

VPP Metric Enhancement

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Feature Summary and Revision History

Summary Data

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

Revision History

Revision Details	Release
The **show active-charging flows full debug-info all** command is enhanced to display timestamp accuracy between VPP and session manager.	21.27
The **show active-charging flows full all** and **show active-charging flows summary**commands are enhanced to get the statistics from VPP.	21.26
The P-GW is enhanced to collect the log messages to monitor offloading and onloading flow transactions between VPP and the session manager.	21.26
The following enhancements were introduced: • Analyzer level statistics (TCP, UDP, P2P, HTTP, HTTPS) • VPP statistics collection using the CLI configuration	21.25
First introduced.	21.24

Feature Description

The Vector Packet Processing (VPP) metrics help to analyze and debug the VPP offloaded traffic. This feature applies only to platforms that support VPP.

Traffic flows are dealt in different ways based on how P-GW recognizes them. For example, some flows are managed with VPP and some are not. To enhance troubleshooting, statistics are added at rulebase, subscriber, and analyzer protocol levels for VPP flows. The supported analyzer protocols include Transmission Control Protocol (TCP), User Datagram Protocol (UDP), peer-to-peer (P2P) analyzer, Hypertext Transfer Protocol (HTTP), and Hypertext Transfer Protocol Secure (HTTPS). System level bulk statistics are supported for troubleshooting.

This feature is partially controlled through the active-charging service configuration. Only the subscriber-specific statistics related to VPP offload are controlled using CLI.

VPP Flow Statistics

The **show active-charging flows full** command is enhanced to receive the per flow information from VPP. This command displays the VPP stream to flow mapping information.

The **show active-charging flows full** and **show active-charging flows summary** commands support the following filters:

- imsi
- ip-address
- msisdn
- username

- callerid
- flow-id
- session-id
- instance



Note Once the idle flow timer expires, the idle flow counters will be incremented. Once the flow is cleared, the counter will be cleared and observed for a short duration of time for the particular flow in idle state.

Monitoring Offloading and Onloading VPP Flow Transactions

The P-GW is enhanced to collect the log messages to monitor offloading and onloading flow transactions between VPP and the session manager. The logs are collected when traffic state changes from offloading to onloading and conversely. The logs are stored in a file. Monitoring can be enabled or disabled using the supported CLI.

Timestamp Accuracy Improvement

When data packets get offloaded, the calculated ticks from the last arrived packet time lag behind the Starent Network Transmission (SNX) global tick time in the session manager. This results in non-synchronization of time between VPP and session manager. As the flow timeout is deducted incorrectly, the flow gets removed from the session.

The **show active-charging flows full debug-info all** command is enhanced to display the correct flow idle timeout.

How it Works

P-GW supports a user-controlled mechanism to monitor traffic offloading to VPP, onloading to sessmgr, and collects the traffic statistics for the monitored period. When the feature is enabled, the logs are saved to */tmp/fpflowchangelog_2021-11-24_02h35m44sEST_1.csv*. Once the logging is disabled, the log file moves to */hd-raid/fpflowchangelog/fpflowchangelog_2021-12-16_04h06m55sEST_1.csv*. If the number of logs exceed 32K, the log file closes and moves to */hd-raid/fpflowchangelog/fpflowchangelog_2021-12-16_04h06m55sEST_2.csv*. Then, the new file gets created in the rotated index format. The number, for example, *_2.csv* gets incremented and gets saved to */tmp/fpflowchangelog_2021-11-24_02h35m44sEST* with the current stamp. However, the logging continues to happen as usual and the logs are written to the new file.

Enabling or Disabling Logging

The logs are stored in a file in the following format:

```
Timestamp,IMSI, Session-ID, Stream-Idx, Client-IP, Client-Port, Server-IP, Server-Port,
Protocol, Trigger-Type, Trigger-Reason
```

Use the following CLI command in the Exec mode to enable or disable offload and onload logging. By default, the monitoring is disabled:

logging session fp-flow-state-change facility sessmgr instance *instance_number* **number-of-events** *events_value*

logging session fp-flow-state-change facility sessmgr instance *instance_number* **duration** *duration_value*

You will receive the following warning message on enabling the command:

Warning Logging facility for flow state change is now enabled! Logs shall be written to /hd-raid/fpflowchangelog/fpflowchangelog_2021-12-16_04h06m55sEST_1.csv. Warning: Flow state change logging may have performance impact. Please use with discretion.

