



# Monitoring and Troubleshooting User Plane in CUPS

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

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## Monitoring and Troubleshooting User Plane in CUPS

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

## SNMP Traps

The following traps are available after session recovery in the User Plane node:

- **starManagerFailure**: This trap is generated when there is failure in the Software manager.
- **starTaskFailed**: This trap is generated when a noncritical task has failed and the appropriate recovery steps begin.
- **starTaskRestart**: This trap is generated when a noncritical task has restarted after an earlier failure.
- **starSessMgrRecoveryComplete**: This trap is generated when Session Manager recovery completes. This is typically caused by the failure of Session Manager task and successful completion of recovery.
- **starManagerRestart**: This trap is generated when the identified manager task has been restarted.

# Show Commands

## show configuration

This command displays the following fields:

```
saegw-service
associate sgw-service
associate pgw-service
associate gtpu-service up-tunnel
associate sx-service
```

## show-gtpu-statistics

Executing this show command displays the following output:

- Session Stats:
  - Current
  - Current (IMS-media)
  - Total Setup
  - Total Setup (IMS-media)
  - Current gtpu v0 sessions
  - Current gtpu v1 sessions
- Total Data Stats:
  - Uplink Packets
  - Uplink Bytes
  - Downlink Packets
  - Downlink Bytes
  - Packets Discarded
  - Bytes Discarded
  - Uplink Packets (IMS-media)
  - Uplink Bytes (IMS-media)
  - Downlink Packets (IMS-media)
  - Downlink Bytes (IMS-media)
  - Packets Discarded (IMS-media)
  - Bytes Discarded (IMS-media)
- QoS Stats:

- QCI <n>:
  - Uplink Packets
  - Uplink Bytes
  - Downlink Packets
  - Downlink Byte
  - Packets Discarded
  - Bytes Discarded
  
- Non-Std QCI(Non-GBR):
  - Uplink Packets
  - Uplink Bytes
  - Downlink Packets
  - Downlink Byte
  - Packets Discarded
  - Bytes Discarded
  
- Non-Std QCI(GBR):
  - Uplink Packets
  - Uplink Bytes
  - Downlink Packets
  - Downlink Byte
  - Packets Discarded
  - Bytes Discarded
  
- Total uplink packets GBR QCI's:
  - Total uplink Bytes GBR QCI's
  - Total Downlink packets GBR QCI's
  - Total Downlink Bytes GBR QCI's
  - Total uplink packets Non-GBR QCI's
  - Total uplink Bytes Non-GBR QCI's
  - Total Downlink packets Non-GBR QCI's
  - Total Downlink Bytes Non-GBR QCI's
  
- Path Management Messages:
  - Echo Request Rx

- Echo Response Rx
- Echo Request Tx
- Echo Response Tx
- SuppExtnHdr Tx
- SuppExtnHdr Rx
  
- Peer Stats:
  - Total GTPU Peers
  - Total GTPU Peers with Stats
  
- Tunnel Management Messages:
  - Error Indication Tx
  - Error Indication Rx
  - Error Indication Rx Discarded
  
- Optimization Stats:
  - Total Packets Input
  - Total Packets Optimized
  - Total TCP Packets Input:
  - Total TCP Packets Optimized:
  - Total UDP Packets Input
  - Total UDP Packets Optimized
  - Total Fragments Input
  
- IPSec Data Stats:
  - Discards Due To IPSec Tunnel Not Present
    - Packets Discarded
    - Bytes Discarded
    - Err-Ind Tx Discarded



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**Note** In CUPS, the "Packets Discarded" statistics are the aggregate of packets dropped at the Session manager and packets dropped at VPP. As VPP handles majority packets, the packet drops at VPP can only be categorized broadly under these statistics.

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You can view specific packet drop reasons only for packets dropped at session manager. Packets dropped at VPP are categorized under Packets Discarded counter in the **show gtpu statistics** CLI.

## show module p2p user-plane-ipv6-addr

Executing this show command displays the following output:

- Control-Plane Sx-Service name
  - Priority
  - User-Plane ip
  - version
  - update/rollback time

## show saegw-service all

The output of this command has been enhanced to include the following new field in support of the Sx Service associated with an SAEGW Service.

sx-service

## show saegw-service name

The output of this command is similar to the **show saegw-service all** CLI command and displays the field for the specified saegw-service name.

## show service all

The output of this command has been modified to include user-plane service and its related parameters.

