Monitoring and Troubleshooting Control Plane in CUPS

This section provides information about the CLI commands available to monitor and/or troubleshoot Control Plane in CUPS.

Show Command(s) and/or Outputs

show subscribers control-plane-only all

This command displays the following Control Plane specific information for the session. Following is a sample output:

- Access Type

  - (R) - sgw-pdn-type-ipv4

  - (O) - sgw-pdn-type-ipv6

  - (Q) - sgw-pdn-type-ipv4-ipv6

  - (@) - saegw-gtp-ipv4

  - (#) - saegw-gtp-ipv6

  - ($) - saegw-gtp-ipv4-ipv6

  - (W) - pgw-gtp-ipv4

  - (Y) - pgw-gtp-ipv6

  - (Z) - pgw-gtp-ipv4-ipv6

  - (.) – Unknown

- Access Tech

    - (U) - UTRAN

    - (G) - GERAN

    - (E) - eUTRAN

    - (.) - Unknown

- Call State

    - (C) - Connected

    - (c) - Connecting

    - (S) - Suspended

    - (d) - Disconnecting

    - (I) - Idle

    - (u) - Unknown

- Bearer Type

    - (D) - Default

    - (E) - Dedicated

    - (I) - Indirect Forwarding

- PLMN

    - (H) - Home

    - (V) – Visiting

    - (R) - Roaming

    - (u) - Unknown

- Emergency Bearer Type

    - (A) - Authentic IMSI

    - (U) - Un-Authentic IMSI

    - (O) - Only IMEI

    - (N) - Non-Emergency

- Addr

    - (L) - Local pool

    - (S) - Static (Subscriber Supplied)

    - Type: (u) - Unknown

- CALLID

- LOCAL SEID

- IMSI/IMEI

- EBI

- V

- IP

- PDN-INSTANCE

- User Plane Address

- TIME-IDLE

Note	- Only all keyword is supported after **control-plane-only** keyword.
	- Bearer-type supported is default.
	- Valid Access Technology populated is eUTRAN for now.

show session disconnect-reasons

The following disconnect reasons has been added in support of Control Plane in CUPS:

- user-plane-info-not-available(651)

  This disconnect reason is seen in following conditions:

    - **user-plane-profile** is not associated with APN Profile for Pure-S call.

    - **user-plane-profile** is not associated with IP Pool for Pure-P call.

    - Associated **user-plane-profile** is not configured.

    - Associated **user-plane-profile** is not configured with endpoint address

- user-plane-info-mismatch(652)

    - For multiple PDN call with same APN, and for IPv4 and IPv6 call, it is mandatory that same User Plane profile is selected. Any variation will result in call creation failure with this disconnect reason.

- sx-max-trans-threshold-reached(676): Calls are dropped with this disconnect reason if the outstanding Sx transaction exceeds 12.

show subscribers saegw-only full all

Executing this command displays the following fields:

- User Plane Address

• Local SEID

• Remote SEID

show subscribers saegw-only seid *seid_value*

Executing this command displays the following fields:

• vvvvvv

• CALL ID

• IMSI/IMEI

• EBI

• v

• IP

• APN

• TIME-IDLE

show user-plane-service statistics charging action

This command displays charging action statistics for all or specified charging actions that are configured in the Active Charging Service (ACS). A charging action represents actions to be taken when a configured rule is matched. Actions range from generating accounting records to dropping the IP packet, and so on. The charging action also determines the metering principle—Whether to count retransmitted packets, and which protocol field to use for billing (L3/L4/L7, and so on).

Syntax

```
show user-plane-service statistics charging-action
{ all [ debug-info | verbose] | name charging_action_name [ debug-info |
verbose] }  [ | { grep grep_options | more } ]
```

Notes:

• **all**: Displays information for all charging actions configured in ACS.

• **name** *charging_action_name*: Displays information for an existing charging action specified as an alphanumeric string from 1 through 63 characters.

