**3GPP TSG-SA5 Meeting #136-e *S5-212371d1***

**Online, , 1st Mar 2021 - 9th Mar 2021**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.1* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **28.532** | **CR** | **0164** | **rev** | **1** | **Current version:** | **16.6.0** |  |
|  | | | | | | | | |
| *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)*.* | | | | | | | | |
|  | | | | | | | | |

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

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | |
| ***Title:*** | Rel-16 CR 28.532 Correct definitions for the File MnS (REST SS) | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Nokia; Nokia Shanghai Bell | | | | | | | | | |
| ***Source to TSG:*** | SA5 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | 5G\_SLICE\_ePA | | | | |  | ***Date:*** | | | 2021-02-19 |
|  |  | | | |  | |  | | |  |
| ***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 can be 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:*** | | The REST SS of file management has some smaller errors. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | | The small errors are corrected. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | | The errors are not removed and may lead to interoperability issues. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | | 12.6.1.1.1, 12.6.1.1.2, 12.6.1.1.3, 12.6.1.1.4, 12.6.1.2.1, 12.6.1.2.2, 12.6.1.2.3, 12.6.1.3.1.1 (new), 12.6.1.3.1.1.2 (new), 12.6.1.3.2.1, 12.6.1.3.2.1.2, 12.6.1.3.2.1.3.1, 12.6.1.3.2.2, 12.6.1.3.2.2.2, 12.6.1.3.2.2.3.1, 12.6.1.3.2.2.3.2 (void), 12.6.1.3.2.3, 12.6.1.3.2.3.2, 12.6.1.3.2.3.3.1, 12.6.1.3.2.4, 12.6.1.3.2.4.3.1, 12.6.1.4.1, 12.6.1.4.2, 12.6.1.4.2.1 (new), 12.6.1.4.2.2 (new), 12.6.1.4.2.3 (new), 12.6.1.4.3 (void), 12.6.1.4.4 (void), 12.6.1.4.5 (void), 12.6.1.4.6.2, 12.6.1.4.6.2, 12.6.1.4.6.3, 12.6.1.4.6.4 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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 28.532... CR 0163, CR 0165 | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

|  |
| --- |
| **First modification** |

## 12.6 File data reporting service

### 12.6.1 RESTful HTTP-based solution set

#### 12.6.1.1 Mapping of operations

##### 12.6.1.1.1 Introduction

The IS operations are mapped to SS equivalents according to table 12.6.1.1.1-1.

Table 12.6.1.1.1-1: Mapping of IS operations to SS equivalents

|  |  |  |  |
| --- | --- | --- | --- |
| IS operation | HTTP Method | Resource URI | S |
| listAvailableFiles | GET | /iles | M |
| subscribe | POST | /subscriptions | M |
| unsubscribe | DELETE | /subscriptions/{subscriptionId} | M |



##### 12.6.1.1.2 Operation listAvailableFiles

The IS operation parameters are mapped to SS equivalents according to table 12.6.1.1.2-1 and table 12.6.1.1.2-2.

Table 12.6.1.1.2-1: Mapping of IS operation input parameters to SS equivalents (HTTP GET)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **IS parameter name** | **SS parameter location** | **SS parameter name** | **SS parameter type** | **S** |
| fileDataType | query | fileDataType | FileDataType | M |
| beginTime | query | beginTime | DateTime | M |
| endTime | query | endTime | DateTime | M |

Table 12.6.1.1.2-2: Mapping of IS operation output parameters to SS equivalents (HTTP GET)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **IS parameter name** | **SS parameter location** | **SS parameter name** | **SS parameter type** | **S** |
| fileInfoList | response body | n/a | array(FileInfo) | M |
| status | response status codes | n/a | n/a | M |
| response body | error | ErrorResponse | O |

The message flow is as follows:

- 1. The MnS consumer sends a HTTP GET request to the MnS producer.

- The URI identifies the "…/files" collection resource.

- The query part may contain filter parameters. Absence of the query component means all available files shall be returned.

- The request message body shall be empty.

2. The MnS producer sends a HTTP GET response to the MnS consumer.

- On success "200 OK" shall be returned. The response message body shall carry the information of available files. The response format is defined by "array(FileInfo)".