- Context ID
- Service ID
- Context Name
- Service Name
- State
- MaxSessions
- Type

## show subscriber all

The output of this command has been modified to include user-plane service and its related parameters:

- Access type
  - user-plane
- Access Tech

- Call State
- Access CSCF Status
- Link Status
- Network Type
- CALLID
- MSID
- USERNAME
- IP
- TIME-IDLE

## show subscribers user-plane-only all

Executing this show command displays the following output:

- Access Type
- Interface Type
- Call State
- CALL ID
- LOCAL SEID
- IP
- PDN-INSTANCE
- TIME-IDLE

## show subscribers user-plane-only called/seid *called/seid* flow flow-id *flow-id*

Executing this show command displays the following output:

- Callid
  - Interface Type
  - IP address
  - Flow ID
  - Uplink pkts
  - Downlink pkts
  - Uplink bytes
  - Downlink bytes
  - UE IP address

- UE Port
- Server IP address
- Server Port
- Protocol
- Total Flows found
- Total subscribers matching specified criteria

## show subscribers user-plane-only called/seid *called/seid* flows full

Executing this show command displays the following output:

- Callid
  - Interface Type
  - IP address
  - Flow ID
  - Uplink pkts
  - Downlink pkts
  - Uplink bytes
  - Downlink bytes
  - UE IP address
  - UE Port
  - Server IP address
  - Server Port
  - Protocol
  - Flow ID
  - Uplink pkts
  - Downlink pkts
  - UE IP address
  - UE Port
  - Server IP address
  - Server Port
  - Protocol
- Total Flows found

- Total subscribers matching specified criteria

## show subscribers user-plane-only called/seid *called/seid* flows

Executing this show command displays the following output:

- Sessmgr Instance
  - Application Protocol
  - Transport Protocol
    - Tethered Flow
      - Recovered Flow
- Total Number of Active flows

## show subscribers user-plane-only callid *call\_id* pdr all

Executing this show command displays the following output:

- Source Interface
- Type
- Destination Interface
- Type
- vv
- PDR-ID
- Linked FAR-ID
- Linked URR-ID
- Linked QER-ID
- Total subscribers matching specified criteria

## show subscribers user-plane-only callid/seid *callid/seid* pdr full all

Executing this show command displays the following output:

- Callid
  - Interface Type
  - IP address
- PDR-ID
- Hits



- Match Bypassed
- Matched Bytes
  - Precedence
  - Source Interface
- Matched Packets
- SDF Filter(s)
  - Filter 1
    - Protocol
    - Src IP Addr
    - Src Port
    - Dst IP Addr
    - Dst Port
- SPI
  - Local F-TEID
  - Outer header removal
  - Application ID
- Linked FARID
  - Destination Interface
  - Apply Action
  - Outer Header Creation
  - Remote TEID
  - Remote IP Address
  - Remote Port
- Linked QERID
  - PDR-ID
  - Hits
  - Match Bypassed
  - Matched Bytes
    - Precedence
    - Source Interface

- SDF Filter(s)
  - Filter 1
    - Protocol
    - Src IP Addr
    - Src Port
    - Dst IP Addr
    - Dst Port
    - SPI
- Local F-TEID
- Outer header removal
- Application ID
- Linked FARID
  - Destination Interface
  - Apply Action
  - Outer Header Creation
  - Remote TEID
  - Remote IP Address
  - Remote Port
- Total PDRs found
- Total subscribers matching specified criteria

## **show subscribers user-plane-only callid/seid *callid/seid* pdr id *pdr-id***

Executing this show command displays the following output:

- Callid
  - Interface Type
  - IP address
- PDR-ID
- Hits
- Match Bypassed
- Matched Bytes
  - Precedence

- Source Interface
- Matched Packets
- SDF Filter(s)
  - Filter 1
    - Protocol
    - Src IP Addr
    - Src Port
    - Dst IP Addr
    - Dst Port
    - SPI
- Local F-TEID
- Outer header removal
- Application ID
- Linked FARID
  - Destination Interface
  - Apply Action
  - Outer Header Creation
  - Remote TEID
- Remote IP Address
- Remote Port
- Linked QERID
- Total PDRs found
- Total subscribers matching specified criteria

## show subscribers user-plane-only flows

Executing this show command displays the following output:

- Sessmgr Instance
  - Application Protocol
  - Transport Protocol
    - Tethered Flow
    - Recovered Flow

- Flow-ID
- Bytes-Up
- Bytes-Down
- Pkts-Up
- Total Number of Active flows
- Total subscribers matching specified criteria

## show subscribers user-plane-only full all

Executing this show command displays the following output:

- Local SEID
- Remote SEID
- State
- Connect Time
- Idle time
- Access Type
- Network Type
- user-plane-service-name
- Callid
- Interface Type
- Card/Cpu
- IP allocation type
- IP address
- Source context
- Destination context
- PDN-Instance
- User-plane-Sx-addr
- Control-plane-Sx-addr
- Number of associated PDRs
- Number of associated FARs
- Number of associated QERs
- Number of associated URRs
- input pkts

