**3GPP TSG-SA4 MBS SWG ad hoc meeting *S4aI221301***

**Electronic meeting, Telco, Feb 2, 2022**

|  |
| --- |
| *CR-Form-v12.1* |
| **PSEUDO CHANGE REQUEST** |
|  |
|  | **26.532** | **CR** | **xxxx** | **rev** | **-** | **Current version:** | **0.2.0** |  |
|  |
| *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 | **X** | Radio Access Network |  | Core Network |  |

|  |
| --- |
|  |
| ***Title:***  | Update of config and report API resource structure for 26.532 |
|  |  |
| ***Source to WG:*** | Ericsson LM, BBC, Qualcomm Incorporated  |
| ***Source to TSG:*** | S4 |
|  |  |
| ***Work item code:*** | EVEX |  | ***Date:*** | 2022-02-02 |
|  |  |  |  |  |
| ***Category:*** | **C** |  | ***Release:*** | Rel-17 |
|  | *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-15 (Release 15)Rel-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)* |
|  |  |
| ***Reason for change:*** | Filling in missing text regarding API. |
|  |  |
| ***Summary of change:*** |  |
|  |  |
| ***Consequences if not approved:*** |  |
|  |  |
| ***Clauses affected:*** | 2, 7.2, 7.3, Annex X (new), Annex Y (new) |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **N** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** |  | **N** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **N** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

### ===================== Start of first change =====================

# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non‑specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2] 3GPP TS 23.501: "System architecture for the 5G System (5GS)".

[3] 3GPP TS 23.502: "Procedures for the 5G System (5GS)".

[4] 3GPP TS 23.288: "Architecture enhancements for 5G System (5GS) to support network data analytics services".

[5] 3GPP TS 29.517: "5G System; Application Function Event Exposure Service; Stage 3".

[6] 3GPP TS 29.510: "5G System; Network Function Repository Services; Stage 3".

[7] 3GPP TS 26.531: "Data Collection and Reporting; General Description and Architecture".

[8] OpenAPI: "OpenAPI 3.0.0 Specification", <https://github.com/OAI/OpenAPI-Specification/blob/master/versions/3.0.0.md>.

[H] 3GPP TS 29.500: "5G System; Technical Realization of Service Based Architecture; Stage 3".

[A] "CORS (Cross-Origin Resource Sharing)" protocol as defined in the ‘Fetch’ standard of WHATWG: [https://fetch.spec.whatwg.org/#cors-protocol](https://fetch.spec.whatwg.org/%22%20%5Cl%20%22cors-protocol).

[B] 3GPP TS 29.571: "5G System; Common Data Types for Service Based Interfaces; Stage 3".

[C] 3GPP TS 29.122: "T8 reference point for Northbound APIs".

[D] 3GPP TS 29.572: "5G System; Location Management Services; Stage 3".

[E] IETF RFC 3550: "RTP: A Transport Protocol for Real-Time Applications".

[F] IETF RFC 6750: "The OAuth 2.0 Authorization Framework: Bearer Token Usage".

[G] 3GPP TS 26.512: “5G Media Streaming (5GMS); Protocols”.

### ===================== Next change =====================

## 7.2 Data Collection and Reporting Configuration API

### 7.2.1 Overview

This clause specifies the configuration API used by data collection clients to obtain a data collection and reporting configuration from the Data Collection AF.

### 7.2.2 Resources

#### 7.2.2.1 Resource Structure

Table 7.2.2.1-1 provides an overview of the resources and applicable HTTP methods.

/sessions

{apiRoot}/ndcaf\_data-reporting/v1

/{sessionId}

Table 7.2.2.1-1: Resources and methods overview

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Service name | Operation name | Resource name | Resource path suffix | HTTP method | Description |
| Ndcaf\_DataReporting | CreateSession | Data Reporting Sessions | /sessions | POST | Data collection client establishes a UE data reporting session with the Data Collection AF, providing information about what UE data it can report, and is provided with a configuration in response. |
| RetrieveSession | Data Reporting Session | /sessions/{sessionId} | GET | Retreives a Data Reporting Session resource from the Data Collection AF. |
| UpdateSession | PUT | Modifies an existing Data Reporting Session resource . |
| DestroySession | DELETE | Destroys a Data Reporting Session resource. |

#### 7.2.2.2 Data Reporting Sessions resource collection

##### 7.2.2.2.1 Description

The Data Reporting Sessions resource collection represents the set of all Data Collection Sessions at a given Data Collection AF (service) instance. The resource collection allows a data collection client to create a new Data Reporting Session resource at, and to receive configuration details for that session from, the Data Collection AF.

