv6 Address (if multiple, format = "Addr1!Addr2"	19
114	Binding Revocation Status	8-bit unsigned integer indicating result of processing BRI. Values less than 128 indicates success	20
115	Binding Revocation Sequence #	Sequence number to match BRI and BRA messages	20
116	Revocation Trigger	8-bit unsigned integer indicating per UE or global reasons for trigger	20
117	Revocation Flag	Hex, example. 0x4	20

IE	Description	Format Example	Relevant Procedures
118 to 130	Reserved		
131	UE IP Address	UE IP address	21, 22, 23 and 26
132	UE UDP Port for SA_INIT	UE UDP Source Port for SA_INIT	21, 22, 23 and 26
133	ePDG Address	ePDG IP address for SA_INIT	21, 22, 23 and 26
134	ePDG Port	ePDG UDP Port for SA_INIT (example: 4500 for IKE)	21, 22, 23 and 26
135	Initiator SPI	Initiator (UE) SPI	21, 22 and 26
136	Responder SPI	Responder (ePDG) SPI	21, 22 and 26
137	Transform Header Type and ID	TypeID negotiated value is entered. x y z w U (Enc/prf/Integrity/Dhg/ESN) In case value is not negotiated, then -1 is entered. Example: PRF is not present in IKE_Auth. Value will be IANA standard number for these protocols.	21, 22 and 26
138	KE DH Group	Diffie Hellman Group Number	21 and 26
139	Notify Message Type	Example: NAT_Detection IP Type (delimited as necessary) will be delimited as x y z^a b c where x/y/z are notify in Procedure request and a/b are notify in Procedure response. If either Request or Response doesn't have any Notify, it will be blank either before or after the delimiter ^.	21 and 26
140	IDi	Identification Initiator: RFC822 Address, example: 0311150123456701@wlan.mnc150.mcc311.3gppnetwork.org	22
141	IDr	Identification Responder: IKEv2 FQDN ID, example: apncf.w-apn.mnc150.mcc311.pub.3gppnetwork.org	22

IE	Description	Format Example	Relevant Procedures
142	TSi	Protocol Type Address Range Port Range (Can be delimited by ^ if more than one TS)	22
143	TSr	Protocol Type Address Range Port Range (Can be delimited by ^ if more than one TS)	22
144	EAP Message Status Code	Example: SUCCESS This will assume last value in the response	22, 27 and 28
145	EAP Message Identifier	EAP Message Identifier	22 and 27
146	EAP Type	Example: AKA (0x17) for ePDG EAP-AKA (0x17)	22, 27 and 28
147	Configured Attribute Auth Method	Shared Key as String. Example: local_method remote_method where local/remote could be PSK/EAP/CERT	22
148	IKEv2 Config Attribute Internal IP4/IPv6	Example: UE address x^y where x is IP4 and y is IPv6	22
149	IKEv2_CFG_ATTRIBUTE_INTERNAL_IP4_NETMASK	Example: 255.255.255.255	22
150	IKEv2_CFG_ATTRIBUTE_INTERNAL_DNS_IPV4	x^y^z where x,y,z will be IPv4 address. Maximum of 3 entries possible in IKE_Auth_reply.	22
151	IKEv2_CFG_ATTRIBUTE_INTERNAL_DNS_IPV6	x^y^z where x,y,z will be IPv6 address. Maximum of 3 entries possible in IKE_Auth_reply. This IE is missing. New one needs to be added	22
152	P-CSCF IPv4	x^y^z where x,y, z will be IPv4 address. Maximum of 3 entries possible in IKE_Auth_reply.	
153	P-CSCF IPv6	x^y^z where x,y,z will be IPv6 address. Maximum of 3 entries possible in IKE_Auth_reply.	22
154	SA Protocol ID	Example: ESP (0x03)	22