If the logging is already enabled when executing the command, you will receive the following message:

```
[local]laas-setup# logging session fp-flow-state-change facility sessmgr instance 8 duration
 10
Flow state change event logging is already enabled. Disable before enabling.
```

```
[local]laas-setup# logging session fp-flow-state-change facility sessmgr instance 12 duration
 10
Error in flow stream state change logging enable. Invalid parameter.
```

Note Once the configured value for **number-of-events** is met or the duration in seconds elapse, this feature gets disabled automatically.

The event logging must be enabled independent of any other feature or module log.

Configuring Metrics Collection

Use the following sample configuration to enable or disable metrics collection from VPP for subscriber and rulebase.

```
configure
  active-charging service service_name
    [ no ] statistics-collection { all | vpp }
    end
```

NOTES:

- **all**: Configures both Ruledef and VPP statistics collection.
- **vpp**: Configures VPP statistics collection.
- **no**: Resets the seed-time value to the default value of 0.
- By default, this CLI is disabled.

Monitoring and Troubleshooting

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

Show Commands and Outputs

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

show active-charging flows full

Table 1: show active-charging flows full Command Output Descriptions

Field	Description
FP-Stream-ID (Up)	Specifies the fastpath stream ID of uplink packets.
FP-Stream-State (Up)	Specifies the fastpath stream state of uplink packets.
FP-Stream-ID (Down)	Specifies the fastpath stream ID of downlink packets.
FP-Stream-State (Down)	Specifies the fastpath stream state of downlink packets.
FP-Client-ID	Specifies the VPP fastpath client ID.
Offload-Stream-at-packet (up)	Specifies the packet number of a stream offloaded from the session manager to VPP when the uplink traffic starts.
Offload-Stream-at-packet (Down)	Specifies the packet number of a stream offloaded from the session manager to VPP when the downlink traffic starts.
VPP FP UL Packets	Specifies the VPP count for uplink packets.
VPP FP UL Bytes	Specifies the VPP count for uplink bytes.
VPP FP DL Packets	Specifies the VPP count for downlink packets.
VPP FP DL Bytes	Specifies the VPP count for downlink bytes.
VPP FP Packets	Specifies total offloaded fastpath packets.
VPP FP Dropped Packets	Specifies dropped packets by VPP.
VPP Onload Succeeded	Specifies total packet onloaded from VPP (onloaded to session manager).
Flow-ID	Identifier for flows.
Session-ID	Identifier for ACS session.
Uplink Packets	The total number of uplinked packets.
Uplink Bytes	The total number of uplinked bytes.

Field	Description
Downlink Packets	The total number of downlinked packets.
Downlink Bytes	Total number of downlinked bytes.
FP Packets	Number of data packets processed in fastpath for this flow.
MS IP	The MS IP address.
MS NAT IP	The MS NAT IP address.
Server IP	The server IP address.
Transport Protocol	The transport protocol: TCP, UDP, ICMP
Application Protocol	The application protocol.
Video Pacing	Indicates whether video pacing is enabled or disabled.
Video Encoded Bit Rate	The currently enforced bit rate for video pacing.
Video Pacing Initial Burst Size	The initial burst size allowed, in bytes, during video pacing.
Video Pacing Normal Burst Size	The normal burst size allowed, in bytes, during video pacing.
Video Pacing Dropped Bytes	The number of data bytes dropped during video pacing.
Video Payload Bytes Sent towards User	The number of data bytes sent to the UE during video pacing.
Video Pacing Duration	The total number of video pacing in seconds.
TCP MS Port	The TCP MS port number.
TCP MS NAT Port	The TCP MS NAT port number. This field is not displayed for one-to-one NAT.
TCP Server Port	The TCP server port number.
TCP State	Indicates the TCP state.
TCP Prev State	Indicates the previous TCP state.
MS Window Size	The mobile window size.
Server Window Size	The server window size.
MS Retries	The total number of mobile subscriber retries.
Server Retries	The total number of server retries.
ITC Action Applied	Indicates that the ITC action is applied.
Throttle-Suppress Countdown	Displays the configured timeout (elapsed time) when flow is throttle-suppressed.