##### 7.2.2.2.2 Resource definition

Resource URL: **{apiRoot}/ndcaf\_data-reporting/v1/sessions**

This resource shall support the resource URL variables defined in table 7.2.2.2.2-1.

Table 7.2.2.2.2-1: Resource URL variables for this resource

|  |  |  |
| --- | --- | --- |
| Name | Data type | Definition |
| apiRoot | string | Fully-Qualified Doman Name of the Data Collection AF and path prefix. |

##### 7.2.2.2.3 Resource Standard Methods

###### 7.2.2.2.3.1 Ndcaf\_DataReporting\_CreateSession operation using POST method

This method shall support the URL query parameters specified in table 7.2.2.2.3.1-1.

Table 7.2.2.2.3.1-1: URL query parameters supported by the POST method on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter | Data type | P | Cardinality | Description |
|  |  |  |  |  |

This method shall support the request data structures specified in table 7.2.2.2.3.1-2 and the response data structures and response codes specified in table 7.2.2.2.3.1-4.

Table 7.2.2.2.3.1-2: Data structures supported by the POST request body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| DataReportingSession | M | 1 | Data supplied by the data collection client to enable creation of a new Data Reporting Session at the Data Collection AF. |

Table 7.2.2.2.3.1-3: Headers supported for POST requests on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| HTTP request  header | Data type | P | Cardinality | Description |
| Authorization | string | M | 1 | For authentication of the data collection client. (NOTE 1) |
| Origin | string | O | 0..1 | Indicates the origin of the requester. (NOTE 2) |
| NOTE 1: If OAuth2.0 authorization is used the value would be “Bearer” followed by a string representing the token, see section 2.1 of RFC 6750 [F].NOTE 2: The Origin header is always supplied if the data collection client is deployed in a web browser. |

Table 7.2.2.2.3.1-4: Data structures supported by the POST response body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Responsecodes | Description |
| DataReportingSession | M | 1 | 201 Created | The creation of a Data Reporting Session is confirmed and configuration data for the data collection client for the session is provided by the Data Collection AF. |
| NOTE: The mandatory HTTP error status codes for the POST method listed in table 5.2.7.1-1 of 3GPP TS 29.500 [H] also apply. |

Table 7.2.2.2.3.1-5: Headers supported by the *201* (*Created*) response code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| HTTP response header | Data type | P | Cardinality | Description |
| Location | string | M | 1 | The URL of the newly created resource at the Data Collection AF, according to the structure: {apiRoot}/ndcaf-datareporting/v1/sessions/{sessionId} |
| Access-Control-Allow-Origin | string | O | 0..1 | Part of CORS [A]. Supplied if the request included the Origin header. |
| Access-Control-Allow-Methods | string | O | 0..1 | Part of CORS [A]. Supplied if the request included the Origin header.Valid values: POST, PUT, DELETE |
| Access-Control-Expose-Headers | string | O | 0..1 | Part of CORS [A]. Supplied if the request included the Origin header.Valid values: Location |

NOTE: Standard HTTP redirection using a 3xx response code with the Location header as well as Alt-Svc are allowed.

#### 7.2.2.3 Data Reporting Session resource

##### 7.2.2.3.1 Description

The Data Reporting Session resource represents a single session within the collection of Data Reporting Sessions at a given Data Collection AF.

##### 7.2.2.3.2 Resource definition

Resource URL: **{apiRoot}/nnwdaf-eventssubscription/v1/sessions/{sessionionId}**

This resource shall support the resource URI variables defined in table 7.2.2.3.2-1.

Table 7.2.2.3.2-1: Resource URL variables for this resource

|  |  |  |
| --- | --- | --- |
| Name | Data type | Definition |
| apiRoot | string | See clause 7.2.2.2.2 |
| sessionId | string | Identifies a session to the Ndcaf\_DataReporting\_Sessions Service |

##### 7.2.2.3.3 Resource standard methods

###### 7.2.2.3.3.1 Ndcaf\_DataReporting\_RetrieveSession operation using GET method

Editor’s Note: To be added.

###### 7.2.2.3.3.2 Ndcaf\_DataReporting\_UpdateSession operation using PUT method

This method shall support the URL query parameters specified in table 7.2.2.3.3.2-1.

Table 7.2.2.3.3.2-1: URL query parameters supported by the PUT method on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
|  |  |  |  |  |

This method shall support the request data structures specified in table 7.2.2.3.3.2-2 and the response data structures and response codes specified in table 7.2.2.3.3.2-4.

