**3GPP TSG- Meeting # *S4-23xxxx***

**, , - (revision of S4-231168)**

|  |
| --- |
| *CR-Form-v12.2* |
| **CHANGE REQUEST** |
|  |
|  | **32** | **CR** | **0005** | **rev** | **1** | **Current version:** |  |  |
|  |
| *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)*.* |
|  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ***Proposed change affects:*** | UICC apps |  | ME | **x** | Radio Access Network |  | Core Network |  |

|  |
| --- |
|  |
| ***Title:***  | [TEI18, ADAE, EVEX] UE Application instructing DDCC for immediate data report delivery |
|  |  |
| ***Source to WG:*** | Samsung |
| ***Source to TSG:*** | SA4 |
|  |  |
| ***Work item code:*** | TEI18, ADAE,  |  | ***Date:*** | 2023-08-01 |
|  |  |  |  |  |
| ***Category:*** | B |  | ***Release:*** | Rel-18 |
|  | *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-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)Rel-19 (Release 19)* |
|  |  |
| ***Reason for change:*** | During discussion with SA6 (in LS Reply: S4-231109), following was identified:“The UE Application can send a report to the Direct Data Collection Client using the reportUeData method defined by TS 26.532 at reference point R7 (the UE client API). At present, this method does not specify a means to instruct the Direct Data Collection Client to override its configuration and send a UE data report immediately. However, SA4 believes that this API method could straightforwardly be enhanced to specify a parameter (e.g. expedite) that instructs the Direct Data Collection Client to prioritise immediate delivery of a UE data report to the Data Collection AF.Furthermore, SA4 believes that the DataReport container type specified in TS 26.532 could be enhanced to include an expedited flag that instructs the Data Collection AF to prioritise the processing of the UE data report and exposure of the resulting event to downstream subscribers, such as the Application Service Provider's Event Consumer AF.To this purpose, SA4 welcomes Release 18 co-ordination Change Requests to TS 26.531 and TS 26.532 from interested Individual Members at its forthcoming meetings, appropriately tagged with SA6 Work Item codes.” |
|  |  |
| ***Summary of change:*** | The changes enhance the data reporting procedure (clause 4.4.4) and DataReport type (clause 7.3.2.3) to enable UE application to instruct the Direct Data Collection Client to prioritise immediate delivery of a UE data report to the Data Collection AF.Backward comatible changes in Ndcaf\_DataReporting service API is introduced. In data report type, expediteReq has been added.  |
|  |  |
| ***Consequences if not approved:*** | SA6 provided requirements will not be specified in Rel-18. |
|  |  |
| ***Clauses affected:*** | 4.4.4, 7.3.2.3 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  |  |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** |  |  |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  |  |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

FIRST CHANGE

### 4.4.4 Data reporting procedure

The UE Application reports data to the Direct Data Collection Client by invoking the reportUeData method on the Direct Data Collection Client at reference point R7.

As a consequence, the Direct Data Collection Client may report the UE data provided by invoking the procedure specified in clause 4.3.3. Depending on the Data Reporting Configuration, the Direct Data Collection Client may instead store the UE data and forward it later. If the UE Application has instructed the Direct Data Collection Client to prioritise immediate delivery of a UE data report by setting the expedite directive, the Direct Data Collection Client forwards the UE data by invoking the procedure specified in clause 4.3.3 on the basis that the reporting condition for the data domain in question has been fulfilled.

Second CHANGE

#### 7.3.2.3 DataReport type

Table 7.3.2.3-1: Definition of DataReport type

|  |  |  |  |
| --- | --- | --- | --- |
| Property name | Data type | Cardinality | Description |
| externalApplicationId | ApplicationID | 1 | External application identifier. |
| expedite | boolean | 0..1 | If present and true, this data report contains UE data requiring expedited processing by the recipient. |
| serviceExperienceRecords | array(ServiceExperienceRecord) | 0..1 (see NOTE) | See clause A.2. |
| locationRecords | array(LocationRecord) | See clause A.3. |
| communicationRecords | array(CommunicationRecord) | See clause A.4. |
| performanceDataRecords | array(PerformanceDataRecord) | See clause A.5. |
| applicationSpecificRecords | array(ApplicationSpecificRecord) | See clause A.6. |
| tripPlanRecords | array(TripPlanRecord) | See clause A.7. |
| mediaStreaming‌Access‌Records | array(MediaStreaming‌AccessRecord) | See TS 26.512 [13] clause 17.2. |
| NOTE: Exactly one of these properties must be present in a DataReport. |

3rd CHANGE

### 8.3.1 Overview

Table 8.3.1-1 provides an overview of the methods and notifications defined for the UE Data Collection, Reporting and Notification API at reference point R7. Different types of method are indicated, namely:

1. State change of the Direct Data Collection Client triggered by the UE Application action (registration or deregistration).