IE	Description	Format Example	Relevant Procedures
155	SA SPI UE	Example: 0x020000BA	22
156	SA SPI ePDG	Similar to SA SPI UE. This is missing. Needs to be added	
157	Informational Request Type	Delete, DPD, and so on.	23
158	IKEv2 Notify – Error Codes	Reference IKEv2 standard Error Codes and Customer Custom Codes per SWu Call Flow: Finally received /sent Notify error code is updated. This could be the Verison custom code if configured, or standard code otherwise.	21, 22, 23 and 26
159 to 160	Reserved		
161	IPv6 Advertised Prefix	Advertised IPv6 Prefixes as part of Router Advertisement	25
162 to 170	Reserved		
171	Called -Station-ID	Stores the bridge or Access Point MAC address in ASCII format with octet values separated by a "-" appended by SSID. Example:: mac64-d9-89-43- d4-a0: grp123456789123456789	27, 28, 30 and 31
172	Service-Type	Indicates the type of service the user has requested, or the type of service to be provided. Example: 02 (Framed).	27, 28, 30 and 31
173	NAS-Port-Type	Indicates the type of the physical port of the NAS which authenticates the user. Example: 19 (Wireless_IEEE_802_11)	27, 28, 30 and 31
174	NAS-Port-ID	Identifies the port of the NAS which authenticates the user. Example: 10	27, 28, 30 and 31
175	NAS-IP-Address	Indicates the identifying IP Address of the NAS which requests user authentication. Example: 192.168.15.51	27, 28, 29, 30 and 31

IE	Description	Format Example	Relevant Procedures
176	NAS-IPv6-Address	Indicates the IP Address of the NAS which requests user authentication. Example: 2405:200:816:945::2:ed9e	27, 28, 29, 30 and 31
177	NAS-Identifier	Indicates a string identifying the NAS origination the request. Example: samog_wlc	27, 28, 29, 30 and 31
178	Acct-Session-ID	Indicates the session to match start and stop records in a log file.	27, 28, 29, 30 and 31
179	Acct-Multi-Session-ID	Indicates a unique Accounting ID to link multiple related sessions in a log file. Each session linked together would have a unique Acct-Session-Id but the same Acct-Multi-Session-Id.	27, 28, 29, 30 and 31
180	NAS-Port	Indicates the physical port number of NAS, which authenticates the user. Example: 1	27, 28, 30 and 31
181	Framed-MITU	Indicates the maximum transmission unit to be configured for the user. Example: 1300	27 and 28
182	Reserved		
183	Framed-IP-Address	Indicates the address allocated for the user. Example: 1,2,3,5	29, 30 and 31
184	Acct-Termination_Cause	Indicates the session termination cause. Example: 1 for user request.	29
185	Framed-IPv6-Prefix	Indicates the IPv6 prefix for the user. Example: 1:2:3:5::/64 or 1:2:3:5::	29, 30 and 31
186	Tunnel-Type	Indicates the tunneling protocol. Example: 14 for VLAN.	27, 28, 30 and 31
187	Tunnel-Medium-Type	Indicates the transport medium for creating protocol. Example: 06 for IEEE-802	27, 28, 30 and 31

IE	Description	Format Example	Relevant Procedures
188	Tunnel-Private-Group-ID	Group ID for the specified tunneling session	27, 28, 30 and 31
189	Acct-Output-Packets	Number of packets sent. Example: 20	30 and 31
190	Acct-Input-Packets	Number of packets received. Example: 24	30 and 31
191	Acct-Status-Type	Indicates the beginning or end of user service. Example 1 (start) 2 (stop).	30 and 31
192	Acct-Session-Time	Indicates how many seconds the user has received service for, and can only be present in Accounting-Request records where the Acct-Status-Type is set to Stop.	30 and 31
193 to 205	Reserved		
206	Transaction ID	Transaction ID. Example: 0x7df10d5d	32 and 33
207	Client IP Address	The IP address allotted to the client through the address: 13.0.0.2	32, 33 and 34
208	Requested IP Address	IP Address requested by the client in DHCP Request message. (DHCP Option: requested ip addr(50) : 13.0.0.2	33
209	Default GW	Default Gateway IP Address. Example: DHCP Option - default gateway(03) : 25.8.0.1	32 and 33
210	Primary DNS Server	Primary DNS Server IP Address. Example: DHCP Option - primary dns server(06) : 49.45.0.1	32 and 33
211	Secondary DNS Server	Secondary DNS Server IP Address. Example: DHCP Option - secondary dns server(06) : 4.5.6.7	32 and 33
212	Lease Time	Lease time's IP address. Example: DHCP Option - lease time(51) : Infinite / 2000 in seconds	32 and 33