- On failure, an appropriate error code shall be returned. The response message body may provide additional error information.

##### 12.6.1.1.3 Operation subscribe

See clause 12.2.1.1.8.

##### 12.6.1.1.4 Operation unsubscribe

See clause 12.2.1.1.9.

#### 12.6.1.2 Mapping of notifications

##### 12.6.1.2.1 Introduction

The IS notifications are mapped to SS equivalents according to table 12.6.1.2.1-1.

**Table 12.6.1.2.1-1: Mapping of IS notifications to SS equivalents**

|  |  |  |  |
| --- | --- | --- | --- |
| **IS notification** | **HTTP Method** | **Resource URI** | **S** |
| notifyFileReady | POST | {notificationTarget} | M |
| notifyFilePreparationError | POST | {notificationTarget} | M |

##### 12.6.1.2.2 Notification notifyFileReady

The IS notification parameters are mapped to SS equivalents according to table 12.6.1.2.2-1.

Table 12.6.1.2.2-1: Mapping of IS notification input parameters to SS equivalents (HTTP POST)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **IS parameter name** | **SS parameter location** | **SS parameter name** | **SS parameter type** | **S** |
| objectClass | request body | href | Uri | M |
| objectInstance |
| notificationId | request body | notificationId | NotificationId | M |
| notificationType | request body | notificationType | NotificationType | M |
| eventTime | request body | eventTime | DateTime | M |
| systemDN | request body | systemDN | SystemDN | M |
| fileInfoList | request body | fileInfoList | array(FileInfo) | M |
| additionalText | request body | additionalText | string | O |

##### 12.6.1.2.3 Notification notifyFilePreparationError

The IS notification parameters are mapped to SS equivalents according to table 12.6.1.2.3-1.

Table 12.6.1.2.3-1: Mapping of IS notification input parameters to SS equivalents (HTTP POST)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **IS parameter name** | **SS parameter location** | **SS parameter name** | **SS parameter type** | **S** |
| objectClass | request body | href | Uri | M |
| objectInstance |
| notificationId | request body | notificationId | NotificationId | M |
| notificationType | request body | notificationType | NotificationType | M |
| eventTime | request body | eventTime | DateTime | M |
| systemDN | request body | systemDN | SystemDN | M |
| fileInfoList | request body | fileInfoList | array(FileInfo) | M |
| reason | request body | reason | string | O |
| additionalText | request body | additionalText | string | O |

#### 12.6.1.3 Resources

##### 12.6.1.3.1 Resource structure

###### 12.6.1.3.1.1 Resource structure on the MnS producer

Figure 12.6.1.3.1.1-1 shows the resource structure of the File Data Reporting MnS on the MnS producer.



Figure 12.6.1.3.1.1-1: Resource URI structure of the File Data Reporting MnS on the MnS producer

Table 12.2.1.3.1.1-1 provides an overview of the resources and applicable HTTP methods.

Table 12.2.1.3.1.1-1: Resources and methods overview

|  |  |  |  |
| --- | --- | --- | --- |
| Resource name | Resource URI | HTTP method | Description |
| Files | …/files | GET | Retrieve the information of the available files |
| Subscriptions | …/subscriptions | POST | Create a subscription |
| Subscription | …/subscriptions/{subscriptionId} | DELETE | Delete a single subscription |
| Notification Target | {notificationTarget} | POST | Send a notification to the notification target |

###### 12.6.1.3.1.2 Resource structure on the MnS consumer

Figure 12.6.1.3.1.2-1 shows the resource structure of the File Data Reporting MnS on the MnS consumer.



Figure 12.6.1.3.1.2-1: Resource URI structure of the File Data Reporting MnS on the MnS consumer

Table 12.6.1.3.1.2-1 provides an overview of the resources and applicable HTTP methods.

Table 12.6.1.3.1.2-1: Resources and methods overview

|  |  |  |  |
| --- | --- | --- | --- |
| Resource name | Resource URI | HTTP method | Description |
| Notification Target | {notificationTarget} | POST | Send a notification to the notification target |



##### 12.6.1.3.2 Resource definitions

###### 12.6.1.3.2.1 Resource "…/files"

12.6.1.3.2.1.1 Description

This resource represents the information about a collection of available files.