Table 7.2.2.3.3.2-2: Data structures supported by the PUT request body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| DataReportingSession | M | 1 | Parameters to replace data collection client provided configuration data for a Data Reporting Session resource. |

Table 7.2.2.3.3.2-3: Headers supported for PUT requests on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| HTTP request header | Data type | P | Cardinality | Description |
| Authorization | string | M | 1 | For authentication of the data collection client. NOTE1 |
| Origin | string | O | 0..1 | Indicates the origin of the requester. NOTE2 |
| NOTE 1: If OAuth2.0 authorization is used the value would be “Bearer” followed by a string representing the token, see section 2.1 RFC 6750 [F].NOTE 2: The Origin header is always supplied if the data collection client is deployed in a Web Browser. |

Table 7.2.2.3.3.2-4: Data structures supported by the PUT response body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Response codes | Description |
| DataReportingSession | M | 1 | 200 OK | The Data Reporting Session resource was modified successfully by configuration data provided by the data collection client. |
| ProblemDetails | O | 0..1 | 307 Temporary Redirect | Temporary redirection, during a Data Reporting Session modification. The response shall include a Location header field containing an alternative URL of the resource located in another Data Collection AF (service) instance.Applicable if the feature "ES3XX" (Extended Support of HTTP 307/308 redirection as defined in TS 29.502 [X]) is supported.  |
| ProblemDetails | O | 0..1 | 308 Permanent Redirect | Permanent redirection, during a Data Reporting Session modification. The response shall include a Location header field containing an alternative URL of the resource located in another Data Collection AF (service) instance.Applicable if the feature "ES3XX" is supported. |
| ProblemDetails | O | 0..1 | 404 Not Found | This Data Reporting Session resource does not exist. (NOTE 2) |
| NOTE 1: The mandatory HTTP error status codes for the PUT method listed in table 5.2.7.1-1 of 3GPP TS 29.500 [H] also apply.NOTE 2: Failure cases are described in subclause 7.2.4. |

Table 7.2.2.3.3.2-5: Headers supported by the 200 response code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| HTTP response header | Data type | P | Cardinality | Description |
| Access-Control-Allow-Origin | string | O | 0..1 | Part of CORS [A]. Supplied if the request included the Origin header. |
| Access-Control-Allow-Methods | string | O | 0..1 | Part of CORS [A]. Supplied if the request included the Origin header.Valid values: POST, PUT, DELETE. |
| Access-Control-Expose-Headers | string | O | 0..1 | Part of CORS [A]. Supplied if the request included the Origin header.Valid values: Location. |

Table 7.2.2.3.3.2-6: Headers supported by the 307 and 308 response codes on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| HTTP response header | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URL of the resource located in another Data Collection AF (service) instance. |
| 3gpp-Sbi-Target-Nf-Id | string | O | 0..1 | Identifier of the target NF (service) instance towards which the request is redirected |
| Access-Control-Allow-Origin | string | O | 0..1 | Part of CORS [A]. Supplied if the request included the Origin header. |
| Access-Control-Allow-Methods | string | O | 0..1 | Part of CORS [A]. Supplied if the request included the Origin header. Valid values: POST, PUT, DELETE |
| Access-Control-Expose-Headers | string | O | 0..1 | Part of CORS [A]. Supplied if the request included the Origin header.Valid values: Location |

###### 7.2.2.3.3.1 Ndcaf\_DataReporting\_DestroySession operation using DELETE method

This method shall support the URL query parameters specified in table 7.2.2.3.3.1-1.

Table 7.2.2.3.3.1-1: URL query parameters supported by the DELETE method on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Data type | P | Cardinality | Description |
|  |  |  |  |  |

This method shall support the request data structures specified in table 7.2.2.3.3.1-2 and the response data structures and response codes specified in table 7.2.2.3.3.1-4.

Table 7.2.2.3.3.1-2: Data structures supported by the DELETE request body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
|  |  |  |  |

Table 7.2.2.3.3.1-3: Headers supported for DELETE requests on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| HTTP request header | Data type | P | Cardinality | Description |
| Authorization | string | M | 1 | For authentication of the data collection client. (NOTE 1) |
| Origin | string | O | 0..1 | Indicates the origin of the requester. (NOTE 2) |
| NOTE 1: If OAuth2.0 authorization is used the value would be “Bearer” followed by a string representing the token, see section 2.1 of RFC 6750 [F].NOTE 2: The Origin header is always supplied if the data collection client is deployed in a web browser. |

