**3GPP TSG CT WG3 Meeting #135 *C3-243152r1***

**Hyderabad, IN, 27 - 31 May, 2024**

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| *CR-Form-v12.3* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **29.575** | **CR** | **0082** | **rev** | **1** | **Current version:** | **18.5.0** |  |
|  | | | | | | | | |
| *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 |  | Radio Access Network |  | Core Network | **X** |

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| ***Title:*** | Nadrf\_MLModelManagement service operation description correction | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | ZTE | | | | | | | | | |
| ***Source to TSG:*** | CT3 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | eNA\_Ph3 | | | | |  | ***Date:*** | | | 2024-05-20 |
|  |  | | | |  | |  | | |  |
| ***Category:*** | **F** |  | | | | | ***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 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-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)  Rel-20 (Release 20)* | |
|  |  | | | | | | | | | |
| ***Reason for change:*** | | 1. In 4.3.2.2.2, it’s specified that the ADRF shall download the ML model(s), but when the consumer directly provides ML Model(s), there is no need for the ADRF to download the ML model(s). 2. There are misalignments in this TS:  * for Nadrf\_MLModelManagement\_StorageRequest, some clauses (4.3.1.1, 4.3.1.3.2, 4.3.2.1, 4.3.2.2.2) say it’s used to store ML model(s), while some clauses (4.3.1.3.1, 4.3.2.2.1) say it’s used to store ML model(s) or ML model address(es). * for Nadrf\_MLModelManagement\_RetrievalRequest, some clauses (4.3.1.1, 4.3.1.3.2, 4.3.2.3.2) say it’s used to retrieve ML model(s), while some clauses (4.3.1.3.1) say it’s used to retrieve ML model(s) or ML model address(es). * for Nadrf\_MLModelManagement\_Delete, some clauses (4.3.1.1, 4.3.1.3.2, 4.3.2.4.2, 4.3.2.4.3) say it’s used to delete ML model(s), while some clauses (4.3.1.3.1, 4.3.2.1, 4.3.2.4.1) say it’s used to delete ML model(s) or ML model address(es).   It’s proposed to only mention ML model(s) to keep consistency in the whole specification, as the details can be found in the corresponding procedure descriptions.   1. In 4.3.2.1, what information is provided by the consumer is described for Nadrf\_MLModelManagement\_StorageRequest service operation, such detail no need to be described here. It’s proposed to remove such detail and align with other service operation description. | | | | | | | | |
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| ***Summary of change:*** | | 1. Make the step of ML model downloading optional in 4.3.2.2.2. 2. Remove the ML model address(es) from the service operation descriptions. 3. Remove the information provided by consumer from 4.3.2.1 for Nadrf\_MLModelManagement\_StorageRequest. | | | | | | | | |
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| ***Consequences if not approved:*** | | Incorrect and inconsistent specification. | | | | | | | | |
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| ***Clauses affected:*** | | 4.3.1.3.1, 4.3.2.1, 4.3.2.2.1, 4.3.2.2.2, 4.3.2.4.1 | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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 ... | | |
|  | |  | | | | | | | | |
| ***Other comments:*** | | This CR does not have any impact in the OpenAPI specification. | | | | | | | | |
|  | |  | | | | | | | | |
| ***This CR's revision history:*** | |  | | | | | | | | |

**Additional discussion(if needed):**

**Proposed changes:**

\*\*\* 1st Change \*\*\*

##### 4.3.1.3.1 Analytics Data Repository Function (ADRF)

The Analytics Data Repository Function (ADRF) provides the functionality to allow NF service consumers to store, retrieve, and remove ML model(s) from the ADRF.

\*\*\* 2nd Change \*\*\*

#### 4.3.2.1 Introduction

Table 4.3.2.1-1: Operations of the Nadrf\_MLModelManagement Service

| Service operation name | Description | Initiated by |
| --- | --- | --- |
| Nadrf\_MLModelManagement\_StorageRequest | This service operation is used by an NF to request the ADRF to store or update ML model(s). | NF service consumer (NWDAF) |
| Nadrf\_MLModelManagement\_RetrievalRequest | This service operation is used by an NF to retrieve stored ML model(s) from the ADRF. | NF service consumer (NWDAF) |
| Nadrf\_MLModelManagement\_Delete | This service operation is used by an NF to delete stored ML model(s) in the ADRF. | NF service consumer (NWDAF) |

\*\*\* 3rd Change \*\*\*

##### 4.3.2.2.1 General

The Nadrf\_MLModelManagement\_StorageRequest service operation is used by an NF service consumer to store ML model(s).

