Static and Predefined Rule Match Support for Shallow Packet Inspection

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Revision History

Note Revision history details are not provided for features introduced before release 21.24.

Revision Details	Release
First introduced	Pre 21.24

Feature Description

This feature adds support to check different data statistics related to the node or ongoing sessions in the CUPS deployment.

To support this functionality, a new keyword “real-time” has been added to the following CLI commands:

- show apn statistics real-time - Displays the aggregated data and control statistics across all APN’s from all user-planes connected to this control plane.
- show apn statistics real-time all - Displays independently per APN, the data and control statistics from all user-planes connected to this control plane.
- show apn statistics real-time name - Displays the data and control statistics by fetching data from all the user-planes for a given APN.

Important For this release, only the following eight counters are supported:

- Uplink Bytes
- Downlink Bytes
- Uplink Packets
- Downlink Packets
- Dropped Uplink Bytes
- Dropped Downlink Bytes
- Dropped Uplink Packets
- Dropped Downlink Packets

How It Works

The following points describe briefly how the SPI feature works:

- The static and predefined rule policies, which are available on the Control-Plane, are percolated to the User-plane based on the rulebase that is associated to the subscriber. This information is translated in the form of a PDR on the Control-Plane.

  Static and predefined rules on the Control-Plane that are translated to PDRs and sent to convert static rules into a rulebase PDR while the predefined rules would be translated as PDR IDs, individual PDR IDs and sent to the User-plane for activation. This is how a set of subscriber policies would be defined in the User-plane.

  The session establishment associates the predefined and static rule that is available to the subscriber. This handles the implementation of policies that are associated for a subscriber.

- The PDR match maps the data packet against the filters specified in the PDI field of the applicable PDRs. When all filter conditions are matched, the packet is matched to the PDR. Based on the FAR ID, the action to perform on the packet is known. Accordingly, the service chain is updated and executed.

- For static and predefined rules, a unique URR is generated based on the combination of QCI, service-ID, and rating-group is configured on the Control-Plane. This URR is passed on the User-plane and forwarding actions are implemented

  Based on this information, policing and charging actions are implemented for the packet, including updating URRs and applying QERs.

  For matched PDRs, the forwarding action is to either “allow” or “discard” a packet.

Monitoring and Troubleshooting

This section provides information regarding show commands and/or their outputs in support of this feature.

Show Command(s) and/or Outputs

This section provides information regarding show commands and/or their outputs in support of this feature.

show subscribers user-plane-only full all

The output of this command has been enhanced to include the following new fields and values in support of this feature.

- Static & Predef Rule Match stats
  - Rule Name
  - Pkts-Down
  - Bytes-Down
  - Bytes-Up
  - Hits
  - Match-Bypassed
- Dynamic Rule Match stats
  - PDR Id
  - Pkts-Down
  - Bytes-Down
  - Pkts-Up
  - Bytes-Up
  - Hits
  - Match-Bypassed

show subscribers user-plane-only callid <callid> pdr full all

The output of this command has been enhanced to include the following field in support of this feature.

Rule Name

This field is displayed only for predefined rules.

show subscribers user-plane-only seid <seid> pdr full all

The output of this command has been enhanced to include the following field in support of this feature.

Rule Name

This field is displayed only for predefined rules.

show subscribers user-plane-only callid <callid> pdr id <id>

The output of this command has been enhanced to include the following field in support of this feature.

Rule Name

This field is displayed only for predefined rules.

show subscribers user-plane-only seid <seid> pdr id <id>

The output of this command has been enhanced to include the following field in support of this feature.

Rule Name

This field is displayed only for predefined rules.