IE	Description	Format Example	Relevant Procedures
213	Server identifier	DHCP Server Identifier . Example: DHCP Option - server identifier(54) : 10.70.150.223	32 and 33
214	Subnet Mask	Subnet mask IP address. Example: DHCP Option - subnet mask(01) : 255.255.0.0	32 and 33
215	Error Message	Example: DHCP Option-message (56) : Invalid requested IP	33 and 34
216 to 220	Reserved		



Note Schemas 1 to 170 are specific to ePDG. Schemas 1 to 170 + 10 Cups schemas are specific to PGW and schemas 171 to 220 are specific to SaMOG.

Configuring RTT

This section provides RTT configuration information for ePDG, P-GW and SaMOG.

Configuring RTT to Record and Produce Call Transactions

Use the following configuration to enable RTT to record and produce call transactions.

```
configure
  context context_name
    [ epdg-service | pgw-service | samog-service ] service_name
    [ no ] reporting-action event-record
  end
```

NOTES:

- **reporting-action event-record**: Enables event reporting through RTT.
- **no**: Disables event reporting through RTT.

Configuring RTT under Session Event Module

Use the following configuration to configure the RTT feature in ePDG, P-GW and SaMOG.

```
configure
  context context_name
    session-event-module
```



```

    event transfer-mode push primary url URL_address file name file_name |
rotation volume volume_size | rotation time rotation_time | compression
compression_type | extension extension_type
    event use-harddisk
    event remove-file-after-transfer
    event push-interval interval_time
end

```

NOTES:

- **transfer-mode**: Enables the transfer mode in RTT.
- **push primary url** *URL_address*: Specifies the external server location where the records are transferred.
- **file name** *file_name*: Specifies the RTT file name where the records are stored. *file_name* can be an alphanumeric string of size 1 to 31.
- **rotation volume** *volume_size*: The volume based on which the RTT file is generated. Enter an integer from 51200 to 62914560.
- **rotation time** *rotation_time*: The time based on which the RTT file is generated. Enter an integer from 30 to 86400 seconds.



Note RTT files are internally generated, based on the rotation volume or rotation time.

- **compression**: Specifies the file compression type. If enabled, the RTT file is generated as a Gzip file, else it is generated as a normal file.
- **extension** *extension_type*: Specifies the RTT file extension (.csv).
- **event use-harddisk**: Specifies hard disk as the storage space for the RTT file generation.
- **event remove-file-after-transfer**: Specifies RTT files to be removed after pushing the files to the external server.
- **event push-interval**: Specifies the push interval time at which the RTT files are transferred to the external server.

Monitoring and Troubleshooting

This section provides information on how to monitor and troubleshoot using show commands to support this feature.

Show Commands and Output

This section provides information regarding show commands and their outputs for this feature.

show samog-service name

Table 1: show samog-service name Command Output Descriptions

Field	Description
Reporting Action	
Event Record	Indicates if RTT feature is enabled or not.

show event-record statistics

Table 2: show event-record statistics Command Output Descriptions

Field	Description
Total Number of Event Records	The total number of event records (GTPv2 + Diameter + IKE + RA + Radius + DHCP).
GTPv2 Event Records	The total number of GTPv2 records
CSR	The total number of CSR (Create Session Request) events.
CBR	The total number of CBR (Create Bearer Request) events.
DSR	The total number of DSR (Delete Session Request) events.
DBR	The total number of DBR (Delete Bearer Request) events.
UBR	The total number of UBR (Update Bearer Request) events.
IPV6 RA Event Records	The total number of IPV6 RA event records.
RA Prefix	The total number of RA prefix events.
Diameter Event Records	The total number of Diameter event records (S6b + SWm + STa + Gx + Gy).
ePDG Events	
IKEv2 Event Records	The total number of IKE events.
IKE_SA_INIT	The total number of IKE_SA_INIT events.
IKE_AUTH	The total number of IKE_AUTH events.
IKE_INFORMATION	The total number of IKE_INFORMATION events.
CREATE_CHILD_SA	The total number of CREATE_CHILD_SA events.
SaMOG Events	
Radius Auth Event Records	The total number of Radius authentication event records.