Field	Description
Throttle-Suppress	Displays "n/a" when throttle-suppress is inactive.
Socket Migration Details:	TCP Proxy Socket Migration related information.
State	Indicates the Socket Migration state of the flow. For example, SOCK_MIG_DONE.
Highest ACK Frm Server	The highest acknowledgment number from the server.
Highest Seq Frm Server	The Highest sequence number from the server.
Highest ACK Frm MS	The highest acknowledgement number from the MS.
Highest Seq Frm MS	The highest sequence number from the MS.
Seq Frm MS at Mig	Sequence number from MS at migration.
ACK Frm MS at Mig	Acknowledgement number from MS at migration.
Seq Frm Server at Mig	The sequence number from the server at migration.
ACK Frm Server at Mig	The acknowledgement number from the server at migration.
Data To Be Delivered To MS	Data to be delivered to the MS.
Data To Be Delivered To Server	Data to be delivered to the server.
Highest Seq Frm MS	Highest sequence number from the MS.
Timestamps Enabled	Indicates if timestamps option is enabled.
SACK Enabled	Indicates if selective acknowledgement is enabled.
Wscale From MS	Window scale value from MS.
Wscale From Server	Window scale value from server.
Buffering Statistics:	
Buffered Uplink Packets	The total number of buffered uplink packets.
Buffered Uplink Bytes	The total number of buffered uplink bytes.
Buffered Downlink Packets	The total number of buffered downlink packets.
Buffered Downlink Bytes	The total number of buffered downlink bytes.
Uplink Packets in Buffer	The total number of uplink packets in the buffer.
Uplink Bytes in Buffer	The total number of uplink bytes in the buffer.
Downlink Packets in Buffer	The total number of downlink packets in the buffer.
Downlink Bytes in Buffer	The total number of downlink bytes in the buffer.

Field	Description
Buff Over-limit Uplink Pkts	The total number of uplink packets that are over the limit in the buffer.
Buff Over-limit Uplink Bytes	The total number of uplink bytes that are over the limit in the buffer.
Buff Over-limit Downlink Pkts	The total number of downlink packets that are over the limit in the buffer.
Buff Over-limit Downlink Bytes	The total number of downlink bytes that are over the limit in the buffer.
CAE-Readdressing:	
Requests CAE-Readdressed	The total number of request readdressing done.
Responses CAE-Readdressed	The total number of response readdressing done.
Requests having xheader inserted	The total number of HTTP requests with x-headers inserted.
Total connect failed to CAE	The total number of connections failed to the CAE.
Total CAE-Readdressed Uplink Bytes	The total number of uplink bytes readdressed.
Total CAE-Readdressed Uplink Packets	The total number of uplink packets readdressed.
Total CAE-Readdressed Downlink Bytes	The total number of downlink bytes readdressed.
Total CAE-Readdressed Downlink Packets	The total number of downlink packets readdressed.
Flows connected to CAE	The total number of flows connected to the CAE.
Proxy Disable Success	The total number of flows with proxy disabled.
Proxy Disable Failed	The total number of times the proxy disable function failed.
Link Monitoring	
Average Throughput	The average TCP throughput of downlink TCP traffic towards the mobile device, in kbps.
Average RTT	The average TCP RTT (Round Trip Time) of downlink TCP traffic towards the mobile device, in milliseconds.
Tethering detection performed	Indicates whether tethering detection was performed.
Tethering detected	Indicates whether tethering was detected.
Total ACS flows matching specified criteria	The total number of ACS flows that match the specified criteria.