12.6.1.3.2.1.2 URI

Resource URI = {MnSRoot}/FileDataReportingMnS/{MnSVersion}/files

The resource URI variables are defined in table 12.6.1.3.2.1.1-1.

Table 12.6.1.3.2.1.1-1: URI variables

|  |  |
| --- | --- |
| **Name** | **Definition** |
| MnSRoot | See clause 4.4.2 of TS 32.158 [15] |
| MnSVersion | See clause 4.4.2 of TS 32.158 [15] |

12.6.1.3.2.1.3 HTTP methods

12.6.1.3.2.1.3.1 HTTP GET

This method shall support the URI query parameters specified in the following table.

**Table 12.6.1.3.2.1.3.1-1: URI query parameters supported by the GET method on this resource**

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Data type** | **Description** | **S** |
| fileDataType | FileDataType | Selects files based on the file data type. | M |
| beginTime | DateTime | Selects files based on the earliest time they became available | M |
| endTime | DateTime | Selects files based on the latest time they became available | M |

This method shall support the request data structures, the response data structures and response codes specified in the following tables.

**Table 12.6.1.3.2.1.3.1-2: Data structures supported by the GET request body on this resource**

|  |  |  |
| --- | --- | --- |
| **Data type** | **Description** | **S** |
|  |  |  |

**Table 12.6.1.3.2.1.3.1-3: Data structures supported by the GET response body on this resource**

|  |  |  |  |
| --- | --- | --- | --- |
| **Data type** | **Response**  **codes** | **Description** | **S** |
| array(FileInfo) | 200 OK | Information about the files identified in the request | M |
| ErrorResponse | 4xx/5xx | Returned in case of an error | M |

12.6.1.3.2.2 Resource "…/subscriptions"

12.6.1.3.2.2.1 Description

This resource is a container resource for individual subscriptions.

12.6.1.3.2.2.2 URI

Resource URI: {MnSRoot}/FileDataReportingMnS/{MnSVersion}/subscriptions

The resource URI variables are defined in table 12.6.1.3.3.2.2.2-1.

Table 12.6.1.3.3.2.2.2-1: URI variables

|  |  |
| --- | --- |
| **Name** | **Definition** |
| MnSRoot | See clause 4.4.2 of TS 32.158 [15] |
| MnSVersion | See clause 4.4.2 of TS 32.158 [15] |

12.6.1.3.2.2.3 HTTP methods

12.6.1.3.2.2.3.1 POST

This method shall support the URI query parameters specified in table 12.6.1.3.2.2.3.1-1.

Table 12.6.1.3.2.2.3.1-1: URI query parameters supported by the POST method on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Data type | Description | S |
| n/a | n/a | n/a | n/a |

This method shall support the request data structures specified in table 12.6.1.3.2.2.3.1-2 and the response data structures and response codes specified in table 12.6.1.3.2.2.3.1-3.

Table 12.6.1.3.2.2.3.1-2: Data structures supported by the POST Request Body on this resource

|  |  |  |
| --- | --- | --- |
| Data type | Description | S |
| Subscription | Details of the subscription to be created | M |

Table 12.6.1.3.2.2.3.1-3: Data structures supported by the POST Response Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Response  codes | Description | S |
| Subscription | 201 Created | In case of success the representation of the created subscription is returned. | M |
| ErrorResponse | 4xx/5xx | In case of failure the error object is returned. | M |

12.6.1.3.2.2.3.2 Void











12.6.1.3.2.3 Resource "…/subscriptions/{subscriptionId}"

12.6.1.3.2.3.1 Description

This resource represents a subscription.

12.6.1.3.2.3.2 URI

Resource URI: {MnSRoot}/FileDataReportingMnS/{MnSVersion}/subscriptions/{subscriptionId}

The resource URI variables are defined in table 12.6.1.3.2.3.2-1.

