**3GPP TSG-SA4 Meeting #127 *S4-240133***

**Sophia-Antipolis, FR, 29 Jan - 02 Feb 2024** revision of S4-231653

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| *CR-Form-v12.2* | | | | | | | | |
| **CHANGE REQUEST** | | | | | | | | |
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|  | **26.512** | **CR** | 0058 | **rev** | **1** | **Current version:** | 18.0.0 |  |
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| *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 | **X** |

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| ***Title:*** | Improvements on Background Data Transfer in 5GMS | | | | | | | | | |
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| ***Source to WG:*** | Tencent Cloud | | | | | | | | | |
| ***Source to TSG:*** | S4 | | | | | | | | | |
|  |  | | | | | | | | | |
| ***Work item code:*** | 5GMS\_Pro\_Ph2 | | | | |  | ***Date:*** | | | 1-20-2024 |
|  |  | | | |  | |  | | |  |
| ***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 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-16 (Release 16) Rel-17 (Release 17) Rel-18 (Release 18) Rel-19 (Release 19)* | |
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| ***Reason for change:*** | | Minor corrections:   1. Allow multiple timeWindows 2. clarify the colume of data per UE is per day. 3. Add references for datatypes 4. Questions about estimatedVol and suggested text   The current draft uses desTimeInt with datatype TimeWindow to define the window, which is defined by startTime and stopTime, each in DataTime format. Therefore, this value can only define one specific window of a specific date: 1/19/24 from 1AM to 5AM.  Periodicity is defined by data type: Periodicityinfo which consists of PeriodUI and PeroidDI.   | Attribute name | Data type | P | Cardinality | Description | | --- | --- | --- | --- | --- | | periodUl | DurationSecRm | O | 0..1 | Indicates the time period between the start of the two data bursts in Uplink direction. | | periodDl | DurationSecRm | O | 0..1 | Indicates the time period between the start of the two data bursts in Downlink direction. |   So periodicity seems to define the time between two destimeInt. They do not define the occurrence, i.e the number of times, or the number of days. The only way it can be used is the number of days between windows: n day (nx24x60x60) because the semantic says it has the same start and end time every day.  To address the following examples  1AM-5AM every day of week  1AM-5AM every workday of week (MTWTF, but no Sat or Sun)  1AM-5AM and 10PM-11PM, MWF  It is easier to define the followings:   1. One or more window intervals in the day that BDT can occur 2. The days of week occurrence: DayOfWeek (1=Mon, 7-Sun) 3. The number of occurrence: integer (number of days) 4. The end data and time of the BDT policy | | | | | | | | |
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| ***Summary of change:*** | |  | | | | | | | | |
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| ***Consequences if not approved:*** | |  | | | | | | | | |
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| ***Clauses affected:*** | | 6.4.3.9, 6.4.3.10, 7.9.1, 11.5.4 | | | | | | | | |
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|  | | **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:*** | |  | | | | | | | | |
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| ***This CR's revision history:*** | | This rev: proposing repalcing periodicity with three parameters.  S4-231653: initial proposal | | | | | | | | |

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| **1st Change** |

#### 6.4.3.9 M1BDTSpecification type

Table 6.4.3.9-1: Definition of M1BDTSpecification type

| Property name | Type | Cardinality | Description |
| --- | --- | --- | --- |
| bdtPolicyId | BdtReferenceId | 0..1 | If a BDT policy already exists, the policy identifier. The BdtReferenceId is defined in TS29.154. |
| desTimeInt | TimeWindow | 0..N | The desired time window(s) for the activation of the BDT policy. |
| daysInWeek | DayOfWeek | 0..N | The days of the week of the BDT policy. A maximum of seven occurrences can be provided. No two occurrences of array shall have the same value. If not defined, the BDT policy is applicable on all days of the week. |
| occurrence | integer | 0..1 | The number of days that the BDT policy is in effect. |
| endTime | DateTime | 0..1 | The end date and time of the BD policy. |
| numOfUes | integer | 0..1 | The expected number of UEs that will use the BDT policy. |
| volPerUe | UsageThreshold | 0..1 | The expected usage threshold per UE when applying this BDT policy per day. |
| NOTE 1: Either bdtPolicyId is present or all other properties are present. In the latter case, the 5GMS AF will attempt to create a new BDT policy using the BDTPolicyControl\_Create procedure as defined in TS29.554.  NOTE 2: Datatypes TimeWindow, dayOfWeek, and DayTime are defined in TS 29.122[1]. | | | |

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| **2nd Change** |

#### 6.4.3.9 M5BDTSpecification type

Table 6.4.3.9-1: Definition of M5BDTSpecification type

| Property name | Type | Cardinality | Description |
| --- | --- | --- | --- |
| recTimeInt | TimeWindow | 1..N | Indicates the recommended time interval(s) for using the BDT policy. |
| daysInWeek | Array(DayOfWeek) | 0..1 | The days of the week of the BDT policy. A maximum of seven occurrences can be provided. No two occurrences of array shall have the same value. If not defined, the BDT policy is applicable on all days of the week. |
| NumberOfOccurrence | integer | 0..1 | The total number of days that the BDT policy is in effect, regardless of the repeat days in the week, e.g. two days in week is set by daysInWeek is counted as two occurrences.  The BDT policy end when either this property or stopTime, whichever sooner, reaches its value. |
| stopTime | DateTime | 0..1 | The end date and time of the BDT policy.  The BD policy ends when either this property or NumberOfOccurance, whichever sooner, reaches its value. |
| maxBitRateDl | Bitrate | 0..1 | The maximum BDT bitrate in the downlink direction authorized for this UE. |
| maxBitrateUl | Bitrate | 0..1 | The maximum BDT bitrate in the uplink direction authorized for this UE. |
| estimatedVolume | UsageThreshold | 0..1 | The estimated data traffic that the UE is expected to use during the current time window. This value is provided by the MSH to the 5GMS AF. |
| NOTE 1: Datatypes TimeWindow, dayOfWeek, and DateTime are defined in TS 29.122[1]. | | | |