show active-charging flows full debug-info all

Table 2: show active-charging flows full debug-info all Command Output Descriptions

Field	Description
Last Active Tick Time	Specifies the last active tick time for the data packet.
Current Tick Time	Specifies the current system tick time.

show active-charging flows summary

Table 3: show active-charging flows summary Command Output Descriptions

Field	Description
Current:	
Active Flows	Specifies the total number of active flows currently on the system.
TCP Active flows	Specifies the total number of active flows for TCP traffic.
DNS Active flows	Specifies the total number of active flows for DNS traffic.
ICMPV6 Active flows	Specifies the total number of active flows for ICMPv6 traffic.
Idle Flows:	
TCP Idle flows	Specifies the total number of idle flows for TCP traffic.
UDP Idle flows	Specifies the total number of idle flows for UDP traffic.
ICMPv6 Idle flows	Specifies the total number of idle flows for ICMPv6 traffic.
DNS Idle flows	Specifies the total number of idle flows for DNS traffic.
Cumulative:	
Uplink Packets	Specifies the total number of uplinked packets.
Uplink Bytes	Specifies the total number of uplinked bytes.
Downlink Packets	Specifies the total number of downlinked packets.
Downlink Bytes	Specifies the total number of downlinked bytes.

show active-charging rulebase statistics name

The output of this command displays the following fields:

Table 4: show active-charging rulebase statistics name Command Output Descriptions

Field	Description
VPP Offload Statistics:	
Total Flows	Total number of flows.
Current Active Flows	Total number of active current flows.
IPv4:	
Uplink Pkts	Total number of IPv4 packets uplinked.
Uplink Bytes	Total number of IPv4 bytes uplinked.
Downlink Pkts	Total number of IPv4 packets downlinked.
Downlink Bytes	Total number of IPv4 bytes downlinked.
Dropped Uplink Pkts	Total number of IPv4 uplink packets discarded.
Dropped Uplink Bytes	Total number of IPv4 uplink bytes discarded.
Dropped Downlink Pkts	Total number of IPv4 downlink packets discarded.
Dropped Downlink Bytes	Total number of IPv4 downlink bytes discarded.
IPv6:	
Uplink Pkts	Total number of IPv6 packets uplinked.
Uplink Bytes	Total number of IPv6 bytes uplinked.
Downlink Pkts	Total number of IPv6 packets downlinked.
Downlink Bytes	Total number of IPv6 bytes downlinked.
Dropped Uplink Pkts	Total number of IPv6 uplink packets discarded.
Dropped Uplink Bytes	Total number of IPv6 uplink bytes discarded.
Dropped Downlink Pkts	Total number of IPv6 downlink packets discarded.
Dropped Downlink Bytes	Total number of IPv6 downlink bytes discarded.

show active-charging subscribers all

The output of this command displays the following fields.

Table 5: show active-charging subscribers all Command Output Descriptions

Field	Description
VPP-PKTS-UP	Total number of packets detected in uplink direction through VPP.

Field	Description
VPP-PKTS-DOWN	Total number of packets detected in downlink direction through VPP.

show-active-charging subscribers full all

The output of this command is enhanced to display the following fields.

Table 6: show active-charging subscribers full all Command Output Descriptions

Field	Description
VPP Offload Statistics: Enabled/Disabled	
Total Flows	Total number of flows.
Current Active Flows	Total number of active current flows.
IPv4:	
Uplink Pkts	Total number of IPv4 packets uplinked.
Uplink Bytes	Total number of IPv4 bytes uplinked.
Downlink Pkts	Total number of IPv4 packets downlinked.
Downlink Bytes	Total number of IPv4 bytes downlinked.
Dropped Uplink Pkts	Total number of IPv4 uplink packets discarded.
Dropped Uplink Bytes	Total number of IPv4 uplink bytes discarded.
Dropped Downlink Pkts	Total number of IPv4 downlink packets discarded.
Dropped Downlink Bytes	Total number of IPv4 downlink bytes discarded.
IPv6:	
Uplink Pkts	Total number of IPv6 packets uplinked.
Uplink Bytes	Total number of IPv6 bytes uplinked.
Downlink Pkts	Total number of IPv6 packets downlinked.
Downlink Bytes	Total number of IPv6 bytes downlinked.
Dropped Uplink Pkts	Total number of IPv6 uplink packets discarded.
Dropped Uplink Bytes	Total number of IPv6 uplink bytes discarded.
Dropped Downlink Pkts	Total number of IPv6 downlink packets discarded.
Dropped Downlink Bytes	Total number of IPv6 downlink bytes discarded.