2. Request from the UE Application to the Direct Data Collection Client for a UE data collection and reporting configuration.

3. Acknowledgment and related response information returned by the Direct Data Collection Client to the UE Application for a successful UE Application registration event.

4. Data report by the UE Application to the Direct Data Collection Client according to the previously obtained configuration.

5. Notification from the UE Application to the Direct Data Collection Client.

Table 8.3.1-1: Methods invoked by the UE Application on the Direct Data Collection Client

| Method name | Type | Description |
| --- | --- | --- |
| registerUeApplication | State change | UE Application registers with the Direct Data Collection Client, including a callback listener for receiving event notifications. |
| deregisterUeApplication | State change | UE Application deregisters with the Direct Data Collection Client. |
| setUserConsent |  | UE Application grants permission for the Direct Data Reporting Client to include the GPSI when creating Data Reporting Sessions. |
| getDataCollectionAnd‌ReportingConfiguration | Configuration request | UE Application obtains its UE data collection and reporting configuration from the Direct Data Collection Client. |
| reportUeData | Data report | UE Application reports collected UE data to the Direct Data Collection Client according to its configuration.The UE Application may indicate (by setting a Boolean method parameter to true) that the data report includes UE data requiring expedited processing by the Direct Data Collection Client and, consequently, by the Data Collection AF. |
| resetClientReportingIdentifier |  | UE Application requests that the Direct Data Collection Client generates a new opaque client reporting identifier for use in data reporting until further notice.This requires any existing Data Reporting Session to be destroyed and a new one (including the replacement client reporting identifier) to be created. |
| uEApplicationBusy | Notification | UE Application notifies the Direct Data Collection Client that it is temporarily unable to perform UE data collection and reporting due to a busy or stalled condition. |
| impendingUeApplication‌Failure | Notification | UE Application notifies the Direct Data Collection Client of an impending fatal error condition that will cause abrupt shutdown of the UE Application. |

Table 8.3.1‑2 lists the different callback notifications from the Direct Data Collection Client to the UE Application.

Table 8.3.1-2: Notifications from the Direct Data Collection Client to the UE Application

| Callback notification name | Description |
| --- | --- |
| dataCollectionAndReporting‌Configuration‌Changed | Direct Data Collection Client notifies the UE Application that the data collection and reporting configuration has changed. |
| dataCollectionClientBusy | Direct Data Collection Client notifies the UE Application that it is temporarily unable to support UE data collection and reporting due to a busy or stalled condition. |
| impendingDataCollectionClient‌Failure | Direct Data Collection Client notifies the UE Application of an impending fatal error condition that will cause abrupt shutdown of the Direct Data Collection Client. |

4th CHANGE

# B.4 Ndcaf\_DataReporting service API

For the purpose of referencing entities defined in this clause, it shall be assumed that the OpenAPI definitions below are contained in a physical file named "TS26532\_Ndcaf\_DataReporting.yaml".

