**3GPP TSG-SA5 Meeting #133e *S5-205102***

**e-meeting 12th - 21st October 2020**

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| *CR-Form-v12.0* |
| **CHANGE REQUEST** |
|  |
|  | **28.532** | **CR** | **0149** | **rev** | **1** | **Current version:** | **16.5.1** |  |
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| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* |
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| ***Proposed change affects:*** | UICC apps |  | ME |  | Radio Access Network | **X** | Core Network | **X** |

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|  |
| ***Title:***  | Update generic streaming MnS |
|  |  |
| ***Source to WG:*** | Huawei |
| ***Source to TSG:*** | S5 |
|  |  |
| ***Work item code:*** | TEI16 |  | ***Date:*** | 2020-09-29 |
|  |  |  |  |  |
| ***Category:*** | F |  | ***Release:*** | Rel-16 |
|  | *Use one of the following categories:****F*** *(correction)****A*** *(mirror corresponding to a change in an earlier release)****B*** *(addition of feature),* ***C*** *(functional modification of feature)****D*** *(editorial modification)*Detailed explanations of the above categories canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)Rel-12 (Release 12)**Rel-13 (Release 13)Rel-14 (Release 14)Rel-15 (Release 15)Rel-16 (Release 16)* |
|  |  |
| ***Reason for change:*** |  The MeasurementReader IOC and corresponding attributes are used in Clause 11.5.1.1, 11.5.1.4 and Clause 11.5.1.7, however, the MeasurementReader IOC is already replaced with PerfMetricJob IOC. |
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| ***Summary of change:*** | Correct the MeasurementReader IOC and corresponding attributes according to the PM control NRM fragment in the latest TS 28.622. |
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| ***Consequences if not approved:*** | Some misalignment of generic streaming MnS and PM control NRM fragment in the latest TS 28.622. |
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| ***Clauses affected:*** | 11.5.1.1.2, 11.5.1.4.2, 11.5.1.4.3, 11.5.1.7.2, A.6.2 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** |  | **X** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
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| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** | Revision of S5-205102 |

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| **1st Change** |

#### 11.5.1.1 establishStreamingConnection operation (M)

##### 11.5.1.1.1 Definition

This operation enables the streaming data reporting producer to establish a connection to the streaming data reporting consumer (i.e. streaming target). The connection establishement includes the exchange of meta-data (producer informs consumer about its own identity and the nature of the data to be reported via streaming) phase and the actual connection (a data pipe for streaming) establishment.

Established connection supports stream multiplexing (one connection supports one or more reporting streams simultaneously).

Upon successful connection establishment, the consumer is aware of the producer's identity, the list of reporting streams and the nature of data being reported on each of the streams.

The established connection may be kept "alive" either by built-in functionality of the solution set or by periodic reporting of empty stream data.

##### 11.5.1.1.2 Input parameters

| Parameter Name | Qualifier | Information type | Comment |
| --- | --- | --- | --- |
| producerId | M | The identity of the producer requesting the connection establishment. | DN of the streaming data reporting MnS producer. If the producer is not modeled as 3GPP NRM MOI, an alternative identifer other than DN may be used. |
| streamInfoList | M | List of StreamInfo | This parameter contains the list of meta-data about each reporting stream.For streaming trace reporting each StreamInfo includes: - StreamType carrying the value "TRACE"; - SerializationFormat carrying the value "GPB" or "ASN1"; - Trace Reference (see clause 5.6 of 3GPP TS 32.422 [38]) as stream identifier; - TraceJob (see clause 4.3.30 of 3GPP TS 28.622 [11]) providing the details about the configuration of the trace job for which the data is being reported.For streaming performance data reporting each StreamInfo includes: - StreamType carrying the value "PERFORMANCE"; - SerializationFormat carrying the value "GPB" or "ASN1"; - streamId globally unique stream identifier; - measObjDn: the DN of the measured object instance; - performanceMetrics: a list of performance metric names whose values are to be reported by the Performance Data Stream Units (see Annex C of TS 28.550 [42]) via this stream. Performance metrics include measurement and KPI; - either: - perfMetricJobGroupId defined in the PerfMetricJob MOI (see clause 4.3.31 of 3GPP TS 28.622 [11]) for which the data is being reported; - or:- jobId globally unique identifier of a measurement job (see TS 28.550 [42]).For streaming analytics reporting each StreamInfo includes: - StreamType carrying the value "ANALYTICS"; - SerializationFormat carrying the value "GPB" or "ASN1"; - streamId globally unique stream identifier; - AnalyticsInfo providing the details about the analytics activity for which the data is being reported.For proprietary data streaming reporting each StreamInfo includes: - StreamType carrying the value "PROPRIETARY"; - streamId globally unique stream identifier; - VsDataContainer (see clause 4.3.9 of 3GPP TS 28.622 [11]) providing the details about the data being reported. |

