

KPI Support for Multiple Replicas

- Feature Summary and Revision History, on page 1
- Feature Description, on page 1
- OAM Support, on page 2

Feature Summary and Revision History

Summary Data

Table 1: Summary Data

Applicable Product(s) or Functional Area	AMF
Applicable Platform(s)	SMI
Feature Default Setting	Enabled - Always-on
Related Documentation	Not Applicable

Revision History

Table 2: Revision History

Revision Details	Release
First introduced.	2021.04.0

Feature Description

This feature supports the following statistics:

- Procedural
- Service-based Interface (SBI)

- Session
  - gNB ID
  - Tracking Area (TA)

OAM Support

This section describes operations, administration, and maintenance information for this feature.

Procedural Statistics

The following procedural statistics are supported.

Metrics	Description	Labels
procedure_execution_seconds_total	Total time in seconds for executing the procedure.	• execution_stage • msg_type • proc_name • sub_proc_name
procedure_service_total	Total number of procedures executed in service.	proc_name
procedure_service_duration_seconds_total	Total time in seconds for executing the procedure in service pod.	proc_name
procedure_service_duration_histogram_total	Histogram time bins for executing the procedure in service pod.	• proc_name • bin
sub_procedure_service_total	Total number of sub procedures executed in service.	• msg_type • proc_name • sub_proc_name
sub_procedure_service_duration_seconds_total	Total time in seconds for executing the sub procedure in service pod.	• msg_type • proc_name • sub_proc_name
sub_procedure_service_duration_histogram_total	Histogram time bins for executing the sub procedure in service pod.	• msg_type • proc_name • sub_proc_name • bin

SBI Statistics

The following SBI statistics are supported.

Metrics	Description	Labels
rpc_response_total	Total number of Remote Process Call (RPC) responses received.	• background • dest_host • dest_set • interface • method_name • msg_type • namespace • proc_name • retry • rpc_name • service_name • stage • status • status_code • sub_proc_name • txn_type

Session Statistics

The following session statistics are supported.

Metrics	Description	Labels
db_records_total	Total number of records present in database.	• CipheringAlgo • IntegrityAlgo • session_type

Bulk Statistics

The following are examples of KPI Support for Multiple Replicas.

Procedural Statistics Example

```
procedure_execution_seconds_total{app_name="amf",cluster="clu1",data_center="dc1",execution_stage="AppInfra",
instance_id="0",msg_type="N1RegistrationRequest",proc_name="UE
Registration",service_name="amf-service",
sub_proc_name="N1RegistrationRequest"} 0.004000576
```

```
procedure_service_duration_histogram_total{app_name="amf",bin="50to500ms",cluster="clu1",data_center="dc1",instance_id="0",
proc_name="UE Registration",service_name="amf-service"} 1
```

```
procedure_service_duration_seconds_total{app_name="amf",cluster="clu1",data_center="dc1",instance_id="0",
proc_name="UE Registration",service_name="amf-service"} 0.201723819
```

```
procedure_service_total{app_name="amf",cluster="clu1",data_center="dc1",instance_id="0",
proc_name="UE Registration",service_name="amf-service"} 1
```

```
sub_procedure_service_duration_histogram_total{app_name="amf",bin="50to500ms",cluster="clu1",data_center="dc1",instance_id="0",
msg_type="N1RegistrationRequest",proc_name="UE
Registration",service_name="amf-service",sub_proc_name="N1RegistrationRequest"}
1
```

```
sub_procedure_service_duration_seconds_total{app_name="amf",cluster="clu1",data_center="dc1",instance_id="0",
msg_type="N1RegistrationRequest",proc_name="UE
Registration",service_name="amf-service",sub_proc_name="N1RegistrationRequest"}
0.201668683
```

```
sub_procedure_service_total{app_name="amf",cluster="clu1",data_center="dc1",instance_id="0",msg_type="N1RegistrationRequest",
proc_name="UE
Registration",service_name="amf-service",sub_proc_name="N1RegistrationRequest"}
1
```