|  |
| --- |
| openapi: 3.0.0info: title: Ndcaf\_DataReporting version: 1.2.1 description: | Data Collection AF: Data Collection and Reporting Configuration API and Data Reporting API © 2023, 3GPP Organizational Partners (ARIB, ATIS, CCSA, ETSI, TSDSI, TTA, TTC). All rights reserved.tags: - name: Ndcaf\_DataReporting description: 'Data Collection and Reporting: Client Configuration and Data Reporting (R2/R3/R4) APIs'externalDocs: description: 'TS 26.532 V18.0.0; Data Collection and Reporting; Protocols and Formats' url: 'https://www.3gpp.org/ftp/Specs/archive/26\_series/26.532/'servers: - url: '{apiRoot}/3gpp-ndcaf\_data-reporting/v1' variables: apiRoot: default: https://example.com description: See 3GPP TS 29.532 clause 5.2.security: - {} - oAuth2ClientCredentials: []paths: /sessions: post: operationId: CreateSession summary: 'Create a new Data Reporting Session' requestBody: required: true content: application/json: schema: $ref: '#/components/schemas/DataReportingSession' responses: '201': description: 'Data Reporting Session successfully created' headers: Location: description: 'URL including the resource identifier of the newly created Data Reporting Session.' required: true schema: $ref: 'TS26512\_CommonData.yaml#/components/schemas/Url' content: application/json: schema: $ref: '#/components/schemas/DataReportingSession' '400': $ref: 'TS29571\_CommonData.yaml#/components/responses/400' '401': $ref: 'TS29571\_CommonData.yaml#/components/responses/401' '403': $ref: 'TS29571\_CommonData.yaml#/components/responses/403' '404': $ref: 'TS29571\_CommonData.yaml#/components/responses/404' '411': $ref: 'TS29571\_CommonData.yaml#/components/responses/411' '413': $ref: 'TS29571\_CommonData.yaml#/components/responses/413' '415': $ref: 'TS29571\_CommonData.yaml#/components/responses/415' '429': $ref: 'TS29571\_CommonData.yaml#/components/responses/429' '500': $ref: 'TS29571\_CommonData.yaml#/components/responses/500' '503': $ref: 'TS29571\_CommonData.yaml#/components/responses/503' default: $ref: 'TS29571\_CommonData.yaml#/components/responses/default' /sessions/{sessionId}: parameters: - name: sessionId in: path required: true schema: $ref: 'TS26512\_CommonData.yaml#/components/schemas/ResourceId' description: 'The resource identifier of an existing Data Reporting Session.' get: operationId: RetrieveSession summary: 'Retrieve an existing Data Reporting Session' responses: '200': description: 'Representation of Data Reporting Session is returned' content: application/json: schema: $ref: '#/components/schemas/DataReportingSession' '307': $ref: 'TS29571\_CommonData.yaml#/components/responses/307' '308': $ref: 'TS29571\_CommonData.yaml#/components/responses/308' '400': $ref: 'TS29571\_CommonData.yaml#/components/responses/400' '401': $ref: 'TS29571\_CommonData.yaml#/components/responses/401' '403': $ref: 'TS29571\_CommonData.yaml#/components/responses/403' '404': $ref: 'TS29571\_CommonData.yaml#/components/responses/404' '406': $ref: 'TS29571\_CommonData.yaml#/components/responses/406' '429': $ref: 'TS29571\_CommonData.yaml#/components/responses/429' '500': $ref: 'TS29571\_CommonData.yaml#/components/responses/500' '503': $ref: 'TS29571\_CommonData.yaml#/components/responses/503' default: $ref: 'TS29571\_CommonData.yaml#/components/responses/default' delete: operationId: DestroySession summary: 'Destroy an existing Data Reporting Session' responses: '204': description: 'Data Reporting Session resource successfully destroyed' # No Content '307': $ref: 'TS29571\_CommonData.yaml#/components/responses/307' '308': $ref: 'TS29571\_CommonData.yaml#/components/responses/308' '400': $ref: 'TS29571\_CommonData.yaml#/components/responses/400' '401': $ref: 'TS29571\_CommonData.yaml#/components/responses/401' '403': $ref: 'TS29571\_CommonData.yaml#/components/responses/403' '404': $ref: 'TS29571\_CommonData.yaml#/components/responses/404' '429': $ref: 'TS29571\_CommonData.yaml#/components/responses/429' '500': $ref: 'TS29571\_CommonData.yaml#/components/responses/500' '503': $ref: 'TS29571\_CommonData.yaml#/components/responses/503' default: $ref: 'TS29571\_CommonData.yaml#/components/responses/default' /sessions/{sessionId}/report: parameters: - name: sessionId in: path required: true schema: $ref: 'TS26512\_CommonData.yaml#/components/schemas/ResourceId' description: 'The resource identifier of an existing Data Reporting Session.' post: operationId: Report summary: 'Report UE data in the context of an existing Data Reporting Session' requestBody: required: true content: application/json: schema: $ref: '#/components/schemas/DataReport' responses: '200': description: 'Data Report accepted and updated Data Reporting Session is returned' headers: Location: description: 'URL including the resource identifier of the returned Data Reporting Session.' required: true schema: $ref: 'TS26512\_CommonData.yaml#/components/schemas/Url' content: application/json: schema: $ref: '#/components/schemas/DataReportingSession' '204': description: 'Data Report accepted' # No Content '400': $ref: 'TS29571\_CommonData.yaml#/components/responses/400' '401': $ref: 'TS29571\_CommonData.yaml#/components/responses/401' '403': $ref: 'TS29571\_CommonData.yaml#/components/responses/403' '404': $ref: 'TS29571\_CommonData.yaml#/components/responses/404' '411': $ref: 'TS29571\_CommonData.yaml#/components/responses/411' '413': $ref: 'TS29571\_CommonData.yaml#/components/responses/413' '415': $ref: 'TS29571\_CommonData.yaml#/components/responses/415' '429': $ref: 'TS29571\_CommonData.yaml#/components/responses/429' '500': $ref: 'TS29571\_CommonData.yaml#/components/responses/500' '503': $ref: 'TS29571\_CommonData.yaml#/components/responses/503' default: $ref: 'TS29571\_CommonData.yaml#/components/responses/default'components: securitySchemes: oAuth2ClientCredentials: type: oauth2 flows: clientCredentials: tokenUrl: '{tokenUri}' scopes: {} description: > For a trusted data collection client, 'ndcaf-datareporting' shall be used as 'scopes' and '{nrfApiRoot}/oauth2/token' shall be used as 'tokenUri'. schemas: DataReportingSession: description: "A representation of a Data Reporting Session." type: object properties: sessionId: $ref: 'TS26512\_CommonData.yaml#/components/schemas/ResourceId' validUntil: $ref: 'TS29571\_CommonData.yaml#/components/schemas/DateTime' externalApplicationId: $ref: 'TS29571\_CommonData.yaml#/components/schemas/ApplicationId' supportedDomains: type: array items: $ref: '#/components/schemas/DataDomain' minItems: 0 samplingRules: type: array items: type: object required: - dataDomain - rules properties: dataDomain: $ref: '#/components/schemas/DataDomain' rules: type: array items: $ref: 'TS26532\_CommonData.yaml#/components/schemas/DataSamplingRule' minItems: 0 reportingConditions: type: array items: type: object required: - dataDomain - conditions properties: dataDomain: $ref: '#/components/schemas/DataDomain' conditions: type: array items: $ref: '#/components/schemas/ReportingCondition' minItems: 0 reportingRules: type: array items: type: object required: - dataDomain - rules properties: dataDomain: $ref: '#/components/schemas/DataDomain' rules: type: array items: $ref: 'TS26532\_CommonData.yaml#/components/schemas/DataReportingRule' minItems: 0 required: - externalApplicationId - supportedDomains - reportingConditions ReportingCondition: description: "A condition that triggers data reporting by a data collection client to the Data Collection AF." type: object properties: type: $ref: '#/components/schemas/ReportingConditionType' period: $ref: 'TS29571\_CommonData.yaml#/components/schemas/DurationSec' parameter: type: string threshold: anyOf: - $ref: 'TS29571\_CommonData.yaml#/components/schemas/Double' - $ref: 'TS29571\_CommonData.yaml#/components/schemas/Float' - $ref: 'TS29571\_CommonData.yaml#/components/schemas/Int32' - $ref: 'TS29571\_CommonData.yaml#/components/schemas/Int64' - $ref: 'TS29571\_CommonData.yaml#/components/schemas/Uint16' - $ref: 'TS29571\_CommonData.yaml#/components/schemas/Uint32' - $ref: 'TS29571\_CommonData.yaml#/components/schemas/Uint64' - $ref: 'TS29571\_CommonData.yaml#/components/schemas/Uinteger' reportWhenBelow: type: boolean eventTrigger: $ref: '#/components/schemas/ReportingEventTrigger' required: - type DataReport: description: "A data report sent by a data collection client to the Data Collection AF." type: object properties: externalApplicationId: $ref: 'TS29571\_CommonData.yaml#/components/schemas/ApplicationId' expedite: type: boolean serviceExperienceRecords: type: array items: $ref: '#/components/schemas/ServiceExperienceRecord' minItems: 1 locationRecords: type: array items: $ref: '#/components/schemas/LocationRecord' minItems: 1 communicationRecords: type: array items: $ref: '#/components/schemas/CommunicationRecord' minItems: 1  performanceDataRecords: type: array items: $ref: '#/components/schemas/PerformanceDataRecord' minItems: 1 applicationSpecificRecords: type: array items: $ref: '#/components/schemas/ApplicationSpecificRecord' minItems: 1 tripPlanRecords: type: array items: $ref: '#/components/schemas/TripPlanRecord' minItems: 1 mediaStreamingAccessRecords: type: array items: $ref: 'TS26512\_R4\_DataReporting.yaml#/components/schemas/MediaStreamingAccessRecord' minItems: 