show active-charging analyzer statistics name

The output of this command displays the following fields. The fields are common for http, secure-http, p2p, tcp, udp.

Table 7: show active-charging analyzer statistics name Command Output Descriptions

Field	Description
Total VPP FP Packets	Total number of Fast Path packets through VPP.
VPP Fastpath Statistics:	
Total Flows	Total number of flows.
Current Active Flows	Total number of active current flows.
IPv4:	
Uplink Pkts	Total number of IPv4 packets uplinked.
Uplink Bytes	Total number of IPv4 bytes uplinked.
Downlink Pkts	Total number of IPv4 packets downlinked.
Downlink Bytes	Total number of IPv4 bytes downlinked.
IPv6:	
Uplink Pkts	Total number of IPv6 packets uplinked.
Uplink Bytes	Total number of IPv6 bytes uplinked.
Downlink Pkts	Total number of IPv6 packets downlinked.
Downlink Bytes	Total number of IPv6 bytes downlinked.

show session fp-flow-state-change statistics

Field	Description
Onload/Offload event logging	Displays the status of logging to show if it is currently enabled or disabled.
Start time	Displays the start time of the last logging. If the logging was never started, the start time shows "NA".
End time	Displays the time when logging was stopped. If logging was never started, the end time shows NA. If the logging is currently enabled, it shows "In progress".
Total events recorded	Displays the total number of logs generated.
Logging enabled for *number of events/ duration*	The number of events or duration in seconds.

Field	Description
Sessmgr Instance	The session manager instance for which the logging is enabled.

Bulk Statistics

The ECS schema includes the following bulk statistics.

ECS Schema

Table 8: Bulk Statistics Variables in the ECS Schema

Variables	Description
vpp-tot-flows	Indicates total number of flows through VPP.
vpp-cur-flows	Indicates total number of active current flows through VPP.
IPv4	
vpp-IPv4-uplk-pkts	Indicates total number of IPv4 packets detected in uplink direction through VPP.
vpp-IPv4-dwnlk-pkts	Indicates total number of IPv4 packets detected in downlink direction through VPP.
vpp-IPv4-uplk-bytes	Indicates total number of IPv4 bytes detected in uplink direction through VPP.
vpp-IPv4-dwnlk-bytes	Indicates total number of IPv4 bytes detected in downlink direction through VPP.
vpp-IPv4-uplk-drop-pkts	Indicates the total number of dropped IPv4 packets detected in uplink direction through VPP.
vpp-IPv4-dwnlk-drop-pkts	Indicates the total number of dropped IPv4 packets detected in downlink direction through VPP.
vpp-IPv4-uplk-drop-bytes	Indicates the total number of dropped IPv4 bytes detected in uplink direction through VPP.
vpp-IPv4-dwnlk-drop-bytes	Indicates the total number of dropped IPv4 bytes detected in downlink direction through VPP.
IPv6	
vpp-IPv6-uplk-pkts	Indicates total number of IPv6 packets detected in uplink direction through VPP.
vpp-IPv6-dwnlk-pkts	Indicates total number of IPv6 packets detected in downlink direction through VPP.