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| **3rd Change** |

### 7.9.1 Overview

The Policy Templates Provisioning API allow a 5GMS Application Provider to configure a set of Policy Templates within the scope of a Provisioning Session that can subsequently be applied to downlink or uplink media streaming sessions belonging to that Application Provider using the Dynamic Policies API specified in clause 11.5. A Policy Template is used to specify the traffic shaping and charging policies to be applied to these media streaming sessions.

A Policy Template, identified by its policyTemplateId, represents a set of PCF/NEF API parameters which defines the service quality and associated charging for the corresponding downlink or uplink media streaming session(s). The Policy Template is configured as part of the provisioning procedures with the 5GMS AF and is then used by the 5GMS AF to request specific QoS and charging policies for that session from the PCF or NEF.

The state of a Policy Template can be:

- pending: The Policy Template is awaiting validation, potentially because not all required parameters have yet been provided. This is the default state after Policy Template creation.

- invalid: One or more of the Policy Template's properties failed validation by the 5GMS AF.

- ready: After successful validation by the 5GMS AF the Policy Template moves into this state.

- suspended: The 5GMS AF may move a Policy Template into this state under certain conditions defined within the Service Level Agreement.

When the Policy Template is used for QoS Flows, the qoSSpecification object (of type M1QoSSpecification) shall be present:

- The qosReference value is obtained with the Service Level Agreement. See TS 23.502 [45] for detailed usage.

- The maxBtrUl and maxBtrDl properties define the maximal bit rate which can be used for QoS Flows. This value is defined by the 5G System.

- The maxAuthBtrUl and MaxAuthBtrDl properties define the maximal authorized bit rate values which can be requested by a Media Session Handler. Higher bit rate values are not authorized for use by the 5GMS Application Provider.

- The minPacketLossRateDl and minPacketLossRateUl properties define the minimal authorized packet loss rate, which can be requested by a Media Session Handler.

When the Policy Template is used for differential charging the chargingSpecification property shall be present.

applicationSessionContext is a mandatory child object, which contains at least the aspId property.

- The aspId identifies the API invoker.

- The dnn property contains the Data Network Name of the data network, in which the 5GMS AF is hosted.

- When Network Slicing is used, the sliceInfo property contains information about the network slice, which is serving the UE.

- When present, the afAppId property contains an application identifier referencing one or more PFD objects. The value of the afAppId property is provided to the PCF with each new Npcf\_PolicyAuthorization service instance.

The 5GMS Application Provider may request the provisioning of Background Data Transfer for its downlink and uplink streaming sessions. To create a new BDT Policy, the request shall at least include:

* The *desTimeInt* indicates the desired time windows over which the quotas for BDT are calculated.
* The *periodicity* indicates the expected periodicity over which the desired BDT is to be used.
* The *numOfUes* that indicates the expected number of Ues to make use of the BDT policy.
* The *volPerUe* that reflects the expected BDT data volume used by each UE over a given time window (desTimeInt).

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| **4th Change** |

### 11.5.4 Operations

This clause defines the behaviour that is expected when activating a Dynamic Policy Instance. The policyTemplateId uniquely identifies the Policy Template, to which the Dynamic Policy Instance is associated. The provisioningSessionId associates the Dynamic Policy Instance to a Provisioning Session.

The Dynamic Policy resource contains a serviceDataFlowDescription property which contains the service data flow template according to TS 23.503. The ServiceDataFlowDescription shall contain one of:

- a flowDescription object (including 5-Tuples, Type of Service, Security Parameter Index, etc.).

- a domainName.

When the Media Session Handler activate a QoS-related Dynamic Policy Template, then the qosSpecifcation property shall be present and it shall contain the following properties:

- marBwDlBitRate or marBwUlBitRate, indicating the maximum requested bit rate by the Media Session Handler.

- mirBwDlBitRate or mirBwUlBitRate, indicating the minimum requested bit rate by the Media Session Handler.

- minDesBwDlBitRate or minDesBwUlBitrate, indicating the minimum bit rate desired by the Media Session Handler.

When the Media Session Handler activates a BDT Dyanmic Policy Template, the bdtSpecification property shall be present and it shall contain the following properties:

- *estimatedVolume*, indicating the estimated data volume that will be used during the current BDT time window.

NOTE: If this value is higher than the maxBitrateUI/DI \* recTimeInt, this volume of data transfer may not be accommodated fulfilled in the current BDT time window.

When the 5G System employs a traffic enforcement function to ensure that the traffic is complying a certain traffic policy, the Dynamic Policy resource may contain the following two properties:

- an enforcementMethod, indicating the type of enforcement method (like leaky bucket).

- an enforcementBitrate property, indicating the maximal permitted bit rate.