Capability to Record and Produce Call Transactions

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Feature Summary and Revision History

Summary Data

Applicable Product(s) or Functional Area	• ePDG • P-GW • SaMOG
Applicable Platform(s)	• ASR 5500 • VPC-DI • VPC-SI
Feature Default	Disabled - Configuration Required
Related Changes in This Release	Not Applicable
Related Documentation	• *Command Line Interface Reference* • *ePDG Administration Guide* • *P-GW Administration Guide* • *SaMOG Administration Guide* • *Statistics and Counters Reference*

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

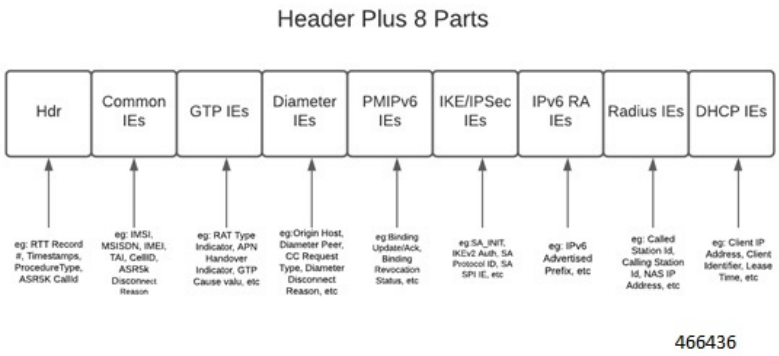
Procedure Number	Procedure Name	Applicability
7	S6b/SWm – Diameter AAR/ AAA	P-GW, ePDG, SaMOG
8	S6b/SWm – Diameter RAR/RAA	P-GW, ePDG, SaMOG
9	S6b/SWm – Diameter Session Termination	P-GW, ePDG, SaMOG
10	S6b – Abort Session	P-GW, ePDG, SaMOG
11	Diameter Gx – CCR-I/CCA-I	P-GW
12	Diameter Gx – CCR-U/CCA-U	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
32	WLC – SaMOG DHCP Discover/Offer	SaMOG
33	WLC – SaMOG DHCP Request/Ack/Nak	SaMOG

Procedure Number	Procedure Name	Applicability
34	WLC – SaMOG DHCP Release/Ack/Nak	SaMOG

RTT Record Schema

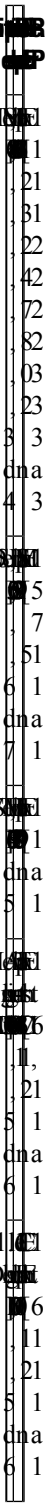
The following figure details the RTT schema for ePDG, P-GW and SaMOG. The first six IEs, Common IEs to IPv6RA IEs are common for ePDG, P-GW and SaMOG. The last two fields, Radius IEs and DHCP IEs are speicific to SaMOG.

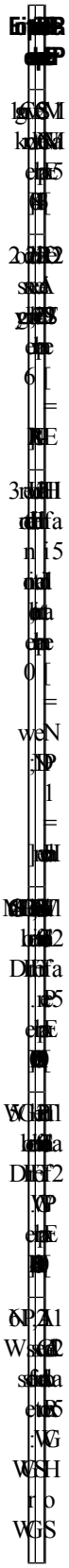
Figure 1: RTT Record Schema

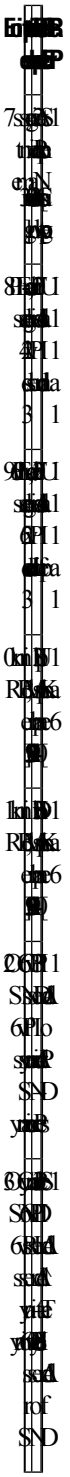


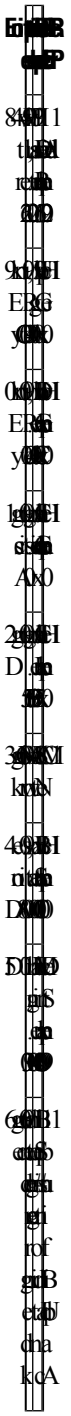
RTT schema has a Header followed by eight blocks of Information Elements (IEs). There are 220 IEs that are grouped into 8 blocks. Schemas 1 to 170 are specific to ePDG. Schemas 1 to 170 + 10 (180) CUPS schemas are specific to P-GW and schemas 171 to 220 are specific to SaMOG. For more information on 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.

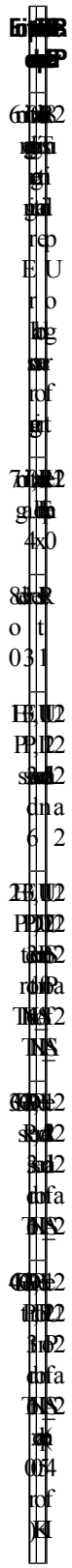
The following table lists the RTT Record schemas:

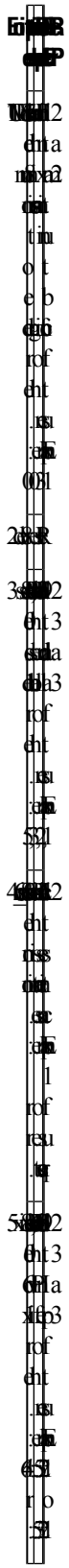


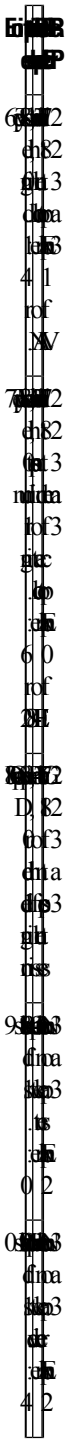












Note Schemas 1 to 170 are speicific to ePDG. Schemas 1 to 170 + 10 Cups schemas are specific to PGW and schemas 171 to 220 are specific to SaMOG.

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_addressfile 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.

Field	Description
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.
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.

Field	Description
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 Varibales 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.
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.

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