



SMF Interface for Metrics

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Feature Summary and Revision History

Feature Summary

Applicable Product(s) or Functional Area	5G-SMF
Applicable Platform(s)	SMI
Default Setting	Enabled – Always-on
Related Changes in this Release	Not Applicable
Related Documentation	Not Applicable

Revision History

Revision Details	Release
First introduced.	2020.02.0

Feature Description

SMF uses Prometheus for gathering statistics/counters from its microservices.

Grafana is used as the user interface to view metrics. It pulls the data from the Prometheus data store. Default graphs for KPI are available using Grafana for rendering a graphical view of the statistics with timelines.

For each microservice, counters and a set of labels are defined. Counters are incremented/decremented with the set of labels depending on the functionality.

The following snapshot is a sample of the Grafana dashboard.

Figure 1: Grafana Dashboard



SMF Rest EP Microservice

This section describes the supported counters and set of labels for the SMF Rest EP microservice.

Counters

The SMF REST EP microservice includes the following counters:

Table 1: SMF REST EP Microservice Counters

Number	Metric	Description
1	smf_restep_http_msg_total	This counter is incremented with every HTTP message received/sent at rest-ep microservice.
2	smf_restep_http_msg	This counter is incremented with every HTTP message received/sent at rest-ep microservice along with the time taken to serve the message.

Labels

The SMF REST EP microservice includes the following labels for the counters:

Table 2: SMF REST EP Microservice Labels for Counters

Number	Label	Description
1	NF TYPE	This label can be any 5G Node that interacts with SMF. For example: AMF, PCF, NRF

Number	Label	Description
2	MESSAGE DIRECTION	Displays the direction of the HTTP message with respect to the REST EP microservice. The possible values are: “inbound” “outbound”
3	API NAME	Displays the service name being served. It can be: "register_ue" "deregister_ue" "subscription_req" "nf_registration" "nf_discovery" "slice_selection" "amf_create_sm_context" "amf_update_sm_context" "amf_release_sm_context" "amf_n1_n2_transfer" "pcf_sm_policy_control_create" "pcf_sm_policy_control_update" "pcf_sm_policy_control_delete" "pcf_sm_policy_control_update_notify" "pcf_sm_policy_control_terminate_notify"
4	NF URI	Displays the rest-ep URI used in the HTTP message (can be FQDN).
5	RESPONSE STATUS	Displays the HTTP Response. It can be any 2xx, 4xx or 5xx response.

SMF Service

This section describes the supported counters and set of labels for the SMF service.

Labels

The SMF service includes the following labels for the counters:

Table 3: SMF Service Labels for Counters

Number	Label	Description
1	PROCEDURE TYPE	This label can take any value depending on the type of procedure queried for: "pdu_sess_create" "ue_req_pdu_sess_mod" "smf_req_pdu_sess_mod" "pcf_req_pdu_sess_mod" "ue_req_pdu_sess_rel" "smf_req_pdu_sess_rel" "pcf_req_pdu_sess_rel" "amf_req_pdu_sess_rel"
2	STATUS	Displays the status type. The possible values are: "attempted" "success" "failure"
3	PDU CONNECTION TYPE	Displays the PDU connection type. The possible values are: "ipv4" "ipv6" "ipv4v6"
4	PDU STATE	Displays the PDU state. The possible values are: "idle" "connected"

SMF Protocol Microservice

This section describes the supported counters and set of labels for the SMF Protocol microservice.

Counters

The SMF service includes the following counters:

Table 4: SMF Service Counters

Number	Metric	Description
1	smf_service_stats	This counter is incremented with every query made to the smf-service.

Number	Metric	Description
2	smf_service_counters	This is a gauge counter and can be incremented/decremented based on the functionality with every query made to the smf-service.

Labels

The SMF Protocol service includes the following labels for the counters:

Table 5: SMF Protocol Service Labels for Counters

Number	Label	Description
1	MESSAGE NAME	<p>This label can take any value depending on the procedure queried for:</p> <p>"n4_session_establishment_req"</p> <p>"n4_session_establishment_res"</p> <p>"n4_session_modification_req"</p> <p>"n4_session_modification_res"</p> <p>"n4_session_report_req"</p> <p>"n4_session_report_res"</p> <p>"n4_session_deletion_req"</p> <p>"n4_session_deletion_res"</p> <p>"n4_association_setup_req"</p> <p>"n4_association_setup_res"</p> <p>"n4_association_update_req"</p> <p>"n4_association_update_res"</p> <p>"n4_association_release_req"</p> <p>"n4_association_release_res"</p> <p>"n4_prime_pfd_management_req"</p> <p>"n4_prime_pfd_management_res"</p> <p>"n4_heartbeat_req"</p> <p>"n4_heartbeat_res"</p> <p>"n4_node_report_req"</p> <p>"n4_node_report_res"</p>

Number	Label	Description
2	MESSAGE DIRECTION	Displays the direction of the HTTP message with respect to the REST EP microservice. The possible values are: “inbound” “outbound”
3	STATUS	Displays the status of the message. The possible values are: “accepted” “denied” “discarded”