



SMF Interface for Metrics

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Feature Description

SMF uses Prometheus for gathering statistics or 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 or 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 following table lists the counters of the SMF REST EP microservice:

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 or sent at rest-ep microservice.
2	smf_restep_http_msg	This counter is incremented with every HTTP message received or sent at rest-ep microservice along with the time taken to process 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
2	MESSAGE DIRECTION	Displays the direction of the HTTP message with respect to the REST EP microservice. The possible values are: “inbound” “outbound”

Number	Label	Description
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 following table lists the counters of the SMF service labels:

Table 3: SMF Service Labels for Counters

Number	Label	Description
1	PROCEDURE TYPE	This label takes any value depending on the type of procedure queried for the following procedures: 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. Following are the allowed values: attempted success failure
3	PDU CONNECTION TYPE	Displays the PDU connection type. Following are the allowed values: ipv4 ipv6 ipv4v6
4	PDU STATE	Displays the PDU state. Following are the allowed values: 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.
2	smf_service_counters	This counter is a gauge counter and can be incremented or 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	This label can take any value depending on the procedure queried for: "session_establishment_req" "session_establishment_res" "session_modification_req" "session_modification_res" "session_report_req" "session_report_res" "session_deletion_req" "session_deletion_res" "association_setup_req" "association_setup_res" "association_update_req" "association_update_res" "association_release_req" "association_release_res" "prime_pfd_management_req" "prime_pfd_management_res" "heartbeat_req" "heartbeat_res" "node_report_req" "node_report_res"

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”