This show CLI command doesn't support the following statistics with the value *0* that is displayed for each of its counter value.

```
PP Flows Readdressed:0
Bytes Charged Yet Packet Dropped:0
Predef-Rules Deactivated:0
Outer IP header dscp marked Pkts:0
```

```
Tethering Blocking Statistics:
   TTL Modified downlink packets:0


Throttle-Suppress Stats:
   Uplink Bytes:0    Downlink Bytes:0


XHeader Information:
IP Frags consumed by XHeader:0 IP Frags consumed by XHeader:0


Strip URL:
   Successful Token stripped:0
   Total strip URL failure:0
   Failure - Missing config:0
   Failure - Existing flow bid:0
   Failure - Token matching failed:0
   Failure - Empty packet:0
   Failure - Req end not found:0
   Failure - Subset of big token:0


URL-Readdressing:
   Requests URL-Readdressed:0
   Total Charging action hit - Req. Readdr.:0
   Proxy Disable Success:0
   Flows connected to URL Server:0



URL-Readdressing Error Conditions:
   Total connect failed to URL Server:0
   URL Readdress- pipelined case:0
   URL Readdress- Socket Mig. Failed:0
   Proxy Disable Failed:0


CAE-Readdressing:
   Requests CAE-Readdressed:0
   Responses CAE-Readdressed:0
   Requests having MVG xheader inserted:0
   Total CAE-Readdressed Uplink Bytes:0
   Total CAE-Readdressed Uplink Packets:0
   Total CAE-Readdressed Downlink Bytes:0
   Total CAE-Readdressed Downlink Packets:0
   Total Charging action hit - Req. Readdr.:0
   Total Charging action hit - Resp. Readdr:0
   Proxy Disable Success:0
   Flows connected to CAE:0


CAE Readdressing Error Conditions:
   Total connect failed to CAE:0
   Req. Readdr. - pipelined case:0
   Skipped Resp. Readdr. - pipelined req:0
```

```
Req. Readdr. - Socket Mig. failed:0
Skipped Resp. Readdr. - partial resp hdr:0
Resp. Readdr. - Socket Mig. failed:0
Total CAE load balancer failed:0
Total MVG xheader insertion failed:0
Proxy Disable Failed:0

Rulebase Changed by flow action:0
Terminate Session:0
P2P random dropped packets:0
```

show user-plane-service statistics group-of-ruledefs

This command displays statistics for all groups or a specified group of **ruledef**s configured in the active charging service. The **group-of-ruledefs** is a collection of rule definitions that can be used in access policy creation.

Syntax

```
show user-plane-service statistics group-of-ruledefs { all | name
group_of_ruledefs_name } [ | { grep grep_options | more } ]
```

Notes:

- **all**: Displays information for all **groups of ruledefs** configured in ACS.

- **name** *group_of_ruledefs_name*: Displays detailed information for an existing **group of ruledefs** specified as an alphanumeric string from 1 through 63 characters.

- **{ grep** *grep_options* | **more } Pipes**: Sends the output of this command to the specified command.

- The following clear CLI command is available for use:

  ```
  clear user-plane-service statistics group-of-ruledefs { all | name
  group_of_ruledefs_name }
  ```

show user-plane-service statistics ruledef

This command displays statistics for all or specified **ruledef** that is configured in an active charging service. The **ruledef** represents a set of matching conditions across multiple L3 - L7 protocol that is based on protocol fields and state information. You can use each **ruledef** across multiple rule bases within the active charging service.

Syntax

```
show user-plane-service statistics ruledef { all { charging | firewall [
 wide ] | post-processing } | name ruledef_name [ wide ] } [ | { grep
grep_options | more } ]
```

Notes:

- **all**: Displays statistics for **all ruledef**s of the specified type that is configured in the ACS.

- **charging**: Displays statistics for all **charging ruledef**s configured in the ACS.

- **firewall**: Displays statistics for all **firewall ruledef**s configured in the service.

- **post processing**: Displays statistics for all **post processing ruledef**s configured in the ACS.