- output pkts
- input bytes
- output bytes
- input bytes dropped
- output bytes dropped
- input pkts dropped
- output pkts dropped
- pk rate from user(bps)
- pk rate to user(bps)
- ave rate from user(bps)
- ave rate to user(bps)
- sust rate from user(bps)
- sust rate to user(pps)
- pk rate from user(pps)
- pk rate to user(pps)
- ave rate from user(pps)
- ave rate to user(pps)
- sust rate from user(pps)
- sust rate to user(pps)
- ipv4 bad hdr
- ipv4 ttl exceeded
- ipv4 fragments sent
- ipv4 could not fragment
- ipv4 bad length trim
- ipv4 input mcast drop
- ipv4 input bcast drop
- input pkts dropped (0 mbr)
- output pkts dropped (0 mbr)
- ip source violations
- ipv4 output no-flow drop
- ipv6 bad hdr
- ipv6 bad length trim

- ipv4 input mcast drop
- ipv4 input beast drop
- input pkts dropped (0 mbr)
- output pkts dropped (0 mbr)
- ip source violations
- ipv4 output no-flow drop
- ipv6 bad hdr
- ipv6 bad length trim
- ipv4 icmp packets dropped
- APN AMBR Input Pkts Drop
- APN AMBR Output Pkts Drop
- APN AMBR Input Bytes Drop
- APN AMBR Output Bytes Drop
- Total subscribers matching specified criteria

## show subscribers user-plane-only seid *seid* pdr all

Executing this show command displays the following output:

- Source Interface
  - Type
- Destination Interface
  - Type
- vv
- PRD-ID
- Linked FAR-ID
- Linked URR-ID
- Linked QER-ID
- Total subscribers matching specified criteria

## show user-plane-service [ all | name *name* ]

Executing this show command displays the following output:

- Service name

- Service-Id
- Context
- Status
- PGW Ingress GTPU Service
- SGW Ingress GTPU Service
- SGW Egress GTPU Service
- Control Plane Tunnel GTPU Service
- Sx Service

## show user-plane-service statistics all

Executing this show command displays the following output:

- VPN Name
- Subscribers Total
  - PDNs Total
    - Active
    - Setup
    - Released
    - Rejected
  - PDNs By PDN-Type
    - IPv4 PDNs
      - Active
      - Setup
      - Released
    - IPv6 PDNs
      - Active
      - Setup
      - Released
    - IPv4v6 PDNs
      - Active
      - Setup

- Released
- PDNs By interface-Type
  - Sxa interface-type PDNs
    - Active
    - Released
  - Sxb interface-type PDNs
    - Active
    - Setup
    - Released
- PDNs Rejected By Reason
  - No Resource
  - Missing or unknown APN
  - Addr not alloc
  - Addr not present
  - No memory available
  - System Failure
  - PDR install failed
- PDNs Released By Reason
  - Network initiated release
  - Admin disconnect
- Total Data Statistics
  - Uplink
    - Total Pkts
    - Total Bytes
    - Total Dropped Pkts
    - Total Dropped Bytes
  - Downlink
    - Total Pkts
    - Total Bytes
    - Total Dropped Pkts



- Total Dropped Bytes
- Data Statistics Per PDN-Type
  - IPv4 PDNs
    - Uplink
      - Total Pkts
      - Total Bytes
    - Downlink
      - Total Pkts
      - Total Bytes
  - IPv6 PDN Data Statistics
    - Uplink
      - Total Pkts
      - Total Bytes
    - Downlink
      - Total Pkts
      - Total Bytes
  - IPv4v6 PDN Data Statistics
    - Uplink
      - Total Pkts v4
      - Total Bytes v4
      - Total Pkts v6
      - Total Bytes v6
    - Downlink
      - Total Pkts v4
      - Total Bytes v4
      - Total Pkts v6
      - Total Bytes v6
  - Flow Statistics
    - Max Flow Reached

- Pkts Dropped - system Limit (L4)
- Ip Flow Statistics
  - Total Flows v4
    - Uplink
    - Total Pkts v4
    - Total Bytes v4
    - Total Error Pkts v4
    - Total Error Bytes v4
  - Active Flows v4
    - Downlink
    - Total Pkts v4
    - Total Bytes v4
    - Total Error Pkts v4
    - Total Error Bytes v4
  - Total Flows v6
    - Uplink
    - Total Pkts v6
    - Total Bytes v6
    - Total Error Pkts v6
    - Total Error Bytes v6
  - Active Flows v6
    - Downlink
    - Total Pkts v6
    - Total Bytes v6
    - Total Error Pkts v6
    - Total Error Bytes v6
- Udp Flow Statistics
  - Total Udp Flows
    - Uplink
      - Total Udp Pkts

- Total Udp Bytes
- Total Udp Error Pkts
- Total Udp Error Bytes
  
- Downlink
  - Total Udp Pkts
  - Total Udp Bytes
  - Total Udp Error Pkts
  - Total Udp Error Bytes
  
- TCP Flow Statistics
  - Total TCP Flows
    - Uplink
      - Total TCP Pkts
      - Total TCP Bytes
      - Total TCP Error Pkts
      - Total TCP Error Bytes
  
    - Downlink
      - Total TCP Pkts
      - Total TCP Bytes
      - Total TCP Error Pkts
      - Total TCP Error Bytes

show user-plane-service statistics all