\*\*\* 4th Change \*\*\*

##### 4.3.2.2.2 Request Storage of ML model(s)

Figure 4.3.2.2.2-1 shows a scenario where the NF service consumer sends a request to the ADRF to store ML model(s).



Figure 4.3.2.2.2-1: NF service consumer requesting to store ML model(s)

The NF service consumer shall invoke the Nadrf\_MLModelManagement\_StorageRequest service operation to store ML model(s). The NF service consumer shall send an HTTP POST request with "{apiRoot}/nadrf-mlmodelmanagement/<apiVersion>/mlmodel-store-records" as Resource URI representing the "ADRF ML Model Store Records" resource, as shown in figure 4.3.2.2.2-1, step 1, to create an "Individual ADRF ML Model Store Record" according to the information in the message body. The NadrfMLModelStoreRecord data structure provided in the request body shall include either the MLModelInfo data structure in the "mlModelInfo" attribute or the MLModel data structure in the "mlModels" attribute, while either the NF instance identifier, within the "nfInstanceId" attribute, or the NF set identifier, within the "nfSetId" attribute of the NWDAF containing MTLF shall also be provided. If the MLModelInfo data structure is provided, the unique ML model identifier within the "modelUniqueId" attribute, the address of the ML model within the "mlFileAddr" attribute, and the storage size required for each of the ML model(s) in the "mlStorageSize" attribute shall be included, while the list of allowed consumer(s) within the "allowConsumerList" may also be provided. If the MLModel data structure is provided, the unique ML model identifier within the "modelUniqueId" attribute and the ML model within the "mlModel" attribute shall be included.

Upon the reception of an HTTP POST request with "{apiRoot}/nadrf-mlmodelmanagement /<apiVersion>/mlmodel-store-records" as Resource URI and NadrfMLModelStoreRecord data structure as request body, the ADRF shall:

- create a new ML model store record;

- assign a storeTransId;

- download the ML model(s) if needed; and

- store the ML model(s).

NOTE 1: If the ML model(s) are already stored or being stored in the ADRF, the ADRF will still create a new "Individual ADRF ML Model Store Record" resource and assign a new storeTransId if the ADRF intends to not really store the ML model(s) in the memory again based on the implementation.

If the ADRF created an "Individual ADRF ML Model Store Record" resource, the ADRF shall respond with "201 Created" with the message body containing a representation of the created ML model record, as shown in figure 4.3.2.2.2-1, step 2. If the storage of the ML models provided in the "mlModelInfo" attribute of the request partially failed, the ADRF may include information about the models that failed to be stored within the "modelStoreResult" attribute in the response. The ADRF shall include a Location HTTP header field, which shall contain the URI of the created record i.e. "{apiRoot}/nadrf- mlmodelmanagement/<apiVersion>/mlmodel-store-records/{storeTransId}".

If the storage of all the ML models provided in the "mlModelInfo" attribute or "mlModels" attribute of the request failed for the same reason, then:

- if the ML model file address(es) was/were not found the ADRF shall send an HTTP "404 Not Found" status code with the response body containing a ProblemDetails data structure with the "cause" attribute including the "ML\_MODEL\_FILE\_ADDRESS\_NOT\_FOUND" application error response as specified in clause 5.2.7; or

- if the ML model file(s) download failed the ADRF shall send an HTTP "500 Internal Server Error" status code with the response body containing a ProblemDetails data structure with the "cause" attribute including the "ML\_MODEL\_FILE\_DOWNLOAD\_FAILED" application error response as specified in clause 5.2.7.

If an error occurs when processing the HTTP POST request, the ADRF shall send an HTTP error response as specified in clause 5.2.7.

\*\*\* 5th Change \*\*\*

##### 4.3.2.4.1 General

The Nadrf\_MLModelManagement\_Delete service operation is used by an NF service consumer to delete stored ML model(s).

\*\*\* End of Changes \*\*\*