Field	Description
Access Req/Challenge	The total number of Radius Authentication access request challenge event records.
Access Req/Accept	The total number of Radius Authentication access request accept event records.
Disconnect Req	The total number of Radius Authentication disconnect request event records.
Radius Accounting Event Records	The total number of Radius accounting event records.
Accounting Req from WLC	The total number of Radius accounting event records from WLC.
Accounting Req to Radius Server	The total number of Radius accounting event records to the Radius server.
STa Procedures	The total number of STa interface specific events.
AAR	The total number AAR (AA-Request) events.
RAR	The total number of RAR (Re-Auth-Request) events.
ASR	The total number of ASR (Abort Session Request) events.
STR	The total number of STR (Session Termination Request) events.
DER	The total number of DER (DE-Request) events.
DHCP Event Records	The total number of DHCP event records.
Discover/Offer	The total number of DHCPv4 discovery offer event records.
Release/Ack	The total number of DHCPv4 release ack event records.
Request/Ack	The total number of DHCPv4 request ack event records.

Bulk Statistics

The following bulk statistics are added to the SaMOG schema as part of this feature:

SaMOG Schema

Table 3: Bulk Statistics Variables in the SaMOG Schema

Variables	Description
sess-samog-total-number-event-records	The total number of SaMOG session event records.
sess-samog-total-s2a-event-records	The total number of SaMOG S2a event records.
sess-samog-total-csr-event-records	The total number of SaMOG CSR event records.

Variables	Description
sess-samog-total-cbr-event-records	The total number of SaMOG CBR event records.
sess-samog-total-dsr-event-records	The total number of SaMOG DSR event records.
sess-samog-total-dbr-event-records	The total number of SaMOG DBR event records.
sess-samog-total-ubr-event-records	The total number of SaMOG UBR event records.
sess-samog-total-ipv6-ra-event-records	The total number of SaMOG IPv6 RA event records.
sess-samog-total-ra-prefix-event-records	The total number of SaMOG RA prefix event records.
sess-samog-total-dhcpv4-event-records	The total number of SaMOG DHCPv4 event records.
sess-samog-total-dhcpv4-disc-offer-event-records	The total number of SaMOG DHCPv4 discovery offer event records.
sess-samog-total-dhcpv4-req-ack-event-records	The total number of SaMOG DHCPv4 request acknowledgement event records.
sess-samog-total-dhcpv4-rel-ack-event-records	The total number of SaMOG DHCPv4 release acknowledgement event records.
sess-samog-total-rad-auth-event-records	The total number of SaMOG Radius Authentication event records.
sess-samog-total-rad-auth-acc-req-chal-event-records	The total number of SaMOG Radius Authentication access request challenge event records.
sess-samog-total-rad-auth-acc-req-acpt-event-records	The total number of SaMOG Radius Authentication access request accepted event records.
sess-samog-total-rad-auth-disc-req-event-records	The total of number SaMOG Radius Authentication disconnect request event records.
sess-samog-total-rad-acct-event-records	The total number of SaMOG Radius Accounting event records.
sess-samog-total-rad-acct-wlc-event-records	The total number of SaMOG Radius Accounting event records from Wireless LAN Controller.
aaa-samog-total-rad-acct-aaa-event-records	The total number of SaMOG Radius Accounting event records to AAA.
aaa-samog-total-sta-event-records	The total number of SaMOG STa event records.
aaa-samog-total-sta-aar-event-records	The total number of SaMOG STa AAR event records.
aaa-samog-total-sta-der-event-records	The total number of SaMOG STa DER event records.
aaa-samog-total-sta-asr-event-records	The total number of SaMOG STa ASR event records.
aaa-samog-total-sta-rar-event-records	The total number of SaMOG STa RAR event records.

Variables	Description
aaa-samog-total-sta-str-event-records	The total number of SaMOG STa STR event records.