Table 7.2.2.3.3.1-4: Data structures supported by the DELETE response body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Responsecodes | Description |
| n/a |  |  | 204 No Content | Successful case: The Data Reporting Session resource matching the sessionId was destroyed at the Data Collection AF. |
| ProblemDetails | O | 0..1 | 307 Temporary Redirect | Temporary redirection during Data Reporting Session destruction. The response shall include a Location header field containing an alternative URL of the resource located in another Data Collection AF (service) instance.Applicable if the feature "ES3XX" is supported. |
| ProblemDetails | O | 0..1 | 308 Permanent Redirect | Permanent redirection during Data Reporting Session destruction. The response shall include a Location header field containing an alternative URL of the resource located in another Data Collection AF (service) instance.Applicable if the feature "ES3XX" is supported. |
| ProblemDetails | O | 0..1 | 404 Not Found | The Data Reporting Session resource does not exist. (NOTE 2) |
| NOTE 1: The mandatory HTTP error status codes for the DELETE method listed in table 5.2.7.1-1 of 3GPP TS 29.500 [H] also apply.NOTE 2: Failure cases are described in subclause 7.2.4. |

Table 7.2.2.3.3.1-5: Headers supported by the 204 response code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| HTTP response header | Data type | P | Cardinality | Description |
| Access-Control-Allow-Origin | string | O | 0..1 | Part of CORS [A]. Supplied if the request included the Origin header. |
| Access-Control-Allow-Methods | string | O | 0..1 | Part of CORS [A]. Supplied if the request included the Origin header.Valid values: POST, PUT, DELETE. |
| Access-Control-Expose-Headers | string | O | 0..1 | Part of CORS [A]. Supplied if the request included the Origin header.Valid values: Location. |

Table 7.2.2.3.3.1-6 Headers supported by the 307 and 308 response codes on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| HTTP response header | Data type | P | Cardinality | Description |
| Location | string | M | 1 | An alternative URL of the resource located in another Data Collection AF (service) instance. |
| 3gpp-Sbi-Target-Nf-Id | string | O | 0..1 | Identifier of the target NF (service) instance towards which the request is redirected |
| Access-Control-Allow-Origin | string | O | 0..1 | Part of CORS [A].Supplied if the request included the Origin header. |
| Access-Control-Allow-Methods | string | O | 0..1 | Part of CORS [A]. Supplied if the request included the Origin header.Valid values: POST, PUT, DELETE. |
| Access-Control-Expose-Headers | string | O | 0..1 | Part of CORS [A]. Supplied if the request included the Origin header.Valid values: Location. |

### 7.2.3 Data model

#### 7.2.3.1 General

Table 7.2.3.1-1 specifies the data types used by the Ndcaf\_DataReporting\_CreateSession, Ndcaf\_DataReporting\_‌Retrieve‌Session, Ndcaf\_DataReporting\_UpdateSession and Ndcaf\_DataReporting\_DestroySession operations.

Table 7.2.3.1-1: Data types specific to Ndcaf\_DataReporting\_CreateSession, Ndcaf\_DataReporting\_RetrieveSession, Ndcaf\_DataReporting\_UpdateSession and Ndcaf\_DataReporting\_DestroySession operations

|  |  |  |
| --- | --- | --- |
| Data type | Clause defined | Description |
| DataReportingSession | 7.2.3.2.1 | Configuration by the Data Collection AF of the data collection client, specifying the data to be reported. |

Table 7.2.3.1-2 specifies data types re-used from other specifications by the Ndcaf\_DataReporting\_CreateSessions, Ndcaf\_DataReporting\_RetrieveSession, Ndcaf\_DataReporting\_UpdateSession and Ndcaf\_DataReporting\_‌Destroy‌Session operations, including a reference to their respective specifications.

Table 7.2.3.1-2: Externally defined data types used by Ndcaf\_DataReporting\_CreateSession, Ndcaf\_DataReporting\_RetrieveSession, Ndcaf\_DataReporting\_UpdateSession and Ndcaf\_DataReporting\_DestroySession operations

|  |  |  |
| --- | --- | --- |
| Data type | Comments | Reference |
| ApplicationId | Identifies the reporting application. | 3GPP TS 29.571 [B] |
| DateTime |  |
| DurationSec |  |
| Double |  |
| Float |  |
| Int32 |  |
| Int64 |  |
| Uint16 |  |
| Uint32 |  |
| Uint64 |  |
| Uinteger |  |