##### 11.5.1.1.3 Output parameters

| Parameter Name | Qualifier | Matching Information | Comment |
| --- | --- | --- | --- |
| connectionId | M | Identifier of the established streaming connection. | It identifies the established streaming connection. The format may have dependency on the solution set. |
| status | M | ENUM (Success, Failure) | An operation may fail because of a specified or unspecified reason. |

##### 11.5.1.1.4 Exceptions

| Exception Name | Definition |
| --- | --- |
| unexpectedStreams | **Condition:** Some information in the list of streamInfo was unexpected by the MnS consumer.**Returned Information:** Name of the exception; status is set to "Failure". |

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| **2nd Change** |

#### 11.5.1.4 addStream operation (M)

##### 11.5.1.4.1 Definition

This operation allows the producer to add one or more reporting streams to an already established streaming connection.

##### 11.5.1.4.2 Input parameters

| Parameter Name | Qualifier | Information type | Comment |
| --- | --- | --- | --- |
| connectionId | M | See clause 11.5.1.1.3 | It identifies the streaming connection to which new reporting streams are being added. The format may have dependency on the solution set. |
| streamInfoList | M | List of StreamInfo | This parameter contains the list of meta-data about each reporting stream being added to the already established connection.For streaming trace reporting each StreamInfo includes: - StreamType carrying the value "TRACE"; - SerializationFormat carrying the value "GPB" or "ASN1"; - Trace Reference (see clause 5.6 of 3GPP TS 32.422 [38]) as stream identifier; - TraceJob (see clause 4.3.30 of 3GPP TS 28.622 [11]) providing the details about the configuration of the trace job for which the data is being reported.For streaming performance data reporting each StreamInfo includes: - StreamType carrying the value "PERFORMANCE"; - SerializationFormat carrying the value "GPB" or "ASN1"; - streamId globally unique stream identifier; - measObjDn: the DN of the measured object instance; - performanceMetrics: a list of performance metric (i.e. measurement or KPI) names whose values are to be reported by the Performance Data Stream Units (see Annex C of TS 28.550 [42]) via this stream; - either: - perfMetricJobGroupId defined in the PerfMetricJob MOI (see clause 4.3.31 of 3GPP TS 28.622 [11]) for which the data is being reported; - or:- jobId globally unique identifier of a measurement job (see TS 28.550 [42]).For streaming analytics reporting each StreamInfo includes: - StreamType carrying the value "ANALYTICS"; - SerializationFormat carrying the value "GPB" or "ASN1"; - streamId globally unique stream identifier; - AnalyticsInfo providing the details about the analytics activity for which the data is being reported.For proprietary data streaming reporting each StreamInfo includes: - StreamType carrying the value "PROPRIETARY"; - streamId globally unique stream identifier; - VsDataContainer (see clause 4.3.9 of 3GPP TS 28.622 [11]) providing the details about the data being reported. |