- **name** *ruledef_name*: Displays statistics for an existing **ruledef** specified as an alphanumeric string from 1 through 63 characters.

- **wide**: Displays all available information in a single wide line.

- The following clear CLI command is available for use:

```
clear user-plane-service statistics ruledef { all | charging | firewall
 | name group_of_ruledefs_name }
```

SNMP Support

The system uses the Simple Network Management Protocol (SNMP) to send traps or events to the EMS server or an alarm server on the network. You must configure SNMP settings to communicate with those devices.

For more details about configuring SNMP and Alarm Server Parameters, refer to the *Management Settings* chapter in either the *VPC-DI System Administration Guide* or the *VPC-SI System Administration Guide*.

✎

Note   The **snmp engine-id local** command is mandatory if your network requires SNMP v3 support. The engine ID uniquely identifies the SNMP engine and associated SNMP entities, thus providing a security association between the two for the sending and receiving of data.

Monitoring and Troubleshooting SAEGW Service in CUPS Mode

This section provides information about the CLI commands available to monitor and/or troubleshoot SAEGW service in CUPS mode.

Show Command(s) and/or Outputs

show configuration errors

Following are the error messages that are added in support of CUPS in eGTPC service for SAEGW:

1.   If neither **cups-enabled** nor **gtpu-service** is associated in eGTPC Service:

```
##############################################################################

                    Displaying EGTP-Service system errors
##############################################################################
Error : No GTPU service is associated with EGTP service <service_name> in the context
 <context_name>.
Total 1 error(s) in this section !
```

2.   If eGTPC S-GW Egress Service is not associated with S-GW Service:

```
##############################################################################
```

```
                          Displaying EGTP-Service system errors
####################################################################################
Error : Egress EGTP service not configured for SGW service <service_name> in the context
 <context_name>.
Total 1 error(s) in this section !
```

Note This error will be displayed only if S-GW Ingress service is configured and cups-enabled is configured in it.

3. If eGTPC S-GW Ingress Service is **cups-enabled** and eGTPC S-GW Egress Service is not **cups-enabled**:

```
####################################################################################

                          Displaying SGW-Service system errors
####################################################################################
Error : Both Ingress EGTP service <service_name> and Ingress EGTP service <service_name>
 must be configured in either CUPS mode or Non-CUPS Mode
Total 1 error(s) in this section !
```

4. If eGTPC S-GW Egress Service is **cups-enabled** and eGTPC S-GW Ingress Service is not **cups-enabled**:

```
####################################################################################

                          Displaying SGW-Service system errors
####################################################################################
Error : Both Ingress EGTP service <service_name> and Ingress EGTP service <service_name>
 must be configured in either CUPS mode or Non-CUPS Mode
Total 1 error(s) in this section !
```

5. If P-GW and/or S-GW Service in SAEGW Service is **cups-enabled** and Sx Service associated in SAEGW Service in not present in system:

```
####################################################################################

                          Displaying SAEGW-Service system errors
####################################################################################
Error : SX service <service_name> configured for SAEGW service <service_name> in the
context <context_name> is not present in the system.
Total 1 error(s) in this section !
```

6. If P-GW and/or S-GW Service in SAEGW Service is **cups-enabled** and Sx Service associated in SAEGW Service is not STARTED

```
####################################################################################

                          Displaying SAEGW-Service system errors
####################################################################################
Error : SX service <service_name> configured for SAEGW service <service_name> in the
context <context_name> is not started.
Total 1 error(s) in this section !
```

7. SAEGW Service is **cups-enabled** and Sx Service is not associated in SAEGW Service:

```
####################################################################################

                          Displaying SAEGW-Service system errors
####################################################################################
Error : SX service not configured for SAEGW service <service_name> in the context
<context_name>.
Total 1 error(s) in this section !
```