#### 7.2.3.2 Structured data types

##### 7.2.3.2.1 DataReportingSession resource type

Table 7.2.3.2.1-1: Definition of DataReportingSession resource type

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Property name | Data type | Cardinality | Usage | Description |
| sessionId | string | 1 | C: ROR: ROU: RO | Unique identifier for this Data Reporting Session assigned by the Data Collection AF. |
| externalApplicationId | ApplicationID | 1 | C: RWR: ROU: RW | The external application identifier, nominated by the data collection client, to which this Data Reporting Session pertains. |
| supportedDomains | array(DataDomain) | 1 | C: RWR: ROU: RW | Set of domains for which the data collection client declares that it is able to report UE data. (See clause 7.2.3.3.1).An empty array indicates that no UE data can currently be reported. |
| reportForDomains | array(DataDomain) | 0..1 | C: ROR: ROU: RO | Subset of supportedDomains above for which the data collection client is requested to report UE data.If the Data Collection AF signals an empty array, no UE data should be reported. |
| reportingCondition | ReportCondition | 0..1 | C: —R: ROU: RO | The condition for reporting, signalled by the Data Collection AF. (See clause 7.2.3.2.2.) |

##### 7.2.3.2.2 ReportCondition type

Table 7.2.3.2.2-1: Definition of ReportCondition type

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Property name | Data type | P | Cardinality | Description |
| type | ConditionType | M | 1 | Type of condition, see 7.2.3.3.2 |
| intervalLength | DurationSec | C | 0..1 | Only applicable when type is INTERVAL. (NOTE 1) |
| threshold | Double, Float, Int32, Int64, Uint16, Uint32, Uint64, or Uinteger | C | 0..1 | Only applicable when type is THRESHOLD. (NOTE 1) |
| parameter | string | C | 0..1 | Only applicable when type is THRESHOLD. (NOTE 1) |
| reportWhenBelow | boolean | C | 0..1 | Only applicable when type is THRESHOLD. (NOTE 1) |
| event | Event | C | 0..1 | Only applicable when type is EVENT. (NOTE 2) |
| NOTE 1: See clause 7.2.3.3.2 and table 7.2.3.1-2.NOTE 2: See clauses 7.2.3.3.2 and 7.2.3.3.3. |

#### 7.2.3.3 Simple data types and enumerations

##### 7.2.3.3.1 DataDomain enumeration

Table 7.2.3.3.1-1: DataDomain enumeration

|  |  |  |
| --- | --- | --- |
| Enumeration value | Description | Applicability (refer to table 7.3.3.2.1-1) |
| SERVICE\_EXPERIENCE | Service Experience related data. | serviceExperienceRecords |
| METRICS | Metrics data. | metricsRecords |
| LOCATION | Location data. | locationRecords |
| COMMUNICATION | Communication data. | communicationRecords |
| PERFORMANCE | Performance data. | performanceDataRecords |
| SERVICE\_SPECIFIC | Service specific data. | serviceSpecificDataRecords |
| DL\_ACCESS\_RECORDS | 5GMS downlink access data. | mediaStreamingDownlinkAccessRecords |
| PLANNED\_TRIPS | Data related to planned trips. | tripPlanRecords |

##### 7.2.3.3.2 ConditionType enumeration

Table 7.2.3.3.2-1: ConditionType enumeration

|  |  |
| --- | --- |
| Enumeration value | Description |
| INTERVAL | Report at a regular interval. |
| THRESHOLD | Report when a threshold is passed. |
| EVENT | Report on event. |
| OFF | Do not report. |

##### 7.2.3.3.3 Event enumeration

This section lists the possible events (*EVENT* in table 7.2.3.3.2-1) that can be used to trigger a report.

Table 7.2.3.3.3-1: Event enumeration

|  |  |
| --- | --- |
| Enumeration value | Description |
| DESTINATION | A new destination has been recorded (refer to clause X.8). |

### 7.2.4 Error handling

Editor’s Note: TBA

### 7.2.5 Mediation by NEF

Editor’s Note: TBA

### ===================== Next change =====================

## 7.3 Data Reporting API

### 7.3.1 Overview

This clause specifies the reporting API used by a data collection client to report UE data that has been collected to the Data Collection AF.

### 7.3.2 Resources

#### 7.3.2.1 Resource structure

/sessions

{apiRoot}/ndcaf\_data-reporting/v1

/{sessionId}

/report

Table 7.2.2.1-1 provides an overview of the resources and applicable HTTP methods.

Table 7.2.2.1-1: Resources and methods overview

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Service name | Operation name | Resource name | Resource path suffix | HTTP method | Description |
| Ndcaf\_DataReporting | Report | Data Report | /sessions/{sessionId}/report | POST | Data collection client reports data to the Data Collection AF via the established session. |

#### 7.3.2.2 Data Report resource

##### 7.3.2.2.1 Description

The Data Report resource allows a data collection client to report data pertaining to an established Data Reporting Session to the Data Collection AF. The Data Collection AF can provide an updated configuration in the response.