##### 11.5.1.4.3 Output parameters

| Parameter Name | Qualifier | Matching Information | Comment |
| --- | --- | --- | --- |
| streamInfoList | M | List of StreamInfo | This parameter contains the list of meta-data about each reporting stream that has been successfully added as a result of this operation.For streaming trace reporting each StreamInfo includes: - StreamType carrying the value "TRACE"; - SerializationFormat carrying the value "GPB" or "ASN1"; - Trace Reference (see clause 5.6 of 3GPP TS 32.422 [38]) as stream identifier; - TraceJob (see clause 4.3.30 of 3GPP TS 28.622 [11]) providing the details about the configuration of the trace job for which the data is being reported.For streaming performance data reporting each StreamInfo includes: - StreamType carrying the value "PERFORMANCE"; - SerializationFormat carrying the value "GPB" or "ASN1"; - streamId globally unique stream identifier; - measObjDn: the DN of the measured object instance; - performanceMetrics: a list of performance metric names whose values are to be reported by the Performance Data Stream Units (see Annex C of TS 28.550 [42]) via this stream. Performance metrics include measurement and KPI; - either: - perfMetricJobGroupId defined in the PerfMetricJob MOI (see clause 4.3.31 of 3GPP TS 28.622 [11]) for which the data is being reported; - or:- jobId globally unique identifier of a measurement job (see TS 28.550 [42]).For streaming analytics reporting each StreamInfo includes: - StreamType carrying the value "ANALYTICS"; - SerializationFormat carrying the value "GPB" or "ASN1"; - streamId globally unique stream identifier; - AnalyticsInfo providing the details about the analytics activity for which the data is being reported.For proprietary data streaming reporting each StreamInfo includes: - StreamType carrying the value "PROPRIETARY"; - streamId globally unique stream identifier; - VsDataContainer (see clause 4.3.9 of 3GPP TS 28.622 [11]) providing the details about the data being reported. |
| status | M | ENUM (Success, Failure, PartialSuccess) | An operation may fail because of a specified or unspecified reason. |

##### 11.5.1.4.4 Exceptions

| Exception Name | Definition |
| --- | --- |
| duplicateStream | **Condition:** One or more of stream identifiers in the streamInfoList already exist on this connection.**Returned Information:** Name of the exception; status is set to "Failure" or "PartialSuccess". |
| unexpectedStreams | **Condition:** Some information in the list of streamInfo was unexpected by the MnS consumer.**Returned Information:** Name of the exception; status is set to "Failure". |
| unknownConnection | **Condition:** the connectionId is invalid.**Returned Information:** Name of the exception; status is set to "Failure". |

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| **3rd Change** |

#### 11.5.1.7 getStreamInfo operation (M)

##### 11.5.1.7.1 Definition

This operation enables the streaming data reporting service producer to obtain information about one or more reporting streams.

##### 11.5.1.7.2 Input parameters

| Parameter Name | Qualifier | Information type | Comment |
| --- | --- | --- | --- |
| streamIdList | M | List of stream identifiers | This parameter contains the list of stream identifiers for which the stream information is to be returned.The empty list indicates the stream information for all streams are to be returned.For streaming trace reporting Trace Reference (see clause 5.6 of 3GPP TS 32.422 [38]) is used as stream identifier.For streaming performance data reporting streamId globally unique stream identifier.For streaming analytics reporting streamId globally unique stream identifier.For proprietary data streaming reporting streamId globally unique stream identifier. |