1 required: - externalApplicationId DataDomain: description: "A data reporting domain." anyOf: - type: string enum: [SERVICE\_EXPERIENCE, LOCATION, COMMUNICATION, PERFORMANCE, APPLICATION\_SPECIFIC, MS\_ACCESS\_ACTIVITY, PLANNED\_TRIPS] - type: string description: > This string provides forward-compatibility with future extensions to the enumeration but is not used to encode content defined in the present version of this API. ReportingConditionType: description: "The type of condition that triggers reporting by a data collection client to the Data Collection AF." anyOf: - type: string enum: [INTERVAL, THRESHOLD, EVENT] - type: string description: > This string provides forward-compatibility with future extensions to the enumeration but is not used to encode content defined in the present version of this API. ReportingEventTrigger: description: "The type of event that triggers reporting by a data collection client to the Data Collection AF." anyOf: - type: string enum: [LOCATION, DESTINATION] - type: string description: > This string provides forward-compatibility with future extensions to the enumeration but is not used to encode content defined in the present version of this API. BaseRecord: description: "Abstract base data type for UE data reporting records." type: object properties: timestamp: $ref: 'TS29571\_CommonData.yaml#/components/schemas/DateTime' required: - timestamp ServiceExperienceRecord: description: "A data reporting record for UE service experience." allOf: - $ref: '#/components/schemas/BaseRecord' - type: object properties: serviceExperienceInfos: type: array items: $ref: '#/components/schemas/PerFlowServiceExperienceInfo' required: - serviceExperienceInfos  PerFlowServiceExperienceInfo: description: "Information about the service experience of a single flow." type: object properties: serviceExperience: $ref: 'TS29517\_Naf\_EventExposure.yaml#/components/schemas/SvcExperience' timeInterval: $ref: 'TS29122\_CommonData.yaml#/components/schemas/TimeWindow' remoteEndpoint: $ref: 'TS29517\_Naf\_EventExposure.yaml#/components/schemas/AddrFqdn' required: - serviceExperience - timeInterval - remoteEndpoint LocationRecord: description: "A data reporting record for UE location." allOf: - $ref: '#/components/schemas/BaseRecord' - type: object properties: location: $ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/LocationData' required: - location  CommunicationRecord: description: "A data reporting record for UE communication." allOf: - $ref: '#/components/schemas/BaseRecord' - type: object properties: timeInterval: $ref: 'TS29122\_CommonData.yaml#/components/schemas/TimeWindow' uplinkVolume: $ref: 'TS29122\_CommonData.yaml#/components/schemas/Volume' downlinkVolume: $ref: 'TS29122\_CommonData.yaml#/components/schemas/Volume' required: - timeInterval  PerformanceDataRecord: description: "A data reporting record for UE performance." allOf: - $ref: '#/components/schemas/BaseRecord' - type: object properties: timeInterval: $ref: 'TS29122\_CommonData.yaml#/components/schemas/TimeWindow' location: $ref: 'TS29122\_CommonData.yaml#/components/schemas/LocationArea5G' remoteEndpoint: $ref: 'TS29517\_Naf\_EventExposure.yaml#/components/schemas/AddrFqdn' packetDelayBudget: $ref: 'TS29571\_CommonData.yaml#/components/schemas/PacketDelBudget' packetLossRate: $ref: 'TS29571\_CommonData.yaml#/components/schemas/PacketLossRate' uplinkThroughput: $ref: 'TS29571\_CommonData.yaml#/components/schemas/BitRate' downlinkThrougput: $ref: 'TS29571\_CommonData.yaml#/components/schemas/BitRate' required: - timeInterval  ApplicationSpecificRecord: description: "A typed application-specific UE data reporting record." allOf: - $ref: '#/components/schemas/BaseRecord' - type: object properties: recordType: $ref: 'TS29571\_CommonData.yaml#/components/schemas/Uri' recordContainer: {} # (Syntax determined by recordType.) required: - recordType - recordContainer  TripPlanRecord: description: "A data reporting record for UE performance." allOf: - $ref: '#/components/schemas/BaseRecord' - type: object properties: startingPoint: $ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/LocationData' waypoints: type: array items: $ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/LocationData' minItems: 1 destination: $ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/LocationData' estimatedAverageSpeed: $ref: 'TS29572\_Nlmf\_Location.yaml#/components/schemas/HorizontalSpeed' estimatedArrivalTime: $ref: 'TS29571\_CommonData.yaml#/components/schemas/DateTime' required: - startingPoint - destination |

END OF CHANGES