##### 7.3.2.2.2 Resource definition

Resource URL: **{apiRoot}/ndcaf\_data-reporting/v1/sessions/{sessionId}/report**

This resource shall support the resource URL variables defined in table 7.3.2.2.2-1.

Table 7.3.2.2.2-1: Resource URL variables for this resource

|  |  |  |
| --- | --- | --- |
| Name | Data type | Definition |
| apiRoot | string | Fully-Qualified Domain Name of the Data Collection AF and path prefix. |
| sessionId | string | Identifier of the Data Reporting Session unique within the scope of the Data Collection AF. |

##### 7.3.2.2.3 Resource Standard Methods

###### 7.3.2.2.3.1 Ndcaf\_DataReporting\_Report operation using POST method

This method shall support the URI query parameters specified in table 7.3.2.2.3.1-1.

Table 7.3.2.2.3.1-1: URI query parameters supported by the POST method on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Parameter | Data type | P | Cardinality | Description |
|  |  |  |  |  |

This method shall support the request data structures specified in table 7.3.2.2.3.1-2 and the response data structures and response codes specified in table 7.3.2.2.3.1-4.

Table 7.3.2.2.3.1-2: Data structures supported by the POST request body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | P | Cardinality | Description |
| DataReport | M | 1 | UE data reported by the data collection client. |

Table 7.3.2.2.3.1-3: Headers supported for POST requests on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| HTTP request header | Data type | P | Cardinality | Description |
| Authorization | string | M | 1 | For authentication of the data collection client. (NOTE 1) |
| Origin | string | O | 0..1 | Indicates the origin of the requester. (NOTE 2) |
| NOTE 1: If OAuth2.0 authorization is used the value would be “Bearer” followed by a string representing the token, see section 2.1 of RFC 6750 [F].NOTE 2: The Origin header is always supplied if the data collection client is deployed in a web browser. |

Table 7.3.2.2.3.1-4: Data structures supported by the POST response body on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data type | P | Cardinality | Responsecodes | Description |
| DataReportingSession | O | 0..1 | 200 OK | The report was accepted by the Data Collection AF.A data collection client configuration (updated or unchanged) may optionally be provided in the response. |
| NOTE: The mandatory HTTP error status codes for the POST method listed in table 5.2.7.1-1 of 3GPP TS 29.500 [H] also apply. |

Table 7.3.2.2.3.1-5: Headers supported by the 200 response code on this resource

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| HTTP response header | Data type | P | Cardinality | Description |
| Access-Control-Allow-Origin | string | O | 0..1 | Part of CORS [A]. Supplied if the request included the Origin header. |
| Access-Control-Allow-Methods | string | O | 0..1 | Part of CORS [A]. Supplied if the request included the Origin header. Value: POST |

NOTE: Standard HTTP redirection (using a 3xx response with a Location response header) as well as Alt-Svc are allowed for this method.

### 7.3.3 Data model

#### 7.3.3.1 General

Table 7.3.3.1-1 specifies the data types used by the Ndcaf\_DataReporting\_Report operation.

Table 7.3.3.1-1: Data types specific to Ndcaf\_DataReporting\_Report operation

|  |  |  |
| --- | --- | --- |
| Data type | Clause defined | Description |
| DataReport | 7.3.3.2.1 | Reported data by the data collection client to the Data Collection AF. |
| DataReportingSession | 7.2.3.2.1 | Configuration of the data collection client. |

Table 7.3.3.1-2 specifies data types re-used from other specifications by the Ndcaf\_DataReporting\_Report operation, including a reference to their respective specifications.

Table 7.3.3.1-2: Externally defined data types used by Ndcaf\_DataReporting\_Report operation

|  |  |  |
| --- | --- | --- |
| Data type | Comments | Reference |
| ApplicationId | Identifies the reporting application. | 3GPP TS 29.571 [B] |
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#### 7.3.3.2 Structured data types

##### 7.3.3.2.1 DataReport type

Table 7.3.3.2.1-1: Definition of DataReport type

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Property name | Data type |  | Cardinality | Description |
| externalApplicationId | ApplicationID |  | 1 | External application identifier. |
| serviceExperienceRecords | array(ServiceExperienceRecord) |  | 0..1 (NOTE) | See clause X.2. |
| locationRecords | array(LocationRecord) |  | See clause X.3. |
| communicationRecords | array(CommunicationRecord) |  |  | See clause X.4. |
| performanceDataRecords | array(PerformanceDataRecord) |  | See clause X.5. |
| metricsRecords | array(MetricsRecordContainer) |  |  | See clause X.6. |
| serviceSpecificDataRecords | array(ServiceDataRecordContainer) |  | See clause X.7. |
| tripPlanRecords | array(TripPlanRecord) |  | See clause X.8. |
| mediaStreaming‌DownlinkAccessRecords | array(MediaStreaming‌DownlinkAccessRecord) |  | See TS 26.512 [G] clause X. |
| NOTE: At least one of these properties must be present in a DataReport. |

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#### 7.3.3.3 Simple data types and enumerations

There are no simple data types and enumerations specified in this release.