Variables	Description
vpp-IPv6-uplk-bytes	Indicates total number of IPv6 bytes detected in uplink direction through VPP.
vpp-IPv6-dwnlk-bytes	Indicates total number of IPv6 bytes detected in downlink direction through VPP.
vpp-IPv6-uplk-drop-pkts	Indicates the total number of dropped IPv6 packets detected in uplink direction through VPP.
vpp-IPv6-dwnlk-drop-pkts	Indicates the total number of dropped IPv6 packets detected in downlink direction through VPP.
vpp-IPv6-uplk-drop-bytes	Indicates the total number of dropped IPv6 bytes detected in uplink direction through VPP.
vpp-IPv6-dwnlk-drop-bytes	Indicates the total number of dropped IPv6 bytes detected in downlink direction through VPP.
TCP	
tcp-vpp-flows-cur	Indicates the current number of flows through VPP for TCP analyzer.
tcp-vpp-flows	Indicates the total number of flows through VPP for TCP analyzer.
tcp-vpp-pkts	The total number of IP packets through VPP for TCP analyzer.
tcp-ipv4-vpp-dwnlk-pkts	Indicates the total number of IP packets detected in downlink direction in IPv4 traffic through VPP for TCP analyzer.
tcp-ipv4-vpp-uplk-pkts	Indicates the total number of IP packets detected in uplink direction in IPv4 traffic through VPP for TCP analyzer.
tcp-ipv4-vpp-dwnlk-bytes	Indicates the total number of IP bytes detected in downlink direction in IPv4 traffic through VPP for TCP analyzer.
tcp-ipv4-vpp-uplk-bytes	Indicates the total number of IP bytes detected in uplink direction in IPv4 traffic through VPP for TCP analyzer.
tcp-ipv6-vpp-dwnlk-pkts	Indicates the total number of IP packets detected in downlink direction in IPv6 traffic through VPP for TCP analyzer.
tcp-ipv6-vpp-uplk-pkts	Indicates the total number of IP packets detected in uplink direction in IPv6 traffic through VPP for TCP analyzer.
tcp-ipv6-vpp-dwnlk-bytes	Indicates the total number of IP bytes detected in downlink direction in IPv6 traffic through VPP for TCP analyzer.

Variables	Description
tcp-ipv6-vpp-uplk-bytes	Indicates the total number of IP bytes detected in uplink direction in IPv6 traffic through VPP for TCP analyzer.
UDP	
udp-vpp-flows-cur	Indicates the current number of flows through VPP for UDP analyzer.
udp-vpp-flows	Indicates the total number of flows through VPP for UDP analyzer.
udp-vpp-pkts	Indicates the total number of IP packets through VPP for UDP analyzer.
udp-ipv4-vpp-dwnlk-pkts	Indicates the total number of IPv4 packets detected in downlink direction through VPP for UDP analyzer.
udp-ipv4-vpp-uplk-pkts	Indicates the total number of IPv4 packets detected in uplink direction through VPP for UDP analyzer.
udp-ipv4-vpp-dwnlk-bytes	Indicates the total number of IPv4 bytes detected in downlink direction through VPP for UDP analyzer.
udp-ipv4-vpp-uplk-bytes	Indicates the total number of IPv4 bytes detected in uplink direction through VPP for UDP analyzer.
udp-ipv6-vpp-dwnlk-pkts	Indicates the total number of IPv6 packets detected in downlink direction through VPP for UDP analyzer.
udp-ipv6-vpp-uplk-pkts	Indicates the total number of IPv6 packets detected in uplink direction through VPP for UDP analyzer.
udp-ipv6-vpp-dwnlk-bytes	Indicates the total number of IPv6 bytes detected in downlink direction through VPP for UDP analyzer.
udp-ipv6-vpp-uplk-bytes	Indicates the total number of IPv6 bytes detected in uplink direction through VPP for UDP analyzer.
HTTP	
http-vpp-flows-cur	Indicates the current number of flows through VPP for HTTP analyzer.
http-vpp-flows	Indicates the total number of flows through VPP for HTTP analyzer.
http-vpp-pkts	Indicates the total number of IP packets through VPP for HTTP analyzer.
http-ipv4-vpp-dwnlk-pkts	Indicates the total number of IPv4 packets detected in downlink direction through VPP for HTTP analyzer.
http-ipv4-vpp-uplk-pkts	Indicates the total number of IPv4 packets detected in uplink direction through VPP for HTTP analyzer.
http-ipv4-vpp-dwnlk-bytes	Indicates the total number of IPv4 bytes detected in downlink direction through VPP for HTTP analyzer.