Table 12.6.1.3.2.3.2-1: URI variables

|  |  |
| --- | --- |
| Name | Definition |
| MnSRoot | See clause 4.4.2 of TS 32.158 [15] |
| MnSVersion | See clause 4.4.2 of TS 32.158 [15] |
| subscriptionId | Subscription identifier |

12.6.1.3.2.3.3 HTTP methods

12.6.1.3.2.3.3.1 DELETE

This method shall support the URI query parameters specified in table 12.6.1.3.2.3.3-1.

Table 12.6.1.3.2.3.3-1: URI query parameters supported by the DELETE method on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Data type | Description | S |
| n/a | n/a | n/a | n/a |

This method shall support the request data structures specified in table 12.6.1.3.2.3.3-2 and the response data structures and response codes specified in table 12.6.1.3.2.3.3-3.

Table 12.6.1.3.2.3.3-2: Data structures supported by the DELETE Request Body on this resource

|  |  |  |
| --- | --- | --- |
| Data type | Description | S |
| n/a | n/a | n/a |

Table 12.6.1.3.2.3.3-3: Data structures supported by the DELETE Response Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Response  codes | Description | S |
| n/a | 204 No Content | In case of success no message body is returned | M |
| ErrorResponse | 4xx/5xx | In case of failure the error object is returned. | M |

12.6.1.3.2.4 Resource "/notificationTarget"

12.6.1.3.2.4.1 Description

This resource represents a notification target on the MnS consumer.

12.6.1.3.2.4.2 URI

Resource URI: {notificationTarget}

The resource URI variables are defined in table 12.6.1.3.2.4.2-1.

Table 12.6.1.3.2.4.2-1: URI variables

|  |  |
| --- | --- |
| Name | Definition |
| notificationTarget | URI of the notification target on the MnS consumer, contained in the notification subscription |

12.6.1.3.2.4.3 HTTP methods

12.6.1.3.2.4.3.1 POST

This method shall support the URI query parameters specified in table 12.6.1.3.2.4.3.1-1.

Table 12.6.1.3.2.4.3.1-1: URI query parameters supported by the POST method on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Data type | Description | S |
| n/a | n/a | n/a | n/a |

This method shall support the request data structures specified in table 12.6.1.3.2.4.3.1-2 and the response data structures and response codes specified in table 12.6.1.3.2.4.3.1-3.

Table 12.6.1.3.2.4.3.1-2: Data structures supported by the POST Request Body on this resource

|  |  |  |
| --- | --- | --- |
| Data type | Description | S |
| NotifyFileReady | Type in case a notifyFileReady notification is sent | M |
| NotifyFilePreparationError | Type in case a notifyFilePreparationError notification is sent | M |

Table 12.6.1.3.2.4.3.1-3: Data structures supported by the POST Response Body on this resource

|  |  |  |  |
| --- | --- | --- | --- |
| Data type | Response  codes | Description | S |
| n/a | 204 No Content | In case of success no message body is returned | M |
| ErrorResponse | 4xx/5xx | In case of failure the error object is returned. | M |

#### 12.6.1.4 Data type definitions

##### 12.6.1.4.1 General

Table 12.6.1.4.1-1: Data types defined in this specification

|  |  |  |
| --- | --- | --- |
| **Data type** | **Reference** | **Description** |
| FileInfo | 12.6.1.4.2.1 | Information describing a file |
| NotifyFileReady | 12.6.1.4.2.2 | Used in the request body of HTTP POST for the notification type notifyFileReady |
| NotifyFilePreparationError | 12.6.1.4.2.3 | Used in the request body of HTTP POST for the notification type notifyFilePreparationError |
| FileDataType | 12.6.1.4.6.3 | File data types |
| FileNotificationTypes | 12.6.1.4.6.4 | File notification types |

Table 12.6.1.4.1-2: Data types imported

|  |  |  |
| --- | --- | --- |
| **Data type** | **Reference** | **Description** |
| DateTime | TS 28.623 [44] | Date and time |
| Float | TS 28.623 [44] | Float type |
| Uri | TS 28.623 [44] | URI type |
| SystemDN | TS 28.623 [44] | systemDN type |
| NotificationId | TS 28.623 [44] | Notification identifier as defined in ITU-T Rec. X. 733 [4] |
| NotificationHeader | TS 28.623 [44] | Notification header |
| ErrorResponse | TS 28.623 [44] | Used in the response body of multiple HTTP methods in case of error |
| Subscription | 12.2.1.4.1a.8 | Subscription resource |