### ===================== Next change =====================

Annex X (normative):
Data reporting data models

# X.1 Introduction

This annex describes the format of the data reports submitted to the Data Collection AF, as required by TS 23.288 [4].

Table X.1-1 specifies data types re-used from other specifications, including a reference to their respective specifications.

Table X.1-1: Externally defined data types used by Ndcaf\_DataReporting\_Report operation

|  |  |  |
| --- | --- | --- |
| Data type | Comments | Reference |
| BitRate |  | 3GPP TS 29.571 [B] |
| PacketDelBudget |  |
| PacketLossRate |  |
| DateTime |  |
| DurationSec |  |
| SvcExperience |  | 3GPP TS 29.517 [5] |
| AddrFqdn |  |
| TimeWindow |  |  |
| Volume |  |
| FlowInfo |  |
| LocationData5G |  |  |
| HorizontalSpeed |  |

## X.2 Service Experience reporting

### X.2.1 ServiceExperienceRecord type

Table X.2.1-1: Definition of ServiceExperienceRecord type

|  |  |  |  |
| --- | --- | --- | --- |
| Property name | Data type | Cardinality | Description |
| timestamp | DateTime | 1 | Time stamp. |
| serviceExperienceInfos | array(PerFlowServiceExperienceInfo) | 1 | X.2.2 |
|  |  |

### X.2.2 PerFlowServiceExperienceInfo

Table X.2.2-1: Definition of PerFlowServiceExperienceInfo type

|  |  |  |  |
| --- | --- | --- | --- |
| Property name | Data type | Cardinality | Description |
| svcExprc | SvcExperience | 1 |  |
| timeIntev | TimeWindow | 1 |  |
| remote | array(AddrFqdn) | 1 | FQDN or IP Address of remote endpoint (e.g., server) |

## X.3 Location reporting

### X.3.1 LocationRecord type

Table X.3.1-1: Definition of type LocationRecord

|  |  |  |  |
| --- | --- | --- | --- |
| Attribute name | Data type | Cardinality | Description |
| *timestamp* | *DateTime* | 1 | Time stamp. |
| *location* | *LocationData5G* | 1 |  |

## X.4 Communication reporting

### X.4.1 CommunicationRecord type

Table X.4.1-1: Definition of type CommunicationRecord

|  |  |  |  |
| --- | --- | --- | --- |
| Attribute name | Data type | Cardinality | Description |
| *timestamp* | *DateTime* | 1 | Time stamp. |
| *timeIntev* | *TimeWindow* | 1 |  |
| *ulVol* | *Volume* | 0..1 | NOTE |
| *dlvol* | *Volume* | 0..1 | NOTE |
| NOTE: at least one of *ulVol* and *dlVol* must be present |

## X.5 Performance Data reporting

### X.5.1 PerformanceDataRecord type

Table X.5.1-1: Definition of type PerformanceDataRecord

|  |  |  |  |
| --- | --- | --- | --- |
| Attribute name | Data type | Cardinality | Description |
| *timestamp* | *DateTime* | 1 | Time stamp. |
| *timeIntev* | *TimeWindow* | 1 |  |
| *loc* | *LocationArea5G* | 0..1 | Represents the UE location. |
| *remote* | *AddrFqdn* | 0..1 | FQDN or IP Address of remote endpoint (e.g., server) |
| *pbd* | *PacketDelayBudget* | 0..1 | Indicates average Packet Delay. |
| *plr* | *PacketLossRate* | 0..1 | Indicates average Packet Loss Rate. |
| *thrputUl* | *BitRate* | 0..1 | Indicates the average uplink throughput. |
| *thrputDl* | *BitRate* | 0..1 | Indicates the average downlink throughput. |

## X.6 Metrics reporting

Metrics reporting is indended to allow reporting of Metrics, including QoE Metrics.

### X.6.1 MetricsRecordContainer type

Different services will have different metrics that are of interest (depending on the service type). The *MetricsRecordContainer* type is intended to enable services to define metrics specifc for the service. To do that the *recordIdentifier* in form of a unique uri (see table X.6.1-1) must be provided, and that uri must point to a specification of the *MetricsRecord* used.

