

Bulk Statistics Support

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Feature Summary and Revision History

Summary Data

Table 1: Summary Data

Applicable Product (s) or Functional Area	5G-UPF
Applicable Platforms	VPC-SI SMI
Feature Default Setting	Enabled – Always-on
Related Changes in this Release	Not Applicable
Related Documentation	*UCC 5G UPF Configuration and Administration Guide*

Revision History

Table 2: Revision History

Revision Details	Release
The following new bulk statistic schemas are now supported: • P2P Schema • Sx Schema • System Schema • Userplane Schema	2021.01.0
First introduced.	2020.02.0

Feature Description

This chapter identifies bulk statistic schemas for the Cisco Ultra Cloud 5G User Plane Function (UPF) software release.

Bulk statistics is a collection of software features and framework that collects and exports the important performance and health-related statistics of the packet core node to an external node. These statistics provide an effective way for the operators to perform the following functions:

- Monitor the overall health and performance of the nodes.
- Help take corrective actions.
- Optimize the packet core network for better utilization.
- Reduce the overall operation expenses.

The individual statistics are configured to be collected in a group called ‘schema.'

The system-supported bulk statistics allows operators to choose statistics that are of importance to them and configure the presentation format. This simplifies the post-processing of statistical data because it allows data formatting that facilitates external, backend processors to parse it.

Statistics or bulk statistics reporting is important on a Mobile Packet Core node. For a product to be deployed in the network, it has to support statistics that meets Carrier Grade requisites.

Operators use bulk statistics for the following:

- Performance KPI monitoring
- Network Fault analysis and debugging
- Network Optimization
- Traffic pattern analysis
- Node health analysis

When used along with an element management system (EMS), the data can be parsed, archived, and graphed.

In the 5G environment, the system can be configured to collect for the following network functions:

- Access and Mobility Management Function (AMF)
- Network Repository Functions (NRF)
- Network Slice Selection Functions (NSSF)
- Policy Control Function (PCF)
- Session Management Function (SMF)
- User Plane Function (UPF)

The system supports the configuration of up to four sets (primary and secondary) of receivers. Each set is configured to collect specific sets of statistics from the supported list of schemas. Statistics can be pulled manually from the system or sent at configured intervals. The bulk statistics are stored on the receivers in files.

You can configure the format of the bulk statistic data files. You can specify the following:

- Format of the filename
- File headers and footers to include information such as the date, system hostname, and system uptime.
- IP address of the system generating the statistics (available for only for headers and footers)
- Time that the file was generated.

An EMS is capable of further processing the statistics data through XML parsing, archiving, and graphing. The Bulk Statistics Server component of an EMS parses collected statistics and stores the information in its PostgreSQL database. It can also generate XML output and can send it to a Northbound NMS or an alternate bulk statistics server for further processing.

Also, the Bulk Statistics server can archive files to an alternate directory on the server. The directory can be on a local file system or on an NFS-mounted file system on an EMS server.

The implementation of bulk statistics in 5G is as follows:

- The NFs collect and export the statistics separately to an aggregator node in the 5G architecture.
- The receiver correlates the statistics from the NFs using the node-names or any other information that is configured as part of the bulk statistics configuration. Any EMS tool can render this data similar to how it is rendered from a standalone system.

Supported Schemas

This release supports the following schemas in the 5G architecture.

APN Schema

The APN schema provides Access Point Name (APN) statistics.

Card Schema

The Card schema provides card-level statistics.

ECS Schema

The ECS schema provides Enhanced Charging Service statistics.

GTP-U Schema

The GTP-U schema provides GPRS Tunneling Protocol- User message statistics.

P2P Schema

The P2P schema provides point-to-point statistics.

P-GW Schema

The P-GW schema provides user-plane service statistics.

Port Schema

The Port schema provides port-level statistics.

Rulebase

The Rulebase schema provides rule base statistics.

Sx Schema

The Sx schema provides N4 related message statistics.

System Schema

The System schema provides system-level statistics.

Userplane Schema

The Userplane schema provides User Plane statistics.

VLAN-NPU

The VLAN-NPU schema provides VLAN and NPU statistics.

Important For more information on bulk statistic configuration, refer to the *Bulk Statistics* chapter in the *ASR 5500 System Administration Guide*.

Bulk statistics for per-QCI drop counters

A bulk statistics schema is a data collection framework that provides performance and health-related metrics for the 5G User Plane Function (UPF) by:

- Aggregating granular drop counters per QCI and per APN.
- Exporting performance data to external network management systems, and
- Enabling long-term traffic pattern analysis and network optimization.

The system-supported bulk statistics allow operators to choose statistics of importance and configure the presentation format. By collecting per-QCI drop data, operators can identify performance bottlenecks in latency-sensitive traffic and take corrective actions to improve subscriber quality of experience.