8. If P-GW and/or S-GW Service in SAEGW Service is **cups-enabled** and GTP-U Service associated in SAEGW Service in not present in system:

```
###########################################################################
                    Displaying SAEGW-Service system errors
###########################################################################
Error : GTPU service <service_name> configured for SAEGW service <service_name> in the
 context <context_name> is not present in the system.
Total 1 error(s) in this section !
```

9. If P-GW and/or S-GW Service in SAEGW Service is **cups-enabled** and GTP-U Service associated in SAEGW Service is not STARTED:

```
###########################################################################
                    Displaying SAEGW-Service system errors
###########################################################################
Error : GTPU service <service_name> configured for SAEGW service <service_name> in the
 context <context_name> is not started.
Total 1 error(s) in this section !
```

10. If P-GW and/or S-GW Service in SAEGW Service is **cups-enabled** and GTP-U Service is not associated in SAEGW Service:

```
###########################################################################
                    Displaying SAEGW-Service system errors
###########################################################################
Error : GTPU service not configured for SAEGW service <service_name> in the context
<context_name>.
Total 1 error(s) in this section !
```

11. If P-GW Service in SAEGW Service is **cups-enabled** but S-GW Service is not cups-enabled:

```
###########################################################################
                    Displaying SAEGW-Service system errors
###########################################################################
Error : Both SGW service <service_name> and PGW service <service_name> must be configured
 in either CUPS mode or Non-CUPS Mode.
Total 1 error(s) in this section !
```

12. If S-GW Service in SAEGW Service is cups-enabled but P-GW Service is not **cups-enabled**:

```
###########################################################################
                    Displaying SAEGW-Service system errors
###########################################################################
Error : Both SGW service <service_name> and PGW service <service_name> must be configured
 in either CUPS mode or Non-CUPS Mode.
Total 1 error(s) in this section !
```

Support for the Additional User Plane Attributes - UP Group Name and UP Node-ID

The following CUPS CLI show commands are modified to support the additional User Plane attributes. Now, the show command displays the UP-GROUP-NAME and UP-NODE-ID in the show subscriber output.

- **show subscribers saegw-only all**

- **show subscribers saegw-only apn** *<apn_name>*

- **show subscribers saegw-only imsi** *<imsi_id>*

- **show subscribers saegw-only callid** *<call_id>*

- **show subscribers saegw-only ebi** *<ebi_value>*

- **show subscribers saegw-only msid** *<ms_id>*

- **show subscribers saegw-only qci** *<qci_value>*

- **show subscribers ggsn-only all**

- **show subscribers ggsn-only apn** *<apn_name>*

- **show subscribers ggsn-only imsi** *<imsi_id>*

- **show subscribers ggsn -only callid** *<call_id>*

- **show subscribers ggsn-only ebi** *<ebi_value>*

- **show subscribers ggsn-only msid** *<ms_id>*

- **show subscribers ggsn-only qci** *<qci_value>*

- **show subscribers saegw-only full imsi** *<imsi_id>*

- **show subscribers saegw-only full apn** *<apn_name>*

- **show subscribers saegw-only full callid** *<call_id>*

- **show subscribers saegw-only full ebi** *<ebi_value>*

- **show subscribers saegw-only full msid** *<ms_id>*

- **show subscribers saegw-only full qci** *<qci_value>*

- **show subscribers ggsn-only full all**

- **show subscribers ggsn-only full imsi** *<imsi_id>*

- **show subscribers ggsn-only full apn** *<apn_name>*

- **show subscribers ggsn-only full callid** *<call_id>*

- **show subscribers ggsn-only full ebi** *<ebi_value>*

- **show subscribers ggsn-only full msid** *<ms_id>*

- **show subscribers ggsn-only full qci** *<qci_value>*

- **show subscribers control-plane-only all**

Change in Idle Time Value in Control Plane

In 21.22.2 and later releases, the output of the following show CLI command has been modified to display the Time-Idle/idle time left value as n/a.

- **show sub all**

- **show sub saegw-only all**

- **show subscribers saegw-only full all**

- **show sub full**

- **show sub full all**