##### 11.5.1.7.3 Output parameters

| Parameter Name | Qualifier | Matching Information | Comment |
| --- | --- | --- | --- |
| streamInfoSumList | M | List of <StreamInfo, StreamReporters> tuples | This parameter contains the list of meta-data about each reporting stream requested by this operation. Each entry in this list is a tuple of StreamInfo and StreamReporters.For streaming trace reporting each StreamInfo includes: - StreamType carrying the value "TRACE"; - SerializationFormat carrying the value "GPB" or "ASN1"; - Trace Reference (see clause 5.6 of 3GPP TS 32.422 [38]) as stream identifier; - TraceJob (see clause 4.3.30 of 3GPP TS 28.622 [11]) providing the details about the configuration of the trace job for which the data is being reported.For streaming trace the StreamReporters is a list of the identities of the streaming data reporting MnS producer(s) reporting data for this Trace Reference to this MnS consumer.For streaming PM reporting each StreamInfo includes: - StreamType carrying the value "PERFORMANCE"; - SerializationFormat carrying the value "GPB" or "ASN1"; - streamId globally unique stream identifier; - measObjDn: the DN of the measured object instance; - performanceMetrics: a list of performance metric names whose values are to be reported by the Performance Data Stream Units (see Annex C of TS 28.550 [42]) via this stream. Performance metrics include measurement and KPI; - either: - perfMetricJobGroupId defined in the PerfMetricJob MOI (see clause 4.3.31 of 3GPP TS 28.622 [11]) for which the data is being reported; - or:- jobId globally unique identifier of a measurement job (see TS 28.550 [42]).For streaming performance data the StreamReporters is a list of the identities of the streaming data reporting MnS producer(s) reporting data for this streamId to this MnS consumer.For streaming analytics reporting each StreamInfo includes: - StreamType carrying the value "ANALYTICS"; - SerializationFormat carrying the value "GPB" or "ASN1"; - streamId globally unique stream identifier; - AnalyticsInfo providing the details about the analytics activity for which the data is being reported.For streaming analytics the StreamReporters is a list of the identities of the streaming data reporting MnS producer(s) reporting data for this streamId to this MnS consumer.For proprietary data streaming reporting each StreamInfo includes: - StreamType carrying the value "PROPRIETARY"; - streamId globally unique stream identifier; - VsDataContainer (see clause 4.3.9 of 3GPP TS 28.622 [11]) providing the details about the data being reported.For proprietary data streaming the StreamReporters is a list of the identities of the streaming data reporting MnS producer(s) reporting data for this streamId to this MnS consumer. |
| status | M | ENUM (Success, Failure, PartialSuccess) | An operation may fail because of a specified or unspecified reason. |

##### 11.5.1.7.4 Exceptions

| Exception Name | Definition |
| --- | --- |
| unknownStreamId | **Condition:** One or more of stream identifiers in the streamIdList is not known to this MnS consumer.**Returned Information:** Name of the exception; status is set to "Failure" or "PartialSuccess". |

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| **4th Change** |

## A.6.2 OpenAPI document "streamingDataMnS.yaml"

openapi: 3.0.1

info:

 title: TS 28.532 Streaming data reporting service

 version: 16.6.0

 description: OAS 3.0.1 specification for the Streaming data reporting service (Streaming MnS)

servers:

 - url: '{MnSRoot}/StreamingDataReportingMnS/{version}'

 variables:

 MnSRoot:

 description: See subclause 4.4 of TS 32.158.

 default: https://example.com/3GPPManagement

 version:

 description: Indicates the current version of the specification

 default: 16.5.0

paths:

 '/connections':

 post:

 summary: Inform consumer about reporting streams to be carried by the new connection and receive a new connection id.

 description: Exchange of meta-data (producer informs consumer about its own identity and the nature of the data to be reported via streaming) phase of the connection establishement by streaming data reporting producer to the streaming data reporting consumer (i.e. streaming target).

 requestBody:

 required: true

 content:

 application/json:

 schema:

 $ref: '#/components/schemas/connectionRequest-Type'

 responses:

 '201':

 description: Success case (201 Created).

 headers:

 Location:

 description: Location of the created connection resource.

 schema:

 $ref: '#/components/schemas/connectionId-Type'

 default:

 description: Error case.

 content:

 application/json:

 schema:

 $ref: '#/components/schemas/failedConnectionResponse-Type'

 get:

 summary: Obtain information about connections.

 description: Enables the streaming data reporting service producer to obtain information about one or more streaming connections.

 parameters:

 - name: connectionIdList

 in: query

 description: The list of connectionId for which the connection information is to be returned.

 required: false

 schema:

 type: array

 items:

 $ref: '#/components/schemas/connectionId-Type'

 responses:

 '200':

 description: Success case (200 OK). The resources identified in the request for retrieval are returned in the response message body. In case the fields query parameter is used, the selected resources are returned.

 content:

 application/json:

 schema:

 type: array

 items:

 $ref: '#/components/schemas/connectionInfo-Type'

 '202':

 description: Partial success case (202 Partially retrieved). Subset of the resources identified in the request for retrieval are returned in the response message body.

 content:

 application/json:

 schema:

 type: array

 items:

 $ref: '#/components/schemas/connectionInfo-Type'

 default:

 description: Error case.

 content:

 application/json:

 schema:

 $ref: '#/components/schemas/errorResponse-Type'

 '/connections/{connectionId}':

 get:

 summary: Obtain information about a connection.

 description: Enables the streaming data reporting service producer to obtain information about one streaming connection.

 parameters:

 - name: connectionId

 in: path

 description: Indicate the ID (URI) of the connection for which the information is being retrieved

 required: true

 schema:

 $ref: '#/components/schemas/connectionId-Type'

 - name: Connection

 in: header

 schema:

 $ref: '#/components/schemas/websocketHeaderConnection-Type'

 - name: Sec-WebSocket-Extensions

 in: header

 schema:

 $ref: '#/components/schemas/websocketHeader-Sec-WebSocket-Extensions-Type'

 - name: Sec-WebSocket-Key

 in: header

 schema:

 $ref: '#/components/schemas/websocketHeader-Sec-WebSocket-Key-Type'

 - name: Sec-WebSocket-Protocol

 in: header

 schema:

 $ref: '#/components/schemas/websocketHeader-Sec-WebSocket-Protocol-Type'

 - name: Sec-WebSocket-Version

 in: header

 schema:

 $ref: '#/components/schemas/websocketHeader-Sec-WebSocket-Version-Type'

 responses:

 '101':

 description: Success case (101 Switching Protocols). The connection has been successfully switched to WebSocket. The response message body is absent.

 headers:

 Upgrade:

 schema:

 $ref: '#/components/schemas/websocketHeaderUpgrade-Type'

 Connection:

 schema:

 $ref: '#/components/schemas/websocketHeaderConnection-Type'

 Sec-WebSocket-Accept:

 schema:

 $ref: '#/components/schemas/websocketHeader-Sec-WebSocket-Accept-Type'

 '200':

 description: Success case (200 OK). The resource identified in the request for retrieval returned in the response message body.

 content:

 application/json:

 schema:

 $ref: '#/components/schemas/connectionInfo-Type'

 default:

 description: Error case.

 content:

 application/json:

 schema:

 $ref: '#/components/schemas/errorResponse-Type'

 '/connections/{connectionId}/streams':

 post:

 summary: Inform consumer about new reporting streams on an existing connection.

 description: Allows the producer to add one or more reporting streams to an already established streaming connection.

 parameters:

 - name: connectionId

 in: path

 description: Indicate the ID (URI) of the connection for which the reporting stream information is being added.

 required: true

 schema:

 $ref: '#/components/schemas/connectionId-Type'

 requestBody:

 required: true

 content:

 application/json:

 schema:

 type: array

 items:

 $ref: '#/components/schemas/streamInfo-Type'

 responses:

 '201':

 description: Success case (201 Posted).

 content:

 application/json:

 schema:

 type: array

 items:

 $ref: '#/components/schemas/streamInfo-Type'

 '202':

 description: Partial success case (202 Posted).

 content:

 application/json:

 schema:

 type: array

 items:

 $ref: '#/components/schemas/streamInfo-Type'

 default:

 description: Error case.

 content:

 application/json:

 schema:

 $ref: '#/components/schemas/errorResponse-Type'

 delete:

 summary: Remove reporting streams from an existing connection

 description: Allows the producer to remove one or more reporting streams from an already established streaming connection.

 parameters:

 - name: connectionId

 in: path

 description: Indicate the ID (URI) of the connection for which the reporting stream information is being removed.

