**3GPP TSG-S4 Meeting #115-e**S4-211079

**Online, 18th – 28th August 2021**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| *CR-Form-v12.1* | | | | | | | | |
| **PSEUDO CHANGE REQUEST** | | | | | | | | |
|  | | | | | | | | |
|  | **26.804** | **CR** |  | **rev** |  | **Current version:** | **0.4.1** |  |
|  | | | | | | | | |
| *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 |  | Core Network |  |

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | | | | | | | | | | |
| ***Title:*** | Potential Solutions for Background Data Transfer | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Source to WG:*** | Qualcomm Incorporated | | | | | | | | | |
| ***Source to TSG:*** | S4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | 5GMS\_EXT | | | | |  | ***Date:*** | | | 21st June 2021 |
|  |  | | | |  | |  | | |  |
| ***Category:*** |  |  | | | | | ***Release:*** | | |  |
|  | *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:*** | | A description of a potential solution for the usage of BDT for media session is provided. | | | | | | | | |
|  | |  | | | | | | | | |
| ***Summary of change:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***Consequences if not approved:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
| ***Clauses affected:*** | |  | | | | | | | | |
|  | |  | | | | | | | | |
|  | | **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:*** | |  | | | | | | | | |

### 5.6.6 Candidate Solutions

#### 5.6.6.1 Existing APIs to provision BDT

The NEF offers the ResourceManagementOfBdt API, as defined in 5.4 of [TS29.122], to AF consumers to allow them to create, manage, and track BDT policies. The NEF also offers the ApplyingBdtPolicy API to request the application of a previously defined BDT policy for a particular UE or group of UEs.

The PCF offers the Npcf\_BDTPolicyControl API, as defined in 5 of [TS29.554], to allow consumers to create and update BDT policies. The NF consumer may subscribe to notifications about any changes to the network conditions that affect a BDT policy.

A BDT policy consists of multiple transfer policies, each of which contains a time window. The AF will select one of the transfer policies to apply.

#### 5.6.6.2 Potential Solution

Background Data Transfer (BDT) is a generic feature that may be used by an Application Service Provider to pre-load content during time periods recommended by the MNO onto a UE. This feature can be suitable for multimedia streaming services but was developed to support other use-cases (such as automotive).

In this potential solution, the support for background data transfer in 5GMS can be realized by the following procedures:

1. Provisioning by the 5GMS Application Provider to enable the usage of background data traffic and to define the background data transfer policy. The BDT policy may be part of the general QoS policy templates.

2. Creation, updating, and monitoring the usage of the background data transfer policy in collaboration with the PCF. This may be done using the procedures described in 5.6.6.1.

3. Communication of the background data transfer policy to the UE, e.g. as part of the access information.

4. Registration by the 5GMS-Aware Application (via the Media Sesssion Handler) with the 5GMS AF to use background data transfer.

5. Notification by the 5GMS AF to the Media Session Handler of an opportunity to perform background data transfer.

6. Activation of the background data transfer policy for the QoS flow, over which the transfer will happen.

Provisioning the background data transfer feature (step 1) is realized through an extension to the dynamic policy template as defined in TS 26.512 clause 7.9.3. The dynamic policy template may, for example, be extended to include an additional property BdtReqData as defined in TS 29.554 section 5.6.2.3.

The 5GMS AF uses the provisioning information to create or select a background data transfer policy within the PCF. For this purpose, it may use the Npct\_BDTPolicyControl or the ResourceManagementOfBdt API.

Once the policy is created, future downlink media streaming sessions will be able to use the defined background data transfer policy. The 5GMS AF provides the information about the background data transfer policy to the UE as part of the Service Access Information at reference point M5.

The M6 interface is extended to allow the application to request background download of content from the Media Session Handler. As a result, the Media Session Handler registers with the 5GMS AF to receive notifications about the availablity of a background data transfer opportunity. Once a download opportunity manifests itself, the 5GMS AF notifies the Media Sesssion Handler about the time window available for background content download, and the Media Session Handler will either perform the download itself, or else invoke the application to download the content. In case the MSH performs the download, appropriate extensions to the M6 API would be required to manage the access to and notification about completed/aborted download operations.

NOTE: Integration of background data transfer with 5MBS is for future study. Alignment with the xMB API should be considered as part of this.