##### 12.6.1.4.2 Structured data types

12.6.1.4.2.1 Type FileInfo

Table 12.6.1.4.2.1-1: Definition of FileInfo

|  |  |  |  |
| --- | --- | --- | --- |
| **Attribute name** | **Data type** | **Description** | **S** |
| fileLocation | Uri | Location of the file | M |
| fileSize | integer | Size of the file, unit is byte | M |
| fileReadyTime | DateTime | Date and time when the file was last closed and made available in the MnS producer. The file content will not be changed any more. | M |
| fileExpirationTime | DateTime | Date and time after which the file may be deleted | M |
| fileCompression | string | Name of the compression algorithm used for compressing the file | M |
| fileFormat | string | Encoding technique used for encoding the file. Its value should indicate the version of the file format specification plus to indicate if "ASN1" or "XML-schema" is used | M |
| fileDataType | FileDataType | Type of management data stored in the file | M |

12.6.1.4.2.2 Type NotifyFileReady

**Table 12.6.1.4.2.2-1: Definition of type NotifyFileReady**

|  |  |  |  |
| --- | --- | --- | --- |
| **Attribute name** | **Data type** | **Description** | **S** |
| href | Uri | URI of the object representing the process, managed element or management node, which made the file available | M |
| notificationId | NotificationId | Notification identifier as defined in ITU-T Rec. X. 733 [4] | M |
| notificationType | NotificationType | Notification type (notifyFileReady, etc.) | M |
| eventTime | DateTime | Event occurrence time (e.g., the file ready time) | M |
| systemDN | SystemDN | DN of the MnS Agent emitting the notification | M |
| fileInfoList | array(FileInfo) | Information describing the available files | M |
| additionalText | string | Allows a free form text description to be reported as defined in ITU-T Rec. X. 733 [4] | O |

12.6.1.4.2.3 Type NotifyFilePreparationError

**Table 12.6.1.4.2.3-1: Definition of type NotifyFilePreparationError**

|  |  |  |  |
| --- | --- | --- | --- |
| **Attribute name** | **Data type** | **Description** | **S** |
| href | Uri | URI of the object representing the process, managed element or management node, where the file preparation error occured | M |
| notificationId | NotificationId | Notification identifier as defined in ITU-T Rec. X. 733 [4] | M |
| notificationType | NotificationType | Notification type (notifyFileReady, etc.) | M |
| eventTime | DateTime | Event occurrence time (e.g., the file ready time) | M |
| systemDN | SystemDN | DN of the MnS Agent emitting the notification | M |
| fileInfoList | array(FileInfo) | Information about the files with a preparation error. | M |
| reason | string | Reason for the file preparation error | O |
| additionalText | string | Allows a free form text description to be reported as defined in ITU-T Rec. X. 733 [4] | O |

##### 12.6.1.4.3 Void

##### 12.6.1.4.4 Void























##### 12.6.1.4.5 Void



##### 12.6.1.4.6 Simple data types and enumerations

12.6.1.4.6.1 General

This clause defines simple data types and enumerations that are used by the data structures defined in the previous clauses.

12.6.1.4.6.2 Simple data types

Table 12.6.1.4.6.2-1: Simple data types

|  |  |  |
| --- | --- | --- |
| Type name | Type definition | Description |
|  |  |  |

12.6.1.4.6.3 Enumeration FileDataType

Table 12.6.1.4.6.3-1: Enumeration FileDataType

|  |  |
| --- | --- |
| Enumeration value | Description |
| PERFORMANCE | Performance data file (measurements and KPIs) |
| TRACE | Trace data file |
| ANALYTICS | Analytics data file |
| PROPRIETARY | Proprietary data file |

12.6.1.4.6.4 Enumeration FileNotificationTypes

Table 12.6.1.4.6.4-1: Enumeration FileNotificationTypes

|  |  |
| --- | --- |
| Enumeration value | Description |
| notifyFileReady | Notification type is notifyFileReady |
| notifyFilePreparationError | Notification type is notifyFilePreparationError |

|  |
| --- |
| **End of modifications** |