Procedure Service Duration Histogram Statistics Example

```
procedure_service_duration_histogram_total{app_name="AMF",bin="<=50ms",cluster="clu1",data_center="dc1",instance_id="2",
proc_name="Pdu N1N2",service_name="amf-service"} 2
```

Sub-procedure Service Duration Histogram Statistics Example

```
sub_procedure_service_duration_histogram_total{app_name="AMF",bin="<=50ms",cluster="clu1",
data_center="dc1",instance_id="0",msg_type="N1N2MessageTransfer",proc_name="Pdu
N1N2",service_name="amf-service",
sub_proc_name="N1N2MessageTransfer"} 1
```

```
sub_procedure_service_total{app_name="AMF",cluster="clu1",data_center="dc1",instance_id="0",
msg_type="N1N2MessageTransfer",proc_name="Pdu
N1N2",service_name="amf-service",sub_proc_name="N1N2MessageTransfer"}1
```

Procedure Service Statistics Example

```
procedure_service_total{app_name="AMF",cluster="clu1",data_center="dc1",instance_id="2",proc_name="UE
 Registration",
service_name="amf-service"} 4
```

SBI Statistics Example

```
rpc_response_total{app_name="amf",background="false",cluster="clu1",data_center="dc1",
dest_host="http://1.0.0.1:1000/nausf-auth/v1",dest_set="",instance_id="1",interface="Rest",
method_name="Authenticate",msg_type="AusfauthRequest",namespace="0",proc_name="Authentication",
retry="0",rpc_name="AUSF",service_name="amf-rest-ep",stage="init_done",status="success",status_code="201",
sub_proc_name="N1RegistrationRequest",txn_type="NausfUeAuthentication"} 1
```

```
rpc_response_total{app_name="amf",background="false",cluster="clu1",data_center="dc1",
dest_host="http://1.0.0.1:1001/nudm-uecm/v1",dest_set="",instance_id="1",interface="Rest",
method_name="Register",msg_type="UdmRegRequest",namespace="0",proc_name="UDM
Registration",
retry="0",rpc_name="UDM",service_name="amf-rest-ep",stage="init_done",status="error",
status_code="RestClientUnableToSend",sub_proc_name="N1RegistrationRequest",
txn_type="NudmUecmRegistration"} 1
```

DB Records Statistics Example

```
db_records_total{appInstanceId="0",app_name="datastore-ep",cluster="session",data_center="test",db="session",
instance_id="3232278441",service_name="datastore-ep",session_type="EmergencyRegistered:false",
sliceName="slice1",systemId=""} 1
db_records_total{appInstanceId="0",app_name="datastore-ep",cluster="session",data_center="test",db="session",
instance_id="3232278441",service_name="datastore-ep",session_type="PLMNType:HOMER",
sliceName="slice1",systemId=""} 2
db_records_total{appInstanceId="0",app_name="datastore-ep",cluster="session",data_center="test",db="session",
instance_id="3232278441",service_name="datastore-ep",session_type="UeUsageSetting:NA",
sliceName="slice1",systemId=""} 0
db_records_total{appInstanceId="0",app_name="datastore-ep",cluster="session",data_center="test",db="session",
instance_id="3232278441",service_name="datastore-ep",session_type="gnb_id:4194304123456",
sliceName="slice1",systemId=""} 0
db_records_total{appInstanceId="0",app_name="datastore-ep",cluster="session",data_center="test",db="session",
instance_id="3232278441",service_name="datastore-ep",session_type="tac:30",
sliceName="slice1",systemId=""} 0
db_records_total{appInstanceId="0",app_name="datastore-ep",cluster="session",data_center="test",db="session",
instance_id="3232278441",service_name="datastore-ep",session_type="total",
sliceName="slice1",systemId="1"} 3
```