 required: true

 schema:

 $ref: '#/components/schemas/connectionId-Type'

 - name: streamIds

 in: query

 description: The list of streamId for the stream(s) to be deleted.

 required: true

 schema:

 type: array

 items:

 $ref: '#/components/schemas/streamId-Type'

 responses:

 '204':

 description: Success case (204 No Content). The stream information resource has been deleted. The response message body is absent.

 default:

 description: Error case.

 content:

 application/json:

 schema:

 $ref: '#/components/schemas/errorResponse-Type'

 get:

 summary: Obtain information about streams.

 description: Enables the streaming data reporting service producer to obtain information about one or more reporting streams.

 parameters:

 - name: connectionId

 in: path

 description: Indicate the ID (URI) of the connection for which the information is being retrieved

 required: true

 schema:

 $ref: '#/components/schemas/connectionId-Type'

 - name: streamIds

 in: query

 description: The list of streamId for which the stream information is to be retrieved.

 required: true

 schema:

 type: array

 items:

 $ref: '#/components/schemas/streamId-Type'

 responses:

 '200':

 description: Success case (200 OK).

 content:

 application/json:

 schema:

 type: array

 items:

 $ref: '#/components/schemas/streamInfoWithReporters-Type'

 '202':

 description: Partial success case (202 Partially retrieved).

 content:

 application/json:

 schema:

 type: array

 items:

 $ref: '#/components/schemas/streamInfoWithReporters-Type'

 default:

 description: Error case.

 content:

 application/json:

 schema:

 $ref: '#/components/schemas/errorResponse-Type'

 '/connections/{connectionId}/streams/{streamId}':

 get:

 summary: Obtain information about stream

 description: Enables the streaming data reporting service producer to obtain information about a reporting stream.

 parameters:

 - name: connectionId

 in: path

 description: Indicate the ID (URI) of the connection for which the information is being retrieved

 required: true

 schema:

 $ref: '#/components/schemas/connectionId-Type'

 - name: streamId

 in: path

 description: Indicate the ID of the reporting stream for which the information is being retrieved

 required: true

 schema:

 $ref: '#/components/schemas/streamId-Type'

 responses:

 '200':

 description: Success case (200 OK).

 content:

 application/json:

 schema:

 $ref: '#/components/schemas/streamInfoWithReporters-Type'

 default:

 description: Error case.

 content:

 application/json:

 schema:

 $ref: '#/components/schemas/errorResponse-Type'

components:

 schemas:

 analyticsInfo-Type:

 description: Information specific to analytics reporting.

 type: object

 properties:

 activityDetails:

 type: string

 connectionId-Type:

 $ref: '#/components/schemas/uri-Type'

 connectionInfo-Type:

 type: object

 properties:

 connection:

 $ref: '#/components/schemas/connectionId-Type'

 producer:

 $ref: '#/components/schemas/producerId-Type'

 streams:

 type: array

 items:

 $ref: '#/components/schemas/streamId-Type'

 connectionRequest-Type:

 type: object

 properties:

 producer:

 $ref: '#/components/schemas/producerId-Type'

 streams:

 type: array

 items:

 $ref: '#/components/schemas/streamInfo-Type'

 errorResponse-Type:

 type: object

 properties:

 error:

 type: object

 properties:

 errorInfo:

 type: string

 failedConnectionResponse-Type:

 type: object

 properties:

 error:

 type: array

 items:

 type: object

 properties:

 streamId:

 $ref: '#/components/schemas/streamId-Type'

 errorReason:

 type: string

 measObjDn-Type:

 description: DN of the measured object instance (see 3GPP TS 28.550)

 allOf:

 - $ref: '#/components/schemas/systemDN-Type'

 performanceMetrics-Type:

 description: an ordered list of performance metric names (see clause 4.4.1 of 3GPP TS 28.622[11]) whose values are to be reported by the Performance Data Stream Units (see Annex C of TS 28.550 [42]) via this stream. Performance metrics include measurement and KPI

 type: array

 items:

 type: string

 performanceInfo-Type:

 description: Information specific to performance data reporting

 type: object

 properties:

 measObjDn:

 $ref: '#/components/schemas/measObjDn-Type'

 performanceMetrics:

 $ref: '#/components/schemas/performanceMetrics-Type'

 perfMetricJobGroupId:

 type: string

 jobId:

 type: string

 required:

 - measObjDn

 - performanceMetrics

 producerId-Type:

 description: DN of the streaming data reporting MnS producer.

 allOf:

 - $ref: '#/components/schemas/systemDN-Type'

 serializationFormat-Type:

 type: string

 enum:

 - GPB

 - ASN1

 streamId-Type:

 description: globally unique stream identifier

 type: string

 example: '26F452550021'

 streamInfo-Type:

 description: Reporting stream meta-data.

 type: object

 properties:

 streamType:

 $ref: '#/components/schemas/streamType-Type'

 serializationFormat:

 $ref: '#/components/schemas/serializationFormat-Type'

 streamId:

 oneOf:

 - $ref: '#/components/schemas/streamId-Type'

 - $ref: '#/components/schemas/traceReference-Type'

 additionalInfo:

 oneOf:

 - $ref: '#/components/schemas/traceInfo-Type'

 - $ref: '#/components/schemas/performanceInfo-Type'

 - $ref: '#/components/schemas/analyticsInfo-Type'

 - $ref: '#/components/schemas/vsDataContainer-Type'

 required:

 - streamType

 - serializationFormat

 - streamId

 streamInfoWithReporters-Type:

 description: Reporting stream meta-data with added information about reporters.

 type: object

 properties:

 streamInfo:

 $ref: '#/components/schemas/streamInfo-Type'

 reporters:

 type: array

 items:

 $ref: '#/components/schemas/producerId-Type'

 systemDN-Type:

 description: See 3GPP TS 32.300 for details

 type: string

 example: 'SubNetwork=ABCNetwork,SubNetwork=MUC01,GNBDUFunction=XYZ0100'

 streamType-Type:

 type: string

 enum:

 - TRACE

 - PERFORMANCE

 - ANALYTICS

 - PROPRIETARY

 traceInfo-Type:

 description: Information specific to trace data reporting

 allOf:

 - $ref: 'genericNrm.yaml#/components/schemas/TraceJob-Attr'

 traceReference-Type:

 description: Trace Reference (see clause 5.6 of 3GPP TS 32.422) as stream identifier for streaming trace data reporting

 type: string

 example: '4358070034D7'

 uri-Type:

 description: Resource URI

 type: string

 vsDataContainer-Type:

 description: container for vendor specific data (see 3GPP TS 28.622)

 type: object

 properties:

 vsDataType:

 type: string

 vsData:

 type: string

 vsDataFormatVersion:

 type: string

 websocketHeaderConnection-Type:

 description: Header value for the upgrade request and response.

 type: string

 enum:

 - Upgrade

 websocketHeaderUpgrade-Type:

 description: Header value for the upgrade to WebSocket request and response.

 type: string

 enum:

 - websocket

 websocketHeader-Sec-WebSocket-Accept-Type:

 description: Header value for secure WebSocket response. Carries hash.

 type: string

 websocketHeader-Sec-WebSocket-Extensions-Type:

 description: Header value for secure WebSocket request. Carries protocol extensions.

 type: string

 websocketHeader-Sec-WebSocket-Key-Type:

 description: Header value for secure WebSocket request. Provides information to the server which is needed in order to confirm that the client is entitled to request an upgrade to WebSocket.

 type: string

 websocketHeader-Sec-WebSocket-Protocol-Type:

 description: Header value for secure WebSocket request. Carries a comma-separated list of subprotocol names, in the order of preference.

 type: string

 websocketHeader-Sec-WebSocket-Version-Type:

 description: Header value for secure WebSocket request and response. Carries the WebSocket protocol version to be used.

 type: string

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| **End of Change** |