Table X.6.1-1: Definition of MetricsRecordContainer type

|  |  |  |  |
| --- | --- | --- | --- |
| Property name | Data type | Cardinality | Description |
| timestamp | DateTime | 1 | Time stamp |
| recordIdentifier | string | 1 | A controlled term in form of a uri that uniquely identifies the of record that follows. |
| metricsRecord | MetricsRecord | 1 | Record containing the actual Metrics |

## X.7 Service specific reporting

Service specific reporting enables an ASP to, in agreement with an MNO, define proprietary data records.

### X.7.1 ServiceDataRecordContainer type

The *ServiceDataRecordContainer* type is intended to enable services to define data records specifc for the service, e.g., for ASP proprietary services. To do that the *recordIdentifier* in form or a unique uri (see table X.7.1-1) must be provided, and that uri must point to a specification of the *ServiceDataRecord* used.

Table X.7.1-1: Definition of ServiceDataRecordContainer type

|  |  |  |  |
| --- | --- | --- | --- |
| Property name | Data type | Cardinality | Description |
| timestamp | DateTime | 1 | Time stamp |
| recordIdentifier | uri | 1 | A controlled term in form of a uri that uniquely identifies the of record that follows. |
| serviceDataRecord | ServiceDataRecord | 1 | Record containing the actual Service Data. |

## X.8 Trip Plan reporting

Trip Plan(s) enable the Data Collection AF to identify collective behavior amongst UEs, see tables 6.5.2-4 and 6.5.2-5 in 3GPP TS 23.288 [4].

### X.8.1 TripPlanRecord type

Table X.8.1-1: Definition of TripPlanRecord type

|  |  |  |  |
| --- | --- | --- | --- |
| Property name | Data type | Cardinality | Description |
| timestamp | DateTime | 1 | Time stamp |
| startingPoint | LocationData5G | 1 | The starting point of the planned trip |
| destination | LocationData5G | 1 | The destination of the planned trip |
| Route | array(LocationData5G) | 0..1 | The route of the planned trip |
| averageSpeed | HorizontalSpeed | 0..1 | Estimated average speed of the planned trip |
| arrivalTime | DateTime | 0..1 | Estimated time of arrival at the destination of the planned trip |

## X.9 MTSI Quality of Experience reporting

This clause is for future study, but likely the MetricsRecordContainer (X.6.1) can be used.

================== Next change ================

Annex Y (informative):
Mapping toward AF Events

This informative annex discusses how the data records described in Annex X can be used as input data for an AF when producing the different events specified in 3GPP TS 29.517 [5]. Note that this is just for discussion, and based on guesses. Also note that two new events are proposed. Not listed in the table below, but available in all data is UE IP Address (which can be used to determine SUPI or GPSI) and Application ID.

|  |  |  |  |
| --- | --- | --- | --- |
| AF Event(TS 29.517 section 5.6.3.3) | Useful record(s)(Annex X) | Relevant properties | Discussion |
| SVC\_EXPERIENCE | ServiceExperienceRecord(MetricsRecordContainer) | -svcExprc (mos, upperRange, lowerRange)-timeIntev-remote (together with UE IP itallows AF to determine ipTrafficFilter)(QoE Metrics) | Metrics relevant if QoE Metrics is made part of SVC\_EXPERIENCE |
| UE\_MOBILITY | LocationRecord | -LocationArea5G-timestamp | A list of timestamped locations enables the AF to populate a trajectory |
| UE\_COMM | CommunicationRecord | -timeIntev-ulVol-dlVol | startTime and endTime can be determined from timeIntev |
| EXCEPTIONS | - | - | Not applicable |
| USER\_DATA\_CONGESTION | PerformanceDataRecord | -timeIntev-remote (enables, together with UE IP, AF to determine ipTrafficFilter)-thrputUl-thrputDl |  |
| PERF\_DATA | PerformanceDataRecord | -timeIntev-remote (asAddr, and enables, together with UE IP, AF to determine ipTrafficFilter)-plr-pdb-loc-thrputUl-thrputDl |  |
| COLLECTIVE\_BEHAVIOUR | TripPlanRecord | See 3GPP TS 23.288 tables 6.5.2-4 and 6.5.2-5 for more info. |  |
| DISPERSION | CommunicationRecord | -timeIntev-ulVol-dlVol | ulVol and dlVol can be used to populate flowDesp |
| METRICS (proposed new Event) | MetricsRecordContainer | Depending on service | Proposal to expose QoE Metrics (see 3GPP TS 23.288 table 6.4.2-1) and other metrics via a new event. |
| APPLICATION (proposed new Event) | ServiceDataRecordContainer | Service proprietary | Proposal to enable service proprietary data collection being exposed via a new event. |