Variables	Description
http-ipv4-vpp-uplk-bytes	Indicates the total number of IPv4 bytes detected in uplink direction through VPP for HTTP analyzer.
http-ipv6-vpp-dwnlk-pkts	Indicates the total number of IPv6 packets detected in downlink direction through VPP for HTTP analyzer.
http-ipv6-vpp-uplk-pkts	Indicates the total number of IPv6 packets detected in uplink direction through VPP for HTTP analyzer.
http-ipv6-vpp-dwnlk-bytes	Indicates the total number of IPv6 bytes detected in downlink direction through VPP for HTTP analyzer.
http-ipv6-vpp-uplk-bytes	Indicates the total number of IPv6 bytes detected in uplink direction through VPP for HTTP analyzer.
Secure-HTTP	
https-vpp-flows-cur	Indicates the current number of flows through VPP for HTTPS analyzer.
https-vpp-flows	Indicates the total number of flows through VPP for HTTPS analyzer.
https-vpp-pkts	Indicates the total number of IP packets through VPP for HTTPS analyzer.
https-ipv4-vpp-dwnlk-pkts	Indicates the total number of IPv4 packets detected in downlink direction through VPP for HTTPS analyzer.
https-ipv4-vpp-uplk-pkts	Indicates the total number of IPv4 packets detected in uplink direction through VPP for HTTPS analyzer.
https-ipv4-vpp-dwnlk-bytes	Indicates the total number of IPv4 bytes detected in downlink direction through VPP for HTTPS analyzer.
https-ipv4-vpp-uplk-bytes	Indicates the total number of IPv4 bytes detected in uplink direction through VPP for HTTPS analyzer.
https-ipv6-vpp-dwnlk-pkts	Indicates the total number of IPv6 packets detected in downlink direction through VPP for HTTPS analyzer.
https-ipv6-vpp-uplk-pkts	Indicates the total number of IPv6 packets detected in uplink direction through VPP for HTTPS analyzer.
https-ipv6-vpp-dwnlk-bytes	Indicates the total number of IPv6 bytes detected in downlink direction through VPP for HTTPS analyzer.
https-ipv6-vpp-uplk-bytes	Indicates the total number of IPv6 bytes detected in uplink direction through VPP for HTTPS analyzer.
P2P	
p2p-vpp-flows-cur	Indicates the current number of flows through VPP for P2P analyzer.
p2p-vpp-flows	Indicates the total number of flows through VPP for P2P analyzer.

Variables	Description
p2p-vpp-pkts	Indicates the total number of IP packets through VPP for P2P analyzer.
p2p-ipv4-vpp-dwnlk-pkts	Indicates the total number of IPv4 packets detected in downlink direction through VPP for P2P analyzer.
p2p-ipv4-vpp-uplk-pkts	Indicates the total number of IPv4 packets detected in uplink direction through VPP for P2P analyzer.
p2p-ipv4-vpp-dwnlk-bytes	Indicates the total number of IPv4 bytes detected in downlink direction through VPP for P2P analyzer.
p2p-ipv4-vpp-uplk-bytes	Indicates the total number of IPv4 bytes detected in uplink direction through VPP for P2P analyzer.
p2p-ipv6-vpp-dwnlk-pkts	Indicates the total number of IPv6 packets detected in downlink direction through VPP for P2P analyzer.
p2p-ipv6-vpp-uplk-pkts	Indicates the total number of IPv6 packets detected in uplink direction through VPP for P2P analyzer.
p2p-ipv6-vpp-dwnlk-bytes	Indicates the total number of IPv6 bytes detected in downlink direction through VPP for P2P analyzer.
p2p-ipv6-vpp-uplk-bytes	Indicates the total number of IPv6 bytes detected in uplink direction through VPP for P2P analyzer.